On Track The Archaeology of High Speed I Section I in Kent

On Track

The Archaeology of High Speed I Section I in Kent

by Paul Booth, Timothy Champion, Stuart Foreman, Paul Garwood,
Helen Glass, Julian Munby and Andrew Reynolds

On Track

The Archaeology of High Speed 1 Section 1 in Kent

by Paul Booth, Timothy Champion, Stuart Foreman, Paul Garwood,
Helen Glass, Julian Munby and Andrew Reynolds

On Track

The Archaeology of High Speed 1 Section 1 in Kent

by Paul Booth, Timothy Champion, Stuart Foreman, Paul Garwood,
Helen Glass, Julian Munby and Andrew Reynolds

with contributions by Michael J Allen, John Giorgi and Elizabeth Stafford

edited by Alex Smith

Illustrations prepared by Georgina Slater and Hannah Kennedy

Oxford Wessex Archaeology
Monograph No. 4
2011

This book is one of a series of monographs by Oxford Wessex Archaeology (OWA)
that can be ordered through all good bookshops and internet bookshops

This publication has been generously funded by High Speed 1

Published by Oxford Wessex Archaeology,
A joint venture partnership between Oxford Archaeology and Wessex Archaeology

ISBN 978-0-9545970-8-5

Oxford Archaeology, Janus House, Osney Mead, Oxford, OX20ES
Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, SP4 6EB

Typeset by Production Line, Oxford
Printed in Great Britain by Information Press, Eynsham, Oxfordshire

Contents

Chapter 4 Later Prehistory *by Timothy Champion*

List of Figures

List of Tables

Summary

The construction of High Speed 1 (HS1, formerly known as the Channel Tunnel Rail Link) resulted in the largest archaeological project undertaken to date in the UK, and this volume summarises and discusses the results from Section 1 of the rail link route, a transect extending from the Thames estuary to the Channel coast. The route passes through a series of geographically distinctive landscape zones, and is broadly representative of the landscape of Kent as a whole.

While there are some exceptional individual sites and individual discoveries, the great strength of the Section 1 dataset lies in the large number of 'ordinary' sites which have been studied within the framework of a common research strategy, allowing broad conclusions to be drawn about the landscape through which the route passes and informing ongoing debates concerning the chronology, intensity and impact of human settlement in Kent and south-east England more widely. Discoveries and investigations along the route encompass a wide range of archaeological sites, ranging in date from the Mesolithic to the 20th century.

Mesolithic material from HS1 Section 1 excavations was scarce, with only three *in situ* assemblages of artefacts. Along with surface scatters and residual artefacts, these discoveries are best understood with reference to the spatial organisation of hunter-gatherer territories which spanned large areas of south-east England, including the ancient coastal plains submerged by Early Holocene sea-level rise.

The Early Neolithic evidence from HS1 is exceptionally important because of the discovery of a very rare timber building at White Horse Stone. This structure is one of only five or six Early Neolithic post-built hall-like structures known in southern Britain, and in many ways is the best preserved. It was found amidst a wider scatter of earlier Neolithic pits and tree-hollows comparable with similar features at other sites excavated along the HS1. These sites offer intriguing insights into the nature of social life at the very beginning of the 4th millennium BC.

Middle Neolithic pottery was recovered from eight HS1 Section 1 sites, in most cases redeposited in later features. Only at two sites were Peterborough Ware assemblages found in pit contexts: at Little Stock Farm and at Pilgrim's Way. Although slight, the Middle Neolithic evidence recovered from these pits and other contexts along the HS1 route is important regionally, adding significantly to the total number of Peterborough Ware finds in south-east England.

The evidence for Late Neolithic activity along the HS1 route in some respects closely resembles the Middle Neolithic pattern, especially in terms of the general rarity of sites and finds of this period and the prominence of pit deposits. Only two HS1 Section 1 sites produced significant Grooved Ware assemblages, White Horse Stone Stone/Pilgrims Way and Eyhorne Street, in both cases primarily from pit contexts. The Late Neolithic activity at White Horse Stone/Pilgrim's Way in particular offers an exceptional insight into the nature of occupation practices in this period.

Long-term patterns of declining deposition in pits, along with shifts in the socio-spatial contexts of this activity from settlements and ceremonial monuments to funerary settings during the late 3rd and early 2nd millennia BC, seem to be registered in the limited HS1 evidence for pit deposition after *c* 2500 BC. Beaker pottery assemblages, for example, were recovered from just six sites along the HS1 Section 1 route, with only three in pit deposits.

Traces of sixteen ring ditches, probably round barrows of Chalcolithic or Early Bronze Age date, were found along the rail link route, a significant addition to the regional corpus of sites excavated under modern conditions. However, the evidence from these sites is problematic as all were truncated by ploughing, so that even the presence of mound superstructures remains uncertain. Burials of this period were rare—seven individual burials were identified from Section 1, including three inhumations sharing the same grave at Northumberland Bottom, a cremation and an inhumation at Saltwood Tunnel and one inhumation at Whitehill Road Barrow, which was accompanied by an amber necklace.

For the late prehistoric period (for the purpose of this volume covering the Middle Bronze Age to the start of the Late Iron Age) there is fragmentary evidence for low-density activity of all periods throughout most of the route, but there is more substantial evidence at certain sites for Middle Bronze Age (eg White Horse Stone, Sandway Road, and Beechbrook Wood), Late Bronze Age (eg Cobham Golf Course and Saltwood Tunnel) and Iron Age (eg White Horse Stone and Beechbrook Wood) settlements. The excavations have also cast new light on Middle Bronze Age bronze-working, early iron-working and on the salt industry. The many large pottery assemblages recovered have also allowed a ceramic chronology to be established with greater confidence, as well as shedding light on resource utilisation, production and distribution. There was also a very varied pattern of clearly selective and structured deposits from all periods.

Archaeology of the Late Iron Age and Roman period was widespread along the HS1 Section 1 route,

represented predominantly by rural settlements, cemeteries and rural landscape features. Examination of a large part of the previously investigated villa complex at Thurnham was the only component of HS1 Section 1 which involved stone-founded Roman structures, apart from some poorly-preserved foundation fragments at Bower Road and a late Roman crop-dryer at Hazell's Road. By contrast, parts of perhaps eleven other rural settlement sites were excavated, mostly interpreted as 'farmsteads' and mostly of Late Iron Age to Early Roman date. A further five principal sites were considered not to represent settlement directly, although four probably lay close to settlement (the fifth was the major cemetery at Pepper Hill near Springhead). These principal sites, as well as many others with less evidence for this period, included elements of roads or trackways and field systems, though the relationship of such features to some of the settlements is unclear.

One of the most striking aspects of the Roman sites of HS1 Section 1 is the apparently early end date of occupation at most of them. Of the sites best dated by pottery evidence only Hazell's Road can be assigned entirely to the second half of the Roman period. A number of other locations saw activity in the 4th century, but this was at a reduced level in comparison with their earlier phases. Overall, it appears that the rural settlement pattern in this transect through Kent was in terminal decline, for the most part by about the middle of the 3rd century AD, and earlier in places.

In view of the general paucity of very Late Roman evidence it is unsurprising that there is little indication of the relationship, if any, between Late Roman and Early Anglo-Saxon settlement patterns. The only clear spatial association from Section 1 is at Saltwood Tunnel, where the Saxon cemeteries were set in the Romano-British landscape. Evidence from Section 2 in the Ebbsfleet Valley has more direct evidence for Late Roman and Anglo-Saxon settlement on the same site, especially at Northfleet Villa, although even here there may have been a hiatus in occupation. The most spectacular discoveries of the Early Anglo-Saxon period are the cemeteries at Cuxton (7th century) and Saltwood Tunnel (6th–7th centuries).

In the Middle and Late Anglo-Saxon periods the evidence recovered from the HS1 investigations provides some tantalising glimpses of site types otherwise largely unknown in the county. The investigations at Saltwood and White Horse Stone in particular, have thrown new light on the structure of the landscape and the nature of early communications and administrative boundaries. Remains of the Late Anglo-Saxon period (c 850–1050) and later were recorded at a series of sites. At Mersham, just south of Ashford, Late Anglo-Saxon and Early Norman activity was recovered in the form of evidence for metalworking activities. Further evidence for agricultural settlement of the late 11th and 12th centuries and later was recorded at Northumberland Bottom at the western end of the HS1 route. At Westenhanger just west of Saltwood the remains of buildings, pits and enclosure ditches dating from the late 11th century were found marking the start of a 200-year period of occupation. Higher status occupation was revealed at Parsonage Farm a few kilometres north-west of Ashford where a 12th–14th century moated manorial complex, probably initially a rectory, was partially excavated.

The earliest historic building investigated is Talbot House, which originated as a Wealden Hall, probably in the late 15th century. Other buildings investigated along the route, dating broadly from the 15th–17th centuries (eg Old Parsonage Farm), were all fairly typical rural domestic dwellings. Agricultural buildings of the 19th century are represented by Yonsea Farm, a model farm built *c* 1820, which exemplifies the impact of the agricultural revolution on approaches to farming in Britain at the time. The range of archaeological features and buildings identified in HS1 Section 1 broadens out beyond the agricultural for the first time in the late 19th and 20th centuries, encompassing small scale industrial sites such as brick kilns and quarries, as well as landscaped parks and gardens, railway infrastructure, and defence structures dating from World War II. While consideration of the later medieval, post-medieval and modern archaeology, including surviving buildings, was almost incidental as a research aim of the High Speed 1 project, the results of fieldwork have nonetheless provided interest and information along the whole route.

Acknowledgements

Many thanks are owed to the people involved in the construction of High Speed 1. It is not possible to mention by name all of the field archaeologists, High Speed 1, RLE and contractors design and construction team members, and landowners who facilitated the archaeological work and others, all of whose commitment and hard work have made the project such a success. The authors wish to extend their thanks and appreciation to the numerous people those whose efforts have made this volume possible.

The 1994 Assessment of Historic and Cultural Effects was undertaken principally by George Lambrick and Julian Munby, assisted by Klara Spandl and Ianto Wain (Oxford Archaeology). Geophysical surveys were undertaken by Bartlett-Clarke Consultancy, and surface artefact collection surveys by teams from Oxford Archaeology.

The archaeological work was supervised from 1996 by the environmental team of Rail Link Engineering (RLE) led by Paul Johnson. The RLE archaeologists, Helen J Glass, Steve Haynes, Jay Carver, Chris Place, Brigitte Buss and Mark Turner, are thanked for their hard work in coordinating and supervising the design, construction and post-excavation phases. The client Union Railways (South) Ltd (latterly HS1 Limited), which provided on-going backing to the project, was represented throughout by Ted Allett Quality and Environment Director, Josie Murray Heritage Manager and Rachel Starling Environment Manager. Peter Drewett and Sue Hamilton from University College London, acted as academic advisors and Peter Drewett wrote the over-arching research strategy for the HS1 Section 1 project. Martin Bates (University of Wales) conducted a geoarchaeological evaluation of the Thames/Medway alluvial corridor and Robin Boast (Cambridge University) produced a guide for the production of electronic datasets for the project.

John Williams, Lis Dyson and Simon Mason of Kent County Council, and Peter Kendall, Dominique de Moulins and Sarah Reilly of English Heritage monitored the fieldwork and post-excavation work at various stages as Statutory Consultees. Kent Archaeological Society contributed very actively to the public consultation process. The late Ken Gravett deserves particular recognition for his positive contribution.

The field investigations were undertaken principally by staff from Canterbury Archaeological Trust, Museum of London Archaeology, Oxford Archaeology and Wessex Archaeology.

The following selected Canterbury Archaeological Trust staff directed excavations along the rail link route: Mick Diack (Saltwood Tunnel excavation), Adrian Gollop (Westenhanger Castle excavation) and Richard Helm (Mersham).

The following selected Museum of London Archaeology staff were involved in directing excavations: George Dennis, Niall Roycroft and Mike Hutchinson (MoLA project managers), Julian Ayre (Ashenbank Wood SBR, Northumberland Bottom Army Camp SBR), Andrew Westman (Watling Street excavation, West of Church Road Singlewell excavation, Brewers Gate excavation, Cobham excavation, Parsonage Farm excavation), Niall Roycroft (East of Pluckley Road evaluation, Tollgate excavation, South of Beechbrook Wood initial excavation), Kieron Heard (Northumberland Bottom excavation), Tony Mackinder and Dave Saxby (Cuxton excavation), Portia Askew (ARC330 watching brief, Northumberland Bottom watching brief and excavation), Kevin Appleton (Knights Place watching brief), Lucy Thompson (Parsonage Farm excavation), Simon Savage (ARC330 watching brief), Frederike Hammer (various sites), Rachel Gardener (ARC330 watching brief) and Elaine Eastbury (ARC330 watching brief).

The following selected Oxford Archaeology staff were involved in directing excavations: Stuart Foreman, Graham Keevill, Ken Welsh and Bob Williams (Project Managers), Christopher Bell (Boys Hall Balancing Pond excavation), Richard Brown (White Horse Stone excavation), Brigitte Buss (Beechbrook Wood excavation and WB, Bower Road excavation, Talbot House), Steve Lawrence (Thurnham Roman Villa excavation), Granville Laws (Chapel Mill, Church Lane/ East of Station Road excavations), Paul Murray (Director - Pepper Hill excavation, West of Sittingbourne Road excavation, Eyhorne Street excavation, Tutt Hill excavation, Area 410, 420, 430 watching brief), Charlie Newman (Snarkhurst Wood excavation), Andrew Parkinson (West of Blind Lane excavation, Nashenden Valley excavation, Area 440 WB, including Westenhanger Castle excavation) and Mike Simms (Leda Cottages excavation). Richard Tyler supervised building recording at Talbot House, Yonsea Farm and Brockton Farm and Jonathon Gill recorded the Tutt Hill pill-boxes and Fairmead Farm, both under direction of Julian Munby.

The following selected Wessex Archaeology staff were involved in directing HS1 Section 1 excavations: Andrew Crockett (Project Manager), Dave Godden (Sandway Road excavation), Mark Dunkley (Little Stock Farm excavation), Phil Jefferson (Saltwood Tunnel excavation - SFB01), Kevin Ritchie (Holm Hill excavation), Mike Trevarthen (Saltwood Tunnel excavation - SFB99), Hilary Valler (Saltwood Tunnel excavation - SFB99 and SFB01).

Project management during the post-excavation phase was provided by the Oxford Wessex Archaeology Joint Venture (OWAJV). Particular mention is due to the OWAJV period and specialist team leaders for the post-excavation project, Alistair Barclay (early prehistory), Andrew Fitzpatrick (later prehistory), Paul Booth (Roman period) Julian Munby (medieval and later periods), and Jacqueline McKinley (cemetery team leader).

The main authors for the digital site reports were Portia Askew (Northumberland Bottom), Edward Biddulph (Pepper Hill Roman Cemetery), Kate Brady (Tutt Hill and Beechbrook Wood), Raoul Bull (Whitehill Road Barrow and Tollgate), Simon Davis (Cobham Golf Course), Valerie Diez (Leda Cottages, Bower Road and Snarkhurst Wood), Adrian Gollop (Westenhanger Castle), Chris Hayden (White Horse Stone and Eyhorne Street), Richard Helm (Mersham), Julian Hill (Parsonage Farm), Steve Lawrence (Thurnham Roman Villa), Tony Mackinder (Cuxton), Ian Riddler (Saltwood Tunnel, joint author), Mike Trevarthen (Sandway Road and Saltwood Tunnel, the latter as joint author), and Kevin Ritchie (Little Stock Farm).

Leigh Allen co-ordinated the small finds studies for HS1 Section 1. Lorraine Mepham was the medieval ceramics lead specialist as well as assisting in co-ordinating finds work. The submission and calibration of radiocarbon dates was coordinated by Michael Allen, in discussion with Alex Bayliss and Peter Marshall of the English Heritage Scientific Dating Service and Nancy Beavan-Athfield (Rafter Radiocarbon Laboratory). Elizabeth Stafford and John Giorgi co-ordinated the palaeoenvironmental studies. Particular mention is due to Ian Riddler for co-ordinating the Saltwood Tunnel artefact reports and grave catalogue and Paul Booth who co-ordinated the very large pottery team. Elaine Morris led a team of specialists based at Southampton University in a major study of the later prehistoric ceramics. Individual specialist contributors are listed below. A full list of reports by author can be found in Appendix 2.

The following artefact specialists contributed specialist research reports: Elaine Morris, Elizabeth Bryan, Barbara McNee, Grace Jones (later prehistoric pottery), Emily Edwards and Alistair Barclay (early prehistoric pottery), Paul Booth, Edward Biddulph, Lisa Brown, Rachel Every, Malcolm Lyne, Louise Rayner and Dan Stansbie (Roman pottery), Brenda Dickinson (samian stamps), Joanna Bird (samian pottery), Paul Blinkhorn (Anglo-Saxon pottery), Lorraine Mepham (medieval pottery), Ian Betts, Susan Pringle and Terence Smith (ceramic building material), Cynthia Poole (fired clay), Philippa Bradley, Phil Harding, Kate Cramp and Rebecca Devaney (worked flint), Phil Andrews and Lynne Keys (metalworking residues). Small finds specialist reports were prepared by Barry Ager, Lyn Blackmore, Paul Booth, Esther Cameron, Hilary Cool, Valerie Diez, Emily Edwards, Vera Evison, Vanessa Fell, Andrew Fitzpatrick, Brian Gilmour, Anthea Harris, Martin Henig, Sue Hirst, Jackie Keily, Sonia Marzinzik, Peter Northover, Ian Riddler, Beth Richardson, Ruth Shaffrey, Stephanie Spain and Penelope Walton-Rogers. Conservation of the large Saltwood Tunnel metalwork assemblage was carried out by the Lincoln City Conservation Laboratory. Liz Barham and Dana Goodburn Brown undertook other finds conservation work.

The following human remains specialists contributed reports: Ceridwen Boston, Nicholas Márquez-Grant, Jacqueline McKinley, Natasha Powers, Bill White and Annesofie Witkin.

Jennifer Kitch, Julie Hamilton, Jane Liddle, Rebecca Nicholson, Kevin Reilly and Fay Worley worked on the animal bone reports. Palaeoenvironmental reports were completed by Diane Alldritt and Dana Challinor (wood charcoal), Mike Allen, Elizabeth Stafford and Alan Pipe (snails), Nigel Cameron (diatoms), Rob Scaife (pollen), Lorna Stow (moss), Anne Davis, John Giorgi, Lisa Gray-Rees, Wendy Smith and Chris Stevens (charred plant remains), John Crowther and Richard Macphail (soil micromorphology), Jane Corcoran and Elizabeth Stafford (geoarchaeology).

Graphics for the digital site reports, many of which form the basis for the drawings produced in this volume, were produced by Rob Goller and Anne Stewardson (Senior illustrators), Laura Kirby, Sophie Lamb, Liz James, Rosalyn Lorimer and Peter Lorimer. Graphics for this volume were produced by Georgina Slater, Julia Collins, Hannah Kennedy, Lucy Ford and Leo Heatley. The reconstruction of the White Horse Stone longhouse is by Peter Lorimer. Kate Pollard, Leo Heatley, Matt Bradley and Gary Jones provided CAD/GIS support at various stages during the project. The digital report abstract translations were by Mercedes Planas (Spanish), Gerlinde Krug (German) and Valerie Diez (French).

Thanks are due to those responsible for managing various aspects of the post-excavation programme: Leigh Allen (finds manager), Niall Donald (data manager), Liz Stafford (environmental manager) and Michael J Allen (radiocarbon dating manager). Organisational managers were Andrew Crockett (WA), Gordon Malcolm/ Julian Hill (MoLA), Peter Clarke (CAT) and Valerie Diez (OA). The OWA senior project manager was Stuart Foreman. Anne Dodd and Karen Walker, the Directors of Post-excavation at Oxford and Wessex Archaeology respectively, provided senior management oversight and much support throughout the programme. Bob Williams and John Dillon provided oversight as Directors of the OWA Joint Venture.

Alistair Barclay provided specialist comment on the text of the early prehistoric chapter of this volume, Andrew Fitzpatrick on the later prehistoric chapter, Anne Dodd on the Anglo-Saxon/medieval chapter, Alex Smith on the Roman chapter and Josie Murray on the post-medieval landscape/historic buildings chapter.

The senior editors for the HS1 Section 1 publication programme are Julie Gardiner (digital reports on ADS) and Alex Smith (this volume).

Preface

High Speed 1 connects Britain to the European High Speed rail network. When the Queen opened High Speed 1 on 6 November 2007 it marked the culmination of Britain's largest construction project, completed on time and within budget. It generated the country's largest archaeological project and created an unprecedented opportunity to excavate along one of the busiest historic corridors between Britain and the Continent, in Kent.

Considerable effort was made in the planning stages of the route to identify historical features. Where possible archaeological sites were avoided or preserved *in situ*. Geophysical, field walking surveys and trial trenching fieldwork were commissioned to provide further detail where there was uncertainty. For sites of interest, an extensive programme of archaeological investigations, analysis and reporting was implemented. The wealth of information that has been gained about the archaeological character and development of the landscapes through Kent has been remarkable. The results of the works reported in this volume relate to the section between the Channel Tunnel at Cheriton and the Fawkham Junction, south of Gravesend. The results of the work undertaken on the remainder of High Speed 1 are reported separately.

The archaeology team from RLE (HS1's project manager) oversaw all aspects of the project, and from the outset, the scale of the work required an innovative approach. English Heritage, County Archaeologists and university academics were closely involved in setting the High Speed 1 (formerly known as the Channel Tunnel Rail Link) academic research strategy, which set the scene for the work. This was implemented within the framework of The Channel Tunnel Rail Link Act 1996 and the project's Environmental Minimum Requirements.

Project managers, planners, design and site engineers, construction, archaeological and historic building contractors, English Heritage, county archaeologists and historic buildings officers came together as one team. It is testament to this team that the fieldwork was undertaken within exacting construction time-scales, whilst ensuring that best practice was achieved. This teamwork has been fundamental to the achievements of the work.

In presenting the results of these investigations this monograph provides a thematic period based synthesis from the early prehistory, through later prehistory, Late Iron Age, Roman and Anglo-Saxon, to medieval and post-medieval periods. Each of the chapters describes the nature of the evidence, discusses themes and draws out specific points of significance. The detailed analyses of the archaeology has deepened our understanding along the route of the High Speed 1 landscape and provided an enhanced level of understanding. There have been some exceptional insights. The High Speed 1 work has also led to major and unique contributions to our understanding of the past within the broader context of Kent, south-east England, nationally and internationally—a fascinating glimpse of our history and culture.

The work was recognised by the Royal Town Planning Institute in 2008 who awarded HS1 Ltd Heritage Category winner in its annual planning awards for setting exemplary standards for archaeological practice. Thank you to all who have contributed to this achievement and to the record of the work in this monograph.

Rachel Starling,
HS1 Ltd Environment Manager
Steve Haynes Arup
High Speed 1 Archaeology Programme Manager

Chapter 1

Archaeology and Engineering: High Speed 1

by H J Glass and S Foreman

Introduction

High Speed 1 (HS1) is the first new railway to be built in Britain for over a century and is the UK's first high speed railway. The construction of the railway became an opportunity to investigate the rich heritage of a long-inhabited corridor through Kent from London to the channel coast, and the engineering feats required to construct the rail link are rightly celebrated (Fig. 1.1). We hope, through the publication of this volume, that the scale and importance of the associated archaeological and historic building investigations will be become evident to those with an interest in the heritage of the region.

Readers should realise from the outset that High Speed 1 was built in two sections, and that this volume is concerned only with Section 1, which runs from the Channel Tunnel Portal at Folkestone to Fawkham Junction near Southfleet. This section of the rail link lies entirely within the County of Kent and was known before 2007 as the Channel Tunnel Rail Link (CTRL) Section 1. It excludes the very rich archaeological landscape of the Ebbsfleet Valley in North Kent, which falls within HS1 Section 2 (formerly CTRL Section 2) and is the subject of a separate series of publications (see below). While it would have been desirable to consider the Ebbsfleet Valley within this volume, this was not possible as archaeological fieldwork on the two route sections was completed three years apart. Most of the chapters in this volume were drafted while analysis of the HS1 Section 2 results was still in progress.

The extent of archaeological investigation along the route of High Speed 1 Section 1 defies simple summary. The results of a tremendous effort by hundreds of archaeologists and other heritage and construction professionals over a twenty year period cannot readily be compressed into a single volume. The purpose of this book is to present a synthetic overview and critical analysis of the HS1 Section 1 archaeological results by a group of leading regional and period experts, placing the investigations within the context of current frameworks of archaeological understanding at a regional, national and international scale. This book is the tip of an information iceberg, the bulk of which is presented in digital form as a series of technical reports and supplementary data on the Archaeology Data Service website (ADS 2006, last updated 2009; see below for further details). This volume is in part intended to provide an introduction to the HS1 archive on ADS. A Gazetteer of individual sites along the route, illustrated with route maps, is provided in Appendix 1, and a list of the detailed digital site and specialist reports that are available to download from the ADS website is provided in Appendix 2.

The route

The high-speed line runs for 109km (68 miles) in total, between St Pancras International in London and the Channel Tunnel on the Kent coast near Folkestone, and connects with the international high speed routes between London and Paris, and London and Brussels. HS1 Section 1—the subject of this book—was the first 74km section to be built and lies entirely within Kent, much of it lies alongside the route of the M2 and M20 motorways.

Between the opening of Section 1 in 2003 and the opening of Section 2 in 2006 the railway was temporarily linked into the national rail network at Fawkham Junction near Southfleet, via existing track to the south of Gravesend, the Eurostar trains terminating at London's Waterloo International station during that period. Following the opening of Section 2, the terminal moved to its permanent home at the rejuvenated St Pancras International in London. Intermediate international stations were built at Ashford on Section 1, and Ebbsfleet and Stratford on Section 2.

Ebbsfleet International lies close to the Thames crossing on the Kent side of the river, at the junction between the two route sections. From there Section 1 runs south and east to the A2/M2, running parallel to, and to the south of, Watling Street and the M2 Motorway as far as Nashenden Valley in the North Downs, crossing the River Medway on a spectacular 1.2km viaduct to the south-west of Rochester and Chatham. From Nashenden Valley to Bluebell Hill the railway passes underneath the North Downs Area of Outstanding Natural Beauty via a 3.2km long, 12m diameter, bored tunnel.

Emerging from the escarpment of the North Downs below Bluebell Hill, the rail link runs south and east, broadly parallel with the A229, and merges with the route of the M20 near Boxley. The railway then runs alongside the M20 motorway, parallel and to the south of the North Downs escarpment, reaching the Channel Tunnel portal at Dollands Moor near Folkestone.

Two substantial portions of the Section 1 route were largely excluded from archaeological investigation—The North Downs Tunnel, as there was no possibility of useful archaeological observation during the tunneling, and the Ashford urban area where the route was built along existing lines. Apart from the railway itself, some of the most substantial excavations arose from temporary construction work sites, which were necessarily much wider than the railway itself. For example, the important archaeological sites at White Horse Stone coincided with the North Downs Tunnel Country Portal site, and the 37ha Beechbook Wood site was excavated in connection with a temporary railhead construction site.

Project background

Preliminary assessment and selection of the route

The choice of route was perhaps the biggest environmental challenge for the proposed railway. Preliminary scoping began in 1989 at an outline level, considering six alternative route options. The formal route selection process began in 1991 and it took two years of rigorous planning, government and local consultation and community relations work to present and explain the scheme. The selected route passed through Kent, the Garden of England, and through many environmentally sensitive areas. Added to this was the scale and complexity of the

Figure 1.1 High Speed 1 construction in progress at White Horse Stone. View NW along the Pilgrim's Way towards the River Medway (top of shot)

scheme, which meant that there were many unique challenges from the outset. Work to identify the location and nature of known archaeological and heritage features started in tandem with the route selection process and was one of the many environmental and engineering matters that influenced the eventually selected alignment.

The assessment process

Once the preferred route was announced it was subject to a more detailed process of assessment. The Assessment of Historic and Cultural Effects (1994) undertaken by Oxford Archaeology (OA), ran to four volumes and remains a benchmark for Cultural Heritage assessments to the present. A copy of the assessment report is included in the ADS digital archive (URL 1994).

Non-intrusive site survey work was subsequently carried out to augment the baseline database, resulting in a further three volumes of supplementary assessment data. Surface artefact collection surveys and geophysical surveys were conducted where access was granted by landowners, verifying information from aerial photographs, or revealing new areas of archaeological potential. Site visits were made to build on this information, to comprehensively understand the setting of key sites and structures. In addition, archaeologists monitored the geotechnical investigations and reviewed the borehole logs gathered by the engineers to provide an early insight into the sediment sequences along the route.

The archaeologists and heritage professionals at Oxford Archaeology were very much part of the project's planning and design team in these early stages. In a high-pressure planning environment, in which a wide range of engineering, environmental and economic issues competed with heritage conservation issues for the designers attention, conflicts and compromises were inevitable. Nevertheless the assessment was highly successful in identifying major constraints on the railway design and establishing a reliable baseline dataset of known and suspected heritage features. It is worth noting that of the significant buried archaeological sites eventually discovered and investigated along the Section 1 route, approximately half were first identified or predicted on the basis of the desk-based assessment. The process was arguably 100% successful in identifying historic standing buildings and extant historic landscapes at risk from the railway construction.

Where potential adverse archaeological impacts were identified, discussions with the engineering designers and other specialists, such as landscape architects and noise engineers, considered how these could be avoided or reduced. This process is familiar today, especially for large scale construction schemes, but in the early 1990s, the methods we now take for granted were just emerging. While many potential impacts were avoided through sensitive design, the imperatives of railway engineering—such as the obvious need for an alignment without sharp bends—severely constrained the ability of the design team to avoid direct or indirect impacts to some designated archaeological sites and historic buildings of known importance. For example the scheduled ancient monuments at Thurnham Roman Villa/Corbier Hall, as well as the various listed historic buildings described and discussed in Chapter 7. Other known sites were preserved *in situ*, through minor re-alignments of the route, such as the Tollgate Cropmark Enclosure, the site of a possible Neolithic mortuary enclosure, which is now preserved beneath landscaped earthworks in a narrow strip of ground between the A2 road and HS1 track.

Given the competing design constraints, at any point in the planning process heritage conservation issues were at risk of being side-lined, were it not for the constant pressure applied by the Kent County Council and English Heritage archaeologists, and others representing the local planning authorities on heritage conservation matters. Their essential role as 'curators' and later 'statutory consultees' under the terms of the CTRL Act, was to insist that heritage conservation was given due weight in the route selection and design process, and that the inevitable programme of archaeological mitigation would result in a lasting legacy of valuable research data. Their diligent scrutiny was clearly far-sighted and instrumental in shaping the project towards that outcome.

The Parliamentary process

In 1994 the completed environmental impact assessment culminated in the UK's largest environmental statement, which was submitted to Parliament in support of the hybrid Channel Tunnel Rail Link Bill. Important changes were made to the route as a result of the Parliamentary process, which lasted for two years and included consideration by Select Committees in both Houses of Parliament. Royal Assent through the Channel Tunnel Rail Link Act was granted in 1996. The concession to develop and build the CTRL was subsequently awarded to London and Continental Railways. Enshrined in an Undertaking to Parliament were the Project's environmental responsibilities. The CTRL Environmental Minimum Requirements (EMRs), set out the commitments of the CTRL project, which were detailed in technical standards and processes for managing impacts to ecology, air quality and cultural heritage (the latter a generic term incorporating archaeology, historic buildings and historic landscapes). A crucial concept was that the subsequent design development should have no greater impact on the environment than the baseline design assessed by the Environmental Statement. In terms of the archaeological and heritage work, this meant that the Assessment of Historic and Cultural Effects was the point of reference for all subsequent design work.

The EMRs included the following key documents:

The Code of Construction Practice was a series of objectives and measures to be applied throughout the construction period to maintain satisfactory levels of environmental protection and limit disturbance from construction activities.

The Environmental Management System was a project management process developed to ensure that the environmental risks identified were managed throughout the design and construction processes.

The Planning Memorandum set out the undertakings given by the local authorities with respect to the handling of planning matters.

The Environmental Memorandum set out undertakings in relation to environmental aspects of the design, construction and operation of High Speed 1.

The Heritage Deed was a system designed to manage impacts to 'Listed Buildings & Buildings in Conservation Areas' and 'Ancient Monuments' that would be affected by the construction of the railway. These included procedures very similar to those for obtaining Scheduled Monument and Listed Building consent, but with the key difference that from the outset it was presumed that the development would go ahead. The Heritage Deeds provided strict parameters for responses by statutory authorities, including time limits; if no response was received to a Heritage Deed submission within a twenty day period it was deemed that consent was granted. A special planning regime was created and developed by the railway promoters, providing the basis for the delivery of high environmental standards in compliance with the EMRs. In developing the detailed design and construction of the railway, the project was required to have due regard to the guidance set out in Planning Policy Guidance Notes 15 and 16, which at the time governed planning policy in relation to non-designated archaeological sites and monuments and historic buildings.

Archaeological investigations along the High Speed 1 route

Putting the CTRL Act into practice

The new railway was built under a Public-Private Partnership contract between the Government and London and Continental Railways (LCR). LCR's shareholders are Bechtel, SBG Warburg, National Express, French Railways, London Electricity, Halcrow, Arup and Systra. The Project was funded through a combination of Government-guaranteed bonds, Government grant and commercial project finance and bank finance, with assistance from the European Union.

As Client, Union Railways (South) (URS) oversaw delivery of the Section 1 railway on behalf of LCR, while Union Railways (North) (URN) oversaw construction of Section 2. The design and project management of the new line was the responsibility of Rail Link Engineering (RLE), a consortium of the construction and engineering consultancy firms Bechtel, Arup, Halcrow and Systra. RLE was responsible not only for designing the bridges, tunnels and tracks, but also for managing the procurement of all contracts and then overseeing the construction contractors who built the railway. This unified approach to the design and management ensured that all of the engineering, planning, community and environmental requirements of the project were met.

The depth and scale of HS1's commitment to the environment set new standards for the United Kingdom. A team of specialists was established to manage the environmental challenges, with a wide and varied brief which included archaeology and listed structures, ecology, environmental management systems, landscape design, soils and agriculture, air and water quality, noise and vibration and waste management.

The research strategy

To place the evaluation and mitigation designs within a coherent framework of understanding, and establish priorities and directions for the investigations, Peter Drewett (then Institute of Archaeology, UCL), in association with the RLE team, developed an Archaeological Research Strategy, which was completed in November 1997. While at that time no formal regional research framework existed for south-east England, the HS1 strategy was informed by the previous work of various academics and curators who have attempted to synthesize the archaeology of individual counties crossed by the rail link, and south-east England more broadly (Drewett 1997, in ADS Collection 335). The extent to which the original aims and objectives set out in the research strategy have been addressed is discussed in Chapter 2 of this volume.

The research objectives sought to investigate shifts in landscape organisation through time, by providing a framework of enquiry based on 'landscape zones'. Although not specifically designed as a 'research' sample, High Speed 1 has created a wide transect through the geological landscape zones of Kent, providing an extraordinarily rich insight into the distribution of settlements, tracks and field systems, burial grounds, and all of the other hidden components of an ancient and constantly evolving man-made landscape. The landscape zones used for the project were those defined in the Character Map of England (Countryside Commission and English Nature), and the following are relevant to Section 1:

North Kent Plain

North Downs

Wealden Greensand (with some Low Weald)

For some comparative purposes, where appropriate and useful, these have been sub-divided in post-excavation analysis into a series of more narrowly defined zones, although in all cases these are derived from the research strategy landscape zones.

Each Written Scheme of Investigation was developed against the backdrop of the research strategy; site specific aims and objectives flowed from the high level questions, enabling clear research priorities to be addressed. Copies of the WSIs can be downloaded from the ADS website (ADS Collection 335).

Project management

Formal Project Management has become commonplace in archaeological practice in the UK, particularly on large construction projects. However HS1 was among the first major projects to impose formal project management mechanisms on archaeological contractors. For many archaeologists involved in the project this was their first exposure to Gantt Charts, spreadsheets, health and safety plans and all of the other requirements of construction project management. Careful planning, intensive management and rigorous quality control were required to ensure that the archaeological contracting organisations involved in the Section 1 excavations adhered to the strategy, and that the objectives were followed through consistently during the intensive fieldwork and lengthy post-excavation programmes. The general themes of the research strategy were developed by the RLE team into more detailed project designs for each project area, and for individual sites or groups of sites. Copies of the Research Strategy were incorporated into each of the 'WSIs' and formed part of the contract agreements and specifications that the archaeological contractors signed before starting work on site. The WSIs formed the basis against which each contractors work was assessed by the RLE archaeological team and the statutory consultees. By such mechanisms were the general objectives of the project transmitted to the teams on the ground and enforced through the lifetime of the project.

The need for this unprecedented level of management arose because of the degree to which the archaeological work was integrated into the construction earthworks programme, which in turn was driven by the large scale of controlled soil stripping demanded by the research strategy. Much more was at stake than the archaeological results—a complex unexpected discovery at a critical point could have had a catastrophic effect on the rail link construction programme. Intensive management ensured that adequate resources and flexibility were available to deal with any eventuality. In the event, the systems were sufficiently robust that the project weathered several unexpectedly complex discoveries without causing significant delays.

Evaluation trenching

Although the 1994 assessment work had identified a series of archaeological 'hotspots', only a few sites had been subject to intrusive site investigation at that stage. The Assessment of Historic and Cultural Effects (1994), included a series of preliminary evaluation and mitigation strategies which, following the granting of Royal Assent in 1996, were re-shaped as necessary to take account of design changes and the Environmental Minimum Requirements and were then implemented under the direction of the RLE archaeological team (URL 1994, in ADS Collection 335). Four archaeological contractors were employed to undertake the field investigations due to the short time available for the work—Oxford Archaeology (OA), Museum of London Archaeological Services (MoLAS), the Canterbury Archaeological Trust (CAT) and Wessex Archaeology (WA).

Trial trenching was the main method of evaluation employed in this stage of the project. A total of 122 evaluations were undertaken in total, comprising more than a thousand individual evaluation trenches, distributed relatively evenly along the route corridor, but with some gaps in coverage in areas of no identified archaeological potential, or in which impacts from the railway construction were expected to be very limited (most significantly the tunnel through the North Downs and Ashford urban area). The earliest evaluations on Section 1 were carried out in 1995–6 and were targeted predominantly on the scheduled monuments directly affected by the proposed route, including Thurnham Roman Villa/Corbier Hall, although unscheduled land to the south of Snarkhurst Wood (Hollingbourne) and Tollgate Cropmark Enclosure, were also investigated in this early series, due to the known high archaeological potential of the area.

The vast majority of the trial trenches in HS1 Section 1 were undertaken in 1997–8, although a small number of evaluations took place as late as Spring 1999. Unlike the non-intrusive survey methods, trial trenching could be relied upon to produce hard data on which to base detailed plans for mitigation, under most geological and ground conditions. The trenches provided further information on the date, character and preservation of sites identified through earlier studies and also greatly reduced the risk of unexpected discoveries during construction. This meant that trial trenching was targeted not only at areas of archaeological potential but also at locations where there was to be early construction activity, such as the establishment of work sites.

The methods used on the rail link built on the experience of the Kent County Council archaeological team in managing county road schemes. The stripping of large open areas provided an ideal opportunity to test the validity of standard investigation methods of the late 1980s and 1990s. The higher percentage trenching samples now routinely requested by curators in SE England, and the increasing preference for large scale strip, map and sample excavations in place of extensive trial trenching, directly reflects the experience gleaned from HS1 and other contemporary major developments in SE England. Four HS1 Section 1 sites (Northumberland Bottom, Thurnham Villa, Tutt Hill and White Horse Stone) were among 12 sites used as the basis for an influential study undertaken for the 'Planarch' project (part of the European Union funded Interreg programme) which modelled the effectiveness of different archaeological evaluation techniques (Hey and Lacey 2000)

Methods of investigation

The overarching research strategy was necessarily framed in very broad terms, but nevertheless established some important principles. One critical outcome of this approach was an emphasis on stripping and recording

the largest possible continuous areas under archaeological supervision, not just to examine obvious individually defined archaeological sites, but also to examine the spaces and links in between them.

The intensive planning for the archaeological work was of great value in ensuring that adequate resources were available to deal with any eventuality, but in the end it was rarely possible to accurately predict the extent and significance of archaeology in a given area until the topsoil had been extensively stripped. However, the planning and methods were sufficiently flexible and robust to deal with the unexpected.

Apart from the evaluation trenching, described above, four defined levels of intrusive field investigation were adopted (detailed excavation; strip, map and sample; targeted watching brief; general watching brief). In practice the dividing lines between these methods became blurred because all of them allowed for a flexible response in the event that the archaeology discovered was more extensive or significant than expected. However, the levels of investigation and recording were generally at their highest in areas of 'detailed excavation' and at their lowest under 'general watching brief' (see Gazetteer mapping, Appendix 1).

Detailed excavation was reserved for sites identified by the 1994 assessment and subsequent evaluations as having very high archaeological potential. The soil stripping was carried out by the appointed archaeological contractors, well ahead of the main construction earthworks, and generous allocations of time and resources were allowed for the investigations. All of the detailed excavations were completed in the period 1998–9. One example is the scheduled area of Thurnham Roman Villa. The non-scheduled parts of the villa site were subject to 'strip, map and sample' (see below), but the boundary of the detailed excavation area was modified during the investigation to include an aisled building discovered unexpectedly outside the scheduled area.

Strip, map and sample (SMS) was the most common type of formal archaeological excavation, and was generally applied to areas considered to have limited or uncertain archaeological potential. As with the detailed excavation areas, the soil stripping was carried out by the archaeological contractor, ahead of the main construction earthworks. However the initial scope of investigation was limited to mapping the archaeological features and carrying out just sufficient sample hand excavation to establish the date and significance of the archaeology. If the archaeology was more extensive or more significant than expected, further work could be agreed to expand the stripped area, or undertake more detailed investigation within the existing area.

Targeted watching brief was intended to allow formal archaeological investigation to take place alongside the construction works, with the earthmoving machinery and other support being provided by the construction contractor. In the planning stages of the project there was considerable concern to complete formal archaeological investigations as far as possible before the construction contractors started work. However, in some areas access was not possible until the contractor had completed their preliminary work. Crucially, under this method the mechanical excavators were fitted with a toothless ditching bucket in compliance with archaeological methods, ensuring a high level of feature visibility. This method was consequently generally comparable with SMS in terms of method and results. Some specific targeted watching briefs, such as a large section cut through the Pilgrim's Way trackway at White Horse Stone, was an extension of the detailed excavation previously carried out at that site, which had to wait until electrical cable and footpath diversions had been completed. In the case of Northumberland Bottom, Beechbrook Wood and North of Westenhanger Castle, initially quite small SMS areas were greatly expanded by means of targeted watching briefs on the construction earthworks, which allowed the mapping and investigation of extensive but sparsely distributed archaeological features over a much wider area (in the most extreme case, the excavated area at Beechbrook Wood amounted to 37ha).

General watching brief was the most extensive form of investigation, and the most difficult to assess in terms of its value and reliability. The very intensive nature of the watching brief, in which almost every machine working on deposits with archaeological potential was monitored by an archaeologist, means that an unusual level of confidence can be placed on the negative evidence from HS1. However, under the 'general watching brief' specification the archaeologists had no remit to modify the soil stripping method adopted by the earthmoving contractor unless significant archaeology was encountered, so the level of archaeological visibility was highly variable. It was rarely possible to obtain a coherent site plan under these circumstances. Methods varied between the main project areas (330, 410, 420, 430, 440), each of which was under control of a different contractor with different working methods. There was also a great deal of variation at a detailed level depending on the type of earthworks being undertaken. The watching brief archive includes annotated route maps showing a complex patchwork of different earthmoving methods and levels of visibility.

Preservation *in situ*

In considering design and methodological options, the first option considered in any given sitiuation was 'preservation *in situ*'. Preservation in some cases involved active intervention by the RLE archaeological team to obtain design changes and modifications to avoid construction impacts to known or suspected archaeological sites. Preservation *in situ* was the default mitigation measure for certain types of earthworks, such as temporary spoil storage areas, some landscaping earthworks and temporary works compounds. In these cases topsoil stripping was usually not carried out to a

sufficient depth to expose archaeological features, and any archaeological deposits present were effectively preserved *in situ* beneath the earthworks, without record.

Case studies

It is not possible in this volume to describe the entire evolution of the project from the drawing board to the ground. The complex discussions between engineers, planners, curators, statutory bodies and construction and heritage specialists which shaped the archaeological results at each of the sites could fill at least another volume. That information is contained in the archaeological and RLE project archives. Relevant information on individual sites is most readily available in digital form in the ADS archive, which contains the 1994 assessment report, written schemes of investigation and fieldwork and post-excavation reports (ADS Collection 335). The following selected 'case studies' serve to illustrate the different circumstances under which excavations took place and the constraints and decisions that shaped some of the most important investigations.

Case study 1: Pepper Hill Roman cemetery

Excavation of the Roman cemetery at Pepper Hill was undertaken following the unexpected discovery of Roman burials during a watching brief on cable diversion works for SEEBoard, enabling works for the construction of HS1. The 1994 Assessment Report and the WSI for Project Area 330 had both included a general prediction that Roman cemeteries were likely to be found in the vicinity of Springhead, particularly at roadside locations. However, the course of the Roman trackway on which the cemetery was discovered was previously unknown, so in effect there was no specific indication that the site was present before the cable diversions took place. The cemetery was discovered at an early stage of the construction programme, in an area that had not yet been yet been subject to evaluation trenching. The watching brief on the cable diversion trench effectively served the purpose of a giant evaluation trench in this case. The 10m cable easement lay immediately alongside the rail link route and was excavated under close archaeological supervision using a toothless ditching bucket. Once the significance of the site was realised, a WSI was prepared by Rail Link Engineering (RLE), and agreed in consultation with English Heritage and Kent County Council (KCC) on behalf of the Local Planning Authorities (URL 1998, in ADS Collection 335), which designated the site as a 'detailed excavation'.

The first stage of work began in November 1997 (ARC PHL97). After several weeks, it became apparent that it would be impossible to complete the excavation of the, by now obvious, cemetery within the easement width before the cable trench was due to be excavated. Following meetings with SEEBoard, KCC and RLE it was agreed that work would concentrate on clearing a 9m wide strip across the cemetery, and that work should continue in a less critical adjacent area. SEEBoard conceded that the area to the north of the cable trench was no longer required as part of the cable diversion work. However, it became clear that the area would be affected in due course by construction work for the HS1 and that complete excavation of the remainder of the cemetery would be necessary. Oxford Archaeology carried out this second stage of work between August 1998 and January 1999 (ARC NBR98). The total excavated area was *c* 0.99ha in extent although the cemetery and associated features fell within an area of only *c* 0.2ha. The cemetery was designated a 'detailed excavation', while the remaining areas of the HS1 route on either side were subject to 'strip, map and sample'. After several months of painstaking intensive work by a team of up to 30 excavators, almost the entire plan of the cemetery was revealed—a total of 558 graves and other funerary-related features. The excavation was undertaken in a period of prolonged wet weather, which required the use of 'polytunnels' to shelter the site and excavators. Other logistical issues included raids by illegal metal-detectorists, which caused significant damage to the site, requiring the employment of 24 hour security guards (Biddulph 2006, in ADS Collection 335).

Case study 2: White Horse Stone

The rail link route as planned emerged from a tunnel under the North Downs at Bluebell Hill, unfortunately coinciding with the eastern group of the Medway Megaliths, close to the Upper White Horse Stone, and cutting through the Pilgrim's Way trackway. The significance of the location was clearly identified and stated in the 1994 assessment. There was sufficient flexibility in the railway design to avoid directly affecting the known and suspected prehistoric funerary monuments, including Kit's Coty House and Little Kit's Coty, but it was clear from the outset that the railway would to some extent affect the setting of the monuments and any associated buried archaeology within the railway route. The reported location of the possible chambered tomb known as Smythe's Megalith, also lay immediately adjacent to the route, in the dry valley bottom.

The site comprised a dry valley at the foot of the North Downs Escarpment, including a chalk ridge area with very shallow soil cover, and the valley bottom, which was known from geotechnical investigations to be in-filled with colluvial deposits. Fieldwalking was employed, but it was realised that the sparse scatter of prehistoric artefacts found in topsoil was unlikely to be a true reflection of buried archaeological features because of the extent of the colluvium. Geophysical survey was not used in this case as it was considered unsuitable given the thick collluvial sequence in the dry valley and the difficulty in detecting potentially very ephemeral archaeological remains. A series of trial trenches was excavated in 1997 throughout the tunnel portal footprint, initially extending from the chalk escarpment as far south as the Pilgrim's Way trackway (a second phase of trenching was later carried out to the south of the Pilgrim's Way).

The trenching identified evidence for Early Iron Age activity on the chalk ridge, including a burial, pits,

postholes and ditches, although from the trenching they appeared sparsely distributed. It also allowed the depth and extent of the colluvial sequence in the dry valley to be modeled, and identified an extensive series of 'buried soils' and a natural sarsen field extending along the bottom of dry valley. However, it failed to identify any conclusive evidence for significant Neolithic activity—probably because very few trenches were excavated to the Neolithic horizon. A single possible Neolithic potsherd was found during the evaluation.

It was nevertheless clear that the site had both archaeological and palaeoenvironmental potential. A WSI was prepared by RLE for a 'detailed excavation' (URS 1998, in ADS Collection 135), which was initially restricted to the width of the railway itself, but once extensive archaeological features began to emerge was quickly expanded to include the full extent of the proposed railway cutting (see Fig. 1.1). Any archaeology in areas of construction fill, which was mainly to the north-east of the railway, were to be preserved *in situ*.

The mechanical excavation in the dry valley bottom was a substantial undertaking due to the thick colluvial deposits, and the fact that archaeological features were known from the evaluation to be cut from different levels within the colluvium. In the end the soil stripping took place in three main stages to allow features to be mapped and investigated at each level. The lowest level encountered the Neolithic longhouse, which was found beneath an extensive later prehistoric 'buried soil'. Although the significance of the structure was clear at this stage, it was not until a small number of pottery sherds recovered from one of the postholes were examined by a specialist that the full significance of the find became apparent. The investigation methodology was altered to include full excavation and sieving of all of the feature fills associated with this structure.

Figure 1.2 Thurnham Villa aerial view of excavations in progress. Roman buildings covered with marquees and polytunnels

An extensive geoarchaeological investigation was undertaken, mainly focused on evidence from molluscs and soil micromorphology.

Case study 3: Thurnham Roman villa

The site of Thurnham Roman villa was well known, and clearly identified as a major design constraint in the 1994 assessment, mainly as a result of previous investigations in 1933 and during construction of the M20 in 1958 (URS 1994, in ADS Collection 335) (Fig. 1.2). However, as the selected rail link route was constrained to a narrow corridor alongside the M20 in this section, there was no possibility of avoiding direct impact to the scheduled monument. The plan of some of the main masonry buildings was clearly visible as a cropmark on aerial photographs. A full range of evaluation techniques (fieldwalking, geophysical survey and evaluation trenching) was carried out to assess the preservation of the known archaeology and the extent of unknown features within the scheduled area and along the route on either side.

The CTRL Act 1996 negated the requirement to obtain Scheduled Monument Consent in order to carry out excavation of the villa; however, the nominated undertaker (URS) was required to obtain agreement under the Heritage Deed from the Secretary of State, as advised by English Heritage, for mitigation works in relation to the monument. The agreement set out the detailed mitigation required (replacing the WSI). The Thurnham Roman villa excavation investigated an area of land 470m long and 35–80m wide adjacent to the eastbound carriage of the M20 between Thurnham Lane and Honeyhills Wood. This 3.2ha area was excavated between November 1998 and June 1999.

During this time targeted excavations were carried out to investigate extant earthworks within the adjacent portion of Honeyhills Wood, and identify any remains that might have been associated with the villa. No conclusive dating evidence was forthcoming, but one of the earthworks coincided with the parish boundary between Thurnham and Detling.

The watching brief area was completed between June and December 1999 and during this period a sequence of small settlement enclosures of Late Iron Age–Early Roman date was encountered and excavated at Hockers Lane, immediately south of Detling village. The northern part of the site was preserved *in situ* under landscaping earthworks (Lawrence 2006, in ADS Collection 335). A decision was made to incorporate the Hockers Lane site into the Thurnham Villa 'principal site' in post-excavation, in order to facilitate direct comparison of the villa with this adjacent minor rural settlement of similar date.

Case study 4: Beechbrook Wood

The development of the Railhead site at Beechbrook Wood illustrates the flexible approach to design development very well. The total land-take for the Railhead was 37ha. The site had been subject to evaluation trenching in 1999, but the dispersed character of the archaeology and limited scope of the trenching meant that the extent and significance of the remains was initially not realised. Trial areas of gradiometer survey were undertaken, but as expected the soil conditions were not sufficiently responsive to give reliable results. The original 'strip, map and sample' excavation area, completed in 2000, proved far too small a window to interpret the archaeology found within it. It was clear that significant archaeology extended beyond the excavated area in all directions. A much larger 'targeted watching brief' area was therefore proposed by the RLE archaeological team, in which soil stripping would be carried out by the construction contractor, as part of the main earthworks, but under archaeological control. Excavations work at Beechbrook Wood eventually took nine months, spread over a three year period, in the later stages closely integrated with the construction of the railhead. The original targeted watching brief area served as a guide for planning purposes, but was modified as needed to include areas of significant archaeology as they emerged. Once the edge of significant archaeological features was encountered in a given area, the method reverted to a general watching brief (ie under archaeological observation but with no control over the excavation method or level unless significant archaeology was found). It proved possible to investigate one area at a time and release areas in stages to the contractor. Carried out under strictly controlled conditions this approach eventually resulted in the successful investigation of one of the largest continuous stripped area along the rail link route.

Case study 5: Saltwood Tunnel funerary landscape

The environmental assessment noted that in 1979, salvage recording during construction of the M20 motorway indicated that archaeological remains survived near the Saltwood Tunnel (URL 1994, in ADS Collection 335). Oxford Archaeology undertook fieldwalking and evaluation trenching immediately south of these remains (URS 1997, in ADS Collection 335), which revealed significant archaeological remains, although the full extent and significance did not become clear until the main excavations got under way.

Construction of the rail link in this section required excavation of two deep, approximately parallel railway cuttings north of Saltwood village, immediately south of the M20 motorway, and directly above the London to Folkestone railway as it passes through the Saltwood Tunnel between Sandling and Dolland's Moor (Appendix 1, Gazetteer Mapping).

Detailed excavation was initially carried out by the Canterbury Archaeological Trust (CAT) under the RLE site code ARC SLT98. A second phase of evaluation trenching revealed early Anglo-Saxon inhumation burials immediately west of the Stone Farm bridleway, and an area around these was also fully excavated (ARC SLT98C). In 1999 Wessex Archaeology (WA) was commissioned to commence a rolling 'strip-map-sample' excavation programme on land east of the bridleway (ARC SFB99), whilst CAT concurrently excavated the remaining ground between their previous sites, and beneath the western portion of the 19th century earth

Figure 1.3 Saltwood tunnel: archaeology and construction work progressing in parallel

bund overlying the Saltwood Tunnel (ARC SLT99). In the final phase of fieldwork WA recorded remains preserved in three separate areas: under the eastern tunnel-bund, within the footprint of a temporary soil storage area, and beneath the former Stone Farm bridleway (ARC SFB01). Overall the work took place between 1997 and 2001 (Riddler and Trevarthen 2006, in ADS Collection 335).

The site was excavated over an extended timescale, in variable conditions, and within the context of a complex civil engineering project to remove the 19th century spoil heaps from above the Saltwood Tunnel and build HS1 (Fig. 1.3). Difficulties inherent in identifying and interpreting archaeological remains on the loose natural sandy substrate of the Saltwood plateau were compounded by the piecemeal manner in which the site was acquired for excavation. Other challenges included the poor preservation conditions—formerly acidic soil conditions had stripped the site of most human and animal bone, removing much of the critical evidence from which its changing economic basis might be reconstructed, and denying the opportunity to carry out detailed osteoarchaeological analysis. Nevertheless the large scale of the excavations allowed the archaeological development of the Saltwood plateau to be charted in considerable detail, revealing a complex multi-period landscape, predominantly funerary in character, including extensive prehistoric, Roman and especially Anglo-Saxon cemeteries. As a result of the large areas stripped we have the most compelling example from the HS1 route for continuity in the basic framework of the man-made landscape, especially trackways, from the Bronze Age to the present (Riddler and Trevarthen 2006, in ADS Collection 335).

Post-excavation and publication

Post-excavation work for Section 1 fell into three main phases. A preliminary phase of data processing and reporting resulted in the completion of a series of summary interim reports for each of the excavated sites, and the publication of an overarching report in *Archaeologia Cantiana* (Glass 1999) summarising the results from the originally planned excavations. The report did not describe the results from the watching brief, which was still in progress at the time. The Phase 1 digital archive, including the evaluation reports and interim excavation reports, was uploaded to the ADS website in 2004.

The second phase was the MAP2 assessment reports, which were completed between 2000 and 2003 by the four archaeological contractors in accordance with a specification prepared by RLE (URS 2000, in ADS Collection 335). The assessments comprised specialist reports on the stratigraphic data, finds and environmental assemblages, and recommendations for further analytical work. The production of a post-excavation project design was delayed until all of the fieldwork and specialist assessment relating to HS1 Section 1 was

complete, and was jointly produced by RLE, in association with Peter Drewett and Sue Hamilton of UCL, and the Oxford Wessex Archaeology Joint Venture (OWAJV) in 2003 (URS 2003, in ADS Collection 335).

The third main phase of post-excavation was the final analysis and reporting of the 29 Principal Sites (see below), which were to be disseminated digitally on the ADS website. In addition, the present volume was envisaged in the project design as the only printed output within the dissemination scheme (see below). However, it was managed somewhat separately from the digital report series. Initially it was hoped that the monograph production would to some extent run in parallel with the analysis and digital reporting, but that proved impractical. Only when all of the technical reports were assembled and finalised was it possible for the chapter authors to begin their work of synthesis.

The historic buildings fell outside the post-excavation analysis framework, and in their case there was no requirement for further specialist analysis. Detailed archive reports were produced for each building investigation, which directly formed the basis for Chapter 7 of this volume. The archive reports are available on the ADS website (Historic building investigations; ADS Collection 335).

In addition to the reports and publications outlined above, an illustrated popular booklet and DVD, *Tracks and Traces: The Archaeology of High Speed 1*, was also produced in 2011, summarising the results of the excavations and building investigations in both route sections (HS1 2011). This volume superseded an earlier booklet which was published for distribution at the launch of Section 1 (*Tracks and Traces: The Archaeology of the Channel Tunnel Rail Link*).

Structure of post-excavation analysis and reporting

Principal Sites reports

The HS1 Section 1 route was divided, for post-excavation analysis and reporting purposes, into 29 Principal Sites (excluding the standing building investigations; see above). The Principal Sites are route sections, named after the most significant individual site contained within them (Fig. 1.4 and Appendix 2). These were defined in the post-excavation project design to reflect the realities of the archaeology as discovered, although due regard to the geological landscape zones defined in the original research strategy has been retained throughout the project (see Chapter 2). The purpose of this approach was to encourage team members to adopt a broad landscape view, taking into consideration the results from all fieldwork events within the defined geographical section, rather than focusing exclusively on the most significant individual sites.

The most significant fieldwork evidence and results of analysis are presented in the form of integrated, illustrated site narratives—'integrated site reports' (ISR). Of the 29 Principal Sites, only 20 are the subject of integrated site reports (see Table 1.1).

These reports are interpretative summaries of the site sequence, incorporating key supporting evidence and the summary results and interpretation of specialist analyses. The reports were for the most part produced by the organisations responsible for their excavation (OA, WA, MoLA and CAT), working to a single post-excavation project design overseen by the archaeological team at RLE and managed by the OWAJV. Five experienced specialists from within the OWAJV were appointed as period team leaders to provide guidance to the report authors and act as editors for the 'integrated site reports'. The period team divisions mirrored the intended structure of the main monograph chapters: Early prehistory, Later prehistory, Late Iron Age/Roman, Anglo-Saxon/Early medieval, Later medieval and Post-medieval (the latter including historic buildings). This arrangement was intended to achieve a balanced input from fieldwork directors most familiar with the sites, and period experts most familiar with the artefactual material and regional

Table 1.1 Principal Sites which were subject to post-excavation analysis, and for which 'integrated site reports' were completed

Principal Site name	*Post-excavation code*	*Main excavating organisation*
Pepper Hill Roman Cemetery	PHL	OA
Whitehill Road Barrow	WHR	MoLAS
Northumberland Bottom	WNB	MoLAS
Tollgate	TLG	MoLAS
Cobham Golf Course	CGC	MoLAS
Cuxton	CXT	MoLAS
White Horse Stone	WHS	OA
Thurnham Roman Villa	THM	OA
South of Snarkhurst Wood	SNK	OA
South-east of Eyhorne Street	EYH	OA
Sandway Road	SWR	WA
Leda Cottages	LED	OA
Tutt Hill	TUT	OA
Parsonage Farm	PFM	MoLAS
Beechbrook Wood	BWD	OA
Mersham	MSH	CAT
Bower Road	BOW	OA
Little Stock Farm	LSF	WA
North of Westenhanger Castle	WGR	CAT
Saltwood Tunnel	SLT	CAT/ WA

Table 1.2 Principal Sites of limited significance for which the post-excavation assessment is the final report

Principal Site name	*Post-excavation code*	*Main excavating organisation*
Nashenden Valley	NSH	OA
West of Sittingbourne Road	WEA	OA
Chapel Mill	CML	OA
A20 Diversion Holm Hill	HOL	WA
Hurst Wood	HWD	OA
Lodge Wood	LWD	OA
Boys Hall Balancing Pond	BHB	OA
West of Blind Lane	BLN	OA
East of Station Road / Church Lane	STR / CHL	OA

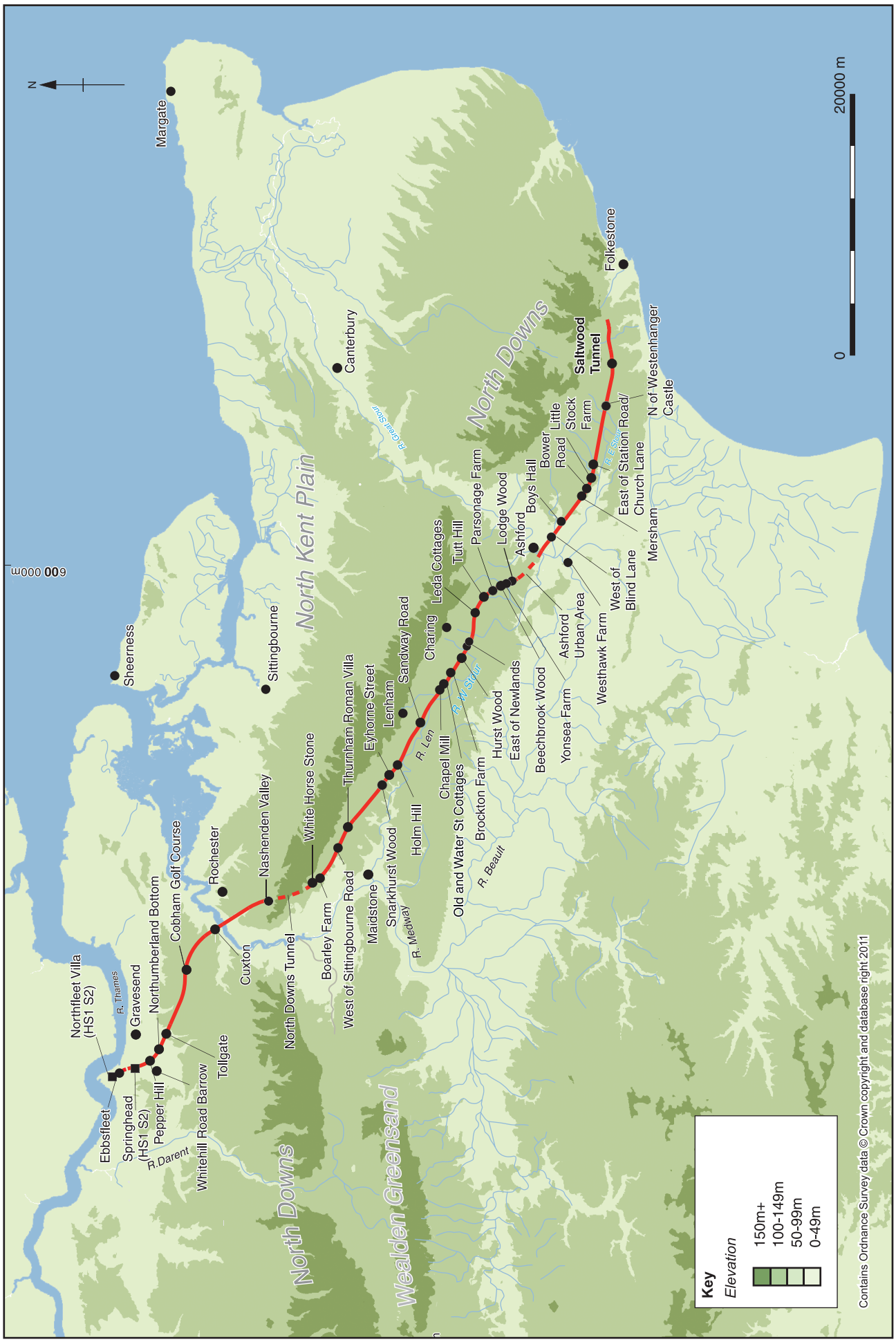


Figure 1.4 The route of High Speed 1 showing principal sites and historic buildings (of all periods) investigated along the route, in relation to elevation and drainage

research context. The level of descriptive detail provided is commensurate with the significance of the evidence and its ability to address the questions posed in the CTRL Research Strategy. The reports are cross-referenced to 'scheme-wide specialist reports' (which report in detail on the results of specialist studies) and the site databases (which contain feature descriptions and document phasing decisions).

MAP2 assessment reports were produced for all of the significant archaeological sites (ADS Collection 335; see above). In the case of the 20 sites selected for further analysis these have been superceded by 'integrated site reports'. The remaining eight principal sites lacked a major archaeological focus and therefore produced insufficient evidence to justify detailed analysis and reporting (Table 1.2).

Specialist analysis and reports

Specialist analyses were commissioned centrally by the OWAJV and a common approach to reporting was achieved through detailed specifications and task lists, and a period- and specialism-based team structure. Artefact and environmental specialists were grouped into teams with responsibility for the following main categories:

Ceramics (pottery and ceramic building material),
Small finds (including metallurgy and metal-working residues),
Worked flint,
Dating (mainly C14 with a small number of OSL dates),
Human remains,
Palaeoenvironmental studies (including animal bone).

For the larger assemblages, in particular the pottery, it was necessary to employ teams of specialists to meet the project deadlines, in which case team leaders were appointed to co-ordinate each element of the study, including writing the specification, editing the individual assemblage reports and writing a schemewide overview report. A series of five 'schemewide specialist reports' summarise and analyse the results from more than 200 site-specific 'specialist research reports'. A schemewide overview was not produced for the small finds category as the diverse nature of the assemblages and the concentration of most of the finds on a small number of major cemetery sites, made any overview of doubtful value. In this case the comprehensive site-specific specialist reports are left to speak for themselves.

HS1 Section 1 monograph

The purpose of this present volume is to introduce the project, to provide detailed expert reviews of the evidence and to outline the contribution of the project to the archaeology of south-east England, in particular Kent. The volume also serves as a guide and introduction to the digital archive (see Appendix 2), and contains a comprehensive gazetteer and mapping of archaeological investigations along the route (Section 1 only; see Appendix 1).

With the exception of Paul Booth and Julian Munby the main chapter authors were not personally involved in the field investigations, apart from site visits, but have been asked to contribute chapters because of their very extensive period-specific knowledge and expertise on the archaeology of South-East England. This approach represents a departure from normal practice and a model for future collaboration between commercial archaeological companies working on developer-funded projects, and university-based specialists.

No attempt has been made to reach a consensus between the opinions and interpretations of the authors of this volume and the underlying body of digital reports. The latter reflect, in the vast majority of cases, the interpretations of the organisations which excavated the sites, modified by detailed editorial input from period and specialist team leaders of the OWAJV. The points of difference with the authors of the present volume, where they occur, help to illustrate the range of different interpretations that are possible from the same dataset, and serve to highlight the different approaches, perspectives and interests of academic researchers as opposed to field archaeologists from a developer-funded background. Joint ventures between university-based and development-based archaeologists are still comparatively rare—the HS1 project has provided the opportunity for a most valuable and enlightening collaboration, the results of which speak for themselves in the following chapters. It is to be hoped that the project will contribute to a new age of close engagement between these currently quite distinct sectors of the archaeological profession.

Archives

The line between 'publication' and 'archive' for HS1 Section 1 is necessarily blurred. This volume lies at the top of the report hierarchy. At the next level down are the digital 'integrated site reports' and 'scheme wide specialist reports', which have been subject to a high level of specialist editorial scrutiny and peer review comparable with academic publication. The individual specialist reports and datasets have been reviewed and edited by relevant specialist team leaders, and most have also been reviewed by the period team leaders.

Other reports within the digital archive, such as project designs, evaluation reports, interim reports and post-excavation assessments, have been subject to the 'Quality Assurance' procedures of the archaeological companies involved, and the commissioning archaeologists at RLE, but have not been subject to the same level of specialist scrutiny as the reports above, so may be considered 'grey literature'. None of the digital reports have ISBN numbers, but they can be referred to in publications using the 'Digital Object Identifier' for the CTRL collection on the ADS website (ADS Collection 335; doi:10.5284/1000230).

Paper, photographic and finds archive

The HS1 Section 1 archive on ADS does not attempt to present the entire record in digital form—the primary record for this project remains the hard copy archive. Consequently researchers may find that some archive elements that would now be expected in digital form are only available in the hard copy archive. In particular, fieldwork specifications in the late 1990s did not require or encourage the use of digital photography. The hard copy archive includes extensive photographic records as 35mm colour slides and black and white film.

Chapter 2

Time and Place: chronology and landscape

by Stuart Foreman

Geology, topography and hydrology of the High Speed 1 route

From the north the High Speed 1 (HS1) route extends from the Ebbsfleet Valley at Springhead south-eastwards across the dip slope of the North Downs (see Fig. 2.1 below). The first 15km of the route south-east of Fawkham Junction to the River Medway is, apart from Scalers Hill, predominantly through Upper Chalk overlain in the deeper cuts by Thanet Beds and/or Head. East of Scalers Hill there are extensive solution features in the top of the chalk. Scalers Hill is an outcrop of the Lower London Tertiaries consisting of Harwich Formation/Blackheath Beds sands and gravels over Woolwich and Reading Beds clay (BGS 2010).

After crossing the River Medway on a 1.3km bridge and viaduct the HS1 runs up the Nashenden Valley mainly through Upper Chalk and then into the 3.2km North Downs Tunnel under Blue Bell Hill. The crest of the North Downs escarpment, overlooking the Weald, reaches a height of *c* 200m OD and is frequently capped by surface deposits of Clay-with-Flints or Tertiary deposits. Extensive deposits of Quaternary age are mapped as Head on the geological maps, extending from coombes cut into the Chalk escarpment and fanning out onto the plains below. The railway exits the North Downs Tunnel below Bluebell Hill at White Horse Stone and runs in a short cut in Lower Chalk before descending into the Weald of Kent.

Across the Weald the route runs for approximately 4km, at *c* 55–60m OD, through the Gault Clay of Boxley Vale north of Maidstone, before reaching the dip slope of the Lower Greensand at Snarkhurst Wood. The route to Ashford passes through gently undulating topography adjacent to the M20 motorway cutting, mainly through Folkestone Beds sand, and occasionally Sandgate Beds and Hythe Beds, crossing a number of small streams that drain towards the West Stour River. Through the town of Ashford itself, the HS1 alignment runs below ground level, in retained cuts and cut/cover tunnels through reworked Hythe Beds, Atherfield Clay and Weald Clay, before rising up onto a long viaduct to cross the River Stour. From Sevington, for approximately 4km, the railway runs close to the south flank of the Hythe Beds escarpment, in cuttings through the Hythe Beds and the Atherfield Clay. This is a spring line, with many small streams emanating from this area and crossing under the trace. Between Sellindge and Westenhanger, there are two long embankments over the alluvium of the East Stour River Valley, interspersed with cuts through the Sandgate Beds and the Hythe Beds. The last 5km of the route from Sandling up to the interface with the Channel Tunnel is through the more deeply incised topography characteristic of the Folkestone Beds sand.

The rail link crosses two of the major drainage basins of North Kent, those of the Rivers Medway and Stour. The former has a tributary, the River Len, which flows parallel to the line of the Lower Greensand and Gault Clay. The source of the Len at Lenham is separated by only 1.5km from the headwaters of the River Stour, which also flows parallel to the strike of the solid geology and to the route of the HS1. However, in most cases the rail line runs perpendicular to the surface drainage patterns which flow down the scarp slopes or dip slopes of the respective geological bands.

Palaeoenvironment

by John Giorgi and Elizabeth Stafford

Palaeoenvironmental reconstruction is a key theme of the HS1 research strategy, though unfortunately the nature of the sites and soil conditions along Section 1 of the route only rarely provided opportunities for detailed studies of this kind. This situation is in marked contrast to the results from HS1 Section 2, where alluvial sequences in the Ebbsfleet Valley and elsewhere in the Thames Valley have provided a wealth of evidence (see conclusion below). This section outlines the extent of the palaeoenvironmental data recovered from Section 1, and its strengths and limitations in addressing the research aims of the project. The general conclusions from the various specialist studies (Giorgi and Stafford 2006), and the regional environmental background, are discussed by period in the following chapters, in particular Chapter 3.

With reference to paleoenvironmental studies, the project research aims focused on environmental reconstruction, identifying evidence of human impact, exploitation and consumption of natural resources, as well as considering the distribution of social, political and ritual organisation within the landscape.

The main potential of the environmental data from the HS1 project was to provide information on the economic (agricultural) development of the study area through time, mainly crop husbandry on the basis of charred plant remains. Animal husbandry could only be explored at a

very basic level. There was less scope for exploring the development of the local and regional environment with a few notable exceptions, particularly the Late Glacial and Holocene sequence at White Horse Stone.

A wide range of environmental remains was recovered during excavations along the rail link route. These included micro-remains (pollen, diatoms) and macro-remains (plants, insects, molluscs, animal bone). Geo-archaeological studies of soil and sediment sequences included stratigraphic and geomorphological site descriptions, with deposit characterisation supported by techniques such as soil micromorphology and the analysis of chemical and magnetic properties. The detailed specialist reports, including a scheme wide overview by John Giorgi and Elizabeth Stafford, can be found in the ADS digital archive (Giorgi and Stafford 2006).

There were obviously potential strengths and limitations of the environmental dataset. Soil/sediment conditions limited the preservation of many classes of biological remains. The poor representation of 'waterlogged' (anaerobic) soils limited the survival of more fragile biological remains, including pollen, insects and 'waterlogged' botanical material to just a few sites. Acidic soils, for example on the Wealden Greensand, severely affected the preservation of animal bone and molluscs. Another potential problem was the question of residual and intrusive remains, which was noted at a number of sites with charred plant remains.

Charred plant remains were well represented, being analysed from 18 sites, while information from 25 assessment reports was also considered. Charcoal was analysed from eight sites and assessed from nine excavations. Analytical reports were prepared on animal bones from 14 sites. Smaller numbers of reports were prepared on molluscs (five sites) and pollen (one analytical and four assessment reports). There were three reports on 'waterlogged' plant remains, two reports (assessment/analysis) on insects, and single reports on mosses (Thurnham Villa) and diatoms (Parsonage Farm). Twelve sites were assessed by geoarchaeological methods, and seven were re-examined during the post-excavation phase, although only White Horse Stone was subject to detailed analysis.

The best represented periods in terms of environmental evidence were the Late Bronze Age/Early Iron Age, Roman and to a slightly lesser extent, the medieval period, with relatively smaller amounts of material from the early prehistoric and Saxon periods. Consequently, the relative abundance of different classes of environmental material by site and period meant that there was great variation in the temporal and spatial presence of the different biological remains, limiting the potential for significant comparisons between periods and areas.

Charred plant remains made up the bulk of the environmental material recovered from all sites. The preservation of these does not depend on the soils/sediments in which they are deposited, consequently they provided the main source of information on economic data (crop husbandry and processing) and the main focus of the scheme wide environmental project. The small number of 'waterlogged' plant remains that were examined meant that potential reconstructions of local environments were limited. Similarly, the few pollen studies meant that regional environmental reconstructions were also restricted, with no regionally important sequences being identified.

Animal bones consisted mainly of large mammal bone, primarily from domesticates, although there were generally insufficient quantities of material and limited data for the reconstruction of age at death profiles, to provide statistically reliable conclusions on animal husbandry. Evidence for game was noted at many sites, albeit represented by small amounts of material. There were small quantities of small mammal, bird and amphibian bones, which could provide only limited data on the reconstruction of the local environment, although there were several significant assemblages of fish bone from Roman and medieval sites.

Molluscan studies at several sites provided information on the character of the local environment and how it may have changed over time, for example at White Horse Stone, while the insect remains from the Late Roman well at Thurnham also produced some data on the character of the immediate environment.

Wider landscape studies within the HS1 study area were carried out using geo-archaeological techniques, primarily the study of soils and sediments. A very important sequence was uncovered at White Horse Stone, which was studied in detail. Several other geo-archaeological sequences from various other dry valleys in the North Downs were examined but the lack of potential dating evidence, or direct association with archaeological remains, meant that they were not analysed in detail.

Radiocarbon dating

by Michael J Allen

Palaeoenvironmental and landscape reconstruction is reliant on a robust chronological framework. The majority of the Section 1 archaeological sites were shallow, plough-truncated soil sequences, the only significant exceptions being dry valleys in the North Downs landscape Zone, in particular White Horse Stone. This meant that the majority of archaeological contexts have been dated on the basis of artefact typology. Nevertheless, the HS1 assessment and post-excavation project included the largest programme of radiocarbon dating so far undertaken in Kent, encompassing 17 sites and 149 determinations from 158 submissions (see Appendix 3). Most sites received six or fewer determinations but four (White Horse Stone, Saltwood Tunnel, Pepper Hill and Beechbrook Wood), because of their complexity or the detailed chronological resolution required, had between 13 and 54 results, comprising 75% of the radiocarbon programme. Not only was the archaeological selection and scrutiny of the material significantly more rigorous than for many previous projects in Kent and south-east England, but the

precision and accuracy of measurements within the radiocarbon laboratories is now also greater than before. Where error ranges of ±50 to 60 years were common and the norm less than 10 years ago, the majority (116; 78%) of the results from this project, largely submitted in 2004–5, have error ranges ≤40 years, and many (58%) are <40 years. Even during the life of this project measurement precision increased; all 14 radiocarbon assessment results submitted between 1998–2002 had error margins greater than ±40 years, averaging >±55, while during the post-excavation phase (2004–5) the majority were ±30 or less, averaging ±35. This level of precision has facilitated more specific questions and distinction between phases throughout the project.

The suite of 149 radiocarbon results (Appendix 3) is heavily biased against periods and episodes with well-dated artefacts, for which radiocarbon chronology would have been redundant, and against periods where the nature of the events do not require detailed radiocarbon chronology. For instance, the Mesolithic events along the HS1 route are sparse and often only required placing into a broad chronological framework, while a sequence of evolving Bronze Age events and activities could be better articulated via a series of radiocarbon determinations than through often vague and poorly dated artefact chronologies.

Chronology derived from both radiocarbon dating and artefact typologies is discussed in depth in the following chapters. Further details are contained in a series of dating reports on each of the 17 Principal Sites with radiocarbon dates, which are available on the Archaeology Data Service (ADS) website (CTRL Specialist Report Series – Dating Reports) and a scheme wide overview report, on which this section is based (Allen 2006).

Landscape zones

The landscape zones used for the project were those defined in the Character Map of England (Countryside Commission and English Nature), and the following are relevant to Section 1.

North Kent Plain

North Downs

Wealden Greensand (with some Low Weald)

The original landscape zones were found to be too broad in some respects to provide a useful basis for comparison and have therefore been sub-divided into a series of eight 'zones' for the purposes of this volume (see Table 2.1 and Fig. 2.1).

The smaller 'zones' predominantly reflect finer distinctions in geology, drainage and topography. Drainage/water sources are likely to have been a key determinant of land-use and settlement location in all periods. The Wealden Greensand Zone is sub-divided into route sections with predominantly clay soils (Zone 4, Gault Clay; Zone 7, varied soils but predominantly based on Atherfield Clay) and areas with predominantly sandy soils (Zones 5, 6 and 8, Folkestone and Sandgate beds).

Apart from geology and drainage, a range of other topographical factors are considered in defining the eight zones, including the location of the rail link route in relation to rivers and the coast, historic communication routes and major historic settlements, all of which might be expected to play a part in the intensity of settlement in different locations and periods. River valleys in particular might be expected to be a major factor in the character and definition of territories and boundaries. For instance the River Medway forms the traditional Boundary between East and West Kent, while the River Ebbsfleet was a lathe and hundred boundary in the Late Saxon period. As discussed in relation to the Ebbsfleet Valley and the West Stour below, rivers are likely to be one of the most significant determining factor in the location of major settlements and core agricultural areas.

The zones are not of equal size but some basis for comparison is provided by identifying the length of the route section in km, the number of historic parishes crossed, and the number of HS1 archaeological fieldwork events undertaken within it. The latter figure is intended as a rough indication of the relative intensity of archaeological investigation. It would be preferable to quote absolute areas investigated, which is possible for the mapped excavation areas, but is impossible as far as far as the general watching brief goes, due to the highly variable visibility in different route sections (see Chapter 1, Methods). The extent of investigation is illustrated in the Gazetteer mapping (Appendix 1).

The 'number of fieldwork events' includes excavations and watching brief areas but not evaluations, as the extent of excavation involved in evaluation trenching is not comparable with open area soil stripping. In addition most evaluations that contained significant archaeology were subsequently subject to some level of archaeological mitigation, so there is a large degree of overlap between the excavation and evaluation areas. Watching brief route sections in which no finds at all were made are excluded because that generally indicates very poor archaeological visibility.

Chronology and landscape

The Section 1 sites are widely distributed and mostly comprise rural sites of well-known types. There are exceptional sites, such as the White Horse Stone Neolithic longhouse, or the Pepper Hill Roman cemetery (which properly forms part of the Ebbsfleet Valley landscape) but the main contribution of Section 1 lies in the extent to which a range of 'ordinary' rural sites have been exposed and investigated across a broad range of landscape zones. The sheer number of sites studied within a consistent research framework has offered a unique opportunity to examine change and development in a very specific transect through the rural landscape of Kent. While the transect is not one that would have been chosen were this purely an archaeological research

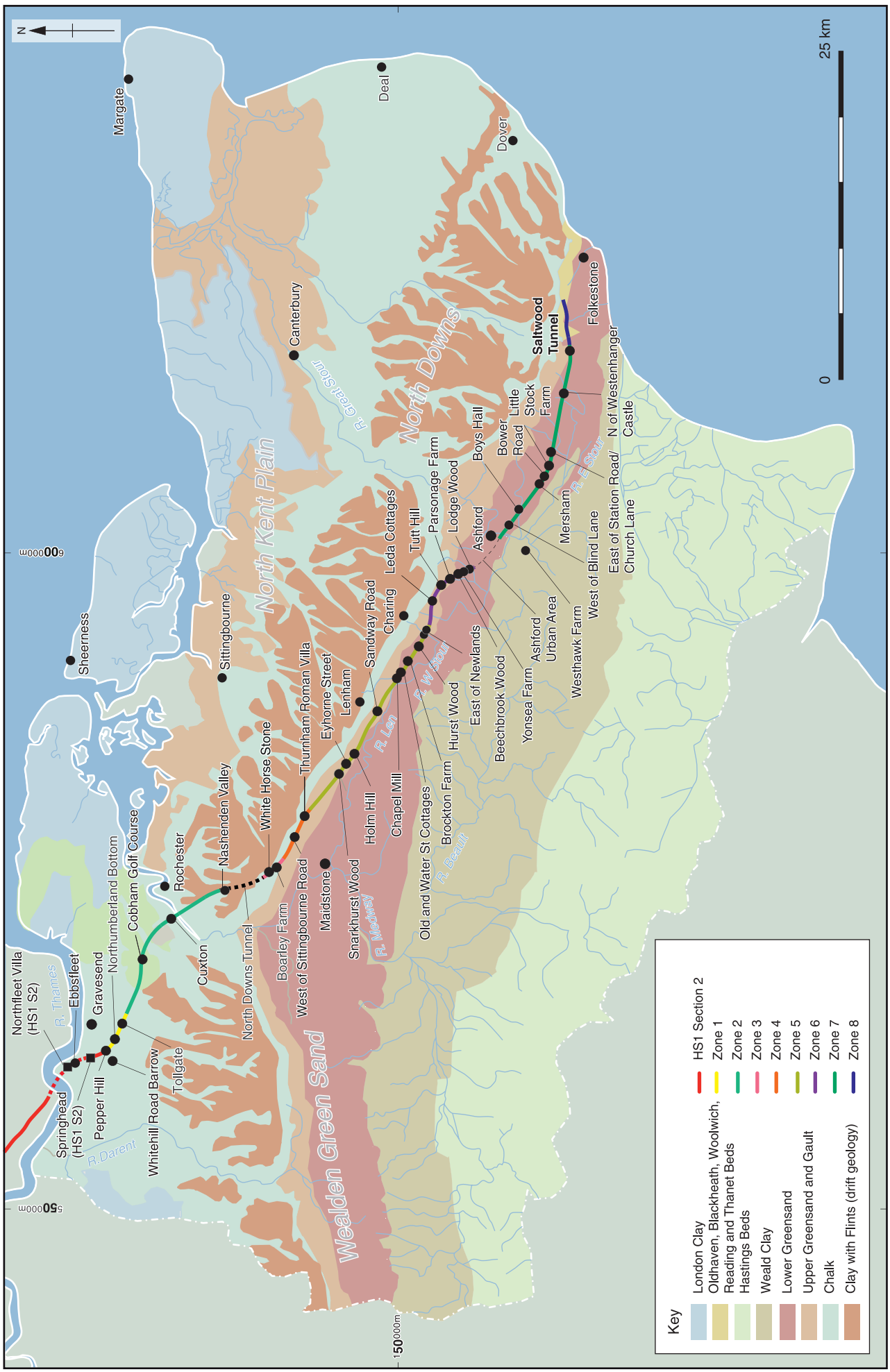


Figure 2.1 The route of High Speed 1 showing landscape zones, Principal Sites and historic buildings (of all periods) investigated along the route, in relation to geology

Table 2.1 Landscape zones within the HS1 project

Zone	UPD Landscape Zone	Principal Sites	Predominant geology	Drainage	Nearest major historic settlements	Principal long-distance communication routes	East Kent/ West Kent	Parishes crossed	Length (km)	No. Fieldwork events considered (excl evaluations and watching brief route sections with no recorded finds)	Comments	FW events per km
HS1 Section 2	North Kent Plain	Ebbsfleet Valley including: STDR4; Northfleet Villa; Springhead;	Alluvium/ terrace gravels overlying Upper Chalk	Ebbsfleet Valley; Thames Estuary	Springhead Roman settlement; Hinterland of Dartford; Gravesend	Watling Street/ A2/ River Thames	West Kent	Northfleet; Southfleet; Swanscombe	3.0	5	HS1 Section 2	1.7
Zone 1	Boundary of North Kent Plain/ North Downs dip-slope.	Pepper Hill, Whitehill Rd./ S.of Station Rd; Northumberland bottom/ Hazells Rd; Tollgate	Upper Chalk overlain by head deposits in some areas	Ebbsfleet Valley; Thames Estuary	Hinterland of Springhead Roman settlement; Dartford; Gravesend	Watling Street/ A2	West Kent	Longfield and New Barn; Northfleet; Southfleet; Gravesend; Ifield; Cobham	11.0	8		0.7
Zone 2	North Downs (dip slope)	Cobham Golf Course; Cuxton; Nashenden Valley	Upper Chalk overlain by head deposits in some areas	Medway Valley (north-west flank of Medway Gap and Medway crossing)	Hinterland of Rochester	Watling Street/ A2; (Pilgrim's Way)	Both (either side of River Medway)	Cobham; Cuxton; Rochester; Wouldham	5.0	3	Length excludes North Downs Tunnel = 3.2 km	0.6
Zone 3	North Downs (scarp slope)	White Horse Stone/ Pilgrim's Way; Boarley Farm West and East	Middle Chalk overlain by head deposits in some areas	Medway Valley (eastern flank of the Medway Gap)	Hinterland of Aylesford/ Maidstone.	Pilgrims Way/ A20 (Rochester to Maidstone Roman Road).	East Kent	Aylesford; Boxley	8.5	5	Length excludes North Downs Tunnel = 3.2 km	0.6
Zone 4	Wealden Greensand (Vale of Holmesdale)	West of Sittingbourne Rd; Thurnham Roman Villa/ Hockers Lane	Gault Clay	Between the North Downs escarpment and the River Medway.	Hinterland of Aylesford/ Maidstone.	Pilgrims Way/ A20	East Kent	Boxley; Detling; Thurnham; Hollingbourne	7.0	6		0.9
Zone 5	Wealden Greensand	Snarkhurst Wood; Eyhorne St., Sandway Rd., Chapel Mill, Old and Water St.Cottages; Brockton Farm; Hurst Wood/ E.of Newlands	Lower Greensand predominantly Folkestone and Sandgate Beds	Between the Downs escarpment and the River Len	Hinterland of Charing/ Lenham	Pilgrim's Way/ A20	East Kent	Hollingbourne; Harrietsham; Lenham; Charing	13.0	10		0.8
Zone 6	Wealden Greensand	West of Leda Cottages; Tutt Hill; Parsonage Farm; Yonsea Farm; Beechbrook Wood; Lodge Wood	Lower Greensand predominantly Folkestone and Sandgate Beds	Between the Downs escarpment and the River West Stour	Hinterland of Westhawk Farm Roman settlement/ Ashford	Pilgrim's Way/ A20	East Kent	Charing, Westwell, Hothfield, Ashford	8.5	6	length excludes Ashford and Sevington WB section = 5.5km	0.7
Zone 7	Wealden Greensand	Boys Hall Balancing Pond; No.2 and 4 Boys Hall Rd; W. of Blind Lane; Bridge House Mersham; Mersham; Bower Rd.; Little Stock Farm; Church Lane/ E.of Station Rd. Talbot House; N. of Westenhanger Castle	Lower Greensand predominantly Atherfield Clay	East Stour Valley	Hinterland of Westhawk Farm Roman settlement/ Ashford	A20 (Stone Street Roman Road)	East Kent	Sevington; Mersham; Smeeth; Sellindge, Stanford	12.0	9	length excludes Ashford and Sevington WB section = 5.5km	0.8
Zone 8	Wealden Greensand	Saltwood Tunnel (all fieldwork events)	Lower Greensand predominantly Folkestone and Sandgate Beds	Coastal Zone - Saltwood plateau - South of the Downs escarpment	Hinterland of Folkestone and Hythe	Pilgrim's Way/ A20 (Stone Street Roman Road)	East Kent	Saltwood; Newington	3.5	2		0.6

project, it is nevertheless a very useful one which stretches from the Thames estuary to the channel coast, and passes through a range of landscape zones, which (including the Ebbsfleet Valley in Section 2) are more-or-less representative of Kent as a whole.

While the following chapters (3–7) examine the evidence by period, this section attempts to model and compare the intensity of land-use within each landscape zone, as evidenced in the archaeological record from the HS1 transect through Kent. Some of the individual sites are unimpressive and did not in themselves warrant detailed analysis, yet when taken as a group they offer important insights into the general chronology and distribution of sites within the zones crossed by the rail link route, which inform general discussions of the evolution of the settlement pattern of Kent as a whole.

The data for these figures has been generated using a simple scoring system, which assesses the intensity of activity in a given period (as evidenced in the HS1 archaeological record) for each Principal Site on a scale of 1 to 4.

1 = Isolated or widely scattered features
2 = Lower level occupation
3 = Main intensive/complex period of activity
4 = Exceptionally intensive and extensive period of activity

Scores were entered into a spreadsheet matrix listing the Principal Sites, with data columns representing 100 year time blocks from 4000 BC to AD 2000. The resulting cumulative scores for each landscape zone are shown graphically in Figures 2.2 to 2.4 (the data sheet is available in the digital archive). This is a simple means of comparing the archaeological chronologies of different combinations of Principal Sites at a landscape level.

The scores for intensity of activity at each site in different periods are based on the period-specific chronological summary charts presented in the following chapters (simplified as rounded to the nearest century), which in turn are based on the chapter authors consideration of all available chronological evidence, the most important sources of evidence being artefact typology in conjunction with radiocarbon dates. The chronology of sites in the Ebbsfleet Valley (HS1 Section 2), although not discussed in detail in this volume, is included in this section for comparison with the Section 1 data, and to complete the HS1 transect through Kent.

This approach is an attempt to summarise change and complexity in the archaeological record in a consistent manner. However, sites that are unusually complex for their period, such as the Neolithic Longhouse at White Horse Stone, or the Anglo-Saxon tidal mill in the Ebbsfleet Valley, are given slightly greater weight than, say, Roman sites of strictly equivalent complexity, which are relatively commonplace. Thus the Neolithic longhouse phase at White Horse Stone, and the Early Roman phase at Thurnham Roman Villa are both given a score of '3', even though the Roman villa structures are considerably more complex and extensive in absolute terms than the Neolithic longhouse. As this example illustrates, the scores are subjective, and incorporate all of the inherent problems of bias discussed elsewhere in this volume, but it nevertheless provides a useful means of visualising and systematically comparing the archaeological chronologies of a diverse collection of sites at the landscape level. While the precise scores applied to particular cases may be questioned, it is hoped that the cumulative scores across groups of sites reflect real patterns in the archaeological data, if not necessarily real patterns in rural settlement.

In interpreting the graphs it is important to remember that the rail link route runs for the most part with the grain of the landscape, following distinct and rather narrow geological bands, whereas historic units of settlement as exemplified by documented Anglo-Saxon estates and medieval parishes in Kent, typically run against the grain, encompassing as wide a range of geological zones as possible. By focussing on one landscape zone at a time we are confining our interest to one of several zones available to any given community, and not necessarily the most important.

Figure 2.2(a) illustrates the overall chronological distribution of activity for the HS1 transect through Kent (all landscape zones), while Figure 2.2(b–d) shows the distribution for each of the overall landscape zones. Figures 2.3 and 2.4 show the distribution for sub-regional zones 1–8.

Overall chronological spread of activity for the HS1 data (all landscape zones)

This section reviews the overall chronological trends apparent in the HS1 transect through Kent, including the Section 2 sites in the Ebbsleet Valley. Chapters 3 to 7 contain detailed analysis of the trends by period, including discussion of the basis of the dating evidence and the possible reasons for the major peaks and troughs in the activity levels in the archaeological record. The graphs in Figures 2.2–2.4 omit the Palaeolithic and Mesolithic periods, as the number of sites of those periods is too small, and the time periods too long, to model at the same scale as the Neolithic and later periods (See chapter 3 for Paul Garwood's detailed analysis of activity during these periods). *In situ* contexts datable to the Mesolithic are found on just three sites on Section 1 (Sandway Road, Beeckbrook Wood and Saltwood Tunnel). The earliest evidence for human activity from the HS1 Section 2 work in the Ebbsfleet Valley extends as far back as the Middle Pleistocene / Clactonian (the estimated age of the Southfleet Road elephant butchery site is *c* 400,000 BP) (Wenban-Smith *et al.* 2006). In contrast, the earliest single artefact identified from the Section 1 sites is a later Upper Palaeolithic burin dating from *c* 10,000 BC. The main reason for this great difference in timescales is the absence from the Section 1 route of deep/complex stratified alluvial deposits, whereas these are a characteristic feature of the Section 2 investigations in the valley of the Thames and its tributaries, including the Ebbsfleet.

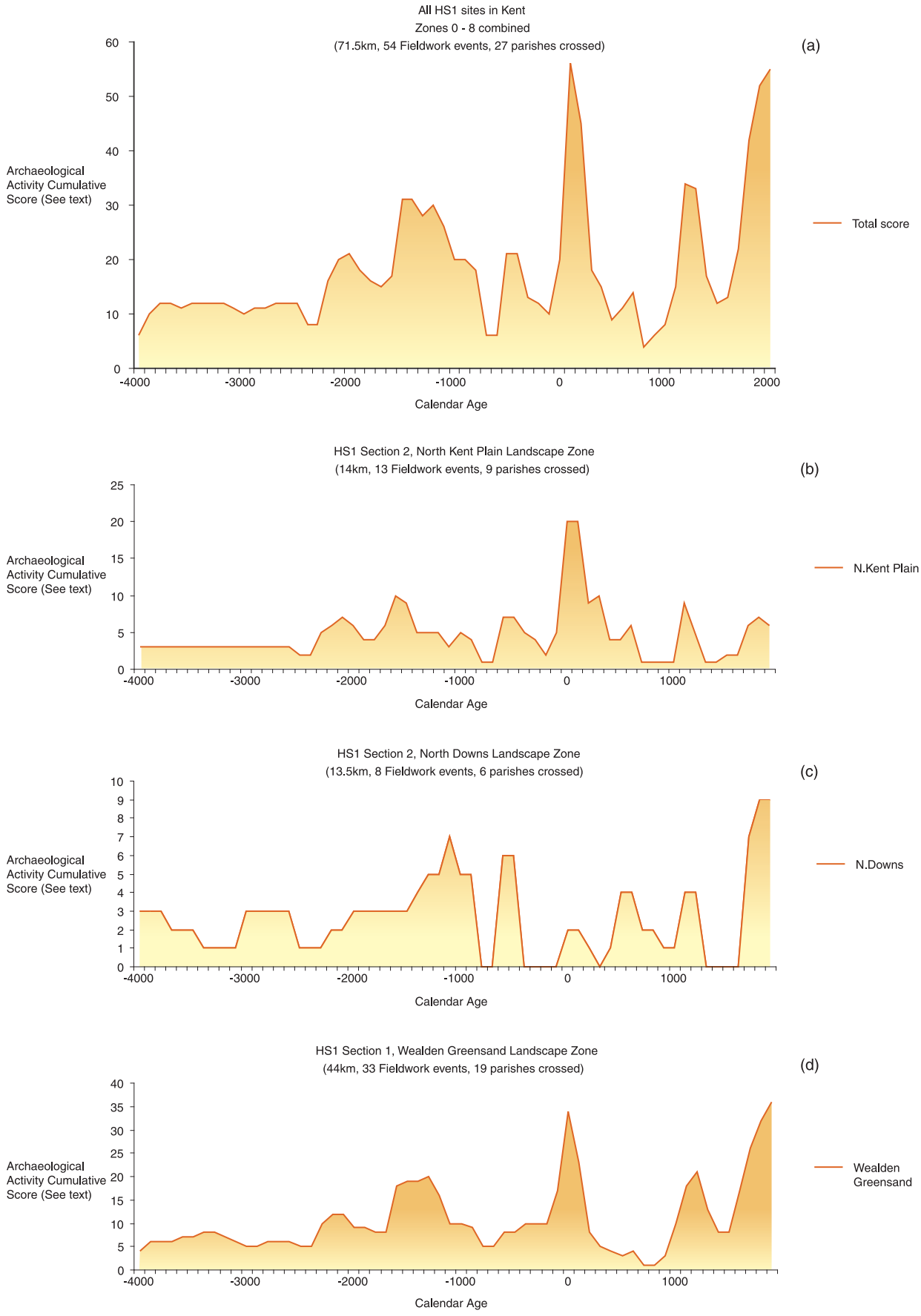


Figure 2.2 Comparison of the chronological distribution of archaeological evidence by landscape zone, showing (a) The route as a whole (b) The North Kent Plain Landscape Zone (c) The North Downs Landscape Zone (d) The Wealden Greensand Landscape Zone

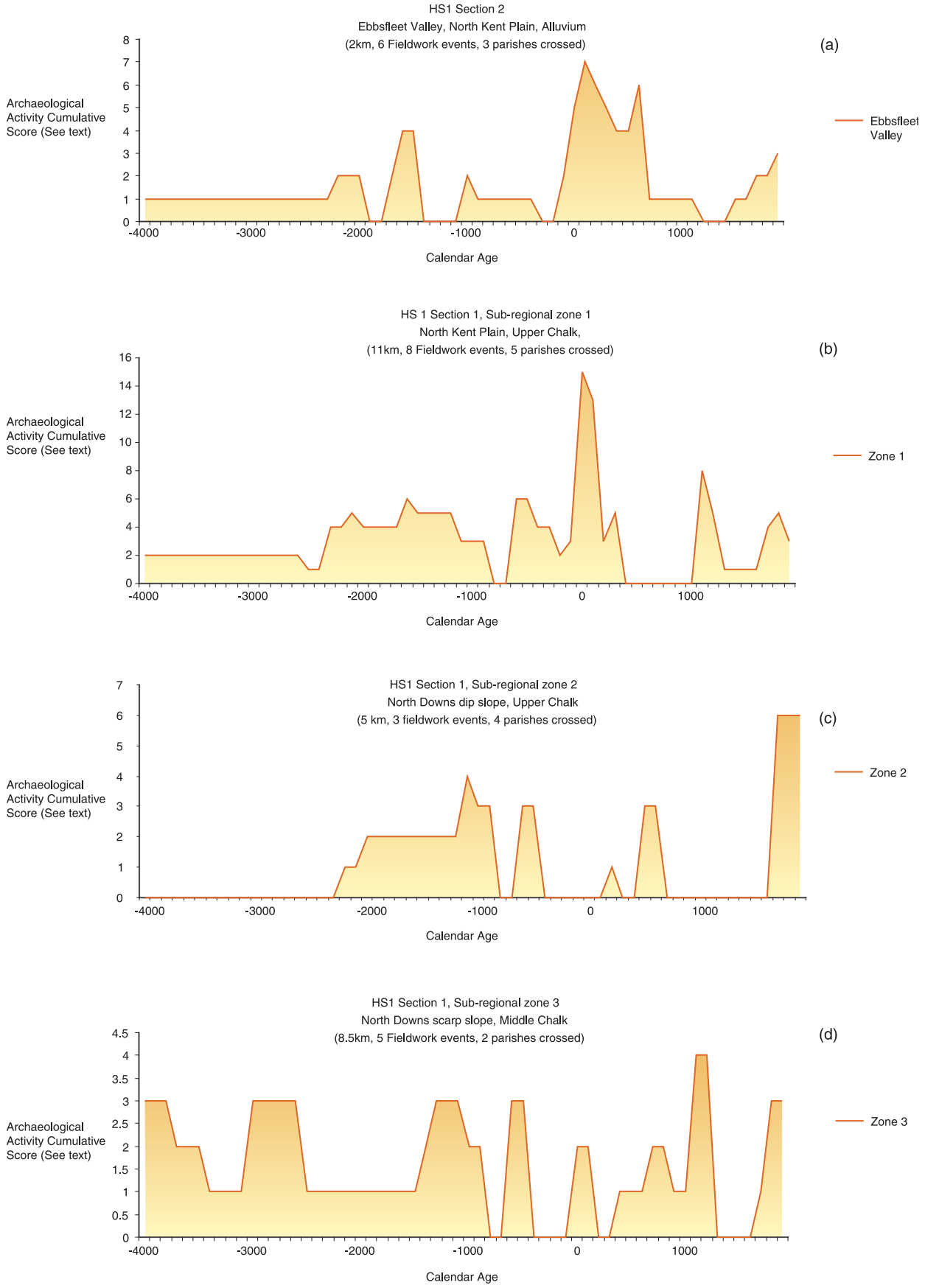
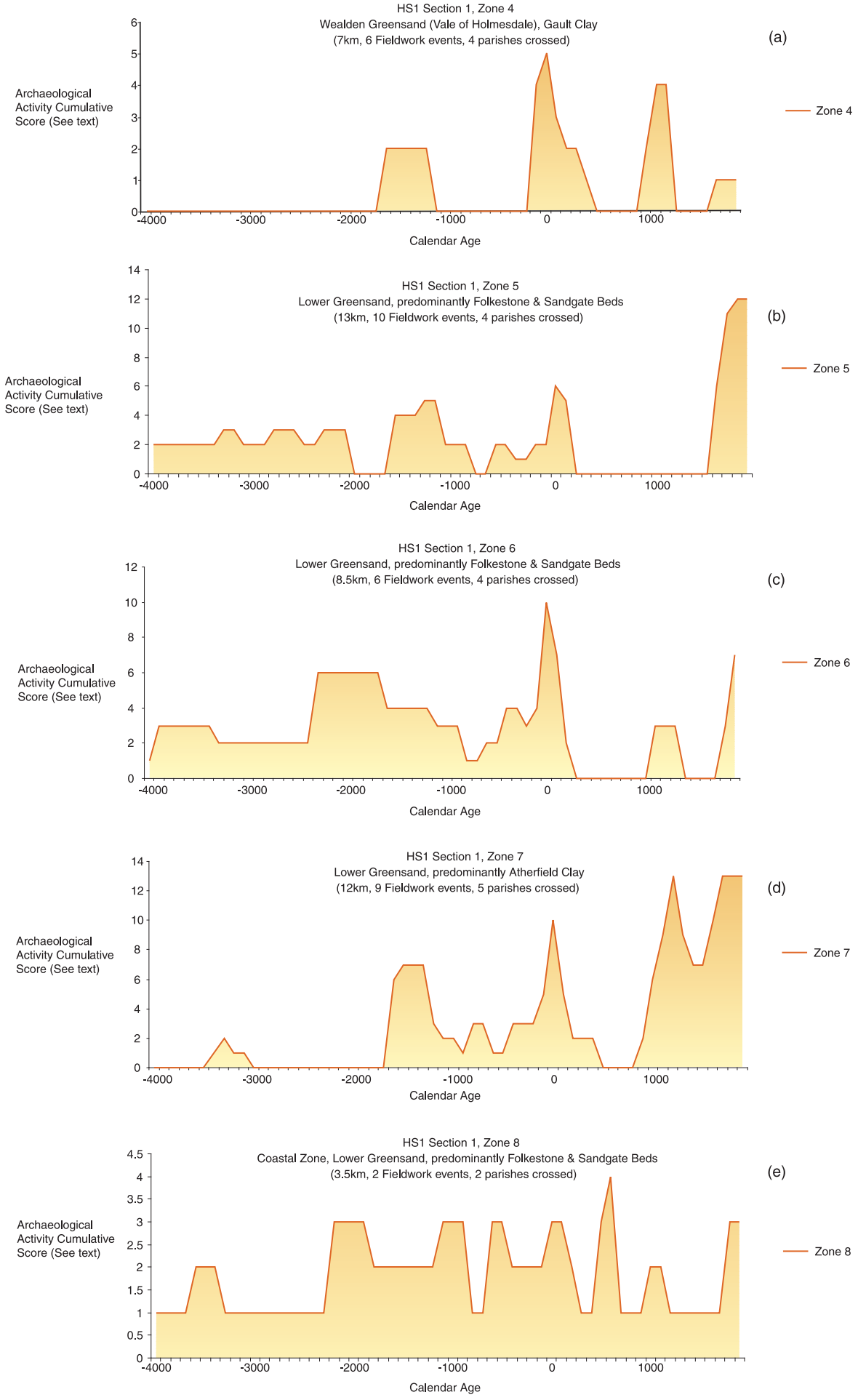


Figure 2.3 Comparison of the chronological distribution of archaeological evidence by sub-regional zone, showing (a) Zone 0 (Ebbsfleet Valley) (b) Zone 1 (c) Zone 2 (d) Zone 3

Figure 2.4 (facing page) Comparison of the chronological distribution of archaeological evidence by sub-regional zone, showing (a) Zone 4 (b) Zone 5 (c) Zone 6 (d) Zone 7 (e) Zone 8


HS1 Section 1, Zone 4
Wealden Greensand (Vale of Holmesdale), Gault Clay
(7km, 6 Fieldwork events, 4 parishes crossed)
(a)
Zone 4
Archaeological Activity Cumulative Score (See text)
Calendar Age
HS1 Section 1, Zone 5
Lower Greensand, predominantly Folkestone & Sandgate Beds
(13km, 10 Fieldwork events, 4 parishes crossed)
(b)
Zone 5
Archaeological Activity Cumulative Score (See text)
Calendar Age
HS1 Section 1, Zone 6
Lower Greensand, predominantly Folkestone & Sandgate Beds
(8.5km, 6 Fieldwork events, 4 parishes crossed)
(c)
Zone 6
Archaeological Activity Cumulative Score (See text)
Calendar Age
HS1 Section 1, Zone 7
Lower Greensand, predominantly Atherfield Clay
(12km, 9 Fieldwork events, 5 parishes crossed)
(d)
Zone 7
Archaeological Activity Cumulative Score (See text)
Calendar Age
HS1 Section 1, Zone 8
Coastal Zone, Lower Greensand, predominantly Folkestone & Sandgate Beds
(3.5km, 2 Fieldwork events, 2 parishes crossed)
(e)
Zone 8
Archaeological Activity Cumulative Score (See text)
Calendar Age

From the start of Neolithic the earlier prehistoric periods show relatively little differentiation by period across all landscape zones. The important Neolithic sequence at White Horse Stone notwithstanding, earlier prehistoric settlement sites have a relatively slight effect on the graphs in Figures 2.2–2.4 due to the relatively small number of such sites and ephemeral nature of the evidence at most sites. Very broadly dated ploughsoil artefact scatters (from fieldwalking) tend to result in low but persistent scores at several sites. White Horse Stone, Eyhorne Street, Sandway Road, Tutt Hill, Beechbrook Wood, and Saltwood Tunnel all show evidence for *in situ* early Neolithic activity. White Horse Stone and on a smaller scale Eyhorne street are particularly notable for their diverse and lengthy early prehistoric ceramic sequences, which have been calibrated for this project using radiocarbon dates.

There is a marked increase in activity in the Early Bronze Age, with the most common class of monument in this period being ring-ditches and other funerary features (Whitehill Road Barrow, Cobham Golf Course, Tutt Hill, Beechbrook Wood and Saltwood Tunnel). The primary period of construction for barrows is generally given a score of 2 or 3 depending on the known extent of the cemetery, and intensity of burials in particular periods, and a score of 1 to reflect persistent presence of the barrow as a significant landscape feature. However, the phases are mostly very broadly dated, which tends to give an impression of long, continuous use in these figures, which may not reflect real patterns of activity, or bear much relation to settlement activity.

A more substantial increase in activity occurs in the Middle Bronze Age extending into the Mid–Late Bronze Age, significant sites being White Horse Stone, Thurnham, Sandway Road, Tutt Hill, Beechbrook Wood and Saltwood Tunnel. Thereafter, activity apparently drops to almost nothing in the 'earliest Iron Age', except for a single settlement at Little Stock Farm, if the identification of this phase is to be believed (see Tim Champions discussion of this issue in Chapter 4). The levels of activity recover to a limited extent in the Early Iron Age, before a further apparent hiatus in the Middle Iron Age, the main exception in this period being the settlement at Beechbrook Wood. The chronology for the Iron Age is largely reliant on ceramic typology, as a result of the 'radiocarbon plateau' covering this period and the scarcity of diagnostic coins and other metal finds from the route. Consequently there remains considerable uncertainty in the detailed chronology of this period. The later prehistoric ceramics have been subject to detailed study for the HS1 project (E Morris, in Booth *et al.* 2006).

Activity initially continues at an apparently low level, if the ceramic chronology is correct, up until the late 1st century BC, with just three sites showing signs of occupation. From that point there is a rapid increase in rural settlement activity, with a major peak in the 1st century AD, the highest level of any period other than the modern. Within the Section 1 transect there is substantial evidence for occupation at 18 sites of all types by the end of the 1st century AD, continuing at a similarly high level until the early or mid-2nd century AD. Sites beginning in this phase include the Pepper Hill Cemetery, Thurnham Roman Villa, and a wide range of lesser rural settlements and burial sites in Section 1. In Section 2, the main phase of occupation at Springhead, and the beginnings of Northfleet Villa also lie in the 1st and 2nd centuries AD. During the course of the 2nd century there is an apparent gradual drop in the number of sites occupied, to *c* 14 by the late 2nd century, predominantly among low status rural settlements.

The 3rd century sees a dramatic fall off in activity of most kinds within the HS1 transect—by the end of the 3rd century only six sites in Section 1 show any sign of occupation, mostly at a lower level than their respective Early Roman phases, for example at Thurnham Roman villa one of the central rooms of the main house was in use as a smithy in the late 3rd century (Lawrence 2006).

A large Late Roman crop-drier at Hazell's Road (part of the Northumberland Bottom Principal Site, near Springhead), stands out as the only exclusively Late Roman site on the whole Section 1 route (see Booth, Chapter 5). Masonry crop-driers/malting ovens were also built at Thurnham Villa and Northfleet Villa in the 3rd–4th century, suggesting a radical change in the organisation of the rural landscape in this period, and a focus of agricultural production away from small rural farmsteads to a small number of villa sites. While the degree of organisation and investment reflected in the appearance of crop-dryers/malting ovens implies continuing large scale demand for foodstuffs, this has to be set against widespread evidence for decline in rural settlement and small towns in the Late Roman period in Kent and the south-east England generally (see Chapter 5). Crop-drying is commonly used by modern farmers as a means of extending the harvest season at times of high labour costs, allowing the harvest to be gathered by fewer workers, and also reduces dependency on weather conditions for harvesting (Hellevang 1994). In a Late Roman context the appearance of such structures could perhaps be seen as evidence either for shortages in rural manpower or climatic deterioration, or both. Whatever the reasons, the ubiquitous appearance of such structures across much of southern Britain suggests that the changes extended far beyond Kent.

Northfleet Villa, strategically located near the Thames Estuary and Watling Street, is the only site in the HS1 transect which shows substantial evidence for development and continuing intensive settlement during the Late Roman period (Andrews *et al.* 2011). By the end of the 4th century it is difficult to find any clear evidence for activity within the HS1 transect, again with the probable exception of Northfleet Villa, which may have received pottery (but not coins) beyond the end of the 4th century. Possible residual activity is suggested at Springhead, on Section 2, and at Pepper Hill, Thurnham, Bower Road and Saltwood Tunnel on Section 1, most commonly evidenced by occasional finds of late 4th century coins from terminal contexts.

In the Early Anglo-Saxon period, activity appears to sink to a very low level, comparable in general terms with

early prehistoric levels, if not lower. Settlement contexts of the period are limited to sunken-featured buildings only broadly dated to the 5th–7th century, the majority of those concentrated in the Ebbsfleet Valley on Section 2 (Andrews *et al.* 2011). Nine sunken-featured buildings were found at Northfleet Villa alone, which is more than the rest of the HS1 route put together, although the artefact chronology, such as it is, suggests that there may have been a hiatus in occupation of perhaps fifty years in the 5th century between the Late Roman and Early Saxon occupation (ibid.). The construction of the Anglo-Saxon tidal mill at Northfleet Villa is dated by dendrochronology to AD 691–2, and it is thought to have had a short working life of about thirty years. It was apparently abandoned because of accumulating alluvial deposits in the Ebbsfleet Valley, which at some point after the mid-7th century cut the site off from tidal influence.

The chronology of the Anglo-Saxon cemeteries in the Ebbsfleet Valley broadly corresponds with the suggested settlement chronology. The cemeteries at Springhead, at the head of the Ebbsfleet Valley, are predominantly of 7th century date, but a cemetery believed to be of late 5th century date is known outside the HS1 excavations in the vicinity of Northfleet Church. The authors suggest that the evidence from the valley represents low density occupation, with a pattern of continuous shifting settlement within the Ebbsfleet Valley from the 5th to the mid-7th century (Andrews *et al.* 2011). In comparison, the Cuxton and Saltwood Tunnel cemeteries on HS1 Section 1 both appear to start in the late 6th century and continue through the 7th century. Of the three Anglo-Saxon cemetery sites identified in the HS1 transect, it is notable that Saltwood Tunnel is located near the Channel Coast, Cuxton is located on the River Medway and the cemeteries at Springhead in the Ebbsfleet Valley are located near the Thames Estuary, supporting indications that settlement by this period may have contracted into core settlement areas based mainly around the navigable rivers and the East Kent coastal zone.

The HS1 investigations tend to support the suggestion that the section of Watling Street to the West of Rochester, including the Ebbsfleet area, fell into disuse during the Saxon period, due to the inundation of river crossings along the Roman road due to rising water levels along the Thames and its tributaries. The route may only have been revived in the Late Saxon period due to the reuse of Rochester and Canterbury as *burhs* (fortified towns), part of a chain of defences against the Vikings linked to London. Documentary evidence suggests that the revived land route went from Strood via Gravesend to Dartford (Tatton-Brown 2001).

Although intriguing evidence for activity in the Mid–Late Saxon period was found at White Horse Stone and Saltwood Tunnel, very little Mid–Late Saxon settlement archaeology was identified in the Section 1 transect as a whole, or on Section 2 in the Ebbsfleet Valley for that matter. This was probably partly the result of the avoidance by the rail link route of historic village centres where evidence for Late Saxon rural settlement is perhaps most likely to be found, probably coupled with continuing low levels of rural settlement and agricultural activity in this period. It is probably no coincidence that one of the few sites with evidence for Late Saxon activity was found in the village of Mersham, which is the only point that the rail link route passes through a Domesday village centre. The fate of settlements in the Ebbsfleet Valley in the Mid–Late Saxon period is considered below.

Evidence for 11th–13th century settlement was considerably more common, with a peak in activity in the 13th century as shown on Figure 2.2(a). This appears to reflect wider patterns in the region and is perhaps best explained by an increase in temperatures in western Europe attributed to the 10th–13th century (Mann 2002; Mann *et al.* 2009). The key sites investigated include a moated manorial complex at Parsonage Farm and a variety of low status rural settlements, including three separate locations in the Northumberland Bottom site on the North Kent Plain. Tangible signs of settlement in the North Downs are elusive in this period as in others, but there is extensive evidence for an expansion of settlement in the Wealden Greensand Zone. A particularly notable feature is an expansion onto clay soils such as the Gault Clay strip and Atherfield Clay (see landscape zone discussion below). Non-settlement agricultural features also become more common in this period, such as a crop-dryer and a trackway marking a parish boundary at the White Horse Stone/ Pilgrim's Way site (Hayden 2006a). The drop in activity from the 13th century peak is clearly also a very widespread phenomenon, probably best explained as settlement contraction caused by population decline, possible causes being deteriorating climatic conditions at the start of the 'Little Ice Age' (Mann 2002; Mann *et al.* 2009), the successive impact of severe famines across north-west Europe in 1315–22 (Kershaw 1973; Jordan 1997) and the onset of the Black Death from 1348 (Horrox 1994).

The levels of activity thereafter remains low until *c* 1600, followed by a rapid increase through the post-medieval period, by which time the archaeological record includes increasing numbers of surviving standing buildings. The earliest historic building investigated is Talbot House, which originated as a Wealden Hall, probably in the late 15th century—Kent has numerous examples of such buildings which reflect late medieval and post-medieval colonisation of the Weald. Archaeological investigation of the building footprint found no evidence that the site had been occupied prior to construction of the hall (OA 2002). The chronology of this expansion is something of an anomaly, as the 15th century otherwise appears to have been a period of low and possibly declining population in the region. The fact that Kent, in particular between the Rivers Medway and the Stour in the Vale of Holmesdale, has more buildings of this type than anywhere in Western Europe suggests that particular regional economic factors are likely to be at play. The appearance of Wealden Halls has been associated with the rise of the economically independant Yeoman farmer in the aftermath of the Black Death. Historical analysis of available documentary sources for Kent suggests that the wealthy landlords of the late

medieval period (such as Christchurch, Canterbury), whose wealth was based predominantly in the North Kent Plain and the main river valleys, gradually withdrew from their interests in their outlying lands in the Weald. As they did so, individuals with initiative moved into the gap and exploited the natural resources of the region, particularly timber and firewood, for their own benefit. Iron production, tanning and cloth production also developed into significant industries in the Weald in the late medieval period (Pearson, 1994). Other buildings investigated along the route which date broadly from the 15th–17th centuries include Old Parsonage Farm, Old and Water Street Cottages, Brockton Farm and Bridge House, all of which are fairly typical rural domestic dwellings.

Agricultural buildings of the 19th century are represented by Yonsea Farm, a model farm built *c* 1820, which exemplifies the impact of the agricultural revolution on approaches to farming in Britain at the time, but is a rare example in Kent (OA 2000a). The range of archaeological features and buildings identified in the HS1 Section 1 transect broadens out beyond the agricultural for the first time in the late 19th and 20th centuries, encompassing small scale industrial sites such brick kilns and quarries (Askew 2006), as well as landscaped parks and gardens, railway infrastructure, and defence structures dating from World War II (MoLA 1999a, MoLA 1999b, OA 2000b, OA 2001b,). The intensity of late 19th–20th century activity is under-stated by a large margin on Figures 2.2–2.4, as the dataset only considers sites that were recorded as 'archaeology' along the rail link route. Historic buildings and landscape features investigated along the route are considered in the scores for each principal site, but other modern buildings and structures that were affected by the railway construction are not reflected in this dataset. Most obviously the route passes through the middle of the Ashford urban area, which was largely excluded from archaeological investigation.

The characteristics and chronology of the archaeology is discussed in the following section by landscape zone:

The North Kent Plain Landscape Zone (Zone 1)
(Figs 2.2(b) and 2.3 (a, b))
This landscape zone falls into two parts, firstly the Ebbsfleet Valley including Springhead and Northfleet Villa (which were excavated as part of HS1 Section 2 and are published in a separate series of volumes; Andrews *et al.* 2011); secondly the principal sites in the immediate hinterland of the Ebbsfleet Valley, namely Whitehill Road Barrow, Northumberland Bottom, Tollgate and Pepper Hill (Bull 2006a; Askew 2006; Bull 2006b; Davis 2006). Figure 2.2(b) models the changing intensity in the North Kent Plain Landscape Zone as a whole (including the Ebbsfleet Valley).

Ebbsfleet Valley (Fig. 2.3(a))
It has not been possible to incorporate detailed consideration of the Ebbsfleet Valley into the main chapters of this volume. Nevertheless it is important here to summarise the results and consider them in this discussion of landscape and chronology, as the Ebbsfleet completes the HS1 transect through Kent. Only there does the rail link pass directly through a site that can be described as major settlement, at least in the Late Iron Age, Roman and possibly the Early/Mid Anglo-Saxon periods. Even here the settlement sequence is not continuous. The scale of impacts caused by construction of the High Speed 1 Ebbsfleet International Station resulted in a very large, complex and intensive archaeological project, encompassing most of the valley (Andrews *et al.* 2011).

The Ebbsfleet Valley has produced evidence for an exceptional range and quality of archaeological material, some of it unique in character and concentrated in a small geographical area. In many respects the complexity of the main sites at Springhead and Northfleet Villa complements the predominantly rural, plough-eroded 'typical' sites that characterise the Section 1 transect. The valley bottom is infilled by a deep sequence of alluvial and colluvial sediments dating from the Pleistocene and Holocene, associated with internationally important archaeology of various periods. Headline discoveries include:

- a Clactonian (Lower Palaeolithic) elephant butchery site at Southfleet Road, dating from the Hoxnian Interglacial (*c* 400,000 BP); extensive geoarchaeological and palaeoenvironmental investigations elsewhere in the valley have helped to place earlier well-known Palaeolithic discoveries into context (Wenban-Smith *et al.* 2006).
- Neolithic, Bronze Age and Iron Age archaeology associated with palaeoenvironmental evidence from deep Holocene alluvial sediments in the valley bottom (principally along the KCC-funded South Thameside Development Route 4). These also provide a context for earlier important Mesolithic and Neolithic discoveries. It is much less clear with the prehistoric evidence whether discoveries are the result of preferential preservation in the alluvial sediments, or unusually intensive activity. As with the later periods it is perhaps most likely to be a combination of the two (Wenban-Smith *et al.* in prep.).
- extensive excavations at Springhead Roman temple complex, roadside settlement and waterfront (Andrews *et al.* 2011).
- extensive excavations at Northfleet Roman villa, including a major waterfront (ibid.).
- important new Anglo-Saxon sunken-featured buildings and cemeteries found in the valley at both Springhead and Northfleet, the most spectacular find being the best-preserved and earliest Anglo-Saxon tidal watermill found to date in the UK (ibid.).

The quantity and quality of archaeological evidence from the Ebbsfleet Valley in comparison with the more 'typical' range of archaeological sites found along HS1 Section 1 can be explained by a combination of factors.

The valley of this minor tributary of the Thames forms a 'sump' in the landscape, which has been subject to periodic tidal influence from the Thames. In the Mid-

Saxon period the valley bottom seems to have been subject to silting, which resulted in the Ebbsfleet no longer being navigable. Settlement shifted elsewhere leaving the valley bottom relatively undeveloped and undisturbed until large scale gravel and chalk extraction commenced in the early 20th century. The history of archaeological discovery in the valley begins at that point. In the areas that have survived the quarrying, the waterlogged deposits in the valley bottom provide exceptional preservation conditions, suitable for preserving organic artefacts and biological remains that are rarely preserved in archaeological contexts.

Unusually intensive human settlement within the valley, especially in the Late Iron Age, Roman and Anglo-Saxon periods, can probably be explained by the 'ecotonal' location of the valley, with ready access to an exceptional variety of environments and resources, including a spring-fed freshwater river, and the resources of a tidal estuary. The range of geology and soil types confined in a small area, including chalk ridges, gravel terraces and alluvium/marshland, would have supported a wide range of natural vegetation and crops. Waterpower could be harnessed directly, as the discovery of the Anglo-Saxon tidal mill demonstrates.

In addition the location formerly had exceptionally good communications via the Thames Estuary and Watling Street. The Ebbsfleet River is considerably smaller than the most of the rivers cutting the North Kent plain, and little more than a ditch today, but there is clear evidence from the Section 2 excavations that it formed a navigable link from the Thames to Watling Street in the Roman and Early–Mid Saxon period, serving substantial Roman waterfronts at Springhead and Northfleet Villa. A number of the Kentish towns which show the most convincing evidence for continuity of settlement from the Roman period—such as Eastry, Wingham, Canterbury, Faversham, Milton Regis, Rochester, Dartford and Crayford—are located along Watling Street, on watercourses cutting the North Kent Plain. Ebbsfleet, being in a comparable topographical position, could be regarded as the early phases of a Kentish town that never made it to the modern era, primarily because the watercourse on which it was located ceased to be navigable at some point in the Saxon period. The case of the Ebbsfleet emphasises the extent to which water courses, in particular navigable ones, are central to understanding the framework of the landscape of Kent. Ironically the construction of High Speed 1 has put the Ebbsfleet firmly back on the map as a key communication hub—most travellers in the ticket hall at Ebbsfleet International Station will be unaware that they are standing by the Roman waterfront at Northfleet Villa.

In spite of a dearth of Late Saxon archaeological evidence in the Ebbsfleet Valley, as in most of the rest of the HS1 route, there are documentary hints that the valley fell within large and important estates in the late 7th and late 8th centuries. Firstly, a late 7th century charter (dated AD 677, for 687 or 688) from Eorcenwold, bishop of the East Saxons, to the nunnery of Barking, grants privileges and confirms a grant of 40 hides (cassatae) at Swanscombe and Erith (among a list of other estates). The lands were apparently originally granted to the nunnery by King Æthelred of Mercia (Electronic Sawyer S 1246). The tidal mill at Northfleet Villa, it should be noted, lies close to the present village of Northfleet, but actually on the Swanscombe side of the River Ebbsfleet. It's construction is dated by dendrochronology to AD 691–2, just a few years after the date of this charter. Secondly a decree of the Synod of Clofesho dating from AD 798, refers to an estate of 60 hides ('cassati') called 'Fleet', among a group of North Kent estates involved in a transfer of property between Abbess Cynethryth of Cookham Abbey in Berkshire (widow of King Offa of Mercia) and Æthelheard, Archbishop of Canterbury (Electronic Sawyer S 1258). 'Fleet' is usually identified with Northfleet, which remained an important Canterbury manor until the dissolution of the monasteries. The estates mentioned in these charters appear much larger than the Domesday estates in the area (for comparison, of the three Domesday manors encompassing the Ebbsfleet Valley, Northfleet was assessed at 6 sulungs (or 12 hides) in 1086, Southfleet at 6 sulungs (or 12 hides) and Swanscombe at 10 sulungs (or 20 hides)).

Given the apparent size and importance of these estates in the late 7th and 8th centuries, it seems unlikely that the abandonment of the tidal mill and cemeteries in the Ebbsfleet Valley around the late 7th century reflects abandonment of the whole area. More likely, as the valley silted up there was a shift in focus to satellite settlements on either side of the valley, perhaps ultimately resulting in the definition of the smaller estates listed in the Ebbsfleet Valley area in the Domesday survey. By the time of the Domesday survey, and possibly earlier, the River Ebbsfleet was both a hundred and a lathe boundary—Swanscombe and Southfleet lie in the Domesday Hundred of Axtane, in the lathe of Sutton-at-Hone, whereas Northfleet lies in the Hundred of Toltingtrough, and the Lathe of Aylesford (Page 1932). Taken together these sources suggest at least one major episode of settlement and territorial reorganisation during the Mid–Late Saxon period.

The Ebbsfleet Valley example partly supports but mostly refutes the suggestion that the settlement patterns and estate boundaries apparent at the time of the Domesday survey are derived from Roman estate structures. A degree of continuity in the selection of core settlement sites between periods is to be expected, but this does not imply continuity in population, as rural population levels in the region may have fallen so low in the Late Roman period that it is entirely possible to envisage groups of Anglo-Saxon settlers in equally small numbers moving into vacant villa estates in the course of the 5th century. The Ebbsfleet Valley also supports Andrew Reynold's suggestion (see Chapter 6) that the framework of estate and territorial boundaries is likely to be a post-Roman imposition, subject to periodic reorganisation, notably in the Late Saxon period.

Hinterland of the Ebbsfleet Valley (Fig. 2.3(b))
The hinterland of Springhead lacks the alluvial sediments present in the Ebbsfleet Valley. The predominant geology is upper chalk overlain by head deposits (usually clay-with-flints) in some areas, and some areas of terrace gravel. The landscape is characterised by chalk ridges crossed by dry valleys infilled with colluvium. The A2 Watling Street runs immediately to the North of the rail link in this area. Downs Road and Wrotham Road, which cross the region from north to south, following the line of the major dry valleys, are believed to be examples of long-established routeways from settlements on the North Kent Plain to the Weald of Kent.

Figure 2.3b models the changing intensity of archaeological activity from the Early Neolithic to the present (excluding the Ebbsfleet Valley). This part of Landscape Zone 1 includes the Whitehill Road Barrow site, multi-period agricultural and funerary landscapes at Northumberland Bottom and Tollgate, and the Roman cemetery at Pepper Hill. There are no *in situ* Palaeolithic or Mesolithic finds from this zone. From the Early Neolithic the chronological profile of activity, as illustrated in Figure 2.3(b), is very similiar to that for the overall HS1 route described above (Fig. 2.2(a)). The archaeological evidence in total suggests a comparatively intensively settled landscape from the Early Bronze Age onwards, and a mixture of funerary and settlement features. There is an apparent gap in the earliest Iron Age, which may not be real (see Champion, Chapter 4), and a major spike in activity in the Early Roman period, emphasised by the presence of the Pepper Hill cemetery. Most of the other activity of this period was originally interpreted as rural settlement and agricultural activity in the Northumberland Bottom site report (Askew 2006), but recent excavations along the adjacent A2 Bean to Cobham Road Improvement discovered two very high status Early Roman burials in amongst enclosures that were previously thought to be agricultural in character, which has led to a general reinterpretation of the Roman landscape in this area (Allen forthcoming). As noted above and discussed in Chapter 5, the Hazells Road site is the only exclusively Late Roman site on the HS1 route, and one of only of only six or so showing any signs of activity beyond the 3rd century (Askew 2006; see Booth Chapter 5). In contrast with the Ebbsfleet Valley there is a complete absence of Anglo-Saxon settlement or burials in this zone. The medieval period is particularly well represented considering that the rail link deliberately avoids centres of historic settlement, with three separate activity areas of 12th–13th century date within the Northumberland Bottom Site Area, including a possible precursor to the modern Hazells Farm (Askew 2006).

The North Downs Landscape Zone (Zones 2–3;
Figs 2.2(c) and 2.3(c, d))

Zone 2—the North Downs dip slope (Fig.2.3(c))
This zone extends on either side of the Medway Gap where it cuts through the North Downs. The solid geology consists of the Upper Chalk of the North Downs overlaid locally by the silty sands and sandy clays of the Woolwich, Blackheath and/or Thanet Beds. The topography consists of undulating land on the northern dip-slope of the North Downs (see Fig 2.1) and broad dry valleys. In general, modern land-use corresponds with the type of topography and soil cover with pasture and fields in the dry valleys on soils derived from the eroded Thanet Beds, and coppiced or mature woodland covering the areas of higher ground that are capped with the Oldhaven, Thanet Beds and Glacial Head. Watling Street, and its successors, the A2 and M2 run through the Cobham Golf Course route section.

Zone 2 includes includes the Cobham Golf Course, Cuxton and Nashenden Valley Principal Sites. Figure 2.3(c) shows the chronological distribution of activity in this zone, which indicates low levels of archaeological activity in all periods, in spite of very extensive investigation. Earlier prehistoric archaeological features identified in this zone comprise a large ring-ditch, land divisions, a track or holloway, and occupation deposits spanning the Early, and Middle to Late Bronze Age, all found at Cobham Golf Course (Davis 2006), indicating a community sufficiently settled to invest in monument building, although settlement remains are slight. This site lies adjacent to Watling Street, which might indicate that the Roman Road in this section broadly follows the line of a long-established prehistoric trackway. The excavation at Cuxton included an Iron Age settlement and an Anglo-Saxon cemetery, but these were located on the north-west bank of the River Medway, which may have been the main determinant of settlement location in this case. There is hardly any evidence for Roman or medieval activity, which is a striking reversal of the pattern in the other zones. It should be noted that the area between Cobham Golf Course and Knight's Place Farm consisted of alternating cuttings and embankments, which allowed for the deeper deposits near to the valley floors to be preserved *in situ,* possibly masking archaeological features, but this does not effect the overall conclusions.

Due to the drainage characteristics of the chalk, the dip slope of the chalk downs is largely lacking in surface water, except for seasonal streams (winterbournes), and is physically separated from adjacent zones by the chalk escarpment. It may have been less attractive for settlement and agriculture for those reasons.

Zone 3—the North Downs escarpment (Fig. 2.3(d))
Zone 3 lies at the foot of the North Downs escarpment, on the eastern side of the Medway Gap, between 92m and 50m aOD (the top of the escarpment at Warren Road lies at 170m aOD). Below the escarpment, the ground descends gently to the west towards the Medway which, at its nearest, lies around 2km away. The scarp slope lies relatively close to the spring line at the foot of the escarpment, although no evidence for a spring was found in the HS1 excavation areas.

The underlying geology consists of Cretaceous Middle Chalk, with extensive drift deposits, mostly clay with

flints, covering the plateaux to the north and west (BGS 2010). Late Pleistocene and Holocene deposits filled the dry valleys forming stratified sequences, whereas the chalk ridges on either side had very shallow soil cover. A feature of the White Horse Stone and Pilgrim's Way sites was an extensive naturally occurring sarsen field in the dry valley bottom, redeposited by periglacial and solifluction processes, which presumably provided the raw materials for constructing the eastern group of the Medway Megaliths, which are clustered in the vicinity of the site. In later periods the sarsens seem to have been a significant obstacle to agriculture and much effort has been expended by farmers since the medieval period removing them from the ploughsoil (Hayden 2006a).

The White Horse Stone site is one of the few Section 1 sites from which significant evidence for the local environmental change was recovered along the HS1 route. In summary, the landscape contemporary with the Early Neolithic longhouse appears to have been covered with mixed woodland with some clearings. Most of the woodland was cleared progressively from the locality in the Late Bronze Age and Early Iron Age, resulting in an increase in colluvial erosion. Thereafter the site has retained its largely open, agricultural character, with woodland remaining on the Downs above (Giorgi and Stafford 2006).

This zone includes the White Horse Stone, Pilgrim's Way, Boarley Farm East and West principal sites, all of which are reported together in the 'White Horse Stone' integrated site report (Hayden 2006a). Figure 2.3(d) shows the chronological distribution of activity in this zone. The values are low because this is a very short route section with only a small number of fieldwork events, although these were extensive excavation areas. The graph shows unusually high levels of earlier prehistoric settlement from the Early Neolithic, with an almost continuous sequence of activity, reflected in both the radiocarbon dates and ceramic chronology. A succession of Neolithic settlements, including two Early Neolithic longhouses, and an extensive Iron Age settlement on the chalk ridge to the west of the dry valley make this site highly unusual for Kent and suggest that this was a location of great importance for prehistoric communities. The Late Iron Age and Roman periods are poorly represented in comparison with other landscape zones, although occasional features and finds from an extensive buried soil within the dry valley indicate that the area remained under cultivation. Anglo-Saxon evidence was unusually extensive in this zone—animal burials and other features suggest very rare evidence for Middle Saxon activity in the West of Boarley Farm excavation area (identified by radiocarbon dating and a small number of pottery sherds), although the nature of the site is unclear. Medieval remains include further non-settlement activity at White Horse Stone—a crop drier and a trackway on the parish boundary between Aylesford and Boxley.

The zone at White Horse Stone lies at a crossroads of great antiquity, although the exact alignment of the roads and tracks at this location have changed several times over the centuries. HS1 excavations at the crossroads have shown that the route of the Pilgrim's Way at this point has been in existence since the Early or Middle Anglo-Saxon period, following a roughly NW-SE route along the base of the North Downs escarpment. An isolated burial of a woman radiocarbon dated to the Mid–Late Saxon period was found beside the crossroads. The Roman road from Rochester to Hastings via Maidstone and the Weald, follows a north-south route along the eastern flank of the Medway Valley. This route has been in existence on this general alignment since at least the Roman period. The line of the road was recognised in the excavations as a pair of ditches running along the bottom of the dry valley, dated by pottery finds and the relative position of the ditches in the stratigraphic sequence of colluvial sediments (Hayden 2006a). Paul Garwood (see Chapter 3) suggests that there may have been a track on this alignment as early as the Neolithic period, based on the linear arrangement of Late Neolithic structures along the dry valley in exactly the same alignment. The trackway was diverted at some point after the Roman period by a track which approached the escarpment via the chalk ridge to the west of the dry valley. Further re-alignments include a late 18th-century turnpike road and the late 20th century cutting of the A229. The HS1 designers, faced with similar geographical constraints, chose to cut a tunnel directly through the chalk escarpment.

The chronological distribution of archaeological activity in this zone appears almost the opposite of the settlement peaks and troughs observed elsewhere along the HS1 route. The main peaks in this zone occur in the Early and Late Neolithic, the Early Iron Age, and the Mid-Saxon periods, periods which are all very rare along the HS1 route as a whole, whereas the usual peaks in activity in the Middle Bronze Age and Late Iron Age/Early Roman periods are much less marked. This anomaly perhaps hints at a completely different pattern of landscape use in the periods of lowest activity levels, which is discussed further below, or it could simply reflect a preference for settlement along the chalk escarpment in those periods. In any case White Horse Stone is clearly not a typical location and it is difficult to say how representative it is of activity along the chalk escarpment.

The Wealden Greensand Landscape Zone (Zones 4–8) (Figs 2.2(d) and 2.4)

Zone 4—Gault Clay strip/Vale of Holmesdale (Fig. 2.4(a))
The HS1 route from Sittingbourne Road to Crismill Lane lies *c* 1km south of, and parallel to, the North Downs on Gault Clay with localised overlying areas of Chalk Head. A drift deposit of yellowish-brown silty clay with flints covers the solid geology to varying depths (BGS 2010). A gently undulating landscape typical of downland areas characterises the route along the foot of the North Downs. The extensive historic woodlands of Horish Wood and Honeyhills Wood are located within this Zone.

Figure 2.4(a) shows the chronological distribution of activity in this zone, which includes the West of Sittingbourne Road and Thurnham Roman Villa/Hockers Lane principal sites (URS 2000a; Lawrence 2006). This zone is notable for a general scarcity of earlier prehistoric activity, with the only significant exception being a Middle Bronze Age 'waterhole' near Thurnham Roman Villa, dated by metalwork finds and radiocarbon dating. A Mid–Late Iron Age rural settlement at Hockers Lane is the earliest evidence for settlement found, predating the earliest activity at Thurnham Villa for the most part, with occupation extending up to the Roman conquest period but not much beyond. The evidence suggests that Thurnham Villa was initially established as a typical Iron Age enclosed farmstead in the 1st century AD, was rebuilt in Roman style as a 'proto-villa' shortly after the Roman conquest and developed to its full extent by the mid 2nd century. Occupation of the site continued until at least the end of the 4th century, although there is no indication of high status occupation after the early 3rd century. Trenching and watching brief work within Honeyhills Wood, which abuts the villa complex on two sides, found no evidence for Roman features extending into the woodland, which suggests that it may have been in existence at the time (Lawrence 2006). Palaeoenvironmental data from a well within the villa complex suggests that the feature was surrounded by trees by the time and was in-filled in the late 4th century. After the end of the Roman period there is no further evidence for occupation or land-use until the establishment of the former Corbier Hall moated manor (SAM KE 309) on the low lying ground to the east of the former villa. Evidence from this area included peripheral features of the moated manor, containing artefacts of 12th to 13th century date.

Elsewhere within this zone, a small 11th–13th century site of uncertain character was found near the parish boundary between Boxley and Detling to the west of Sittingbourne Road, which also seems to have built originally in an area of historic woodland (URS 2000a).

The evidence from this zone suggests that the settlements were relatively short-lived foundations carved out of predominantly wooded areas during the usual main peaks in settlement activity, with little or no evidence for continuity between periods. There is slight evidence for land-use in the Bronze Age, with the main peaks occurring in the Late Iron Age/Early Roman period and early medieval periods respectively. The foundation of Thurnham Villa and Corbier Hall at different locations suggests that they reflect independent episodes of expansion into areas of woodland/clay soils, probably in times of high population pressure. It is interesting that in both of these cases the settlements appear to be relatively high status ones from the outset. Perhaps colonisation of this kind in both periods required a degree of initial investment only possible for those with access to considerable surplus resources. Further research a little way to the north, around the Springline near the modern villages of Thurnham and Detling, would be particularly helpful in placing these sites in their broader landscape context.

Zone 5—the Len and West Stour Valleys (Fig. 2.4(b))

This zone follows the narrow band of the Folkestone Beds, bordered to the north by Gault Clay and to the south by the Hythe Beds, and is covered by silty sand soils (BGS 2010). It is situated just over 1km south-west of the North Downs escarpment, in an area of gently undulating land, between *c* 50–60 m OD, which descends gradually towards the river Len. Occasional tributary streams drain from the spring line below the escarpment. Historic woodland occurs extensively, including Snarkhurst Wood and Hurst Wood. The River Len drains towards the Medway Valley, and the headwaters of the river Stour also rise in Lenham parish, draining eastwards towards Ashford. The poor acidic soils are not well suited to arable farming, although this would not necessarily have been a concern to hunter-gatherer and pastoralist communities.

Figure 2.4(b) shows the chronological distribution of activity in this zone, which is the most extensive of the zones at 13km long, but also subject to the least intensive investigation. It includes the principal site of Sandway Road (Trevarthen 2006), a major Mesolithic occupation site, with some Neolithic and slight evidence for Bronze Age activity. Eyhorne Street (Hayden 2006b) is difficult to characterise due to the limited area exposed and ephemeral nature of the remains. It has features and artefacts mainly dating from the Neolithic and the Iron Age, but with a long prehistoric ceramic sequence suggesting a persistent use of the site over a long period. South of Snarkhurst Wood (Diez 2006c) had slight traces of Mesolithic, Early and Middle Bronze Age activity, but most of the evidence related to Late Iron Age/Early Roman rural settlement. Chapel Mill (URS 2000c) included a single Bronze Age feature and a series of Late Iron Age boundary ditches. The Hurst Wood principal site serves as an umbrella for various scattered groups of features of various date, with no well-defined site focus. The most tangible evidence in this route section was from a Late Iron Age/Early Roman trackway investigated at East of Newlands.

The general impression is of a landscape in sporadic low intensity use, but with certain locations revisited repeatedly over a long period of time. There are slight peaks in activity in the Middle Bronze Age and Late Iron Age/Early Roman period, small groups of features of these dates often occurring in conjunction at the same location. Examples of this phenomenon were found at Chapel Mill (URS 2000c) and Hurst Wood (URS 2001b) in Zone 5, and in other zones in the Wealden Greensand, as discussed further below. It is difficult to explain unless the general framework of the landscape—in particular local trackways—remained in continuous use in the intervening period, so that Roman inhabitants moving around within a territory looking for the optimum location for a particular activity, would tend to make the same decision as their Bronze Age predecessors. The Early Roman peak in activity is less marked here than in most of the other zones. No evidence at all was found for Late Roman, Anglo-Saxon or medieval activity in this zone. Core settlement areas for later periods are more

likely to be found close to the Spring Line to the North, near the medieval settlements at Harrietsham and Lenham (the latter settlement dates back at least to the early 9th century on the basis of charter evidence).

The standing building investigations at Old and Water Street Cottages and Brockton Farm fall within this zone. The construction of these timber framed rural dwellings in the 17th century may reflect an expansion of settlement into more marginal land in response to wider population pressure and economic changes in that period.

Zone 6—the West Stour Valley (Fig. 2.4(c))

The zone is located between the North Downs escarpment and the River West Stour, north-west of Ashford and is very similar in its geological, topographical and land-use characteristics to Zone 5. The main difference is perhaps in its proximity to the Great Stour Valley, which cuts a gap through the North Downs to the north-east. The route in this section follows the Folkestone Beds, which are bordered to the north-east by Gault clays and overlain by sandy silt soils (BGS 2010). The River Stour is typically *c* 1km south-west of the HS1 route in this zone and several tributary streams drain towards the river. Typical modern rural land-use is predominantly pasture. To the south of Tutt Hill is Beechbrook Wood, where the remains of an ancient coppice woodland survive. Further remains of ancient woodland in the vicinity include Ripple Wood, Balls Wood, Lodge Wood and Godinton Park to the south. The cultivation of chestnut coppicing was, historically, a common way of utilising the poor acidic soils of the area. Most of the excavated sites in this zone lie within the parish of Westwell. The village lies to the north of the rail link at the foot of the Downs escarpment in an area with numerous springs (which are believed to give the settlement its name).

Figure 2.4(c) shows the shows the chronological distribution of activity in Zone 6. Principal sites in this zone include multi-period remains of Mesolithic to Early Roman date at two separate locations within the Beechbrook Wood excavation area (Brady 2006a); a Bronze Age barrow cemetery and Early Iron Age field system at Tutt Hill (Brady 2006b); a Late Iron Age/Early Roman ironworking site at West of Leda Cottages (Diez 2006a); a second site of similiar date but indeterminate function at Lodge Wood (URS 2000d); a medieval moated manor at Parsonage Farm (Hill 2006); and a 19th century model farm at Yonsea Farm (OA 2000a).

A low but persistent prehistoric presence is suggested from the Early Neolithic, which increases significantly in the Late Neolithic/Early Bronze Age with the construction of a series of round barrows at Tutt Hill and Beechbrook Wood respectively.

The appearance of small scale Late Iron Age/Early Roman ironworking sites at Leda Cottages and Beechbrook Wood is of particular interest in building up a picture of the important ironworking industry of the period, located in the Weald, *c* 15km to the south. The Roman small town at Westhawk Farm, just to the south-east of Ashford, appears to have been an important centre for the industry (Booth *et al.* 2008).

The extensive size of the Beechbrook Wood site has resulted in the identification of two spatially separate locations within the excavation area (*c* 700m apart), both of which appear to have been occupied at least sporadically from early prehistory to the 3rd century AD. If the medieval and post-medieval settlements at Parsonage Farm and Yonsea Farm are considered successors to these settlements, it is possible that we have here something approaching a representative settlement sequence for the Wealden Greensand zone. It appears not to be a continuous sequence however, and is worth outlining here in some detail for that reason. The Beechbrook Wood site is located on a spur projecting from the North Downs, overlooking the Great Stour Valley, between two tributary streams (Brady 2006, fig. 2). It is possible that each of the locations relates to one of the streams.

The northern location includes one of only three *in situ* assemblages of Mesolithic flint from the HS1 route, probably a short-lived camp site dating from the Late Mesolithic (6500–4000 BC). After a substantial gap in evidence the next recognisable phases comprise Late Neolithic and Early Bronze Age pits and ring-ditches, then a distinct phase of Mid to Late Bronze Age settlement and slight traces of co-axial field system, thought to have been laid out at some time between the Late Bronze Age and Late Iron Age. However, there is no direct evidence for Early or Middle Iron Age activity at this location.

A minor Late Iron Age/Early Roman settlement with evidence for ironworking was established, probably in the 1st century BC or 1st century AD, which would have been contemporary with a brushwood platform uncovered on the bank of the nearby stream in the adjacent Parsonage Farm excavation (Hill 2006). The pottery associated with this activity is mainly Late Iron Age in date but includes post-conquest material that could extend as late as the 2nd or 3rd century AD. The range of types present indicates that the inhabitants were of low status. There is then a long hiatus in activity, probably from around the 3rd century AD until the early medieval period. The latest activity within the Beechbrook Wood excavation are fragments of ditch containing 13th century pottery in the northern edge of the site near the documented medieval settlement of Parsonage Farm. The Parsonage Farm excavations revealed a moated manorial site initially constructed next to the northern stream in the late 12th century (see Munby, Chapter 7). It was completely reconstructed in the mid- or late-13th century and occupation thereafter continued into the 14th century, possibly as late as *c* 1380. The rectory was appropriated to Canterbury Cathedral in 1397 and Parsonage Farm was subsequently leased out to farmers and the site may have been abandoned until a new farm was built on the opposite side of Water Lane in the 16th century. Late medieval and post-medieval was not recognisable archaeologically within the Parsonage Farm site and may have been ephemeral in nature, although a 19th-century smithy was uncovered outside the northern moat.

The earliest evidence at the southern location includes Late Neolithic/Early Bronze Age ring-ditches, and a distinct phase of Mid to Late Bronze Age settlement. Unlike the northern location this site has a definite Iron Age phase, one of the few examples of Middle Iron Age settlement in the HS1 transect, consisting of a series of enclosures familiar from examples in other parts of southern England, but so far unique in Kent (see Champion, Chapter 4). A Late Iron Age or Early Roman cemetery was established near the enclosure entrance, which seems to have continued in use to some extent, although there is no sign of settlement during this phase. As with the northern location there is a long hiatus after the Early Roman period. The latest activity at the southern location are fragments of ditch dating from the 13th century, found along the southern edge of the site, in the vicinity of Yonsea Farm. This Farm is first referred to in documentary sources dating from the 13th century (Walker 1998). There is no archaeological or documentary evidence for its subsequent history, until it was rebuilt in the 1820s as a model farm.

The evidence from this zone, in particular Beechbrook Wood, clarifies the evidence from less extensively excavated locations elsewhere along the route. There appears to be a degree of continuity between periods in the choice of location, but considerable gaps in the chronological sequence, and practically no continuity in the range of activities represented. The hiatus from around the 3rd century to the 13th century is striking and reinforces a general pattern in the HS1 data. The re-establishment of settlements in the early medieval period, peaking in the 13th century, is also seen more widely in the HS1 data, especially the North Kent Plain at Northumberland Bottom.

As discussed further below, the repeated return to these two general locations in spite of lengthy periods of apparent inactivity is most easily explained if the framework of topographically constrained trackways remained in more or less continuous use. There is no evidence for such a trackway within the excavated area, but the present Water Lane, which follows the northern of the two streams flanking the site, is a prime candidate for a long-established route that has survived into the modern era. It runs from the crossroads and springline settlement at Westwell and southwards to the River West Stour.

Beechbrook Wood may be a fairly typical site sequence for this landscape zone. Hints of similar sequences are apparent elsewhere along the rail link at numerous locations within the Wealden Greensand. The chronological sequences vary in completeness but most include superimposed evidence for Mid–Late Bronze, Late Iron Age and early medieval activity, coinciding with the main peaks in settlement activity shown on Figure 2.2(d). In this case the very extensive investigation area has allowed a more complete view of the development of the landscape. The presence of Mesolithic and Iron Age Phases, which are rare in the HS1 transect generally, perhaps suggests a more intensively used location than most. The site lies close to the gap through the North Downs created by the River Great Stour, so may have lain along a particularly favoured and long-established routeway.

Zone 7—the East Stour Valley (Fig. 2.4(d))

The geology of this zone is varied, but generally crosses the southernmost fringes of Cretaceous Lower Greensand Hythe Beds which overlie Atherfield Clay of the same geological period (BGS 2010), the Atherfield Clay being the predominant geology encountered in most of the excavation areas (there are exceptions, noted below). To the south of the rail link the drainage pattern is dominated by the west-flowing East Stour River, which converges with the Great Stour at Ashford. Various minor tributary streams flow southwards to meet it. Ashford was not subject to archaeological investigation as the rail link made use of the existing London to Folkestone railway line through the town. Consequently this zone begins to the east of Ashford in the vicinity of Boys Hall Road.

Principal sites in this zone included excavations at Boys Hall Balancing Pond (URS 2000a), Church Lane/East of Station Road (URS 2000f), West of Blind lane (URS 2000g), Mersham (Helm 2006), Bower Road (Diez 2006b), Little Stock Farm (Ritchie 2006) and North of Westenhanger Castle (Gollop 2006). This zone also includes building investigations Numbers 2 and 4 Boys Hall Road, Bridge House and Talbot House (OA 2002; OA1999b; OA 1999c).

At Boys Hall Balancing Pond a single sherd of Late Bronze Age pottery provides very tenuous evidence that a series of ditches on the same alignment may be part of a Bronze Age field system. Later ditches and a group of cremation burials date from the Late Iron Age and Early Roman phase, and it is clear from previous investigations that this site is part of a more extensive landscape of this period (Booth and Everson 1995). The site lies next to Boys Hall Moat (Kent SAM 146), which was the site of the manor of Sevington, probably dating originally from the 13th century.

Church Lane produced surface scatters of Mesolithic and later prehistoric flints on the margins of the stream, and two Middle or Late Bronze Age ditches draining towards the stream. On the opposite side of the same stream, at East of Station Road, the main phase of activity comprised drainage ditches dating to *c* 100BC–AD100, with hints of contemporary occupation in the corner of one of the enclosures. Some useful palaeoenvironmental data was recovered from a trench in the adjacent stream valley bottom. The branch of an oak tree recovered from near the base of the sequence produced a Mesolithic radiocarbon date (7060–6680 cal BC; NZA-12234), while the upper part of the sequence was associated with Late Iron Age/Early Roman pottery. Assessment of the pollen, although not studied in detail, broadly suggests an environment of damp grassland in this valley bottom location, with some arable components, contemporary with the Late Iron Age/Early Roman activity. There is some evidence for re-colonisation by alder carr woodland in the subsequent period,

which was not dated. Post-medieval drainage ditches were also present.

Little Stock Farm included isolated pits of Middle Neolithic date and two pits of Late Bronze Age to Early Iron Age date, one containing several pots in a placed deposit. However, most of the evidence was of Iron Age date, comprising enclosures, droveways and a small enclosure containing a possible roundhouse, as well as two burials. A single probable sunken-featured building of Anglo-Saxon date was found, one of the very few from the HS1 Section 1 route. The latest activity comprised a medieval quarry and ditches.

The sequence at Bower Road may represent a shift in settlement from Little Stock Farm, as the sites have no chronological overlap and are only 400m apart. Apart from a small assemblage of redeposited worked flint, ranging in date from the Mesolithic to the Early Bronze Age, the main element of the site is a Late Iron Age/Early Roman settlement with a peak of activity in the 2nd century AD. The site is distinguished by large rectangular posthole buildings, which suggest that it may be the outskirts of a villa (see Booth, Chapter 5). This agricultural complex seems to have been in use until the late 3rd century and, unusually for the rail link sites, may have continued into the 4th century, although at a much reduced level.

The excavations at Mersham are important as the only excavation on the HS1 transect which took place within a medieval village centre, and one of the very few to produce evidence for Late Saxon activity (Helm 2006). The excavation was located in a pasture to the south of the church of St John the Baptist. The village lies on the north bank of the East Stour, on a slight spur formed by the Hythe Beds. The Late Saxon features comprised five pits and a shallow gully containing smelting and smithing waste (see Reynolds, Chapter 6). The date range of the pottery starts *c* AD 950 and the latest evidence from the excavation included domestic and metalworking activity dating from the 11th to mid-12th century. Documentary evidence confirms that Mersham was a market and an important manor in the hands of Christ Church, Canterbury, iron forming part of its dues (Riddler, in Lawson and Killingray 2004).

Archaeological and standing building investigations at Bridge House Mersham suggest a late 12th to 14th century occupation phase underlying the building including postholes, pits and a gully. Further archaeological evidence suggests that Bridge House was built towards the end of the 17th Century, and it thereafter continued to be used and modified to the present. The latest phase in its development (which may test the skill of future archaeologists) involved underpinning the building and sliding it 50m away from the railway cutting.

Taken together, the chronological range of sites encountered in this zone is markedly different from those in the other zones in the Wealden Greensand. It is possible to suggest that Little Stock Farm, Bower Road and Mersham (including Bridge House) together represent an almost continuous sequence of activity in the valley of the East Stour from the Late Bronze Age to the present, with hints of more sporadic occupation extending back to the Middle Neolithic (to the Mesolithic if surface artefact scatters are taken into consideration). These three sites are all significant settlements located close to the river within 1km of each other—it is not impossible that they represent a single settlement that has periodically relocated along the valley. The usual problems of identifying Early–Middle Saxon activity result in very little evidence from this time, although Little Stock Farm includes one of the very few sunken-featured buildings from the rail link route and this zone is just a few miles from the Anglo-Saxon cemeteries and probable hundred meeting place at Saltwood Tunnel (see below). It is particularly striking that the only rail link investigations within a medieval village centre has provided the only uninterrupted settlement sequence extending from the Late Saxon to the present day. The reasons for this unusually complete chronological sequence may well lie in the proximity of the rail link route to the East Stour. Part of the explanation may also lie in the soils, which are particularly varied in this area, but dominated by Atherfield Clay. The sites are also within a few km of Folkestone and the Channel Coast to the south and east, as well as being in the hinterland of Ashford and its possible Roman predecessor at Westhawk Farm.

Zone 8—the channel coast (Fig. 2.4(e))

The solid geology in this zone comprised the Folkestone Beds, typically friable quartz-sands, sometimes interbedded with seams of pebbles or clay, or with sheets of glauconitic calcareous sandstone known colloquially as ragstone (BGS 2010). Across the zone the upper exposure of Folkestone Beds had weathered to unconsolidated and often highly mobile sands, and ragstone sheets outcropped in its north-west corner. At the eastern end of the zone a bed of fossiliferous clay-marl gave rise to heavy clay-rich soils.

North of the M20, the natural dip-slope of the Greensand and the overlying Gault Clay form a broad, shallow and predominantly dry vale, beyond which the steep chalk scarp of the North Downs rises to Tolsford Hill *c* 1.1km away.

This zone includes just the Saltwood Tunnel principal site, which investigated a *c* 0.8km long transect across the broad, flat top of a spur known as the Saltwood plateau. West of Folkestone several deeply incised north-south aligned valleys dissect the coastal exposure of the Greensand, and the Saltwood Tunnel site lies between two of these valleys (Sandling to the west and Dolland's Moor to the east). Much of the site lay at *c* 95m aOD although ground dipped locally to *c* 91.5m aOD at its far-western end. The southern edge of the Saltwood plateau drops irregularly and sometimes precipitously southward towards Saltwood village and, beyond that, to the steep ancient cliff-lines at Hythe. A localised coombe bifurcates the southern edge of the plateau and this appears to have facilitated access from the south since prehistoric times. More recently the coombe carried a

single-track road linking Saltwood village with the A20 at Stone Farm. The site contained no natural water sources and no groundwater was encountered during excavation. However, springs arising at the foot of the North Downs feed a small stream (the Slay Brook) which discharges past Dolland's Moor *c* 0.4km east of the site.

A complex multi-period site was revealed, with evidence for ceremonial and funerary land use as well as for settlement and agriculture. It is worth summarising the sequence in some detail as this site provides the best example from the HS1 transect of continuity in the evolution of a local landscape (see Riddler and Trevarthen 2006 for further detail).

Activity earlier than the Bronze Age was mainly restricted to unstratified or residual flint and pottery, but a group of eight Mesolithic Horsham-type retouched points was found in a small pit-like feature and three Early Neolithic pits were identified. In the Early Bronze Age a barrow cemetery consisting of five barrows and a flat grave developed. Limited Middle Bronze Age evidence suggests that the barrow cemetery was respected until the late 2nd millennium BC but, in the Late Bronze Age, a settlement and field-system were established. Early to Middle Iron Age agriculture is also attested, while in the Iron Age an inhumation cemetery and a square enclosure, perhaps a mortuary enclosure, were established at some time between the 8th and 4th centuries BC, although no contemporary settlement remains were discovered. A Middle Iron Age inhumation grave of 2nd to 4th century BC date also lay near the western end of the site. Early Roman domestic finds abounded at the western end of the excavation, and together with the presence of two small cremation cemeteries strongly suggests that a small rural settlement lay close by. That this settlement waned after the mid–late 3rd century is inferred from a greatly reduced suite of remains.

Early Anglo-Saxon evidence from Saltwood Tunnel is dominated by three separate inhumation cemeteries (217 burials), each located in the vicinity of a Bronze Age barrow, and dating to the 6th–7th centuries (with two cemeteries in use at any one time; see Reynolds, Chapter 6).

Several early medieval ditches and pits mark the location of a small rural site, probably 10th or 11th century in date. Other medieval and post-medieval pottery was recovered from features and topsoil in the north-western corner of the excavation, where elements of the ancient Roman landscape may have been exploited as rectilinear fields, or possibly stock-pens. Remains associated with construction of the Saltwood railway tunnel in the early 1840s and relating to the presence of a military barracks in the earlier 20th century were also discovered.

Although many phases of landuse have been identified on the Saltwood plateau, it is not necessarily possible to conclude that this represents continuity of occupation, or that earlier landscapes were necessarily maintained by later generations. Revealed instead are a number of abrupt discontinuities of landuse, some of them chronological whilst others mark significant re-ordering of the landscape. The later 2nd millennium BC, for example, witnessed a transition from Early and Middle Bronze Age funerary use to secular Late Bronze Age agriculture and settlement. A similar situation was also seen at Tutt Hill near Ashford in Zone 6 (Brady 2006a).

The Late Bronze Age landscape was, in turn, overwritten by evidence for Early–Middle Iron Age agriculture, with an imprint of trackways and enclosures that has shaped the area to the present day, and the Late Iron Age to Early Roman period saw the growth of a rural settlement, probably on a minor local routeway. In the Anglo-Saxon period the site reverted again to funerary use, albeit with a settlement to the north, largely beyond the limit of excavation. The presence of Middle Anglo-Saxon occupation is important in local terms, lying as it does between a small port at *Sandtun* to the west, and further rural settlement at Dolland's Moor to the east.

The early medieval evidence from the site is not easily interpreted, but suggests that, by the time of the Norman Conquest, the Anglo-Saxon cemeteries were forgotten, or irrelevant, and that the plateau had, at least in part, reverted to agricultural use.

Some aspects of landuse did, however, exert a repeated influence on the organisation of later landscapes and, perhaps most notably, the Early Bronze Age barrow cemetery. The earthworks of at least three barrows may have influenced the alignment of the Iron Age and Roman trackways, while the placing of 6th to 7th century burials, some of high status, in direct association with three of the barrows conforms to a nationally observed tradition (Williams 1997). The large pen-annular ring-ditch 10045 around grave C1081 seems to have been appended to an existing barrow ditch, and it is perhaps significant that at least two of the cemeteries lay at the intersections of the barrows with Iron Age or Roman tracks. One of these tracks was perpetuated into the modern era, and was recorded as a bridleway on the early edition Ordnance Survey mapping. It is suggested here that the bridleway was visible as a feature in the Early Anglo-Saxon period, and was still used as a routeway. The central cemetery was sited at the head of a small coombe, which has probably facilitated north–south movement over the Greensand escarpment since at least the late prehistoric period. In the Anglo–Saxon period, this route may have formed part of an important link between the manor of Saltwood (immediately to the south) and the royal manor of Lyminge to the north. Burial on and around barrow mounds at a prominent topographic point on such an axis may have carried significant prestige, and it may be no coincidence that the most lavishly furnished Anglo-Saxon burials were established parallel to this route (see Reynolds, Chapter 6 for further discussion).

Continuity in patterns of settlement and routeways

It is clear from documentary studies, for example from the mapping of settlement and population as deduced from the Domesday Survey, that early medieval settle-

ment in Kent was predominantly concentrated in the North Kent Plain, broadly along the line of Watling Street and on the Isle of Thanet, with another band of settlement along the foot of the North Downs escarpment. A larger concentration of population in East Kent is apparent, while the Weald was an area of secondary and tertiary settlement, much of which was only colonised in the late medieval and post-medieval period, but which was used in the Late Saxon period for swine pasturage and as a source of timber, and as hunting grounds. The line of settlements along the springline at the foot of the North Downs escarpment, which are of central importance to the HS1 transect, are also core settlements, most of which were in existence at the time of the Domesday Survey, and some of which can be traced back at least to the Late Saxon period in other documentary sources (eg Lenham and Charing). It has long been suggested that the majority of historic roads in Kent run broadly from north-east to south-west, from the North Kent Plain to the Weald of Kent (eg Witney 1976; Everitt 1986) linking areas of primary settlement with pastures and woodland in the North Downs and the Weald. These are crossed by a much smaller number of long-distance north-west to south-east routes of varying degrees of antiquity, such as Watling Street and the Pilgrim's Way. A key question for the HS1 project is the extent to which this pattern is real and whether it applied in earlier periods.

The one really major problem with the transect is that, for the most part, it deliberately avoids historic centres of settlement. This leaves us wondering how typical the range of archaeology found really is. If the comparative scarcity of Saxon, medieval and post-medieval settlement evidence along the rail link route can be at least partly explained by its avoidance of historic centres of settlement, can the same be said of earlier periods?

In the eastern part of the route, the historic village centres for the most part lie to the north-east of the rail link, on or near the spring line at the foot of the North Downs escarpment, which are intrinsically likely locations for early settlement (eg Detling, Thurnham, Hollingbourne, Harrietsham, Lenham, Charing, Westwell, Sevington, Smeeth, Sellindge and Stanford). Only at Mersham, located on the River East Stour rather than the spring line, was there an opportunity for investigation along the rail link route in the immediate vicinity of a Domesday village centre. Perhaps unsurprisingly it was the only location which revealed a continuous sequence of occupation from the Late Saxon period through to the modern (taking the Mersham and Bridge House investigations together).

The White Horse Stone sequence, if it is a typical settlement location at all, suggests that some of the more elusive archaeology, of Neolithic, Early Iron Age and Middle Saxon date, should be sought along the foot of the chalk escarpment, quite likely at Spring sites underlying the medieval and later settlements. In the Roman period the HS1 data in isolation appears to show rural settlement declining dramatically in the 3rd and 4th centuries AD, but it is plausible that core settlements were located along the springline throughout the Roman period, in which case the decline may not have been as severe as it appears in the HS1 data. Clearly this raises questions for future research that can only be addressed through investigation along the springline.

The chronology of settlement in the Wealden Greensand suggests that this zone is not and never has been a preferred settlement area. Settlements occur, but the HS1 evidence suggests that they are generally short-lived and coincide with periods of apparently high levels of settlement activity throughout the transect, most commonly the Middle Bronze Age, Late Iron Age/Early Roman period and early medieval period. There are distinct signs of occasional expansion onto clay soils, carved out from woodland, including Thurnham in the 1st century AD, Corbier Hall and Boys Hall in the 12th–13th centuries. These examples are relatively high status settlements, perhaps reflecting the level of investment involved in clearing and preparing the ground for agriculture. On the whole the range of features encountered in each period is similar to other zones. There are few clear examples of activities particular to the Wealden Greensand. Possible examples include the Iron Age enclosure at Beechbrook Wood which is unusual for the region and suggestive of a livestock corral, and small scale Late Iron Age/Early Roman ironworking sites at Leda Cottages and Beechbrook Wood (Brady 2006), outliers of the main Wealden ironworking industry of that period. The significance of Talbot House Wealden Hall is discussed above.

It was observed at a number of sites that Middle or Late Bronze Age features were found in close conjunction with Late Iron Age/Early Roman features, with no evidence for occupation in the intervening periods. Examples of this phenomenon were found at South of Snarkhurst Wood, Chapel Mill and Hurst Wood in Zone 5, and West of Blind Lane and Church Lane in Zone 7. However, this is very likely a factor of the narrow transect investigated—further phases may well be found just outside the rail link route on either side. Beechbrook Wood (described above) provides perhaps the most typical and complete model for settlement patterns in the Wealden Greensand due the very large area investigated.

There are several sites in the HS1 transect where the origins of trackways have been subject to archaeological investigation. Perhaps the most convincing evidence for continuity in a network of local trackways comes from Saltwood Tunnel (Riddler and Trevarthen 2006) where it appears that the network of local trackways mapped by the 1st Edition Ordnance Survey in the late 19th century is much as it was in the Iron Age, presumably explained by the persistent importance of the place as a burial ground and communal meeting place, and proximity to areas of settlement.

Maintenance of trackways on the same alignment is not universal however. In the North Kent Plain landscape zone there are examples of holloways/trackways of Late Iron Age/Early Roman date at Northumberland Bottom and Tollgate (Askew 2006; Bull 2006b) and Pepper Hill

(Biddulph 2006) which appear to fall out of use in the Late Roman period. The cemetery site at Pepper Hill is a particularly striking example as the road in question was clearly an important one in the Late Iron Age and Early Roman landscape, carrying traffic into Springhead from the south. It seems to have faded gradually out of use at much the same time as Springhead and the cemetery. A few Late Roman coins were found in the silts infilling the holloway.

Apart from Saltwood Tunnel (Riddler and Trevarthen 2006), surprisingly few trackways were found in the Wealden Greensand zone, which lends support to the suggestion that many may have survived in the modern network of lanes and roads. An isolated example at East of Newlands was a shallow holloway which produced only Late Iron Age/Early Roman pottery.

The repeated selection of roughly the same location by successive groups of settlers when there is no evidence for continuous occupation at a site, as suggested at Beechbrook Wood and several other sites, could possibly be explained by the existence of long-established routeways. However, there may be no need to invoke this explanation, as topographical constraints of the Kent landscape, and the tendency for successive groups to select optimum ecotonal occupation sites with convenient nearby water sources, would probably have had much the same effect. The key topographical constraints for north-east to south-west routeways in the case of the HS1 transect are the North Downs escarpment and the rivers running parallel to it, the Len, the West Stour and the East Stour. Routeways through this transect are most likely to run between settlement sites at the springline (dictated by the location of natural springs unless wells are dug) and the nearest suitable crossing point of the river, following the line of least resistance. An example is Water Lane, (between Parsonage Farm/Beechbrook Wood), which starts at the crossroads and springline settlement at Westwell and follows a stream valley to a crossing of the River West Stour to the south of Hothfield. Such routes are very likely to have been consistent elements of the landscape for as long as the location of each of those features (spring, settlement, crossing point) has remained more or less unchanged. The HS1 demonstrates that the location of settlements in this part of Kent are particularly prone to change, although springline settlements *may* have been more stable, but springs can dry up or shift location. As the Ebbsfleet Valley example shows even rivers can change their characteristics resulting in substantial changes to the organisation of the surrounding landscape.

One possible explanation of the unusual chronological sequence in Zone 4, at White Horse Stone, is that in periods with apparently low activity levels across all zones, such as the Neolithic, Early Iron Age and Anglo-Saxon, settlement may have been largely limited to core settlement locations in the major river valleys or at spring sites. In periods of settlement contraction, such as the Late Roman, the trackway network would presumably also have contracted so that a smaller number of important trackways linking those core areas would have retained their importance, while most others declined in use or disappeared. This would help to explain the particular significance of the White Horse Stone site in those periods, as it lies at a natural crossroads on a routeway linking the upper and middle reaches of the Medway Valley, one of the two major rivers of Kent.

General conclusion

The results from the HS1 excavations have already begun to re-shape many long-held assumptions about the archaeology of Kent and southern England. The project features heavily in the recently published Kent History Project volume, *The Archaeology of Kent to AD 800* (Williams 2007) and the results have greatly influenced the development of the regional research strategy for the south-east, which will shape the direction of archaeological fieldwork in the region for at least the next decade. Some important recent works of synthesis at a national level have singled out the HS1 transect as particularly informative, such as Taylor's *Atlas of Roman Rural Settlement* (Taylor 2007).

The period covered by the HS1 planning, design and construction, from 1989 to 2007, saw numerous developments in the way in which archaeological work was undertaken in a developer-funded environment. The very large scale and duration of the project has meant that many of the professional archaeologists working today in southern England have had some direct or indirect involvement with the project, such that it will have a lasting legacy for decades to come. Perhaps the greatest contribution the project has made has been to open the eyes of the current generation of archaeologists to what can be achieved in a developer-funded environment, given an appropriate level of planning and funding. HS1 has presented an opportunity for broad scale excavation of the rural landscape on a scale beyond the dreams of most university-based research projects. The project has also emphasised the enormous contribution that large scale open area excavation can have to understanding the development of the man-made landscape. Further projects on a similar scale in different landscape zones have the potential to revolutionise our understanding of the region's history. Most recently, excavations along the East Kent Access Road have exposed a very large transect through Thanet, an undoubted core settlement area and the agricultural heartland of Kent, offering great potential for comparative studies.

It is hoped that this volume will encourage researchers to explore the large archive of digital reports on the individual sites and specialist analyses to be found on the Archaeology Data Service website (see Appendix 2).

Chapter 3

Early prehistory

by Paul Garwood

Introduction

The huge scale and intensive nature of the archaeological fieldwork undertaken along the High Speed 1 (HS1) route provides us with an unparalleled opportunity to explore the past cultural worlds that existed in south-east England in earlier prehistory, from the end of the last Ice Age to the development of complex Bronze Age agricultural landscapes. The significance of some of the sites and finds extends further, to major debates concerning the nature of earlier prehistoric social interaction, innovation and transformation in southern Britain and north-western Europe more widely. Indeed, it is quickly apparent from a survey of the HS1 evidence that much of it is explicable only by situating it within larger-scale regional, national and international frameworks of knowledge and understanding. The presence of an Early Mesolithic hunting party at Saltwood, for example, relates to patterns of inhabitation that traversed lands lying beneath what is now the southern North Sea and English Channel. The rich Late Mesolithic evidence from sites along the Greensand ridge, notably at Sandway Road, is best understood with reference to the spatial organisation of hunter-gatherer territories which spanned large areas of south-east England, including the ancient coastal plains submerged by Early Holocene sea-level rise. The Early Neolithic timber halls at White Horse Stone/Pilgrim's Way are especially important because of their geographical position and early date in relation to cultural interactions with communities in continental Europe that led to the adoption/creation of new farming technologies, social structures and ways of thinking that would delineate the fundamental conditions of social life in Britain for the next three thousand years. Even the single burial at Whitehill Road, of a woman with an amber necklace, can only be understood in the context of long-distance maritime communication and exchanges in the mid-2nd millennium BC, in this case with people who lived in the Netherlands.

These examples of movement and cultural transmission provide all manner of possible metaphors relating to journeys through landscapes past and present that seem especially apposite for the particular character of the HS1 route and its purpose. At the same time, however, the path that the HS1 Section 1 corridor takes—transecting parts of the chalk downlands, Greensand ridges, wealden clay vales, and the brickearth and gravel plains of north Kent—allows for in-depth investigation of human occupation and ways of life in contrasting topographical, pedological and ecological zones. Moreover, the early prehistoric period, spanning some twelve thousand years (*c* 13500–1500 BC), encompasses the most profound and rapid series of environmental and cultural transformations in Britain before the industrial revolution. The route thus provides linear samples of many different ancient cultural landscapes, in both space and time, all of which in their own terms reveal complex patterns of human behaviour, representation and meaning organised at several social and spatial scales. There is no simple interpretative model that can encompass this diversity, not least because of the very different kinds of societies that the inhabitants of these early prehistoric landscapes belonged to, ranging from relatively small-scale hunter-gatherer communities operating over vast geographical ranges, through tribal or clan-organised agricultural groups, probably occupying local core agricultural territories, to hierarchical chiefly polities with complex and often expansive social and political organisations.

In this broad context, the research significance of the HS1 Section evidence stems not only from its breadth and diversity, distributed along a corridor nearly 70km in length and up to 200m wide, but also its richness at a local scale, due largely to the intensive nature of the fieldwork methods applied. This contrasts with the generally lower levels of earlier prehistoric site identification and data recovery along comparable sections of other high speed rail routes in northern and western Europe such as TGV Nord (Blanchet 2000; Remy and Soumoy (eds) 1996; Saint-Blanquat 1992), although of course there are exceptions like the Hardinxveld Mesolithic settlement investigated on the Betuweweg route in the Rhine-Maas delta (Louwe Kooijmans 2001). All of the 30 major area excavations along the HS1 Section 1 route produced earlier prehistoric artefacts, and in ten cases (Figs 3.1 and 3.2) these revealed significant stratified assemblages of one or more periods in pits, ditches and other sub-surface features, and/or evidence for built structures such as houses and monuments. The significance of this contribution to our knowledge of the prehistory of southern Britain cannot be underestimated: the Sandway Road Late Mesolithic flintwork assemblage, for example, is one of the largest recovered in the region; the Early Neolithic hall structures at White Horse Stone/Pilgrim's Way are exceptionally important both nationally and internationally; the Late Neolithic settle-

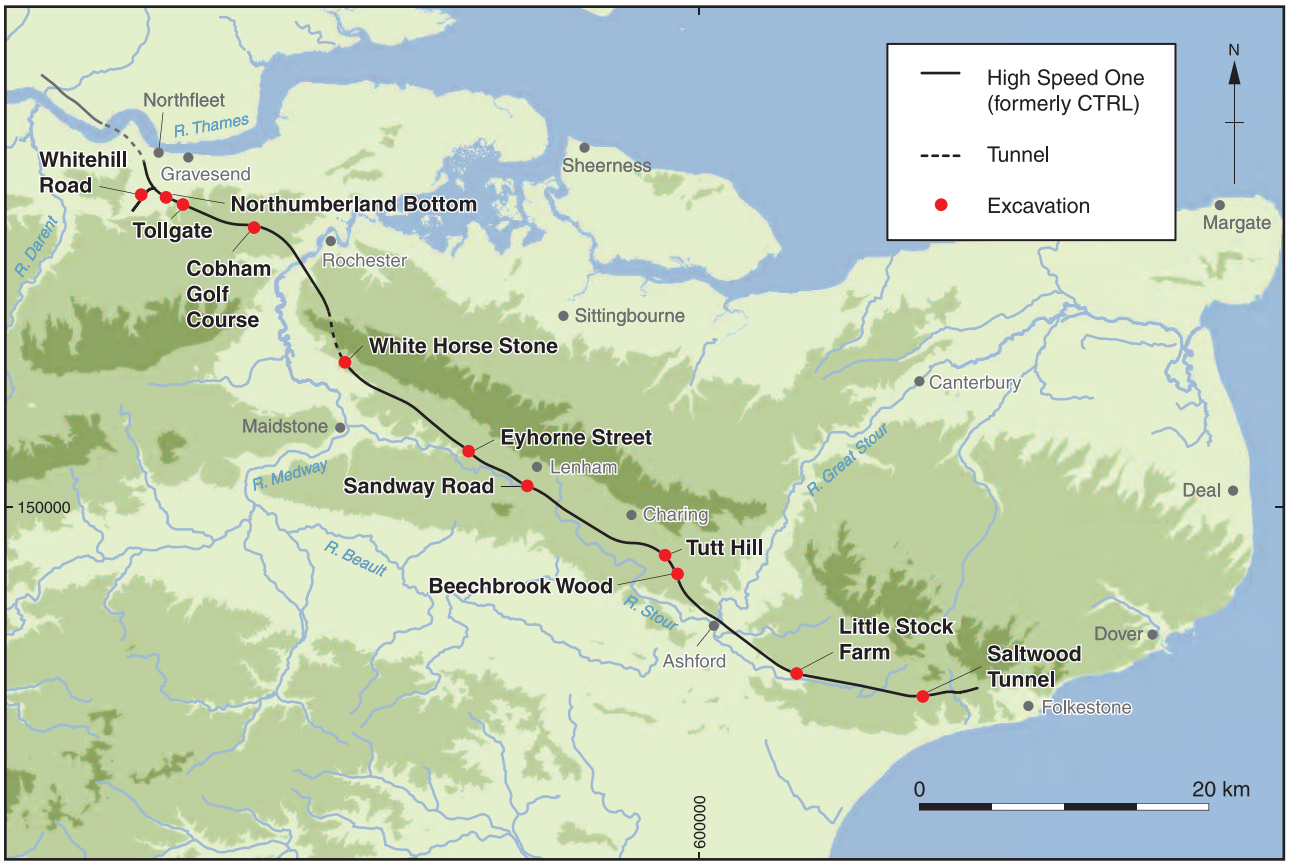


Figure 3.1 Map showing the major early prehistoric sites along the HS1 route

ment evidence at the same site is rare in southern Britain and north-west Europe more widely; and the number of earlier Bronze Age funerary monuments excavated comprises a sixth of those recorded to modern standards in the whole of south-east England. Even the very rare instances of Chalcolithic and Early Bronze Age burials are important in research terms because of their unusual character and/or the evidence they provide for geographically extensive funerary repertoires and long-distance cultural contacts.

There is no question that the HS1 evidence is of considerable relevance to a wide range of current research themes in earlier prehistoric studies in Britain and the nearer parts of continental Europe, including re-assessments of the Mesolithic– Neolithic transition, the sedentism/residential mobility question and the nature of Neolithic settlement, the significance of mortuary practices, and the scale, character and extent of population movements and cultural interactions. The relative value of particular kinds of evidence from specific HS1 sites with respect to these research themes is, of course, variable. Yet whether this evidence derives from a single depositional event at one site or from repeated patterns of social activity at a multiplicity of sites along the route, the very scale of the project and the opportunity this provides for comparative analysis—including basic contrasts in terms of presence and absence of evidence—provides entirely new perspectives on the earlier prehistory of south-east England.

Late Pleistocene and early Holocene cultural worlds

The hunter-gatherer communities that populated Britain after the last Ice Age led complex lives (see Conneller and Warren (eds) 2006), guided in part by the seasonal availability of resources, environmental conditions and the need for residential mobility in order to be in the 'right places at the right times' to secure their livelihoods. Ethnographic parallels suggest that the spatial scale of group movements over a year could be considerable, with territorial or foraging ranges possibly extending for anything up to 300km, depending on local resource availability, movements of game, preferred occupation areas for base camps and larger social gatherings, as well as topographical and other geographical parameters that conditioned the spatial articulation of routeways and patterns of inhabitation. It is important to recognise, however, that whilst sharing certain characteristics in common, especially the structuring of social relations around the consumption rather than the production of resources, and relatively consistent scales of social organisation, hunter-gatherer societies recorded ethnographically, historically and archaeologically are extraordinarily diverse (Gamble 1986, 28–62; Jordan 2007; Rowley-Conwy 2001; Finlayson and Warren 2010). This can be accounted for partly in terms of different environmental possibilities and constraints, and 'adaptive' technologies and material cultures geared to

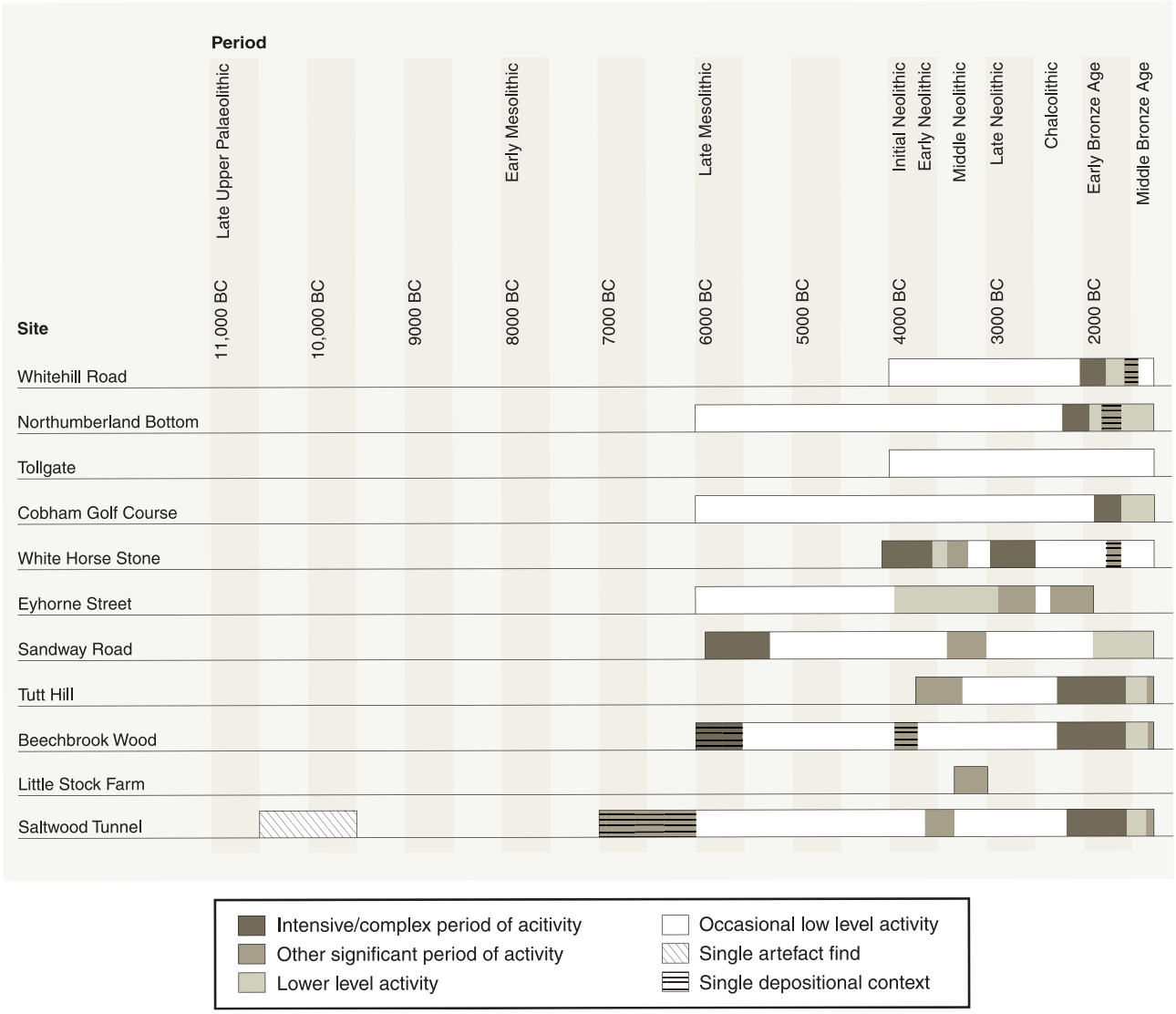


Figure 3.2 Chronology of the High Speed 1 early prehistoric sites

specific ecological systems. This is insufficient, however, to explain the specific subsistence and technological choices made by hunter-gatherers, or the particular social and spatial organisations of their lives, which were defined more by their beliefs, values, and perceptions of their social relationships and the physical worlds in which they lived than by environmental factors alone (see Barnard 2007; Jordan 2003; Milner 2007; Warren 2007).

There appear to be some consistent patterns in the way hunter-gatherer groups were structured, interacted and perceived themselves in social, territorial and ethno-cultural terms. In most cases, local exogamous groups or 'bands' constituted the minimal productive social unit, numbering 20–70 persons. Several of these together would form a culturally distinctive, usually endogamous regional group, also described as a 'maximal band', 'tribe' or marriage universe (connubium), numbering *c* 200–1000 people and occasionally more (Gamble 1986, 50–3). In other respects, however, there is great variation in the spatial and temporal articulation of bands and larger groups, and in their residential organisations, subsistence practices and technologies. Ideal-type contrasts are often made, for example, between 'foraging' and 'collecting' systems (Rowly-Conwy 2001, 40–1): the former involving frequent movements by bands between short-lived camps central to foraging/hunting zones, often with an emphasis on specialised exploitation of specific resources; the latter involving less mobility and longer-term occupation of base camps with more diverse resource procurement. A rather different, but equally significant contrast is made between 'immediate-return' and 'delayed-return' economic systems (Woodburn 1980; 1982); the former corresponding to conventional views of nomadic hunter-gatherers consuming their resources as soon as they acquire them and then moving on; the latter relating to more long-term strategies involving the building of fixed assets such as durable houses, fish traps and storage facilities, the social and economic 'returns' on such investments being spread over months or years. Such delayed-return systems, which favour a higher degree of sedentism, concepts of personal and group ownership and greater territorial fixity, were probably widespread in

prehistory, especially in relatively resource-rich and predictable ecological settings such as Mid-Holocene south-east England during the later Mesolithic.

These models of hunter-gatherer societies can be applied to both the British Late Upper Palaeolithic and Mesolithic, although interpretation is complicated by the nature of the evidence and the need to take account of the changing environmental contexts of social action. The greatest challenge is material, as the archaeological record from south-east England consists almost entirely of lithic artefacts, with very little animal bone and no human remains at all (Barton 2009; Milner and Mithen 2009). Most sites in the region are in open-air contexts (with the exception of a few rock shelters in the Weald), few have stratified deposits, built structures are unknown, and the majority are only vaguely dated because of the lack of suitable radiocarbon sample materials (for recent reviews of the evidence, see: Champion 2007c; Ellaby 1987; M Gardiner 1990, 40–2; Holgate 2003; Jacobi 1982). It is also likely that a large part of the post-glacial/Early Holocene occupied landscape has been submerged by sea-level rise (Shennan and Horton 2002, Shennan *et al.* 2006; Gaffney *et al.* 2009), leading to uncertainties about wider settlement patterns (see Figs 3.3, 3.9, 3.10). It is very difficult, therefore, to establish the scale, character and temporality of individual sites, and even more difficult to relate these to extensive pattems of social and economic organisation. Moreover, although the ecological changes that took place from the end of the last glaciation to the Mid-Holocene profoundly affected the social structures, practices and cultural rationales of hunter-gatherer communites (Barton 2009; Milner and Mithen 2009, 53–6; cf. Gaffney *et al.* 2009), their impact at a local level is often obscure because of chronological imprecision and the limited nature of both environmental and cultural evidence. From this perspective, recovery of Late Pleistocene/Early Holocene environmental data is often as important as evidence for human activity for understanding the Upper Palaeolithic and Mesolithic social practices, and how these were structured across the landscape.

Late glacial and early post-glacial hunters

Recolonisation of south-east England by human communities after the end of the Last Glaciation occurred initially as warmer conditions developed around 13,000–12,800 BC (Barton 2005, 115–38; 2009, 25–37; cf. Gamble 1999, 268–302, tbls. 6.5, 6.9). The Late Magdalenian (Creswellian) and succeeding Final Upper Palaeolithic societies that periodically inhabited southern Britain during the 13th to 10th millennia BC did not, however, establish a lasting or sustained presence. Indeed, human communities probably moved entirely with the return of extreme cold conditions during the Loch Lomond ('Younger Dryas') stadial, *c* 10,700–9600 BC (Barton 2009, 45–9). In any case, the very low-level presence of later Upper Palaeolithic groups, probably mainly hunting parties, is likely to have been seasonal and episodic (though certainly strategic rather than just environmentally driven; Tolan-Smith 2003a). A relatively short phase of Final Upper Palaeolithic recolonisation towards the end of this last cold stage, marked by the presence of 'long blade' lithic industries dating to *c* 9600–8000 BC (Barton 2009, 49), was soon succeeded by the appearance of characteristic Early Mesolithic 'broad blade' assemblages, associated with new subsistence patterns that accompanied extremely rapid climatic warming and ecological changes at the beginning of the Holocene.

Late Glacial and early post-Glacial finds are very scarce in Kent (Fig. 3.3), occurring mainly in river valley locations such as Oare near Faversham, Springhead in the Ebbsfleet valley, and Riverdale, near Canterbury (P Harding 2006b, 14–15). Final Upper Palaeolithic 'long blade' assemblages have also been found in HS1 Section 2 excavations at Springhead, at Lullingstone in the Derwent Valley (L Dyson, pers. comm) and at Underdown Lane, Herne Bay (Riddler and Trevarthen 2006, 7). There was almost no evidence, however, for similar activity along Section 1 of the HS1 route. It is possible that fragments of charcoal in sediments dating to the late 12th/early 11th millennia BC at White Horse Stone derived from human activity (Giorgi and Stafford 2006, 13), but the only artefact find was a later Upper Palaeolithic burin redeposited in a Bronze Age ring ditch (W33) at Saltwood Tunnel (P Harding 2006b, 14–15). The human groups active in the region at this time probably belonged to communities that lived in eastern England (Campbell 1977, 172, map 46) and on the open grassland plains, lakeshores and littoral zones of the now-submerged North Sea Basin or 'Doggerland' (Gaffney *et al.* 2009, 115–16; 150–51). It is likely that hunting parties made only rare forays into the higher and more rugged inland parts of south-east England, travelling southwards from Doggerland or northwards across the Channel plains and river systems. This area was probably some distance from the main areas of inhabitation and large mammal migration routes, although the scale, organisation and geographical extents of Upper Palaeolithic territories and hunting ranges remain uncertain (Gamble 1999, 351–87).

Several HS1 Section 1 sites have contributed to our knowledge of local Late Glacial environmental conditions (Giorgi and Stafford 2006, 7–14). At White Horse Stone, cold climate molluscan assemblages from the basal valley sediments are similar to those recorded in Trench HV at Holywell Coombe near Folkstone, dated to 11,800–11,150 cal BC (OxA-2345; Switsur and Housley 1998). The high silt content of these sediments probably derived from loess deposits characteristic of Late Glacial tundra environments (Giorgi and Stafford 2006, 11). Thin-section analysis of sediments at White Horse Stone indicated that these were not produced by mass-movement solifluction processes, but developed incrementally through seasonal deposition of chalk meltwater muds with intervening periods of stabilisation and plant growth (Stafford 2006a, 13). Similar erosion and redeposition of Late Glacial sediments was also

evident in the Nashenden valley (Giorgi and Stafford 2006, 9), at Tollgate (Bull 2006b, 8–9) and at other sites in Kent such as Upper Halling and Holborough (Preece 1992; Giorgi and Stafford 2006, 10–12). In some places, these valley-bottom sediments were covered by 'Allerød soils' (ibid.; Kerney 1963; Preece 1994), including deposits at White Horse Stone and in the Nashenden Valley. Thin-section analysis of the White Horse Stone Allerød horizon, however, showed that it does not represent an *in situ* soil, but consists instead of reworked humic material with lenses of fine silt sediments. Two pieces of charred woody material from these deposits produced a radiocarbon date of 11,500–10,900 cal BC (NZA-22046) (Stafford 2006a, 13–14), which is very similar to the mean pooled age of 11,990–11,020 cal BC for the Allerød soil at Holywell Coombe (Switsur and Housley 1998). These observations are important because they reinforce the general impression of mainly cold open grasslands stretching across southern England during the Windermere interstadial, traversed easily but probably only occasionally by hunting groups.

Mesolithic sites and landscapes

The Mesolithic period encompasses some profound social and cultural changes, including the sustained resettlement of Britain from *c* 8000 BC, the increasing presence of complex hunter-gatherer societies, the intensification of subsistence and residence systems and eventually the adoption of farming practices in the late 5th/early 4th millennia BC. The Early Mesolithic, dating to *c* 8000–6500 BC (Milner and Mithen 2009, 57–8), is typified by 'broad blade assemblages' with large microliths (such as obliquely-blunted points), large game hunting in open grassland landscapes and seasonal residence patterns that required a high degree of mobility, often over long distances. The Late Mesolithic, *c* 6500–4000 BC, is typified by 'narrow blade' assemblages with an emphasis on small geometric microliths suitable for making a diverse range of tools, broad-spectrum subsistence regimes that included the hunting of woodland game and intensive exploitation of plants and marine resources, and 'tethered mobility' residence

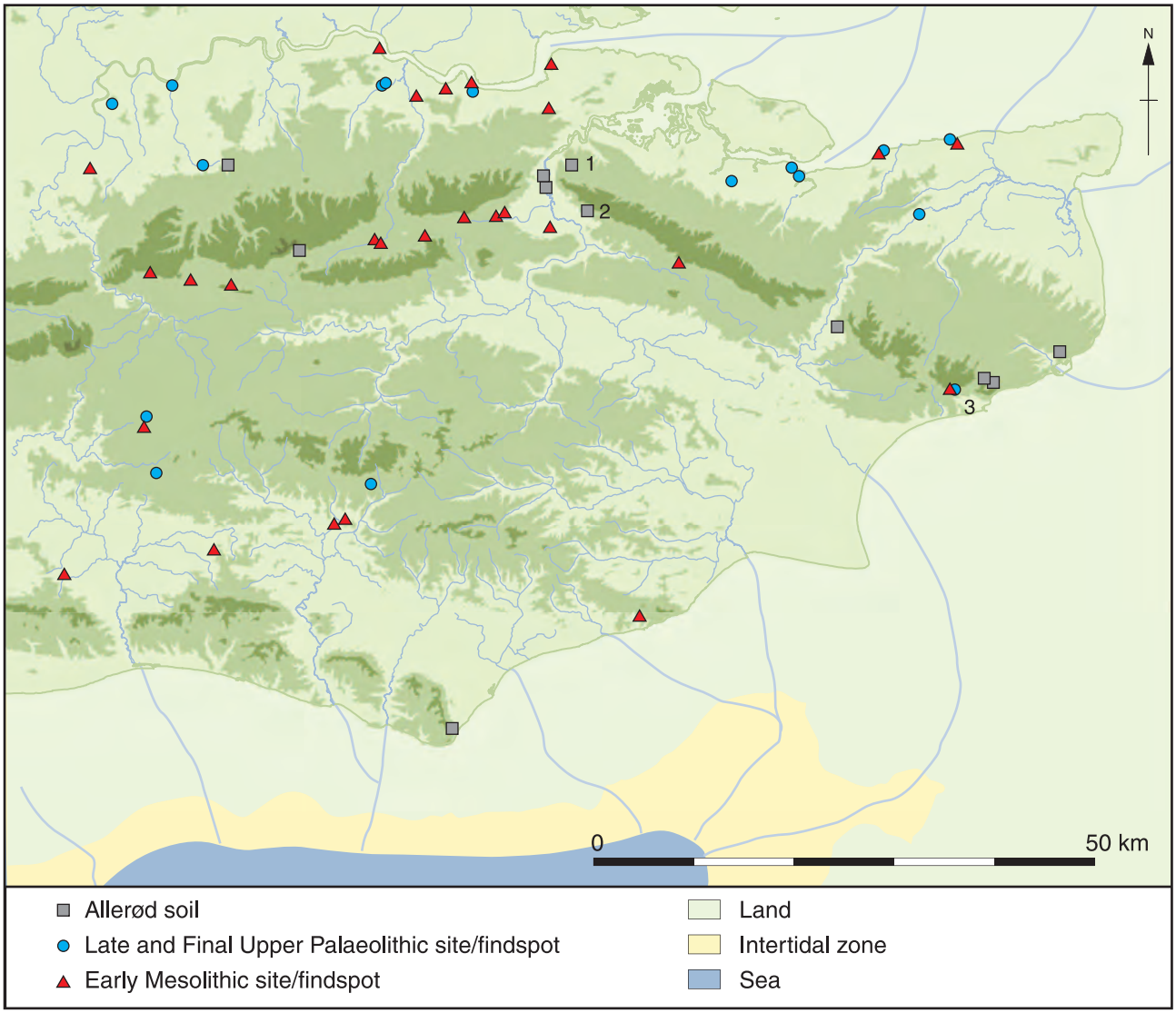


Figure 3.3 Late and Final Upper Palaeolithic sites and finds, Allerød soils and Early Mesolithic finds in south-east England. Numbers indicate HS1 sites: 1. Nashenden Valley; 2. White Horse Stone; 3. Saltwood Tunnel

patterns within relatively fixed territories. In addition, in south-east England, a regional Early Mesolithic variant or intermediate 'Horsham' assemblage type has been identified, with obliquely-backed microliths and basally retouched points, dating to *c* 7000–6000 BC (Jacobi 1982; Reynier 1998). A small number of HS1 Section 1 finds can be allocated to this Horsham 'phase' but the vast majority belong to Late Mesolithic narrow blade assemblages.

It is important to bear in mind the impact of environmental changes caused by climatic warming. Sea-level rises led to the separation of Britain from the continent around 6500 BC, the final inundation of Doggerland by *c* 6000 BC and progressive submergence of remnant coastal plains around the present coast thereafter (Champion 2007c, fig. 4.1; Gaffney *et al.* 2009, 138–47). This was paralleled by an afforestation process that transformed open grasslands into mixed broadleaf woodlands. However, direct evidence for these processes at a local level is limited and often ambiguous. Early/Mid-Holocene soils are rarely preserved in south-east England, usually occurring only in isolated subsoil hollows or archaeological features, while most sedimentary sequences are poorly dated. There are also major gaps in many of these sequences between the Late Glacial and later prehistory: basal deposits are frequently truncated, while colluvial sequences often date only from the Bronze Age or later (M Allen 2005; Bell 1992). Pollen evidence is also limited in the region, although it tends to confirm increasingly dense forest development during pre-boreal and boreal climatic stages (*c* 9000–5500 BC), initially with colonisation by birch and pine, followed by hazel and then oak and elm. There is considerable debate, however, about the character of these forests. A continuous canopy is often assumed (Rackham 2003) but there is now widespread evidence to suggest a more varied mosaic of dense and open woodlands, scrub vegetation and grasslands (cf. Vera 2000). Very little Mesolithic-period environmental data was recovered from HS1 sites (Giorgi and Stafford 2006, 14–16): charred hazelnut shells of Early Mesolithic date at Sandway Road may relate to the use of hazelnuts as a food resource (Moffet *et al.* 1989), while residual fragments of Early Mesolithic pine charcoal were found in postholes of the White Horse Stone Early Neolithic hall structure, and alder/hazel charcoal of Late Mesolithic date in the fills of Beechbrook Wood ring ditch 1021.

Evidence for Mesolithic activity on the chalkland sections of the HS1 route was especially scarce. This may be due to the low recovery of flint artefacts during field walking in general (P Harding 2006b) but may also genuinely reflect a lack of Mesolithic occupation. The small quantities of Mesolithic or Early Neolithic material found near Ebbsfleet and at Cobham Golf Course (including a small number of blades) came from areas where Mesolithic material has been recorded previously. The recovery of surface finds on the Greensand ridge part of the HS1 route was also surprisingly limited given the scale of previous finds such as Lord Monckton's 19th century collection of 11,000 Mesolithic flint artefacts from fields just to the south of Sandway Road (ibid., 17–18). No HS1 sites produced surface assemblages even remotely comparable in size to this: the two small scatters of Mesolithic material recovered on the east bank of a tributary stream of the Great Stour at Charing, for instance, amounted to only 35 pieces.

Mesolithic material from HS1 Section 1 excavations was similarly scarce. Single artefacts were found redeposited in a some later contexts: microliths at South East of Eyhorne Street and Saltwood Tunnel; blades and bladelets at Cobham Golf Course, South of Snarkhurst Wood, South East of Eyhorne Street, Leda Cottages and Saltwood Tunnel; a retouched blade at Cobham Golf Course; a utilised blade at West of Northumberland Bottom; and blade cores at South of Snarkhurst Wood, Cobham Golf Course, Leda Cottages and Saltwood Tunnel (P Harding 2006b, 18–19). A single burin was also found in a later ditch context at White Horse Stone (Hayden 2006a, 24). This material is most likely to be of Late Mesolithic date (P Harding 2006b, 19). There were only three *in situ* assemblages of Mesolithic artefacts from the whole of HS1 Section 1: a small group of finds in an Early Mesolithic pit at Saltwood Tunnel; a sizeable Late Mesolithic assemblage from a tree-throw/working hollow at Beechbrook Wood; and a large Late Mesolithic assemblage associated with possible working areas and hearth debris at Sandway Road.

The Saltwood Tunnel Early Mesolithic pit deposit

The eight symmetrical hollow-based 'Horsham' points dating to the 7th millennium BC found in the upper fill of a shallow 'pit' at the southern edge of the Saltwood Tunnel excavation area (Pitt 6677; Fig. 3.4) is an unusual, apparently deliberate deposit. It is uncertain whether the pit was created artificially or was a natural hollow or tree-throw hole (P Harding 2006b, 20–1; Riddler and Trevarthen 2006, 7), but the close clustering of the points, their technological and morphological consistency and the lack of evidence for post-depositional disturbance suggest these objects were all buried or placed in this feature intentionally. It is notable that several had broken tips and had probably been recovered after use on one or more occasions. These may represent a 'lost' cache of ready-to-use arrows or unhafted points, but non-utilitarian interpretations are equally likely; it is possible, for example, that they were buried deliberately as a votive or sacrificial act (cf. Chatterton 2006, 116–19). Previous finds of two more probable Early Mesolithic oblique points on the Saltwood plateau suggests several visits to this locale during this period, perhaps reflecting the preference for plateau 'occupation sites' by Horsham groups noted by Reynier (1998). However, the plateau-edge position of the Saltwood pit, with wide views to the south, may be related more to the use of a hunting station overlooking animal migration routes, as suggested for the open-air Upper Palaeolithic sites investigated recently at Glaston, Rutland (Barton 2005, 116; Myers 2006), and at Bradgate Park and Launde in Leicestershire (Cooper 2006). Although Horsham finds are distributed widely across the Weald, they are very rare further to the east (Champion 2007c,

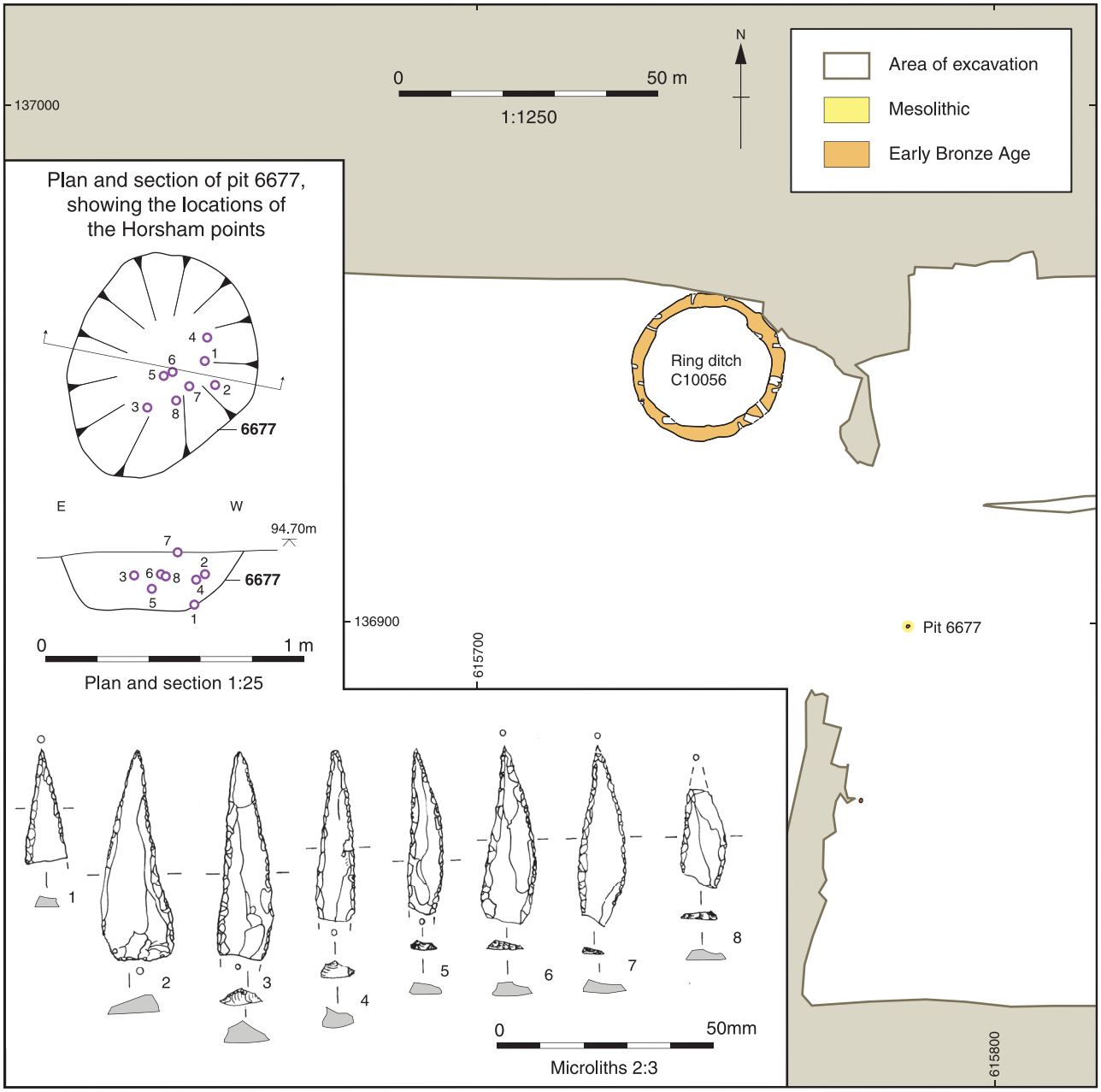


Figure 3.4 Saltwood Tunnel Early Mesolithic pit 6677; showing the assemblage of Horsham points

72), the closest to Saltwood being the surface finds at Harrietsham, 32km to the north-west (Jacobi 1982, 15). The Saltwood assemblage thus marks activity at the easternmost margins of the known range of groups using this kind of hunting equipment.

The Beechbrook Wood Late Mesolithic 'camp site'

A far larger assemblage of Late Mesolithic tools and flintworking debitage, probably from a camp site, was found at Beechbrook Wood in a shallow tree-throw hole or hollow (1623; Fig. 3.5), measuring 0.35m deep and 5m diameter (Brady 2006a, 9–10). The finds comprised 1393 pieces of worked flint, including 30 microliths, predominantly scalene micro-triangles, 58 microburins, six retouched flakes and blades and nine cores (five for blade production) (P Harding 2006b, 19). Careful excavation by quadrant, together with a 1m² test trench excavated in 50mm spits in order to examine the vertical distribution of finds, indicated a greater concentration of flintwork in the western quadrant and a slight increase in the number of finds with depth, although no specific activity areas were identified. The artefacts were in fresh condition but there were no refitting pieces, which may indicate that they were redeposited from a more extensive spread or midden in the near vicinity. The lack of corticated material suggests that core preparation took place elsewhere, while the relatively high proportion of microburins (a by-product of microlith manufacture) suggests that most microliths were taken away for tool production and use (Brady 2006a, 9–10). It is notable that 219 of the artefacts had been burnt, and that small quantities (295g) of unworked burnt flint were found in the fills of the hollow, which suggests the presence of hearths nearby. No sample materials suitable for

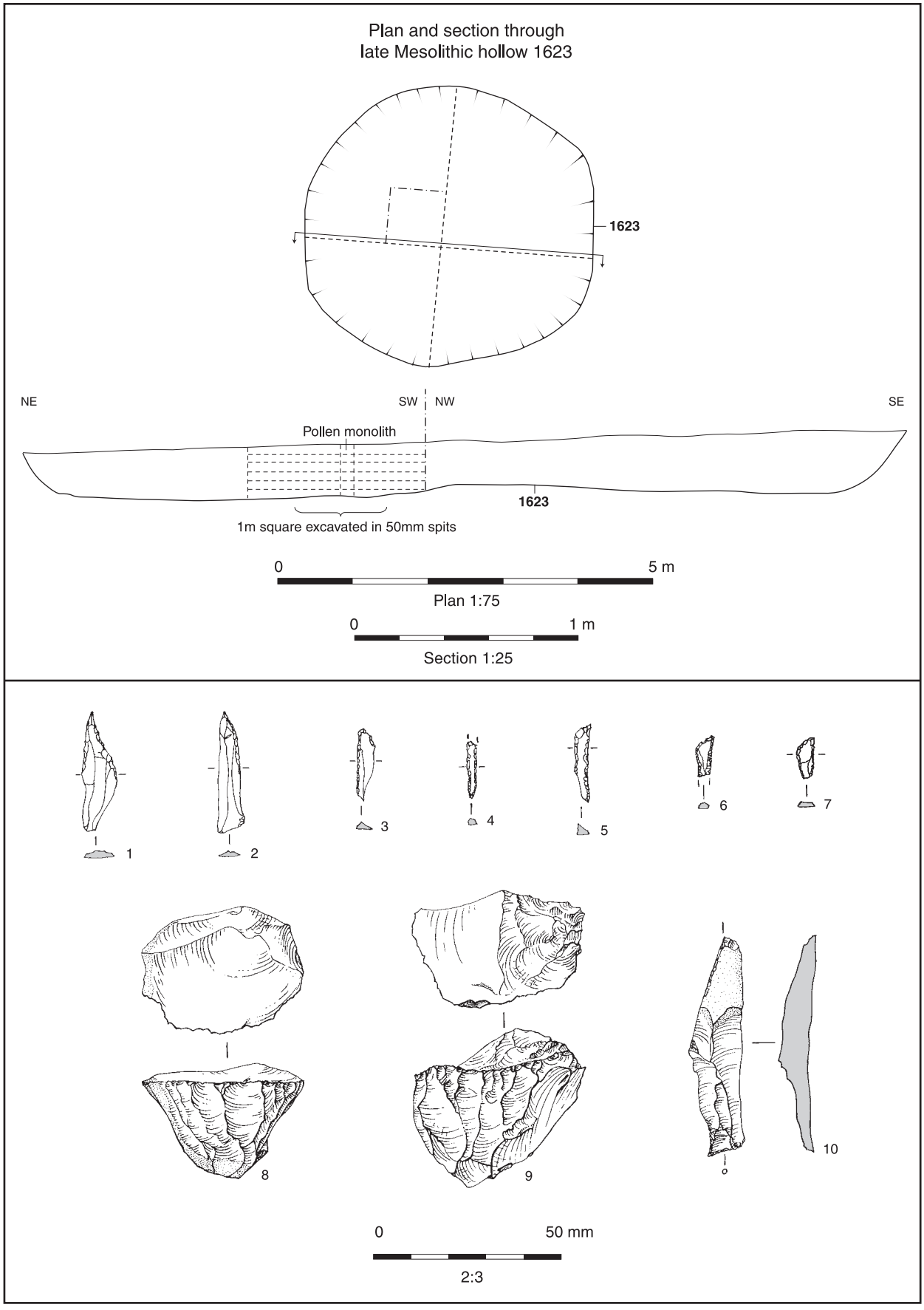


Figure 3.5 Beechbrook Wood Late Mesolithic hollow 1623. Feature plan and section, and a selection of microlith and other finds: 1–7, microliths, including five narrow-bladed scalene microtriangles (2–6); 8–9, blade/bladelet cores; 10, piercer. See Figure 3.46 for the site location of hollow 1623

radiocarbon dating were recovered from hollow 1623, although charcoal from a tree-throw cut by ring ditch 1021 (*c* 90m to the north-east) produced a date of 6020–5840 cal BC (NZA-20049), which might relate to the wider presence of Late Mesolithic activity in this area (ibid.). The assemblage probably represents debris from a short-lived camp occupied by a small band, some of whom made microliths, using the tree-throw hollow to discard knapping waste, broken tools and burnt materials.

Sandway Road: a Late Mesolithic occupation site

The assemblage of Late Mesolithic material excavated at Sandway Road, Area C, comprising over 11,000 pieces of worked flint, is one of the largest groups of Mesolithic artefacts from a single site in south-east England. Spreads of artefacts, burnt flints and small amounts of charcoal were found in plough-truncated natural features and subsoil horizons extending across an area of about 900m² on the gravel terrace overlooking a tributary stream of the River Len (Fig. 3.6). Most of the assemblage (93%) was concentrated in a natural sub-circular hollow (558), a tree-throw hole (574), and remnant ancient soil layers (550 and 569), occurring most densely in the uppermost 0.1m of deposits. The remaining artefacts were found during stripping of the colluvium (3%) and from other archaeological and natural features nearby (4%) (Trevarthen 2006, 5–11). Only 3% of the flintwork assemblage consisted of tools or tool components, including 223 microliths of mostly geometric forms (67% of retouched material) (Fig. 3.7), together with a few more retouched pieces (33% of

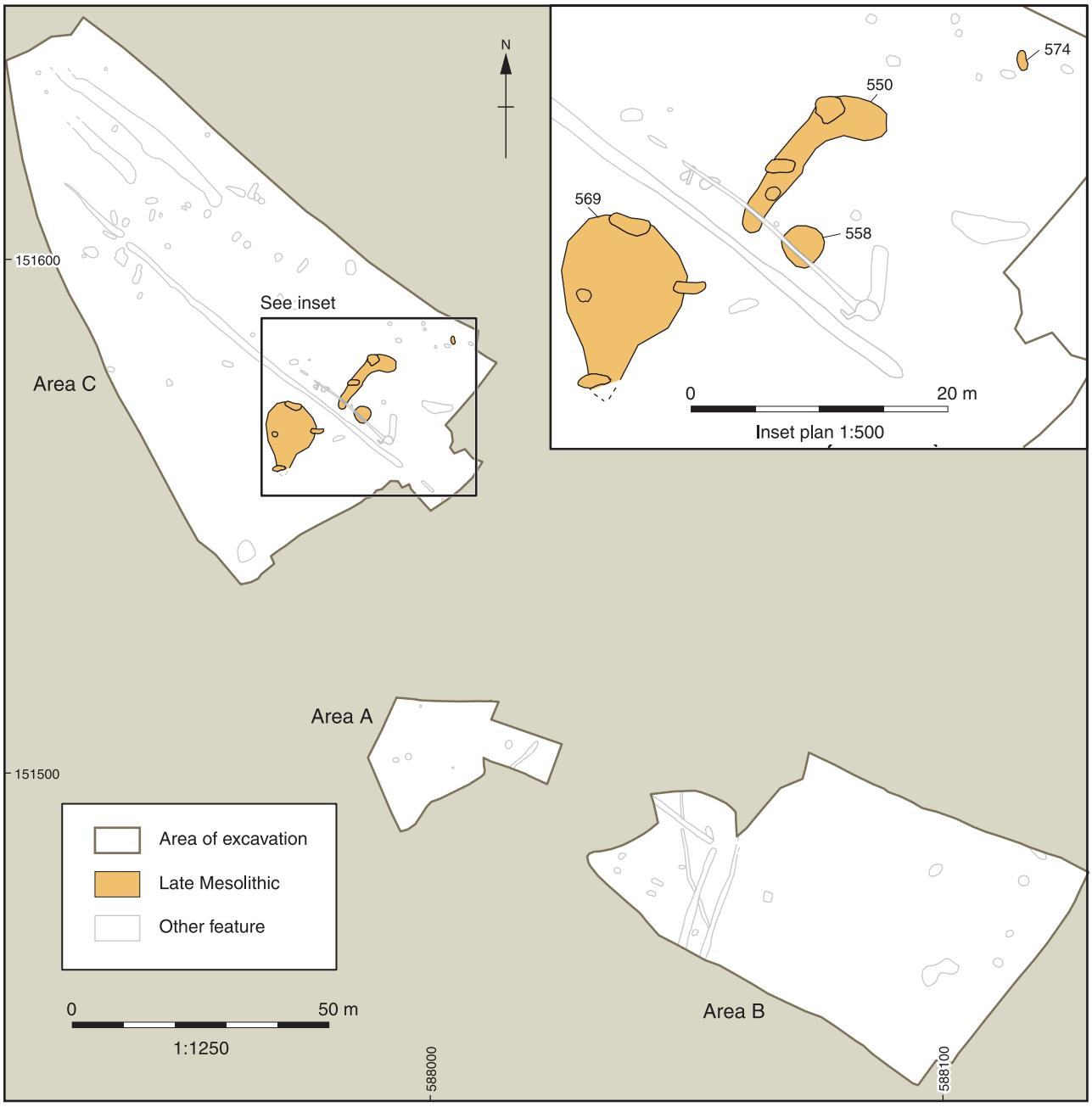


Figure 3.6 Sandway Road Late Mesolithic occupation site

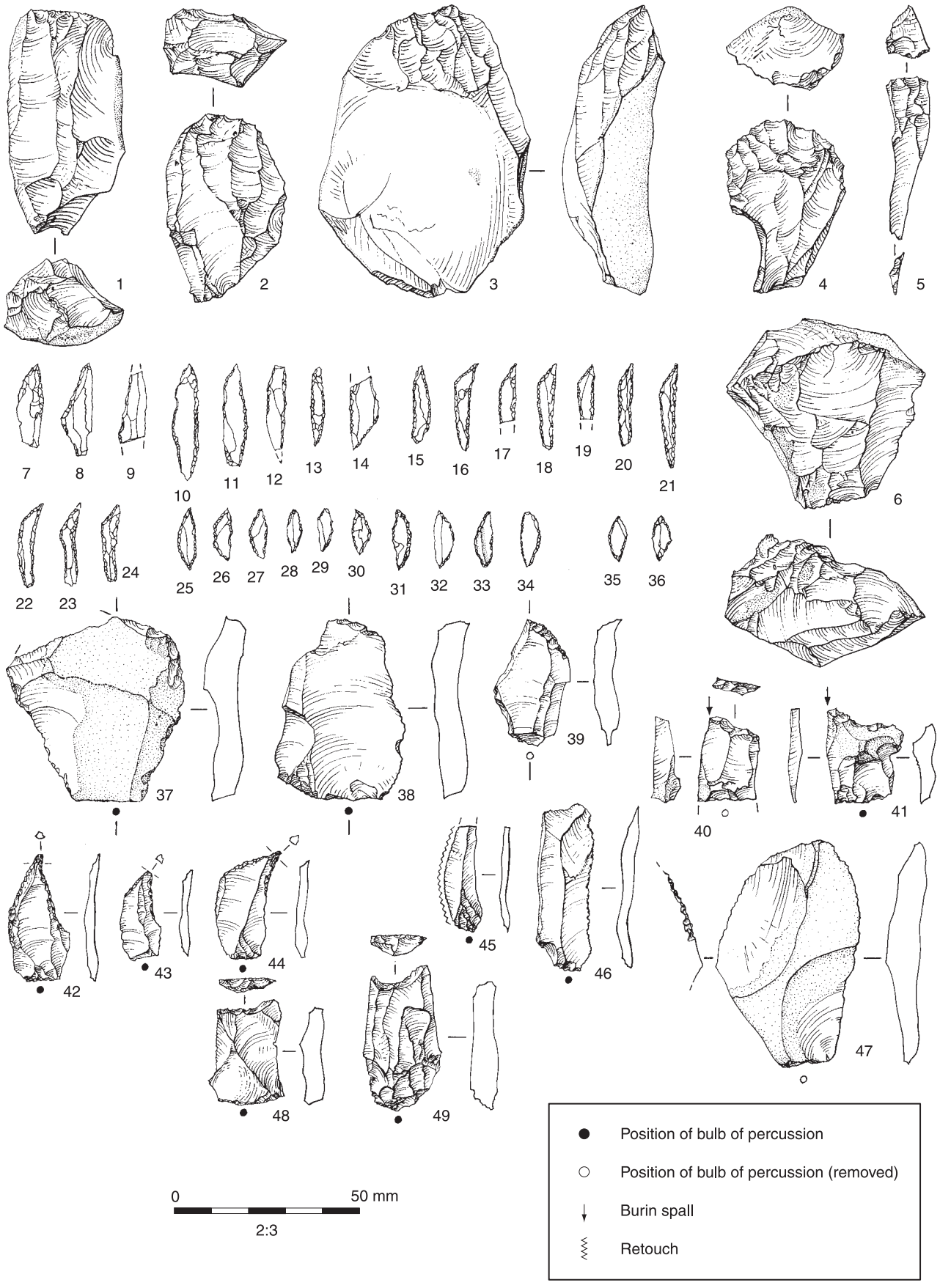


Figure 3.7 Microliths and other lithic finds from the Sandway Road Late Mesolithic occupation site: 1–6, cores; 7–36, microliths (types after Clark 1934: 7–9 = type A10; 13= B; 14=C1; 15-24=D1; 25-34= D2; 35-36= D3); 37–39, scrapers; 40–41, burins; 42–44, piercers; 45–46, microdenticulates; 47, retouched flake; 48–49, truncated flake and blade

retouched material). The remainder of the assemblage comprised 228 microburins, 1814 blades and bladelets, 3866 flakes, 4434 chips and 267 cores (P Harding 2006b, 18–19). Unfortunately, animal bones did not survive in the acidic soils, and insufficient pollen was present to allow for a reconstruction of the local environment (Trevarthen 2006, 5–11).

There was nothing to indicate that any of the features had been deliberately constructed or modified (P Harding 2006b, 18–19). Hollow 558, *c* 3.5m in diameter and up to 0.3m deep, had certainly been largely infilled with a dark humic forest soil prior to the phase of Late Mesolithic activity. This feature, which contained the greatest concentration of worked flint including the majority of the microliths and over half of the microburins, as well as fragmentary charcoal and a few charred seeds and plant remains, appears to have been used primarily as a place for flint knapping and tool production, and/or the disposal of knapping waste and burnt materials from hearths (Trevarthen 2006, 5–11). To the north and west of hollow 558, large patches of mid-brown silty-sand, layers 550 and 569, probably represent the truncated remnants of the original mid-Holocene soil. These layers respectively contained 18% and 28% of the artefacts from Area C. The irregular sub-oval tree-throw hole 574, located 20m north-west of hollow 558, also produced a dense concentration of flint artefacts.

Most of the struck flints were in very fresh condition, derived mainly from nodular flint but also from large flakes, thermally-fractured pieces and a single beach cobble. The flint appears to have been obtained mainly from secondary sources such as Head gravel, although some artefacts were made of Bullhead flint from the base of the Thanet Sands and Woolwich and Reading Beds on the North Downs (Trevarthen 2006, 5–11). Detailed analyses of the flintworking technologies represented at Sandway Road by Phil Harding (2005; 2006, 18–32), have shown that primary core production took place off-site as large hammers were absent and there was little debitage from nodule reduction or core preparation. Most of the cores were used for making bladelets, and the large number of microburins provides a clear indication that on-site tool manufacture focussed on microlith production. In this context the lack of conjoins amongst the Sandway Road assemblage is surprising, although this may be accounted for by the high degree of site truncation and the predominantly microlithic technology. It is also apparent that many cores were abandoned when straightforward core rejuvenation techniques would have allowed for additional bladelet removals. This may indicate that tools were being prepared to serve immediate needs, perhaps in the context of relatively intense hunting activities requiring rapid production of suitable tools, rather than more patient or diversified tool manufacture.

Analysis of the flint distributions and possible hearth locations provide some impression of the organisation of the camp and the activities that took place (Fig. 3.8). There is evidence for spatial patterning in the distributions of cores, microburins and microlith types within 558, 550 and 569, suggesting several knapping areas relating to specific production episodes. In addition, although there was no evidence for structures, several clusters of burnt flint up to *c* 1m across may indicate the location of hearths or, as charcoal was absent, more probably dumps of hearth debris or cooking stones (Trevarthen 2006, 5–11). The significance of the dense artefact concentration in hollow 558 is less clear: this probably resulted from a series of short-lived superimposed flintworking and/or dumping episodes subsequently mixed by trampling and bioturbation. It is possible that this area was set aside for both tool manufacture and rubbish disposal, so that surrounding parts of the camp were kept relatively clear of sharp flints and other kinds of refuse (P Harding 2006, 25–7). In contrast, the smaller and more widely distributed artefact clusters in the north and south soil spreads allow for easier identification of possible activity areas. In the north spread (550) there were three areas associated with flake manufacture (one surrounding a concentration of burnt flints) but only one with microliths. In the south spread (569) the flintwork and burnt flint clustered in four areas, three of which contained a high proportion of microburins and more numerous microliths, perhaps indicating the movement of blades or completed microliths to areas of tool use or repair (ibid.). These patterns suggest contrasting activity zones with spatially distinct deposits within them, although it is uncertain whether these mark contemporary or successive activities (Trevarthen 2006, 5–11).

It is possible that the Sandway Road site represents no more than a single occupation event, although the scale of the assemblage, the spatial extent of activity, and the number of burnt flint concentrations suggests a series of visits over several years or decades (Trevarthen 2006, 5–11). There was no direct evidence for built structures but it is likely that several short-lived dwellings existed at the site, associated with surface activity areas and middens (for recent discussions of Mesolithic buildings and the organisation of occupation sites, see Grøn 2001; C Smith 1992, 29-34; Whitelaw 1994; Waddington 2007). Flintworking may have been primarily concerned with the manufacture and repair of hunting equipment (P Harding 2006, 25–7), though the sparse occurrence of tools other than microliths is probably due in part to their removal from the site for use elsewhere. Even so, tools directly associated with 'domestic' activities were extremely rare: there were no axes (though a tranchet axe-sharpening flake was found), and only nine scrapers, seven serrated pieces, three burins and six piercers (see Fig. 3.7). In this light, it seems most likely that the Sandway Road site was a hunting camp, perhaps revisited on an occasional or annual basis, located with easy access to a range of resource procurement zones as well as a water source.

Radiocarbon dating of burnt sample materials from hollow 558 produced age ranges of 8740–8330 cal. BC (charred hazelnut; NZA-11934), 5900–5710 cal. BC (unidentified charred seed; NZA-11935) and 1960–1690 cal. BC (charred cereal grain, possibly

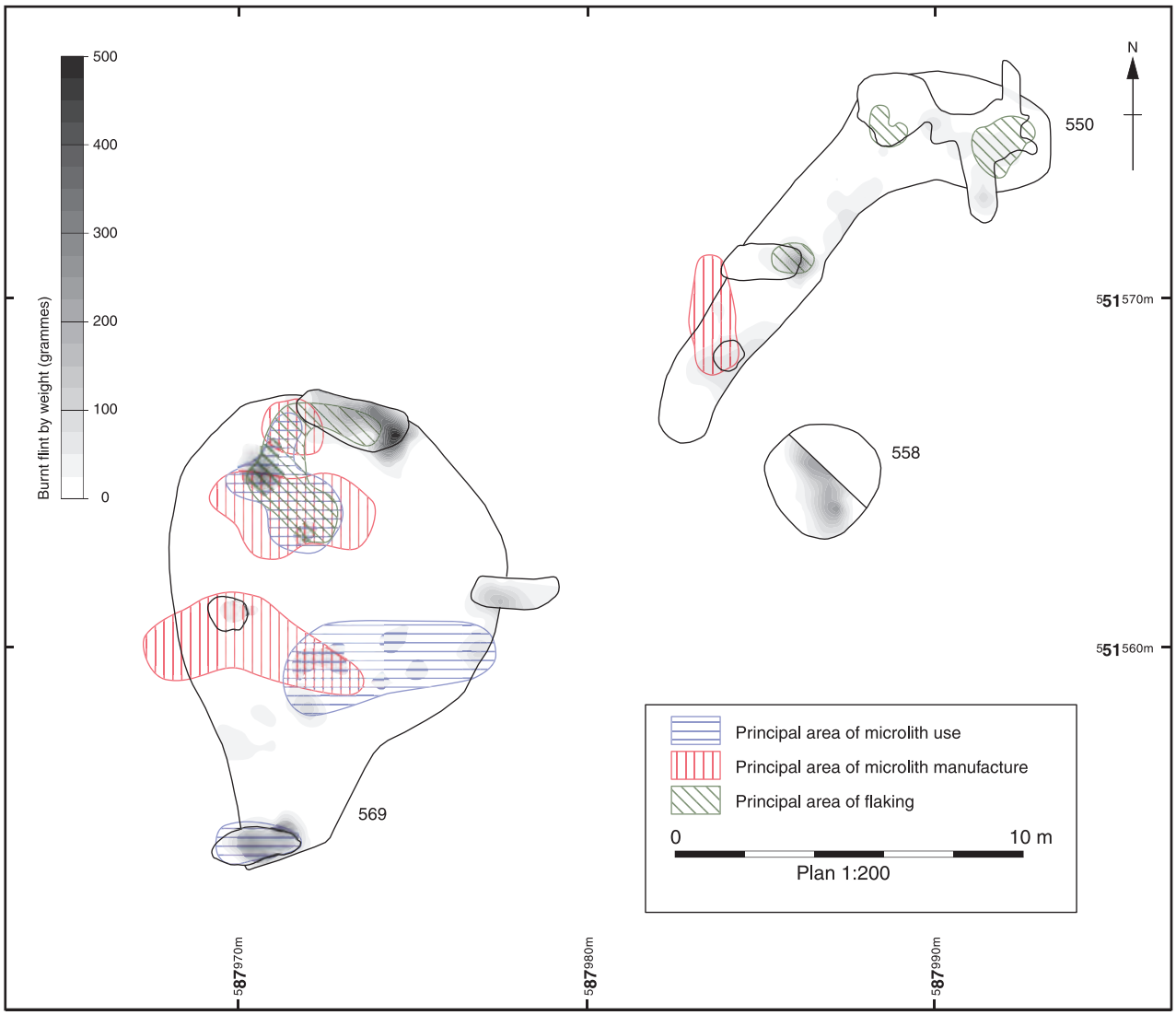


Figure 3.8 Sandway Road Late Mesolithic occupation site: interpretative plan of burnt flint concentrations and lithic artefact manufacturing and use areas

Triticum sp; NZA-11936). The middle of these is consistent with the expected 6th millennium BC date of the Mesolithic artefacts on typological grounds. The other age ranges suggest possible earlier Mesolithic activity in the same area, although no Early Mesolithic artefacts were recorded, together with later disturbance during the Early Bronze Age (P Harding 2006, 22–3).

Paths, places and communities in the Late Mesolithic landscape

By *c* 6000 BC south-east England had been colonised by deciduous woodland, primarily oak, elm, elder and lime. Sandy soils, like those on the Greensand, may have seen the development of more open 'dry' oak woodland, providing good conditions for hunting (Mellars and Rheinhardt 1978), whereas areas with more dense woodland and shrub vegetation on 'wetter' loam and clay soils may have been especially suitable for gathering plant foods and other materials. It has been suggested that vegetation was burned off deliberately by Late Mesolithic communities to create open environments favourable for hunting (Mellars 1976; Simmons 1996; J Moore 2003), but there is no evidence to show this occurred at Sandway Road or Beechbrook Wood. The spreads of burnt flint at these sites are small and localised, suggesting camp fires rather than more extensive burning of undergrowth (P Harding 2006, 29–30). In any case, the scale of possible anthropogenic woodland clearance in the Mesolithic may have been over-estimated (Whitehouse and Smith 2004).

Evidence from HS1 Section 1 broadly reinforces the results of previous research in Kent (Fig. 3.9), suggesting concentrations of Late Mesolithic activity along the Greensand Ridge, with a thin presence on the chalklands immediately to the north and the high Weald areas to the south (P Harding 2006, 28; Scott 2004, 9). It is notable, however, that narrow blade Late Mesolithic assemblages occur in several different geo-environmental zones in Kent, including the Lower Greensand ridge (eg at Addington), the coastal plain (eg at Lower Halstow), the east Kent coast (eg at Finglesham), the northern edge of the downs (eg at Selling) and in rock shelters in the

central Weald (eg Stonewall, Chiddingstone) (P Harding 2006, 21–3). What marks out the Greensand ridge is the density of this activity: at Addington, for example, at least six Mesolithic flint scatters are known within an area of only 1.6ha (Alexander 1961). Few of these sites can be dated accurately: radiocarbon dates, for example, are available only for a stratified series of hearths at Stonewall Rock Shelter B, which span most of the 9th to 5th millennia BC (Jacobi 1982).

The closest parallels in south-east England for the features and depositional patterns recorded at Sandway Road and Beechbrook Wood can be found at several other Late Mesolithic sites with hollows/pits and large flint assemblages (Drewett *et al.* 1988, 17–20; P Harding 2006, 31). At Abinger, Surrey, a surface spread of tools and debitage surrounded a large oval 'pit' containing 1056 pieces of worked flint, including 60 microliths. Three oval features at Selmeston, Sussex, were associated with a similarly large flint assemblage, including 136 microliths. Even more striking is the evidence from four large irregular 'pits' excavated at Farnham, Surrey, which together contained over 39,000 pieces of worked flint including 690 microliths. These features, originally interpreted as dwellings (Clark and Rankine 1939) or flint extraction pits (Drewett *et al.* 1988), have been reinterpreted more recently as tree-throw holes utilised as habitation sites (Evans *et al.* 1999). Upturned trees/tree-boles would have had a powerful visible presence in a relatively open woodland environment, besides providing natural vertical root meshes, soil heaps and wood piles that could easily be modified and supplemented to create temporary buildings or shelters. Furthermore, the wider hollow and crushed vegetation produced by a fallen tree would create a 'clearing' that could be occupied without the need to fell more standing trees. It may be significant that the Lower Greensand ridge appears to have favoured the development of open woodland: the higher ground was exposed to wind blow, and trees may have been especially susceptible to uprooting because of the thin soils (P Harding 2006, 32).

The Sandway Road occupation site clearly forms part of a more extensive area of Mesolithic activity that includes the large flint scatters noted by Lord Monckton just to the south, and several sites around Harrietsham and Lenham to the west and north-west (Jacobi 1982). The assemblages from these sites are similar except for the absence of tranchet axes at Sandway Road. Such concentrations of activity, evident in many Greensand

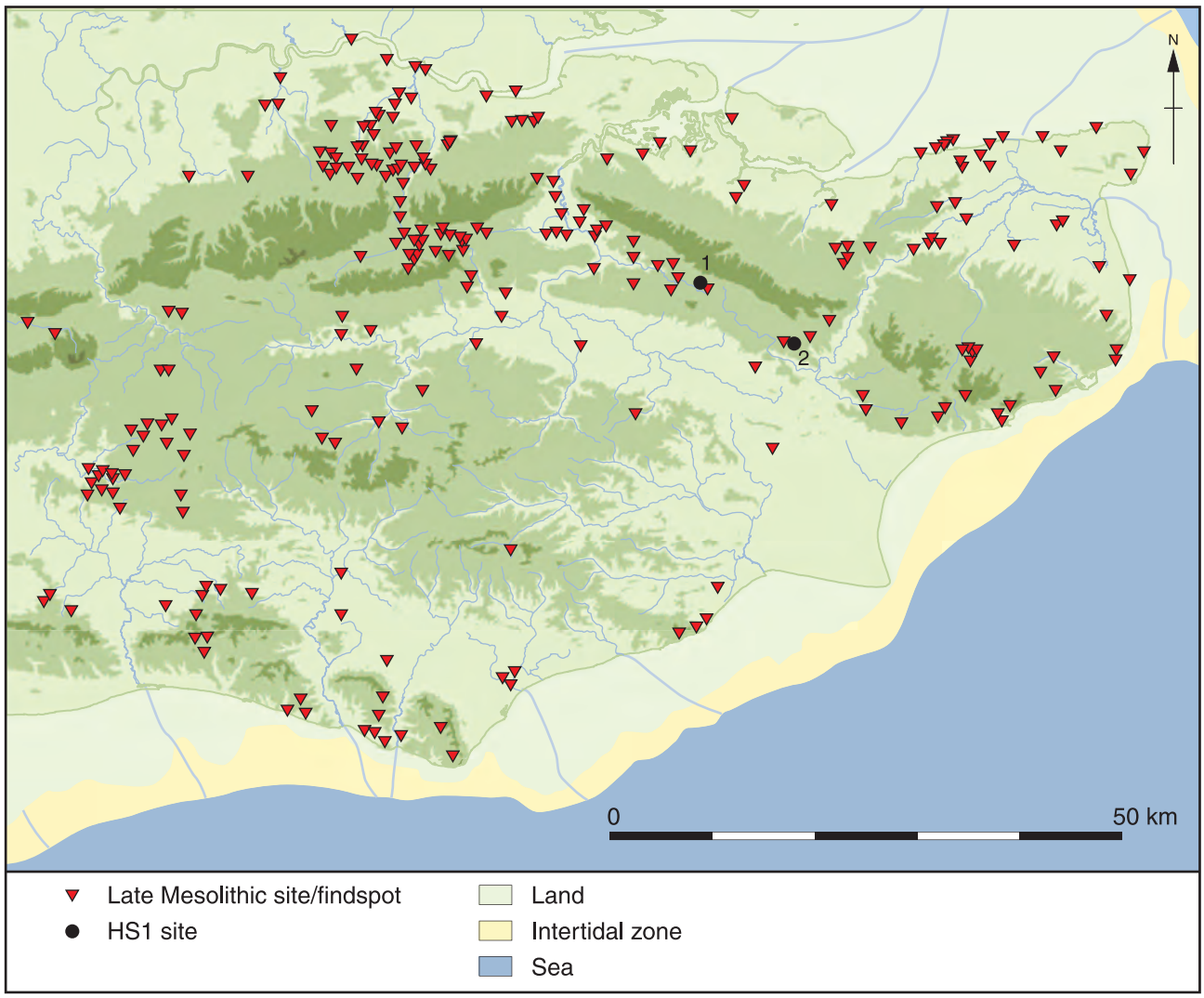


Figure 3.9 Late Mesolithic sites and finds in south-east England. HS1 sites: 1. Sandway Road; 2. Beechbrook Wood

areas, suggest both sustained inhabitation and repeated use of specific locales that probably varied in structured ways in relation to wider patterns of landscape occupation and resource procurement (P Harding 2006, 24). In the Wey Valley at Farnham, Surrey, for example, tool assemblages showed noticeable contrasts in relation to their topographic positions, with microliths and microburins concentrated in upper slope locations overlooking the valley, while tranchet axes were found mainly at valley-bottom sites (ibid., 25). This is consistent with Barton's (1992) model, which draws a contrast between microlith-dominated hunting camps in elevated locations and longer-term base camps in river valleys associated with axes and more diverse tool sets. The assemblages from Sandway Road and Beechbrook Wood, both dominated by microliths with very few other tool types, certainly resemble those found at the more elevated Farnham sites, as well as Rock Common and High Hurstwood, Sussex, and West Heath, Hampstead, all of which have been interpreted as hunting camps (P Harding 2006, 27–8). However, the locations of the two HS1 sites in valley-slope positions close to streams plainly diverge from Barton's model. In fact, instead of a simple hunting camp/base camp dichotomy, it is now possible to recognise far greater variation in Late Mesolithic site categories, kinds of activity and preferred locations (Spikins 2000; Bell 2007, 326–7). Rather than the specialised hunting of large game animals tracked from hunting camps positioned close to migration routes, Late Mesolithic settlement sites seem to have favoured 'ecotonal' locations providing access to a diverse range of resources (Holgate 2003, 35–6). These would have varied greatly in their purpose, scale, range of activities and spatial organisation depending on the particular ecological setting, group composition, and the specific stage and type of seasonal resource availability targeted by each occupation episode.

The Late Mesolithic in south-east England is certainly typified by large numbers of mostly small, scattered occupation sites, which might well reflect a diverse subsistence base involving a high degree of mobility and dispersal (ibid., cf. Jacobi 1982). At the same time, in comparison with the Early Mesolithic there appears to have been an increase in hunter-gatherer populations, marked by extensive Late Mesolithic artefact distributions, along with prolific flint scatters resulting from repeated returns to favoured occupation areas (especially on the Blackheath/Woolwich Beds on the northern edge of the Downs, and on the Greensand; Scott 2005, 9). Indeed, the Greensand areas may have been ideal for more sustained inhabitation: water sources were never far away, the free-draining sandy soils and open woodland environments would have provided relatively comfortable camp sites, and a wide range of ecological zones were always in easy striking distance, ranging from the upland chalk downs to lower-lying clay vales and the high Wealden hills, besides the Greensand ridges themselves. Moreover, these ridges not only provided an easily-traversed east-west corridor for inter-group communication and exchange (paralleled only by the less accessible chalk escarpment ridge-top route), but also access to several major river valleys (the Darent, Medway and Stour) that cut through the downlands, linking the Wealden interior with the resource-rich coastal plains and maritime and estuarine zones to the north. The topography of the Rivers Beult, Len and Stour to the south would have been more difficult to traverse, and the Late Mesolithic sites excavated in the High Weald, including rock shelters at High Rocks and Hermitage Rocks, certainly suggest only occasional small-scale occupation by hunting parties (M Gardiner 1990, 40–2; Holgate 2003, 35–6; P Harding 2006, 24).

It is evident that the contrasting subsistence and settlement characteristics of the earlier and later Mesolithic have very different implications for the scale and spatial organisation of social groups (C Smith 1992; Spikins 2000). Although Mesolithic social structures in Britain remain little understood and are difficult to model in spatial terms, it is possible to recognise general trends: from foraging/specialised hunting to collecting/broad spectrum subsistence regimes; from extensive to smaller territorial ranges; from low to high population densities; and from immediate- to delayed-return economic systems. At present, however, these socio-economic forms and processes are not easily discernible in south-east England at any scale: for example, the only strong distributional pattern in Kent (Fig. 3.9) is the concentration of Late Mesolithic finds along the northern coastal plain and the Greensand ridge, divided by the chalk downlands where far lower levels of lithic finds have been recorded (Scott 2004, 9). It is notable, in this context, that while Late Mesolithic sites along the HS1 route were well-placed to gain access to the chalk, where supplies of good quality flint were certainly used for the manufacture of tranchet axes, little attempt appears to have been made to exploit these sources intensively, with preference given instead to locally available but poorer quality material. This is especially surprising in the area to the north of the River Len, where there is almost no evidence for Late Mesolithic activity despite the dense concentrations of finds on the Greensand ridge just to the south, and the presence of a major dry valley that cuts across the Downs allowing easy paths to the coast and along the escarpment to the River Stour (P Harding 2006, 28–9). The reasons for this pattern of flint procurement and landscape inhabitation are unknown, but it is possible that the 'avoidance' of the chalk relates to much larger-scale social, territorial and demographic structures.

The scale of possible Late Mesolithic territories remains obscure, but a settlement radius of at least 30–50km (based on ethnographic parallels and archaeological evidence) has been estimated for regional culture-area populations (ie 'tribes', 'maximal bands' or 'connubia') in areas such as the Rhine-Maas delta and the Severn estuary (Bell 2007, 332). This organisational scale might suggest the presence of one regional group on either side of the North Downs, although the relatively rich ecotonal environments of south-east England may have supported denser hunter-gatherer populations and

thus two or more such social entities in each zone. In this settlement model, territories to the north of the Downs would have encompassed the well-watered periphery of the chalklands, the wide valleys and coastal plains to the north, and the saltwater marshes and maritime zone of the southern North Sea and Thames estuary. In contrast, territories to the south of the Downs could have stretched from the springline below the chalk escarpment, across the Greensand ridge, the inland river valleys and the clay vales and sandstone hills of the central Weald, to the Channel plains and littoral. The chalklands in between, from this perspective, might have acted as a 'marginal' domain of overlapping hunting ranges/resource procurement areas with relatively low levels of inhabitation and only rare encounters and exchanges between different groups (except, perhaps, along the river valleys cutting through the Downs). This is reminiscent of the far larger-scale 'buffer zone' or 'resource reservoir' suggested for the thinly-occupied English Midlands in this period (Tolan-Smith 2003b, 116). Although this idea has been questioned by Myers (2007), who argues that the character of activity in the Midlands probably relates to distinctive regional patterns of mobility and resource procurement, we are still left with the impression of complex spatial variation in densities of inhabitation and different kinds of social and economic activity, along with areas in which occupation of any kind was sparse.

The spatial pattern of Late Mesolithic activity in Kent raises interesting questions about the social identities and relationships of the people represented at Sandway Road and Beechbrook Wood. Unfortunately, it is impossible to say whether the hunter-gatherer bands that occupied these sites would have identified themselves as belonging to the same ethno-cultural community or quite different ones. There is no question that ethnic constructs distinguishing group members and outsiders have existed in recent hunter-gatherer societies, often with a strong territorial dimension associated with ideas of exclusive 'belonging' (Bergsvik 2003). Such identities can be expressed through material culture repertoires relating to distinctive sets of everyday practices, as well as by overt stylistic and symbolic media such as decorative devices or emblems. Specific ethnic markers, however, come to the fore only situationally and diacritically, in interactional contexts where cultural identities and their boundaries become manifest and are sometimes activated strategically in contexts of social contact, exchange or confrontation. These situations are very difficult to recognise in Mesolithic studies because of the invisibility of most Mesolithic material culture, and uncertainties about the spatial scale and structuring of hunter-gatherer societies and the kinds of interactions between them. Although microlithic styles and assemblage types in other regions have sometimes been seen as reflections of ethnic groups (eg Jacobi 1979), there is no similar evidence at present in south-east England, and in any case this observation is detached from any kind of socio-spatial model to explain how and why ethnic identities were being articulated in the first place. Moreover, different kinds of ethno-territorial sensitivity can be recognised within recent hunter-gatherer societies: for example, while overlapping hunting and foraging ranges might be largely uncontentious in terms of identity and 'belonging', 'core' sacred areas have usually been seen as exclusive to particular groups (Stanner 1965).

The other major difficulty in trying to delineate the scale and spatial structuring of Late Mesolithic territories in south-east England is the uncertain extent and character of the now-submerged plains and coastal regions of the North Sea and Channel (see Fig. 3.9). There is no question about the importance of marine resources for Late Mesolithic diets (Richards and Schulting 2003, 126), but how these were procured, and the distribution, scale and temporal intensity of coastal settlement in relation to inland residence and activity patterns are unknown. This is complicated by the likelihood of significant seasonal mobility and contrasting settlement regimes spanning diverse geographical zones at different times of year (cf. Spikins 2000; Bell 2007, 332). Although it may be possible in the future to identify underwater sites using predictive modelling and prospection techniques, and thus explore facets of the submerged archaeological record in order to reconstruct Late Mesolithic socio-economic systems in former coastal regions (Engen and Spikins 2007; cf. Momber 2007; Gaffney *et al.* 2009). There is no doubt that a substantial part of the Mesolithic settlement pattern is now invisible and substantially unrecoverable.

The Mesolithic–Neolithic transition

It is apparent that the later Mesolithic evidence from the HS1 Section 1 route is difficult to situate precisely in definable social and economic landscapes, whilst much of the wider context of social organisation and settlement in south-east England remains ambiguous at best (eg Holgate 2004). More generally, although the nature of southern British Late Mesolithic hunter-gatherer communities is perhaps a little clearer as a consequence of recent extensive programmes of fieldwork in areas such as north Kent, the specific character and structuring of Late Mesolithic ways of life at local and regional levels are still elusive. This raises particular problems for understanding the transition from a primarily 'hunting-gathering-fishing' society to a predominantly 'farming' society during the late 5th and 4th millennia BC. The absence of evidence for significant colonisation by agricultural groups, along with the evidence for continuing hunting and gathering and narrow blade lithic technologies during this period (Holgate 2004, 26–7), suggest above all that it is essential to understand the nature of the indigenous Late Mesolithic populations that may have interacted with small groups of incoming farmers and/or adopted farming and other new technologies themselves (Warren 2007; cf. Holgate 2004; Robb and Miracle 2007; J Thomas 2007a; 2008).

Unfortunately, the indigenous communities of the last centuries of the 5th millennium BC, and first centuries of

the 4th in southern Britain are still virtually 'invisible' in the archaeological record, as is any direct evidence for the specific nature of social change charted through even one site sequence. This lacuna is exemplified by the almost complete dearth of reliably-dated Late Mesolithic sites of the 5th millennium BC in south-east England, a pattern that still persists 30 years after the first assessment of the dating evidence (Jacobi 1982, 21–2; cf. Ellaby 2004; Holgate 2004), This pervasive 'absence of evidence' is the most enigmatic and challenging aspect of the Mesolithic–Neolithic transition. The fact that it persists despite recent increases in large-scale excavation projects certainly makes it difficult to account for solely in terms of insufficient fieldwork or the 'ephemerality' and poor dating potential of the material evidence. In this context, the loss of the coastal zones of potential Late Mesolithic/Early Neolithic settlement to sea-level rise—areas which may well have been especially densely inhabited and in which many aspects of social transition may have been first articulated and realised—offers one possible explanation for the 'missing' evidence and must certainly affect the extent to which the transitional period can be investigated.

Given this wider context, it is perhaps unsurprising that the evidence relating to the Mesolithic–Neolithic transition from the inland HS1 Section 1 corridor is so limited. Nonetheless, it is clear that there are no strong indications of continuity of 'place', or sustained inhabitation at any HS1 site, spanning the late 5th/early 4th millennia BC. It is striking that where there is evidence for Late Mesolithic activity, as at Sandway Road and Beechbrook Wood, earlier Neolithic activity was very sparse (see below), and that in both cases the successive 'Mesolithic' and 'Neolithic' occupation episodes or depositional events were short-lived, spatially distanced and probably separated temporally by as much as a millennium. It is unwise to generalise too far on the basis of these few sites, especially in the context of land use and settlement regimes characterised by high levels of mobility and extensive modes of inhabitation (Whittle 1997a; Pollard 1999; Darvill 2003), yet the overall impression is still one of sporadic activity, local discontinuities and a degree of social dislocation.

Although the nature of the social changes that took place during the four to five centuries around 4000 BC is thus ambiguous, there is no question that one of the striking features of the full Early Neolithic in south-east England, from *c* 3800 BC, is the construction of a range of funerary monuments and enclosures in primarily chalkland locations; precisely those areas where evidence for Late Mesolithic activity is most lacking. This dramatic transformation of the cultural landscape may have had very little to do with immediate local responses to the possibilities of farming, but was perhaps more a consequence of social and economic changes much farther afield, perhaps initially in coastal regions, that led to longer-term changes in the ways that group identities and social networks were constituted. From this perspective, the Mesolithic–Neolithic 'transitions' recognised in inland areas in the 38th and 37th centuries BC may really be translations of events and processes that had already happened' elsewhere, several generations if not centuries earlier.

Yet so limited is the evidence available that any major new discovery has the power to alter radically our understanding of the creation of the earliest farming communities. This highlights the exceptional significance of the evidence for Neolithic farming and cultural life in the Medway Valley, especially at the key HS1 site of White Horse Stone, where a timber long hall was built in the late 41st or 40th century BC (discussed at length in the next section). This may provide one of the first convincing insights into the nature of the initial Mesolithic–Neolithic transition in south-east England.

Settlement and landscape in the Early Neolithic

The HS1 evidence in context: the Early Neolithic in Britain

The Early Neolithic in Britain, *c* 4050–3500 BC, is usually characterised by the adoption of agriculture and the construction of durable monumental architecture such as long mounds, megalithic tombs and causewayed enclosures. These structures are the most visible expressions of a far wider transformation of the cultural landscape, marked by sustained human modification of the natural environment (in the form of woodland clearances and the effects of agricultural practices, both pastoral and agrarian), the creation of enduring cultural places such as monuments and middens, and depositional practices including deliberate placement of cultural materials in pits and other contexts (Pollard 1999; 2000; J Thomas 1999; 2008). The 'built' landscapes of the Early Neolithic thus seem to contrast radically with the largely unmodified 'natural' woodlands in which the actions of Mesolithic communities left little lasting trace. This view may be tempered in the light of new interpretations of Mesolithic forest burning, coastal middens and possible 'monumental' structures (such as the massive timber post settings close to Stonehenge) (ibid., 67), but there is no question that the widespread and increasingly intensive construction of durable architectural forms in wood, earth and stone in the early 4th millennium BC was both unprecedented and overtly transformative. These structures changed the appearance and configuration of the landscapes in which they were built, and created entirely new material conditions for human inhabitation, perception and agency.

At a regional scale, in south-east England, we are presented with a stark material and social contrast between the Mesolithic, evidence for which is restricted almost entirely to assemblages of lithic artefacts, and the Early Neolithic (see Figs 3.10 and 3.11) which is marked by the presence of prominent burial monuments and complex mortuary deposits, enclosures, specialised resource procurement and processing facilities ('flint

mines'), new material culture (notably ceramics) and the adoption of agricultural technologies based on imported plant and animal species (see: Drewett *et al.* 1988; Drewett 2003; Champion 2007c; Healy 2008). This dichotomy does not, however, take into account the temporalities of change, nor the potentially diverse social and economic processes involved in the transformation from a wholly hunter-gatherer cultural world to one at least partly based on agricultural practices. Nor does it take into account spatial variation and population shifts over this time frame, especially in relation to the sea level rises that inundated the ancient shores and plains that once existed along the Channel coast and the north Kent littoral (Champion 2007c, 69–73; Gaffney *et al.* 2009, 50–3).

Current interpretations of the Mesolithic–Neolithic transition in Britain reject diffusionist 'Neolithic package' and colonisation models that held sway until the 1970s. Instead, the British 'Neolithic' has increasingly been seen primarily as a cultural rather than an economic phenomenon that arose out of indigenous acculturation, emulation, transfers of technical skills and knowledge, and architectural innovations such as funerary monuments (J Thomas 1993; 1999, 2003; Whittle 1996; Bradley 2004). There are, however, many uncertainties and divergent interpretative arguments concerning the cultural and economic importance of 'Neolithicisation', as well as the extent and temporal rate of change during the late 5th and 4th millennia BC. In this context, new chronological frameworks, continuities in some hunter-gatherer subsistence practices and lithic technologies, and contrasting views on the significance of farming and the nature of landscape change, have raised fundamental questions about the nature of Early Neolithic society (eg J Thomas 1999, 7–33; 2003; 2007a; 2008; King 2003; Pollard 2004; Whittle 2007).

The importance of farming to subsistence and social organisation (cf. Bradley 1984; Kinnes 1988, 1994; J Thomas 1999) has been the subject of especially intense disagreement. Those who see farming as central to economic production and subsistence (eg Entwistle and Grant 1989; Richards and Hedges 1999; Rowley-Conwy 2003; Schulting 2000), have little in common with those who see farming as just one part of a diversified subsistence economy (eg Bradley 2004; Fairbairn 2000; G Jones 2000; Robinson 2000; J Thomas 1993; 1999; 2003; 2008; Whittle 2000). There are similarly opposed views concerning settlement: between those who argue for a significant sedentary element in Early Neolithic residence patterns (citing the evidence for houses in Ireland while accounting for the absence of these in Britain in terms of preservation and visibility: eg Cooney 2000a; Darvill 1996; Gibson 2003; Rowley-Conwy 2003), and those who reject the 'farming equals sedentism' model and argue instead for diverse patterns of residential mobility (pointing especially to the limited evidence for houses and field systems: eg J Thomas 1993, 1996; Whittle 1997a; Evans *et al.* 1999; Grogan 2002; Pollard 1999; 2000; 2004; Scarre 2001). The extreme rarity of Early Neolithic settlements with durable house architecture is indeed puzzling, but if the impact of early farming was relatively localised and episodic, with more emphasis on herding than cultivation and continuing reliance on hunting and gathering practices (J Thomas 2008, 72), then residence patterns are indeed likely to have involved a high degree of mobility, while permanently occupied settlements were correspondingly less significant. In such a landscape of shifting settlement, 'monuments' rather than 'houses', it is argued, provided the significant fixed points around which the social worlds of Early Neolithic communities were organised.

At a national scale, the chronology of the Mesolithic–Early Neolithic transition and the development of distinctive Early Neolithic societies is now becoming a great deal clearer. Julian Thomas' influential model of cultural Neolithicisation (1991b; 1999, fig. 2.1), which gave primacy to new social practices and beliefs focused on monuments and novel kinds of material culture as the prime movers of cultural change (rejecting 'traditional' models of economic causation), saw the appearance of monuments, enclosures and timber halls, as well as domesticates and agricultural technologies, as parallel processes that all started in the period *c* 4200–4000 BC. This framework does not require a 'formative Neolithic' preceding the period of monument building, as Kinnes once proposed (1988, 6), because the making of monuments and other new practices are directly implicated in the creation of a Neolithic way of life rather than simply products of economic and social changes. Indeed, the take-up of farming and related economic activities is seen as a gradual process facilitated by cultural changes, rather than the other way around. Although Thomas's interpretation has been challenged (eg Rowley-Conwy 2003; 2004), it is used widely to account for the limited evidence for arable farming and sedentism in the 4th millennium BC, and thus the likelihood of residential mobility and fluid settlement patterns (J Thomas 1996b; Whittle 1997; Pollard, 1999; 2000; 2004).

This general interpretation may well need rethinking, however, to take account of major reassessments of Early Neolithic chronology based on new and more precise dating evidence (Barber *et al.* 1999; Bayliss *et al.* 2008; Bradley 2008; Whittle 2007; Whittle *et al.* 2007; Whittle *et al.* 2011). These studies are now revealing well-defined chronological 'horizons', major thresholds of cultural change, and sequences in the phasing of material categories and practices, with the suggestion of relatively rapid social and economic changes during the late 5th and early 4th millennia BC. These new chronological insights can be summarised as follows:

1. There is no strong evidence, as Bradley has emphasised, for agriculture anywhere in Britain prior to *c* 4050 BC (2007, 32). When farming does appear, however, it seems to be adopted rapidly and widely over large areas, with considerable commitment to arable cultivation in the period 4050–3700 BC, after which cereals decline in significance (Bradley 2008).

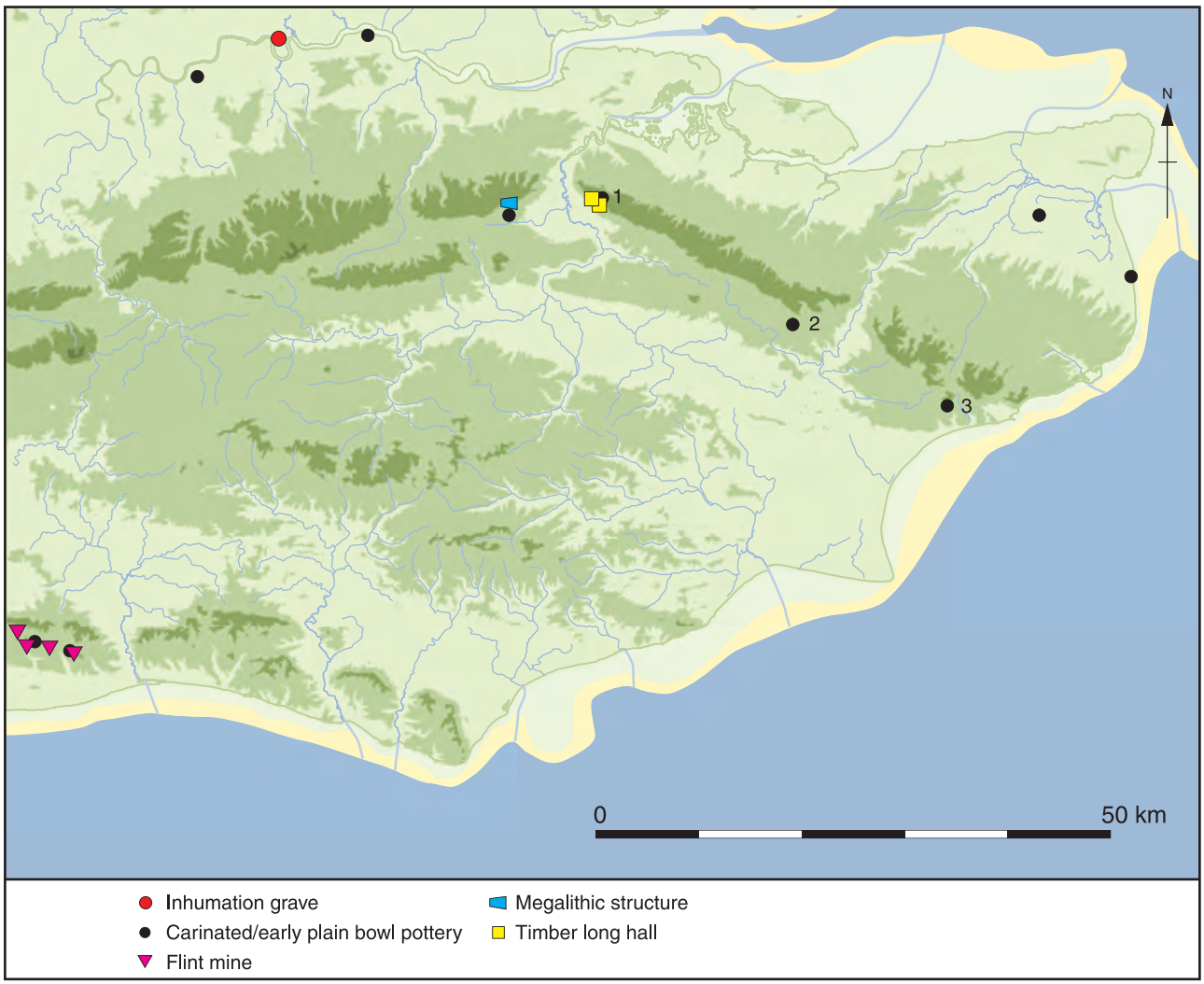


Figure 3.10 Map of Initial Neolithic monuments, other sites and Carinated Bowl finds in south-east England, *c* 4050–3750 cal BC. HS1 sites: 1. White Horse Stone; 2. Beechbrook Wood; 3. Saltwood Tunnel

The earliest dates for pottery in Britain are consistent with this phase, especially the evidence from well-dated Carinated Bowl assemblages, often from pit group contexts (Herne 1988; Sheridan 2007; J Thomas 2008, 75–7).

2. There is good evidence for flint mines being worked from the very beginning of the 4th millennium BC (Barber *et al.* 1999; Whittle *et al.* 2011, 255–62), while the evidence from the two most reliably-dated timber 'long houses' in southern Britain (at Yarnton, Oxfordshire, and White Horse Stone on the HS1 route; discussed below) suggests these also date to the same early phase of the Neolithic (J Thomas 2008, 79–80; Whittle *et al.* 2011, 840–42), contemporary with the earliest evidence for farmed resources and ceramics found in pit contexts.

3. The construction of most chambered tombs and earthen long mounds, in contrast, appears to have taken place later, during a relatively narrow time span within the period *c* 3750–3400 BC (Whittle *et al.* 2007, 125–7). In most cases this involved short-term building events (rather than long drawn-out 'projects'), with mortuary deposition at each monument rarely lasting more than a century (*c* 3–5 generations). Although there may be some earlier funerary monuments in western Britain, such as 'dolmens', simple passage graves and 'rotunda graves' (Darvill 2004, 46–66, fig. 33), and possibly also in south-east Britain, such as the Coldrum tomb in the Medway Valley (Whittle *et al.* 2007, 127; 2011, 381–3; Wysocki, *et al.* in prep.), it is evident that what was once an archetypal component of the Early Neolithic in fact belongs not to the earliest phase but more to the latter part of the period.

4. The same point can be made with regard to causewayed enclosures, the construction dates for which all fall within the period *c* 3750–3500 BC (Whittle *et al.* 2011, 684). The first appearance of these enclosures in the mid-38th century BC, with the most intensive period of enclosure circuit construction during the early 37th century BC, and their abandonment in the 34th–33rd centuries BC, also places their construction and primary use firmly in the latter half

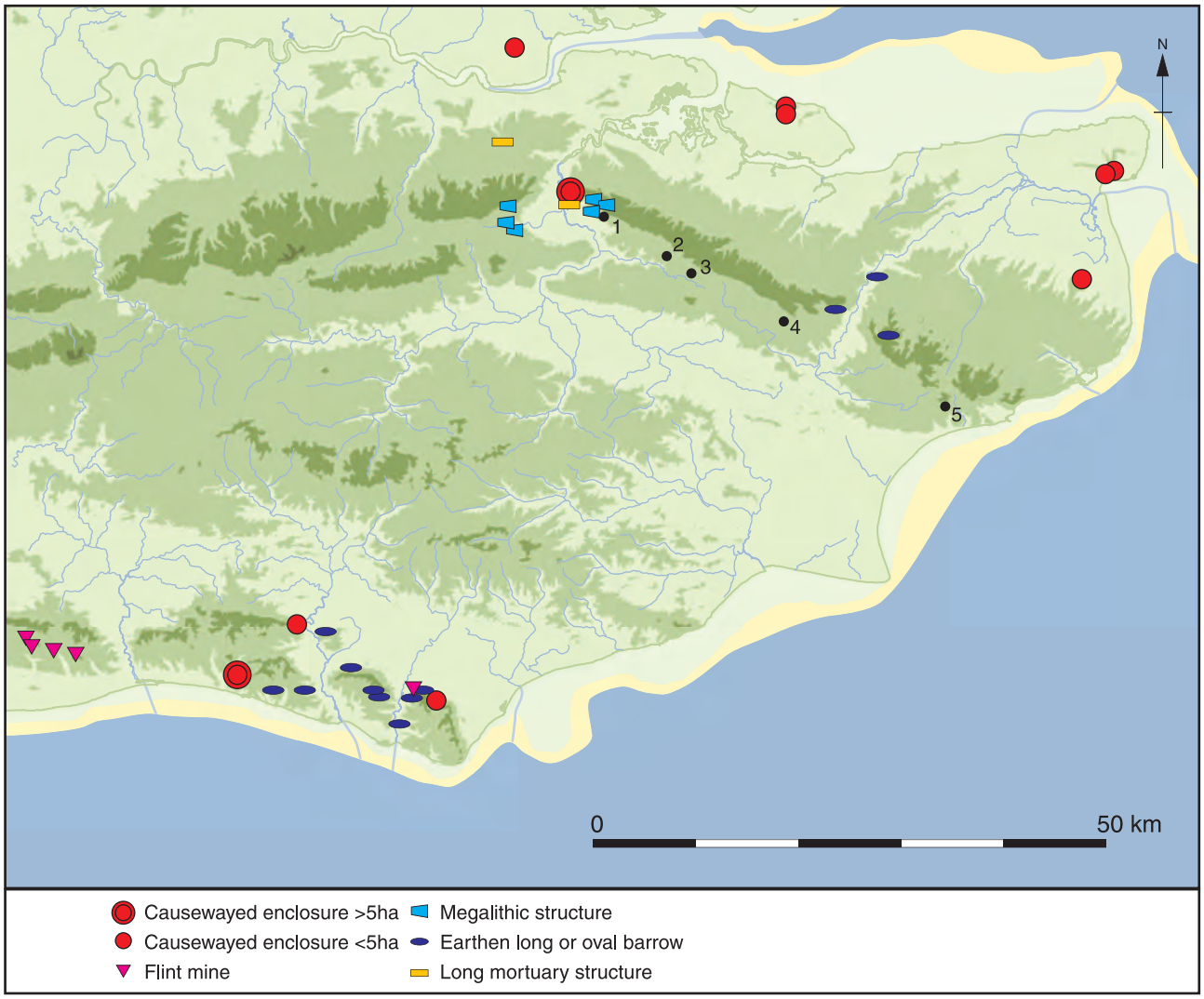


Figure 3.11 Map of Early Neolithic monuments and other sites in south-east England, *c* 3750–3400 cal BC. HS1 sites: 1. White Horse Stone; 2. Sandway Road; 3. Eyhorne Street; 4. Tutt Hill; 5. Saltwood Tunnel

of the 'Early Neolithic' and the early part of the 'Middle Neolithic' (cf. Bayliss *et al.* 2008; Whittle *et al.* 2011, 683–90).

In this light, we can now differentiate between two 'earlier Neolithic' phases. The first of these, which could be termed an 'initial' or 'formative' Neolithic (*c* 4050–3750 BC; see Fig. 3.10 for the distribution of sites of this period in south-east England) is marked by a sharp break with the cultural repertories of the Late Mesolithic and more or less synchronous transformations in several key areas of cultural life, including the first presence of domesticates, cereal cultivation, pit-digging practices, ceramic technology, the deposition of Carinated and other Undecorated Bowl pottery, flint mining and large timber buildings (J Thomas 2008, 79), together with a few early funerary monuments. The second phase, which could perhaps still be termed the 'Early Neolithic' (*c* 3750–3500 BC; see Fig. 3.11 for south-east England), is marked by the 'classic' range of funerary monuments, complex mortuary deposition, causewayed enclosures and Decorated Bowl ceramics typically associated with early farming communities in Britain, though with relatively little arable farming and greater emphasis instead on livestock, especially cattle. The significant decline in cereal cultivation following the short-lived 'pioneering' phase of the initial Neolithic (Bradley 2008) may not have been reversed until the late 3rd or even early 2nd millennium BC. At present, however, there is no consensus with regard to a new period terminology, which in any case could soon be superseded by finer-grained chronological schemes (working to a scale of single centuries or even human generations). It may well be safest at present to use the term 'Early Neolithic' as a broad descriptor for material evidence of the period *c* 4050–3500 BC, while differentiating between earlier and later parts of this age span where possible.

In this context, the Early Neolithic evidence from High Speed 1 Section 1 is exceptionally important in several respects, above all because of the discovery of the very rare timber building at White Horse Stone (Hayden 2006a). This structure is one of only five or six Early Neolithic post-built hall-like structures known in

southern Britain, and in many ways is the best preserved. It was found amidst a wider scatter of earlier Neolithic pits and tree-hollows comparable with similar features at other sites excavated along the HS1 route, such as Sandway Road, Tutt Hill, and Beechbrook Wood. These sites offer intriguing insights into the nature of social life at the very beginning of the 4th millennium BC and again raise questions about the nature of 'settlement' in this period. It is especially important, however, to recognise from the start that these sites provide a series of 'windows' into a cultural world profoundly different to our own. One of the greatest challenges in Neolithic archaeology is to embrace this 'otherness' (J Thomas 1999; Whittle 2003) and find ways to make sense of the unfamiliar and often unique cultural repertoires that developed in Britain in this period. In particular, the significance of Neolithic pits, and deposits of artefacts and other cultural materials found in 'dug' features and natural hollows such as tree-throws, become more comprehensible once their wider social and landscape contexts are appreciated (cf. Evans *et al.* 1999; J Thomas 1999, 62–125; Pollard 2002; Woodward 2002c).

Pits, pots and lithic artefact scatters: making sense of the Early Neolithic landscape

There are six sites along the HS1 route with evidence for Early Neolithic activity in the form of deposits of cultural materials in pits or natural features: White Horse Stone, Eyhorne Street, Sandway Road, Tutt Hill, Beechbrook Wood, and Saltwood Tunnel. Palaeoenvironmental evidence from some of these sites also allows the reconstruction of aspects of the local environmental conditions in the early to mid-4th millennium BC and thus a wider understanding of the Early Neolithic landscape.

At White Horse Stone (see Fig. 3.17 below), four natural hollows and a tree-throw pre-dated the construction of the timber building. The two larger hollows contained flint debitage, burnt flint and a few sherds of Early Neolithic pottery (Hayden 2006a). Another 16 natural features in the vicinity of the building but unrelated to it stratigraphically contained similar artefact assemblages, including possible Carinated Bowl sherds, as well as small amounts of charcoal and animal bone. These deposits could be contemporary with building use but just as easily pre- or post-date it. There was no evidence, however, for prior Late Mesolithic activity (Stafford, in Hayden 2006a, 19–20), and no indication that the location of the timber building was chosen because it was already a significant locale in terms of earlier cultural practices or attachments to 'place'. Episodic activity did occur in the same area for an extended period after the building went out of use, although this does not seem to have involved any attempt to 'reference' or re-occupy the site of the structure. Early Neolithic pottery and lithic artefacts of mid-4th millennium BC date (including Mildenhall style Decorated Bowl pottery) were also found in a tree-throw and in two later Bronze Age postholes in the south-west part of the excavation area (Hayden 2006a, 65–6). Molluscan evidence from postholes belonging to the timber building, and from tree-throws nearby, suggests a local woodland environment, with small areas of open grassland or scrub nearby (Stafford 2006b, 18, tbl.2; cf. Giorgi and Stafford 2006, 17). This may suggest highly localised clearance, perhaps in advance of building construction, within an otherwise wooded landscape. There was certainly no evidence for extensive grazed grassland or cereal cultivation anywhere close to the excavated area during the Early Neolithic.

At Eyhorne Street, Hollingbourne, an assemblage of probably redeposited Ebbsfleet style pottery was recovered from the upper fill of an undated pit or ditch terminal (F100). Tree-throw holes and hollows along the south-western side of the site also in some cases contained Neolithic flintwork, including one large assemblage that probably relates to a knapping event within or beside an open tree-throw hole (F188; Hayden 2006b, 7–8). At Sandway Road, Lenham, an assemblage of Early Neolithic pottery found in an animal burrow cutting the fill of a large tree-throw hollow probably represents occupation debris introduced from a since-truncated surface layer (Trevarthen 2006, 12). Assemblages of Middle Neolithic pottery including both Mortlake and Ebbsfleet styles were recovered from other tree-throw holes, natural hollows and a possible pit on the same site. At Tutt Hill, sherds of Early Neolithic plain bowl and Ebbsfleet Ware pottery were found in charcoal-rich deposits in two pits and a tree-throw hole (all undated). These were buried by a layer of colluvium that accumulated after later prehistoric woodland clearance and ploughing (Brady 2006b, 17–18).

At Beechbrook Wood, a single Early Neolithic pit (Feature 1910; Brady 2006a, 11–12: Fig. 3.12) contained a large flint assemblage (671 pieces) that is almost indistinguishable technologically from Late Mesolithic flintwork in a nearby tree-throw hole (P Harding 2006, 35). The Early Neolithic assemblage, which appears to have been carefully selected, included five soft-hammer struck cores, blades and bladelets, several retouched tools and a serrated flake with edge gloss suggesting use for cutting silica-rich plants such as cereals. It is notable that many of the unretouched flakes and blades showed signs of use-wear and that as much as half of the assemblage had been used in some way (ibid., 43). The flintwork was associated with a complete ironstone saddle quern placed on the base of the pit, together with Plain Bowl pottery sherds (from a large open vessel and a small bowl) and burnt unworked flint. This material appears to have been deposited as a deliberate ritualised act that brought together flintworking residues, flint artefacts with both 'Mesolithic' and 'Neolithic' attributes, fragments of new ceramic objects and artefacts concerned with agricultural practices. Considering the likely date of the deposit early in the 4th millennium BC, it is possible that its particular composition had special symbolic significance in the way that it integrated new subsistence technologies and artefact types with the material repertoires of hunter-

gatherer practices. Other Early Neolithic pits with deliberate deposits that include quern fragments and/or grinding stones are known elsewhere in Kent at Mill Road, Deal (Dunning 1966, 1) and Wingham (Greenfield 1960a).

Finally, at Saltwood Tunnel, three small pits containing Early Neolithic pottery (Fig. 3.13) were found near the east end of the site (Pits 136, 175, 317) (Riddler and Trevarthen 2006, 8–9). The ceramic assemblages consisted of sherds from a number of incomplete vessels, including a Whitehawk-style decorated bowl (Pit 317), plain shouldered and hemispherical bowls (Pit 136), and a cordoned bowl and a carinated vessel (Pit 175). In two cases (Pits 136, 175), the pit fills also contained charcoal and charred plant remains, fragmentary burnt and unburnt animal bone, and worked and burnt flint. As at Beechbrook Wood, the lithic artefacts included an especially high proportion of tools and utilised flakes and blades, with relatively little evidence for flint chips and other knapping debitage (P Harding 2006, 43). The charred plant remains from the pit fills were dominated by hazelnut shells but also included emmer wheat and barley grains, indicating processing and consumption of both wild and farmed resources (Giorgi and Stafford 2006, 18; Riddler and Trevarthen 2006, 9). Apart from the White Horse Stone building, these pits are the only radiocarbon-dated Early Neolithic features from the entire HS1 Section 1 corridor, in both cases producing high value dates from short-life sample materials (charred hazelnut shells) in primary depositional contexts. The Pit 136 deposit was dated to 3650–3380 cal BC (NZA-20599) and the Pit 175 deposit to

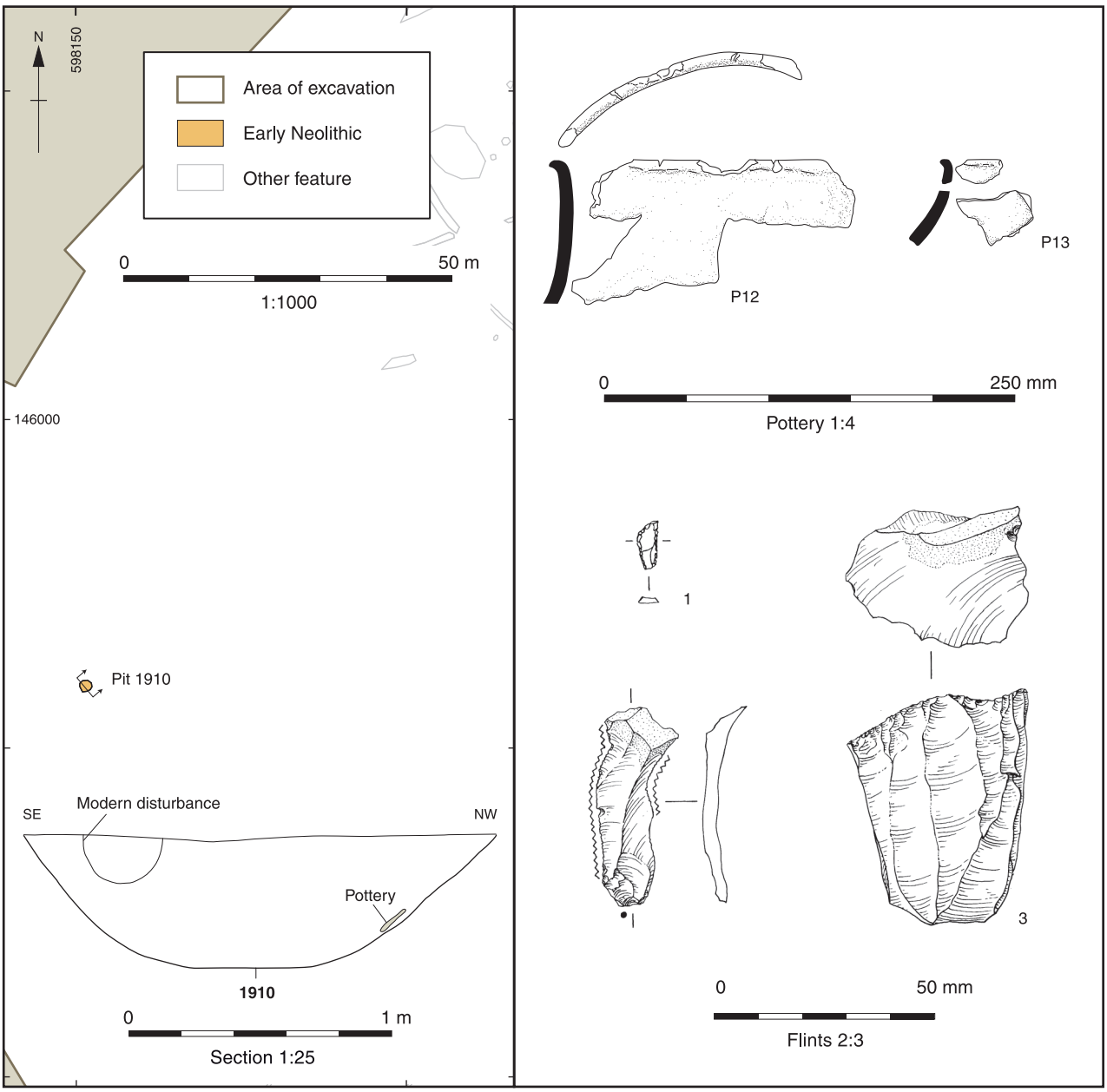


Figure 3.12 Beechbrook Wood Early Neolithic pit 1910: feature location and section. Ceramic artefacts: P12, rim and shoulder of a Plain or Carinated Bowl vessel; P13, rim and shoulder of an Early Neolithic cup or bowl. Lithic artefacts: 1, redeposited microlith; 2, serrated blade; 3, single platform blade core

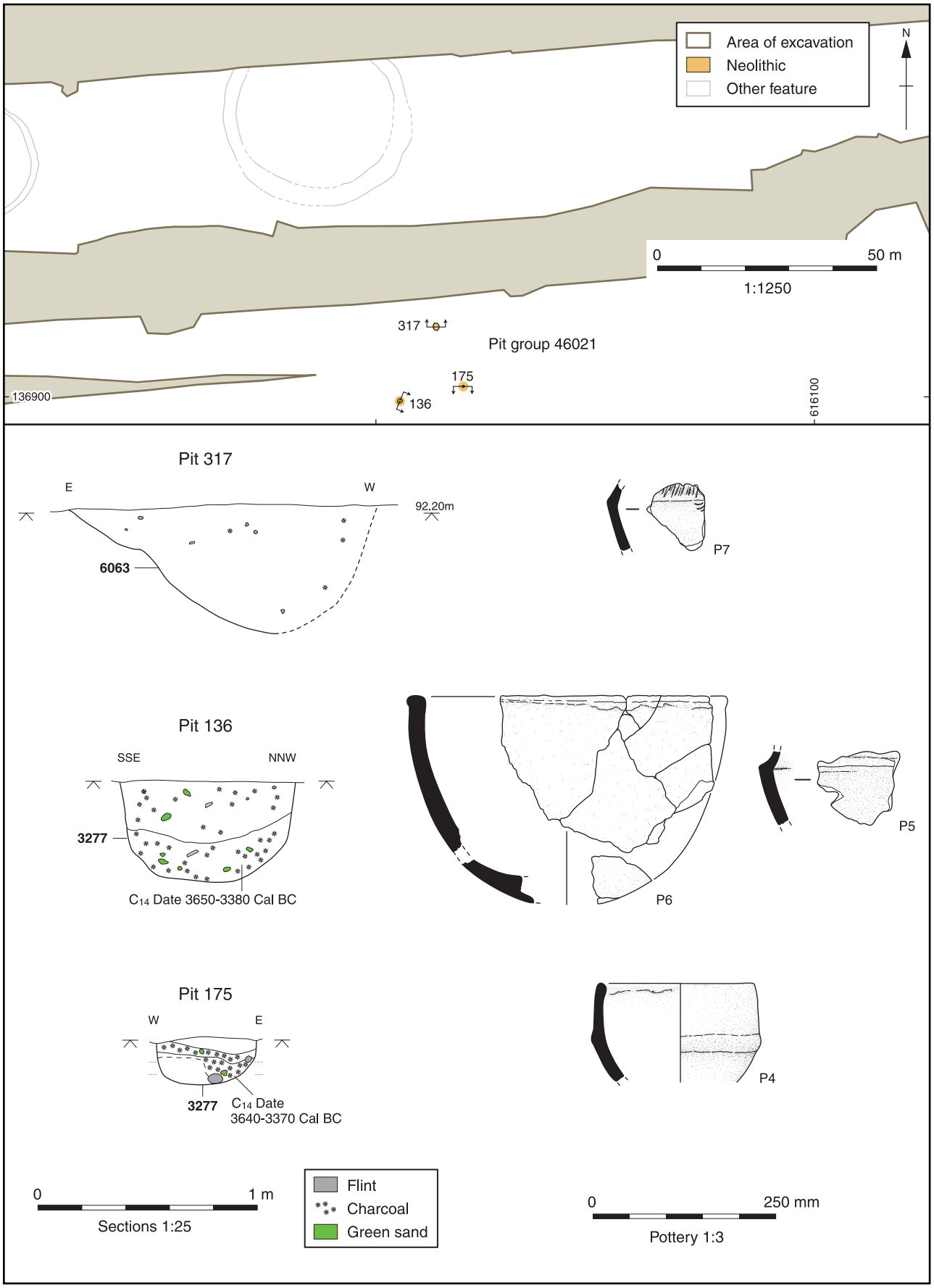


Figure 3.13 Saltwood Tunnel Early Neolithic pits 136, 175 and 317: site plan, and pit sections with associated Early Neolithic ceramic artefacts. Pit 317: P7, shoulder sherd from a carinated bowl with incised decoration just above the carination. Pit 136: P6, plain uncarinated open bowl; P5, shoulder of a carinated bowl. Pit 175: P4, upper part of a small bowl with a horizontal cordon

3640–3370 cal BC (NZA-20600). The calibration plots also suggest that the depositional events probably took place in the earlier parts of the age ranges in both cases, within the period *c* 3650–3500 BC, which is consistent with wider dating of Whitehawk-style plain and decorated ceramics.

Although the Early Neolithic sites investigated on the HS1 route from Holywell Combe to White Horse Stone are all located on the south side of the chalk downland escarpment, they occupy diverse geological and topographical locations. These range from the base of a chalkland combe at White Horse Stone, to a relatively elevated Greensand hillside location overlooking the Stour valley at Tutt Hill. The fact that the Early Neolithic evidence at all these sites is remarkably similar suggests that the landscape, and social actions within it, were not subject to major classificatory distinctions or strategic decisions determined by soil, elevation or aspect. Instead, the existence of a more or less heavily wooded landscape, with undulating terrain and easy access to water sources everywhere in this part of the HS1 corridor, suggests one broad landscape zone traversing the northern Weald and southern edge of the Downs in which short-term occupation sites were chosen on the basis of localised and temporally-specific group- and activity-related criteria.

The nature of this activity, however, remains obscure and it is possible to suggest many different kinds of social practice and inhabitation. These range from sedentary settlement foci for multiple spatially-overlapping economic activities, through many diverse types of episodic occupation events related to the procurement of specific resources within wooded and other environments, to special events for 'ritual' or 'ceremonial' performances (eg rites of passage conducted in 'liminal' places; Garwood 2011). The social practices represented at a contextual level range from apparently routine discard of cultural materials in middens or surface occupation layers (eg at White Horse Stone and Sandway Road), through single knapping events (eg in Eyhorne Street tree-throw hole F188), to ritualised depositional acts (Beechbrook Wood Pit F1910). It is important to recognise, of course, that these kinds of social practices and landscape utilisation are in no sense mutually exclusive, although at any one time they may have been separated spatially for both practical and symbolic reasons.

The same range of deposits is apparent at other non-monument sites throughout Kent in both pit contexts and natural features (see Champion 2007c, 74–5). Indeed, Healy argues (2008) that the whole of the landscape was used in some way or another, even if episodically and non-intensively, and that occupation sites were widespread. It is notable that wherever Early Neolithic pits, occupation deposits and flint working sites have been recorded in the region, they are very similar to those encountered along the HS1 route in terms of their formal and depositional characteristics and the diverse practices represented. These kinds of sites are clearly not restricted to particular geo-environmental or topographic zones but occur in many different landscape contexts. It is possible to discern some geographical variation in the relative emphasis placed on different kinds of activities on the basis of large-scale distributions of surface finds such as arrowheads and axe heads (cf. J. Gardiner 1984), but these are not exclusive and their particular social and economic significance is open to alternative interpretations (Healy 2008).

Pits and pit groups are certainly pervasive features of the British Neolithic (J Thomas 1999, 62–74), so much so that they could be seen as the defining feature of Early Neolithic occupation practices, rather than 'monuments', which are sometimes absent altogether, appearing less and less typical of cultural life in this period across Britain as a whole (Ray 2007, 71–2). The purpose and significance of pits and pit deposits, however, remain problematic (discussed in more detail below in relation to Grooved Ware pits). It is possible that some were used for routine tasks within or around occupation sites, and a general relationship between pits and settlement is widely acknowledged (cf. Garrow *et al.* 2005; Garrow 2007b; J Harding 2006; Lamdin-Whymark 2008a, 100–28; J Thomas 1999, 64–88), yet the structured nature of some pit deposits suggests these resulted from ritualised modes of social action (ibid.; J Harding 2006). It is clear that we are confronted here with unfamiliar, spatially extensive kinds of behaviour that could involve repeated visits to the same locations at short intervals of months or years, as well as unconnected occupation events separated by centuries (Garrow 2007a; 2007b). It is difficult to suggest specific social interpretations, however, because the duration and frequency of pit use cannot be determined in precise chronological terms, and their spatial organisation—even if related to contemporary practices—is usually uncertain as the full extent of most pit groups is unknown. This is certainly true of the examples recorded along the HS1 route, which provide us with local 'snapshots' of Early Neolithic activity and a diverse range of practices, but little information about their landscape settings or social contexts. These sites, and the thin scatters of surface finds from fieldwalking surveys (P. Harding 2006, 36–7), offer only a general picture of the Early Neolithic landscape, dominated by long-term patterns of relatively ephemeral, low-intensity and short-lived occupation events in a mostly woodland environment.

This view is consistent with recent interpretations of the Mesolithic–Neolithic transition and the impact of Early Neolithic 'farming' communities on the environment. There is evidence throughout Britain to support the view that woodland clearance in the 4th millennium BC was very limited in scale, sometimes transient, with only small-scale and possibly discontinuous agrarian production (where this was present at all) (T Allen *et al.* 2004; Austin 2000; Brown 2000; Pollard 2004). There is some indication that fields were sometimes maintained for many years (Bogaard and Jones 2007, 367–70), with considerable local investment in cereal production, but these seem to be features of the initial phase of the Neolithic (*c* 4050–3700 BC) rather than characteristic of the Early Neolithic as a whole (cf. Bradley 2008). Although deforestation may have been cumulatively expansive over the 4th and 3rd millennia BC, it appears

to have been uneven in tempo and spatially variable, even in areas of large-scale monument building such as Wessex (M Allen 1997; Gillings *et al.* 2008, 172–99). This process accelerated in all parts of Britain only from the mid-2nd millennium BC, marked by evidence for far more extensive woodland clearance (in some areas for the first time) alongside intensive agrarian production practices, field systems and large-scale land division (cf. Bradley 2007, 187–96; Garwood 2007c, 196–7).

Environmental evidence from south-east England for the period *c* 4500–3500 BC is extremely limited and often ambiguous. Woodland appears to have been prevalent at most chalkland sites but there also seems to have been considerable variation over short distances in the density of tree cover and the extent of grassland and scrub (Giorgi and Stafford 2006, 22). It is certainly evident that great care needs to be taken not to generalise from single sites, as the variation in dry valley colluviation sequences in Sussex demonstrates (Wilkinson 2003). Reconstructions of local palaeoenvironments are also rare, and are usually over-reliant on just one principal kind of palaeoenvironmental indicator. The identification of clearance before *c* 3000 BC and woodland regeneration on the edge of the chalk escarpment at Brook near Ashford, for example, is based almost entirely on molluscan evidence (Kerney *et al.* 1964). Even so, a general picture of the Early Neolithic landscape has been built up from a number of site-specific analyses of diverse palaeoenvironmental data, including lithostratigraphic and molluscan studies of colluviation sequences (eg from Brook and Holywell Combe: ibid.; Preece and Bridgland 1998; cf. Wilkinson 2003), rare pollen evidence (Thorley 1981; M Allen *et al.* 2008, 269–71), relatively common charred plant remains, especially from pit and ditch contexts (eg at Saltwood Tunnel and Kingsborough Farm: Giorgi and Stafford 2006, 18; M Allen *et al.* 2008, 271–4), and the presence of tree-throw holes and root boles containing cultural materials at nearly all Early Neolithic sites. Taken together, this range of evidence seems to confirm that earlier clearances were localised and subject to cycles of woodland/scrub regeneration (Giorgi and Stafford 2006, 22). There may, however, be significant exceptions, such as the area around the Kingsborough enclosures on the Isle of Sheppey, where there is evidence for open grassland and cereal farming (M Allen *et al.* 2008, 271), and in the low-lying coastal zone now covered by the North Kent marshes which appears to have been dry grassland and open scrub woodland throughout the Neolithic (ibid., 278).

Overall, therefore, we should imagine that extensive 'treescapes' existed in the early and mid-4th millennium BC in the areas transected by the HS1 corridor. Even the places occupied by monument-building groups and more committed agricultural communities along this route were still dominated by relatively dense tree cover. The significance of woodland domains for Early Neolithic social experience and perception, in terms of both routine 'economic' and special 'ritual' practices, has only recently become a prominent interpretative theme in Neolithic studies (eg Austin 2000; Cummings and Whittle 2003; Evans *et al.* 1999; Pollard 2004; 2005), but there is little question that the resources, experiential qualities and mythological and symbolic associations attached to trees and forests must have been diverse and sometimes all-encompassing (Bloch 2005). Considering the limited evidence for farming, it is possible that many early clearances were not for agricultural purposes but primarily in order to create open spaces for constructing monumental buildings, mounds and enclosures. This may well have included attempts to enhance the visibility of monuments within the landscape, to give them special prominence as foci for asserting social identities, and as powerful statements of human success in overcoming natural forces and the chaos of the 'wild', reconfiguring and perhaps domesticating the relationship between humans and the natural world (Pollard 2004; Whittle and Pollard 1999, 384). Ethnographically, the symbolic significance and aesthetic appreciation of trees and forests vary greatly from one cultural context to another but are often central to cosmological schemes and many different kinds of agency. Ideals of cultural and political order among the Zafimaniry people of eastern Madagascar, for example, are articulated in terms of successful rainforest clearance (overcoming the forces of nature), house and settlement 'growth' (reproduction), and an aesthetic of human achievement and transcendence that emphasises the visibility (clarity) and relative elevation of cultural places in the forest landscape (Bloch 1995a).

Places of special virtue: monuments and houses in the Neolithic landscape

In this light, the presence of durable architectural edifices, such as mounds, enclosures and timber buildings, becomes all the more striking in the densely wooded Early Neolithic cultural landscape. These were places of very special significance, around which more fluid everyday social practices were structured (J Thomas 1999, 34–53). In contrast with Sussex, which has long had a prominent place in wider interpretative discussions of Early Neolithic monumentality and social organisations (eg Drewett *et al.* 1988; Oswald *et al.* 2001, 117–18; Drewett 2003), our understanding of these monuments in Kent has been subject to serious evaluation only recently (Champion 2007c, 75–83; Healy 2008).

The distinctive distribution of Early Neolithic megalithic structures and long mounds in Kent has been recognised for some time (eg Holgate 1981; Drewett *et al.* 1988, 56–60; Ashbee 1993). These form two clusters of monuments (see Figs 3.11, 3.29, 3.30), both located on the south side of the chalk escarpment where major rivers cut through the Downs. To the west, in the Medway Valley, two separate groups of megalithic sites are situated on either side of the river to the north and west of Maidstone. To the east, three earthen long mounds have a dispersed distribution in the Stour Valley to the north of Ashford, with one site on each side of the

river and the third located further downriver on the eastern valley side. This long-established 'pattern' in the evidence may, however, need revision in the light of new discoveries of possible Early Neolithic monuments in Kent through air photographic survey (12 possible long barrow sites: Bewley *et al.* 2004, 72) and developer-funded excavation (eg long enclosures or plough-truncated long barrows at Tollgate near Gravesend and at Northdown on Thanet: Bull 2006b, 10; Dinwiddy and Barclay 2009). This challenges previous assumptions about the absence of such monuments from the North Downs and other parts of Kent on which previous appraisals of the evidence have been based, usually in comparison with the well-known downland distribution of long mounds on the South Downs (Drewett *et al.* 1988, 52–62).

These discoveries build on another dramatic recent change in perceptions of the Early Neolithic landscapes of Kent. Causewayed enclosures have figured prominently in social interpretations of this period since the 1920s (eg Oswald *et al.* 2001, 15–26), in part informed by a notable series of excavations of Sussex enclosures (especially at Whitehawk, Combe Hill, Offham Hill and Bury Hill), yet such sites until recently appeared to be entirely lacking in Kent (Drewett *et al.* 1988, 44; Barber 1997). This raised the possibility that enclosures were not part of the social fabric of Early Neolithic communities in this part of south-east England, or that they awaited discovery in riverine or other landscape contexts similar to enclosure sites in the Thames Valley (eg Staines) or the Essex coastal plain (Orsett) (Drewett *et al.* 1988, 44). In the late 1990s, however, our understanding of the Early Neolithic in south-east England was transformed as a result of a series of independent discoveries of causewayed enclosures at several sites in Kent (Dyson *et al.* 2000; Oswald *et al.* 2001, 81; Champion 2007c, 81; Hammond 2007; Healy 2008).

An especially striking feature of the Kent enclosures is the existence of adjacent 'paired' sites at Ramsgate on the Isle of Thanet, where there is evidence for at least two (possibly three) enclosures on the hills overlooking Pegwell Bay (Champion 2007c, 81–3; Lis Dyson pers. comm.), and at Kingsborough, on the Isle of Sheppey, where two enclosure sites were located on the highest part of the island (M. Allen *et al.* 2008). A causewayed enclosure is also known at Burham in the Medway Valley close to the eastern group of megalithic monuments (discussed below), and another possible site shown on air photographs may exist on the Downs at Eastry near Dover (Oswald *et al.* 2001, 153). Plainly, the potential for further new discoveries is considerable, especially through air photographic survey (Bewley *et al.* 2004) and the potential use of LiDAR for investigating woodland areas of western Kent. The excavated enclosure sites in Kent, the dating of which has recently been analysed in detail by Whittle *et al.* (2011), are amongst the earliest in Britain. The main Chalk Hill enclosure was initially constructed in the period 3740–3690 cal BC (ibid., 375), while Kingsborough 2 and 1 were probably built in *c* 3710–3635 cal BC and 3660–3580 cal BC respectively (ibid., 370–1).

It is apparent that nearly all of the Early Neolithic funerary monuments and enclosures in Kent are located in chalkland settings, the only exceptions being two megalithic sites on the Greensand: Addington long barrow and The Chestnuts chambered tomb (Ashbee 2000). The HS1 Section 1 corridor, in this wider geo-cultural context, provides an extremely valuable transect across both Greensand and chalkland zones for evaluating the presence of monumental structures in hitherto unexplored parts of the Kent landscape. It is especially striking, therefore, that despite extensive survey and excavation, the presence of Early Neolithic features and artefacts, and the proximity of the HS1 route to known monument sites in both the Medway and Stour valleys, this work produced no evidence of any kind for Neolithic monuments in the Greensand areas between Saltwood Tunnel and Hollingbourne. In the chalkland area to the west of the Medway, in contrast, a 'long enclosure' site of Early or Middle Neolithic date (Loveday 2006) was identified at Tollgate, Gravesend (now preserved *in situ* beside the HS1 route; Bull 2006b, 10), reinforcing the general chalkland emphasis of Early Neolithic monument-building.

The discovery of three clusters of sarsen stones at Tollgate, to the east of Church Road, prompted speculation that these might be collapsed or demolished megalithic structures (ibid., 10–11). These comprised about 40 stones altogether, the largest just over 2m in length, some of which had been burnt or had fairly fresh breaks and plough strikes. There was, however, no direct structural or artefactual evidence to support their interpretation as destroyed monuments, and the only possible find amongst the stones could be interpreted as either an exceptionally large saddle quern or an eroded sarsen boulder. Sarsen stone groups are a natural feature of the North Downs landscape, formed by Pleistocene periglacial and solifluction processes that produced clusters and wider scatters of stones close to or on land surfaces (Ullyott *et al.* 1998). It is most likely that the sarsen deposits at Tollgate are natural features of this kind, although some of the stones were clearly moved and damaged by human activity in the medieval period or more recently. Medieval features recorded nearby, including a cobbled surface, hearth, postholes and burnt sarsen fragments, were associated with pottery dating to *c* AD 1100–1250. This activity may relate to field clearance activities when sarsens were broken up and sometimes destroyed by fire-setting (a process well-attested in the Avebury landscape during the early 18th century, but very unusual at other times and rarely documented elsewhere in Britain: Gillings *et al.* 2008, 291–364).

Although the archaeological work carried out along HS1 Section 1 does not add a great deal to our knowledge of Early Neolithic monuments or enclosures, it did produce one of the most significant and striking contributions to our understanding of this period in south-east England and Britain more widely: the

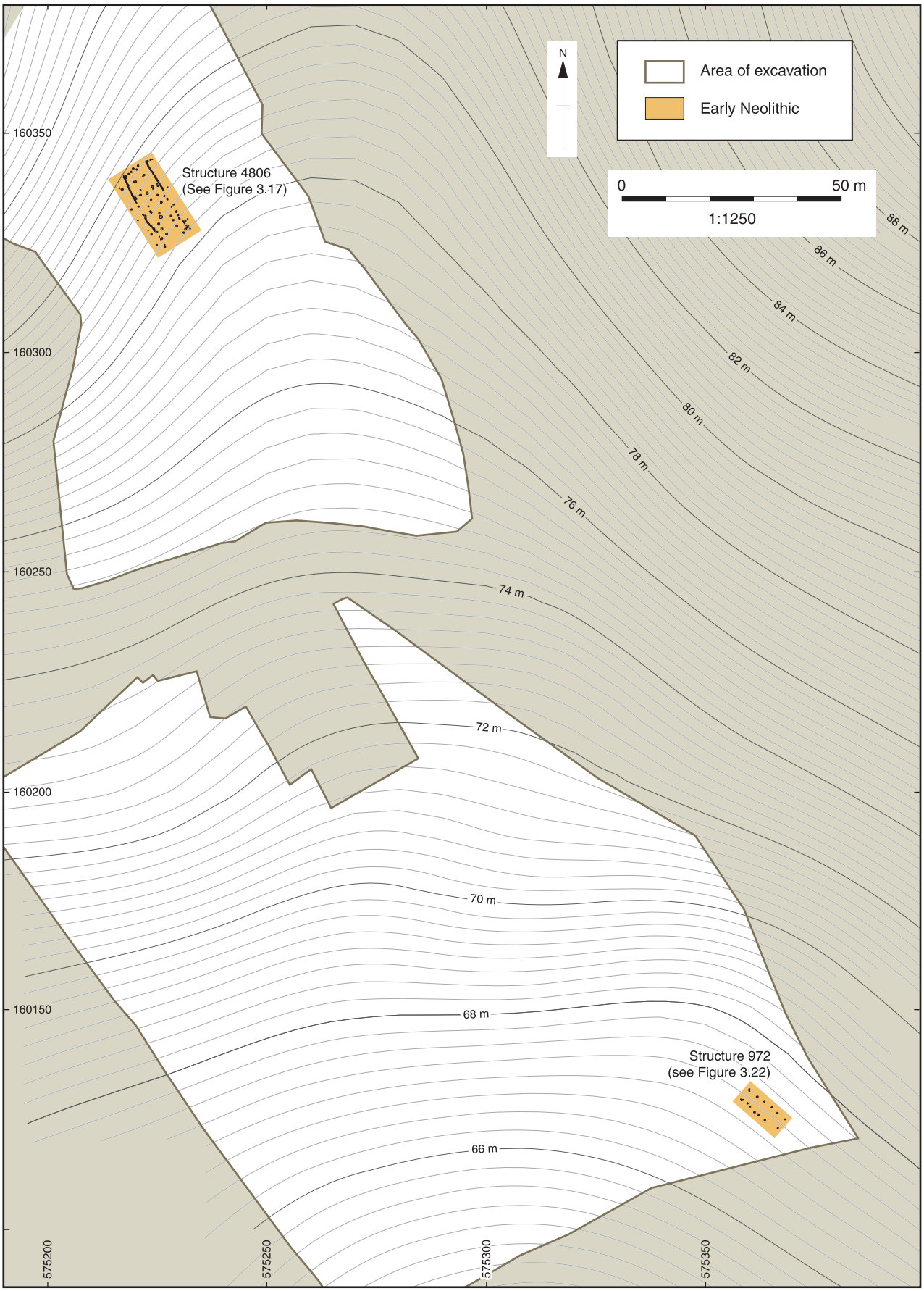


Figure 3.14 Locations of the Early Neolithic timber long halls at White Horse Stone (Structure 4806) and Pilgrim's Way (Structure 972). Contours show modern surface topography

discovery of the large timber building at White Horse Stone and the remains of a second similar building on the Pilgrim's Way site nearby. As noted above, these structures belong to the late 5th or early 4th millennium BC, at the very earliest stage in the development of insular agricultural communities.

The Early Neolithic timber buildings at White Horse Stone and Pilgrim's Way

The Early Neolithic buildings

The White Horse Stone and Pilgrim's Way excavations, described in detail by Hayden (2006a), comprised two extensive open-area sites extending for a total distance of about 525m north-west to south-east, and 160m east-west, the two excavation areas being divided by a gap up to 18m wide on the line of the Pilgrim's Way footpath (Fig. 3.14). The excavated areas lie mainly within the western arm and tail of a Y-shaped dry valley, situated between two prominent chalkland spurs on the south side of the North Downs escarpment. This part of the valley slopes steeply southwards to the base of the spurs then shelves more gently south-westwards towards the River Medway about 2km away. The base of the dry valley was filled with Late Pleistocene and Holocene deposits up to 2.5m in depth, while thin topsoils covered the valley sides. A notable feature of the Pleistocene deposits in the south-eastern corner of the White Horse Stone site was the presence of about 70 sarsen boulders, redeposited in the base of the dry valley by periglacial processes. These must have been at least partly visible in the Early Neolithic landscape (Fig. 3.15).

The two timber structures consisted of one definite building, located approximately 90m from the southern end of the White Horse Stone excavation area, and a second probable building situated in the far south-east corner of the Pilgrim's Way site. The White Horse Stone building, situated on a steep slope close to the base of the dry valley and protected by colluvial deposits, was far better preserved than the Pilgrim's Way structure, which was positioned higher up the valley side beneath a thin topsoil. Although the two buildings were built some 280m apart and in different positions in relation to the configuration of the dry valley, the long axis of the southern half of the slightly angled White Horse Stone building appears to be aligned directly on the Pilgrim's Way structure. This suggests that even if the two were not in contemporary use, one was built with reference to the other in terms of landscape positioning and orientation.

The thin modern topsoils across the northern part of the White Horse Stone site and most of the Pilgrim's Way site were removed by machine to reveal eroded and plough-truncated features cut directly into the natural chalk. In the southern parts of the White Horse Stone site, in contrast, where deep colluvial fills had accumulated (Fig. 3.16), the deposits had to be machine-excavated in three phases: first, to the top of the archaeological horizons marked by Roman features; second, to the top of the Iron Age soil; and, third, to the chalk bedrock where Neolithic features were evident. The Iron Age soil in this area directly overlay the Late Glacial sediments and Neolithic features. The most difficult interpretative problem, in this context, is the absence of early–mid Holocene buried soils and colluvial deposits, including floor layers associated with the White Horse Stone building. This may indicate a major gap in the sediment sequence for the period *c* 8000–500 BC caused by extreme high-energy erosion processes. The absence of pre-Bronze Age soils and colluvium in dry valleys, widely noted in south-east England, has been interpreted as evidence for extensive truncation during the late 2nd or early 1st millennia BC (eg M Allen 1992), although the causes, frequency, severity and precise chronology of these processes are unknown.

The apparent absence of Early to Mid-Holocene soils may not, however, be due entirely—or even largely—to erosion events. It was evident at White Horse Stone that the colluvial deposits on the upper western slopes of the valley were cut by a Middle Bronze Age ditch (4025), which suggests that erosion processes here were not as extreme, extensive or sustained as one reading of the evidence suggests. At the same time, there was no evidence from sub-colluvial contexts in any part of the site for gullying of the chalk bedrock, scouring of the dry valley floor/sides, or deposition of sediments in a high-energy environment, in contrast with the evidence from the top of the Iron Age buried soil (Stafford, in Hayden 2006a, 15–17). In this light, the soils in the valley may have been subject instead to continuous biological reworking over a long period of relatively stable soil conditions, interspersed with occasional short periods of localised erosion and colluviation, until the late Iron Age or Roman period when they were finally buried by much deeper colluvial deposits. Thin-section examination of fills of Late Neolithic and possible Early Bronze Age features at White Horse Stone/Pilgrim's Way certainly indicate that soils in the immediate vicinity were humic rendzinas, which suggests little or no surface erosion during these periods. This issue has a direct bearing on interpretations of the timber building, the floor layers of which were not identified in the course of excavation (discussed in more detail below).

The White Horse Stone building (Structure 4806)

The White Horse Stone building (Figs 3.17–19), measuring 17.5m in length and 6.5–7m in width, consisted of six longitudinal rows of posts oriented NNW–SSE, and at least nine (possibly 10) transverse rows of posts oriented WSW–ENE (Hayden 2006a, 30). The interior rows of postholes in both the northern and southern halves of the building contained the largest posts, generally over 0.31m across, while slightly smaller posts, 0.16–0.31m across, were used for the outer rows (Fig. 3.19). Outside the lines of the bedding trenches, to both east and west, were widely spaced lines of posts of varying size, mostly relatively slight, which appear to represent linear 'porches' or roof supports along both

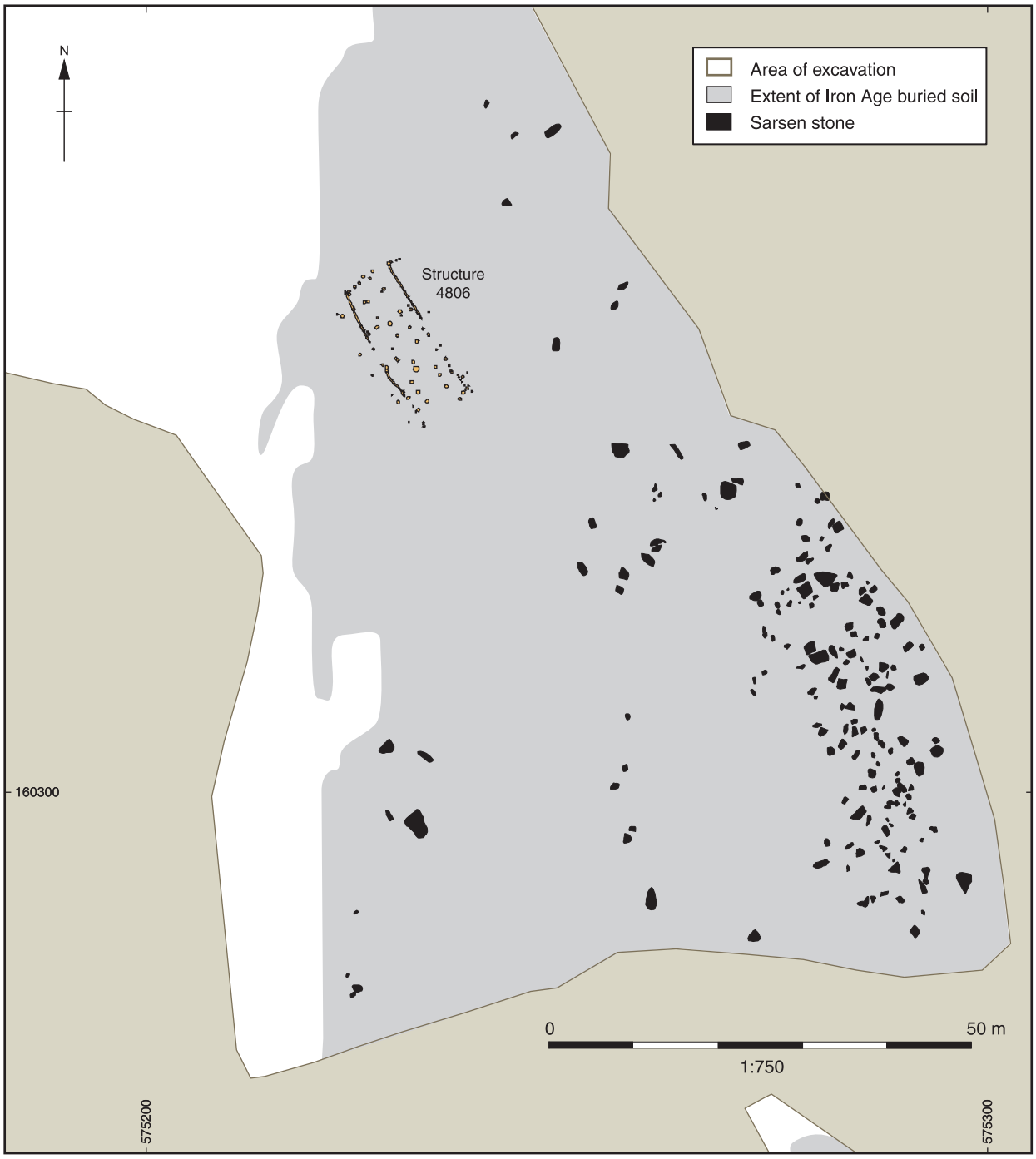


Figure 3.15 White Horse Stone timber long hall, Structure 4806, and the adjacent sarsen boulder field sealed beneath Iron Age colluvium

sides of the building. The gap between the bedding gullies on the west side probably marks the location of a doorway about halfway along the length of the building (ibid., 33). Where post pipes could be distinguished from post packing, all of the posts were circular. In terms of basic architectural design, therefore, it appears that the large internal posts carried most of the weight of the roof, while the wall posts and the external 'porch' posts on the long sides of the building supported just the wall structures, possible doorway and the outer edges of the roof.

The corners of the building were marked by multiple post settings, probably for strengthening the main building frame. The two shallow bedding gullies, 0.07–0.09m deep, on the east and west sides of the northern half of the structure, and a single short bedding gully 0.14m deep on the south-west side, almost certainly mark the lines of the east and west walls. The bedding trenches probably contained short sleeper-beam foundations either for vertically-set plank walls, or for additional vertical posts (between those erected in postholes) to support lightweight walling such as wattle- or wickerwork panels, bark shingles and/or horizontally-laid planking. The absence of similar gullies at the north

Figure 3.16 View of the White Horse Stone site from the north-west, looking south-eastwards. The early Neolithic long hall (Structure 4806) is under excavation just beyond the figures in the middle ground. The sarsen field and overlying colluvial deposits can be seen in the excavation area and sections around the eastern and southern edges of the site.

and south ends, and on the south-east side, cannot be explained by differential erosion given the preservation of the recorded gullies and other insubstantial features such as small postholes, so the external walls in these areas must have been built in a different fashion to those along the bedding trenches. As no traces of daub were found in micromorphological analyses of soil samples from posthole contexts it is most likely that all the walls were built using light wooden hurdles, woven panels or planking.

The northern end of the building had a substantial wall consisting of two slightly angled and offset lines of close-set posts. This was formed by adding posts between the main structural timbers at the ends of the longitudinal rows. The very southern end of the structure, in contrast, lacked evidence for a continuous wall. Although disturbance by shallow natural features was more marked in this area, this would not have affected the survival of deep postholes, and in any case the undisturbed parts of the structure at the south end included numerous small post settings along with a few widely spaced larger postholes. It is probable, therefore, that the south end of the building consisted of a lighter timber-frame wall, perhaps with a wide entrance, or even that it was open-ended or could be opened temporarily by removing wattle screens. It is also conceivable that the large posts at the southern ends of the longitudinal rows originally formed the main southern end wall, while the smaller postholes/stakeholes at the south-east and south-west corners represent a rectangular open-sided extension at this end of the building. Alternatively, the slighter postholes and stakeholes at the south end, especially those at the south-east corner, may have formed parts of quite separate Late Neolithic structures or fencelines (discussed in more detail below). Either way, given the lie of the land and the likelihood that the immediate landscape was wooded, it is evident that the widest views to be had from the building lay to the south and south-east, and that portals or wall openings at this end of the building would have maximised the amount of daylight reaching the interior of the building. The possible entrance on the western side, in contrast, would have opened onto the valley side, where the rising ground and any vegetation cover would have blocked views to the west and south-west and severely limited the amount of light entering the building from that direction.

The basic architectural form of the White Horse Stone building is thus uncertain, and is complicated still further by its topographic position and the possibility of a multi-phase construction sequence. The position of the building, angled downslope across the contours on a steep part of the western valley side, with a 1.8m drop in height from the northern to the southern end of the structure, was clearly not dictated by local topography or ease of construction. There was no evidence for terracing or raised earth or chalk platforms to create level floor areas, so the interior ground surface of the building must instead have been steeply angled, with an average overall

Figure 3.17 White Horse Stone long hall, Structure 4806: plan showing constructional elements (postholes and gullies), together with pre-building features and other features not related stratigraphically to the building but probably Neolithic or earlier in date (including natural tree-throw holes and hollows)

gradient of 1:10. It is possible, of course, that raised plank floors were built within the building, although this would probably have required more elaborate and substantial internal post-settings. It is also surprising that if the roof was built more or less on a level as both Hayden and Davies assume (Hayden 2006a, 32; cf. Davies 2006, 126–7; figs 5.3.2–5.3.11), the south end of the building must have been considerably taller (*c* 1.5m) and with greater weight loads than the north end, yet the postholes in the southern half of the structure appear to have been no more deeply-cut than their northern counterparts. Although this may perhaps have been due to greater surface erosion and truncation of the upper parts of postholes (Hayden 2006a, 30), the survival of small stake holes at the south-east corner, the bedding gully along the south-west side, and hearth 4830 in the middle of the southern half of the building, suggests this is unlikely. It is possible, therefore, that the roof structure was pitched longitudinally as well as to the sides, perhaps in a complex multi-faceted fashion.

One distinctive feature of the building architecture which has attracted surprisingly little attention is its angled or 'bent' ground plan and contrasting two-unit compartmental design (eg there is only brief comment by Hayden: 2006a, 54; though see Davies 2006, 121–5). The northern unit takes the form of a short trapezoid, both in the layout of the opposed bedding gullies and in the internal longitudinal alignments of posts. Using the gullies as a guide, this was approximately 8.0m long, 6.8m wide at the south end, and 6.2m wide at the north end. The largest posts form the penultimate transverse row southwards, while the southernmost transverse row at/beyond the ends of the bedding gullies consists of flimsier posts. The southern unit, in contrast, is more rectangular rather than trapezoidal in plan (this is especially apparent in the symmetrical grid lay-out of the post settings), measuring approximately 8.6m in length and 6.6–6.8m in width. This has a short bedding trench present on just one side, and has a different orientation to the northern part of the building. The closest correspondence in design between the two components, in fact, is the presence of larger posts in the two central longitudinal rows, suggesting that the load-bearing qualities of the timber frames and the forms of the roof structures were similar in each case. It is probable, therefore, that while the internal post settings supported a continuous pitched roof with a central longitudinal ridge, the angled layout of the structure and the contrasting ground plans of the northern and southern units strongly suggest it was built in more than one stage, the basic design emulated as the building was extended.

In this light, it is likely that the White Horse Stone building was a two-phase structure. One possible interpretation is that the northern part of the building was built first, to a trapezoidal design with a more lightly-built southern end. This structure was then extended down-slope by the more rectangular building unit, on a slightly different alignment to the northern part but still replicating the more lightly-built character of the structure's southern end. Because of the different

Figure 3.18 White Horse Stone long hall after excavation, viewed from north-west to south-east along the central axis of the building. Note the distinctive angled lay-out of the building units, especially visible on the right (west) side of the structure

alignments the 'gap' between the two building units narrows markedly from west to east, and it is possible that some of the small posts in this area were added in order to support a 'bridging' section of roof between the two parts of the building. Although there may have been several reasons for extension and re-alignment of the structure, it is striking that the southern part of the building is oriented directly on another Neolithic timber building some 240m to the south-east (Structure 972). It is equally possible, however, that the southern unit was built first while the northern part represents the later extension. The basic design and construction sequence of the White Horse Stone building can thus be interpreted in three main ways (Fig. 3.20):

1. A single-build, angled structure.
2. A two-phase structure comprising an earlier northern trapezoidal building that was later extended southwards by the addition of the southern rectangular building unit.
3. A two-phase structure comprising an earlier southern

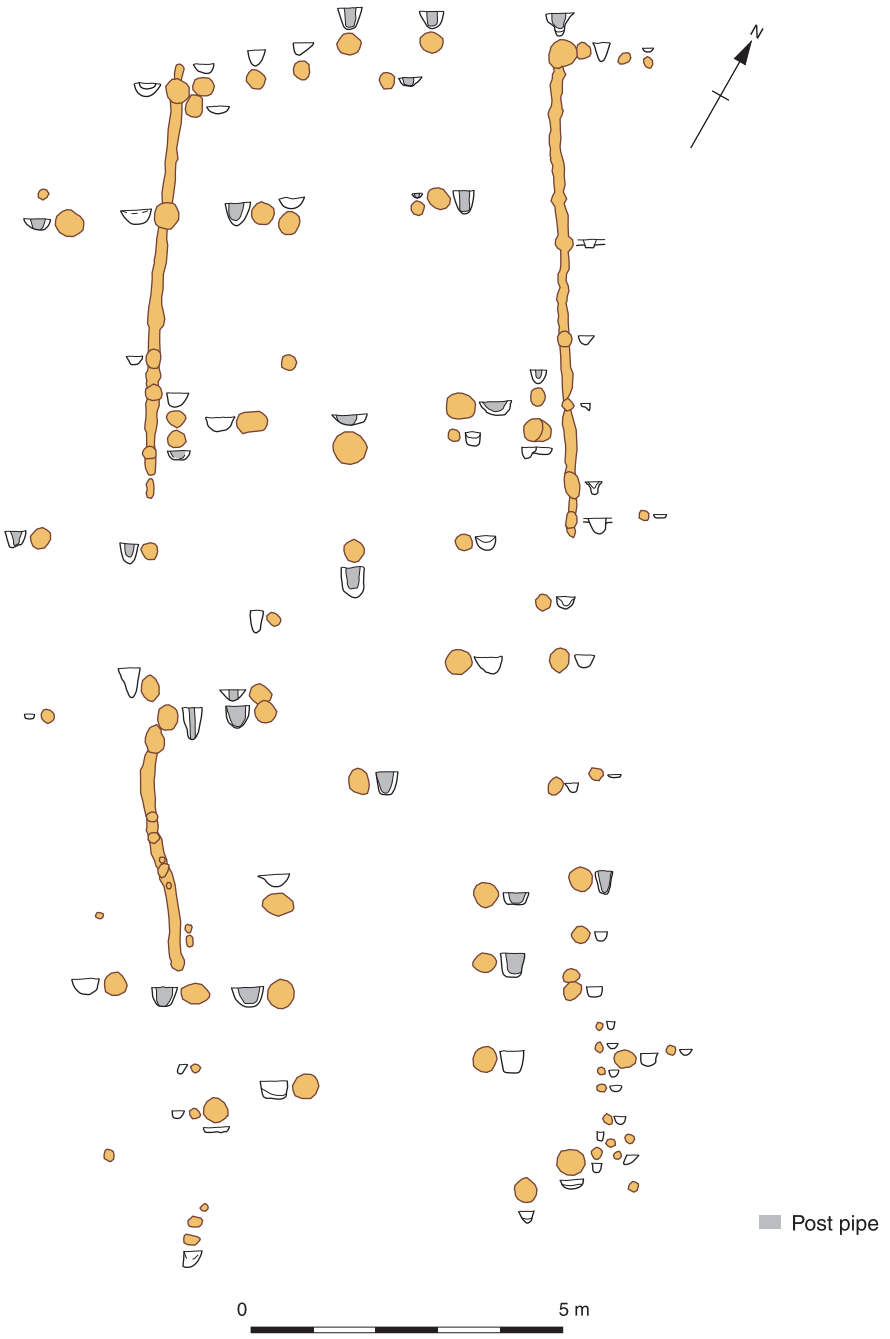


Figure 3.19 White Horse Stone Early Neolithic long hall: plan of the building, with sections of structural and other features

rectangular building that was later extended northwards by the addition of the northern trapezoidal building unit.

The second option is preferred by the present author, as the change in building orientation can perhaps be accounted for most easily as a way of referring to a new feature in the cultural landscape, Structure 972, which may not have existed when the trapezoidal building was erected. The designs of these buildings are considered further below in the context of a comparative discussion of Early and Middle Neolithic timber architecture in Britain and north-west Europe.

Considering the general level of preservation of the White Horse Stone building, it is striking that there is almost no evidence for internal structures or activity areas. Two oval features recorded within the area of the building may represent hearths, but the group of Grooved Ware sherds from one of these (Feature 4874) suggests this almost certainly belongs to a later phase of activity associated with the Late Neolithic buildings nearby. The other hearth, Feature 4830, was situated just west of the central axis of the southern part of the structure and thus appears more likely to be part of the internal lay-out of the building. This feature, which was 0.62 x 0.48m across and 0.18m deep, had a burnt base

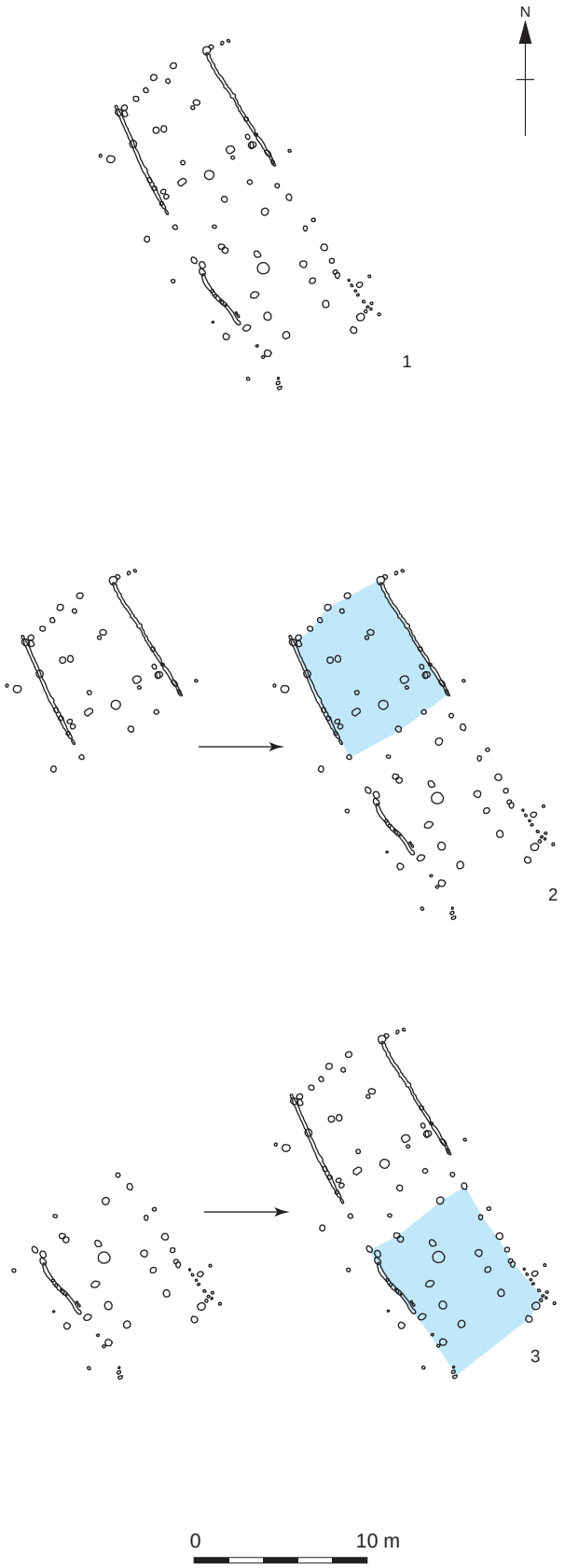


Figure 3.20 Three alternative interpretations of the White Horse Stone Early Neolithic long hall construction sequence: (i). single-build structure; (ii). primary northern trapezoidal building, with added rectangular building unit to south; (iii). primary southern rectangular building, with trapezoidal building unit added to north

and contained oak and Maloideae charcoal and small fragments of burnt bone, as well as a single tiny Grooved Ware sherd which could—conceivably—have been introduced into an Early Neolithic deposit by later biotic activity. Both hearth features produced radiocarbon dates consistent with those from the postholes of the Early Neolithic building (see below), but in one case at least (4874) this seems to have derived from residual charcoal, and the same may well apply in the other case as well. There is also no direct evidence for a specific arrangement of internal partitions, 'rooms' or other spatial divisions. Although it is quite likely that these existed (eg see Davies' attempt to visualise the building architecture using 3-D modeling techniques: 2006, 121–36), there is no particular reason to adopt one reconstruction over another. With the evidence available, therefore, it is not possible to determine the internal spatial organisation of the building based on structural elements or built features, and indeed we have to accept that many alternative scenarios are possible.

A similar level of uncertainty applies to the contexts and spatial patterning of materials deposited within the structure (Fig. 3.21). One of the greatest interpretative difficulties with the White Horse Stone building is the apparent absence of floor layers even though the survival of structural and internal features such as the smaller postholes, stakeholes, wall gullies and the contemporary or later Neolithic hearths suggests that the degree of erosion is likely to have been limited. The lack of direct evidence for the removal of floor layers either through deliberate clearance (eg terracing) or natural erosional processes (such as 'flash-flood' events), strongly suggests that the original floors were either eroded gradually by biological agents (to the point of being indistinguishable from natural sediments), and/or they were inadvertently destroyed when the overlying colluvial deposits were removed by machine. These layers may, in any case, have been very thin and possibly no more than compacted (trampled) topsoil to begin with. Phosphate analysis of the interior was unproductive as even 'high' values fell close to background levels, while micromorphological analysis of posthole fills showed no evidence for the presence of dung or burnt dung (Macphail and Crowther 2006), which strongly suggests that the building was not used for animal stabling.

The finds assemblages from the Early Neolithic building consisted almost entirely of very small pottery, bone and flint fragments collected by sieving. These were all recovered from posthole contexts except for a few finds from Gully 5031 (Hayden 2006a, 38, 41). There were 66 sherds of Early Neolithic pottery from the area of the building (total weight of just 138g), all worn and abraded but attributable to the Early Neolithic Bowl tradition, including a few possible Carinated Bowl sherds (Whittle *et al.* 2011, 379). A total assemblage of 428 flint artefacts were found in structural and other features associated with the building, consisting mainly of small chips but including a few flakes. The predominance of micro-debitage suggests that episodes of flint knapping took place within or around the building, while the

absence of retouched pieces and broken tool fragments suggests that tool use in this area was either very limited or involved relatively light tasks. A large assemblage of flint artefacts was also recovered from the buried soil overlying the building, including numerous flint chips but also retouched tools. It has been suggested that this material derived from practices that took place within the building (Hayden 2006a, 39), but it is equally possible

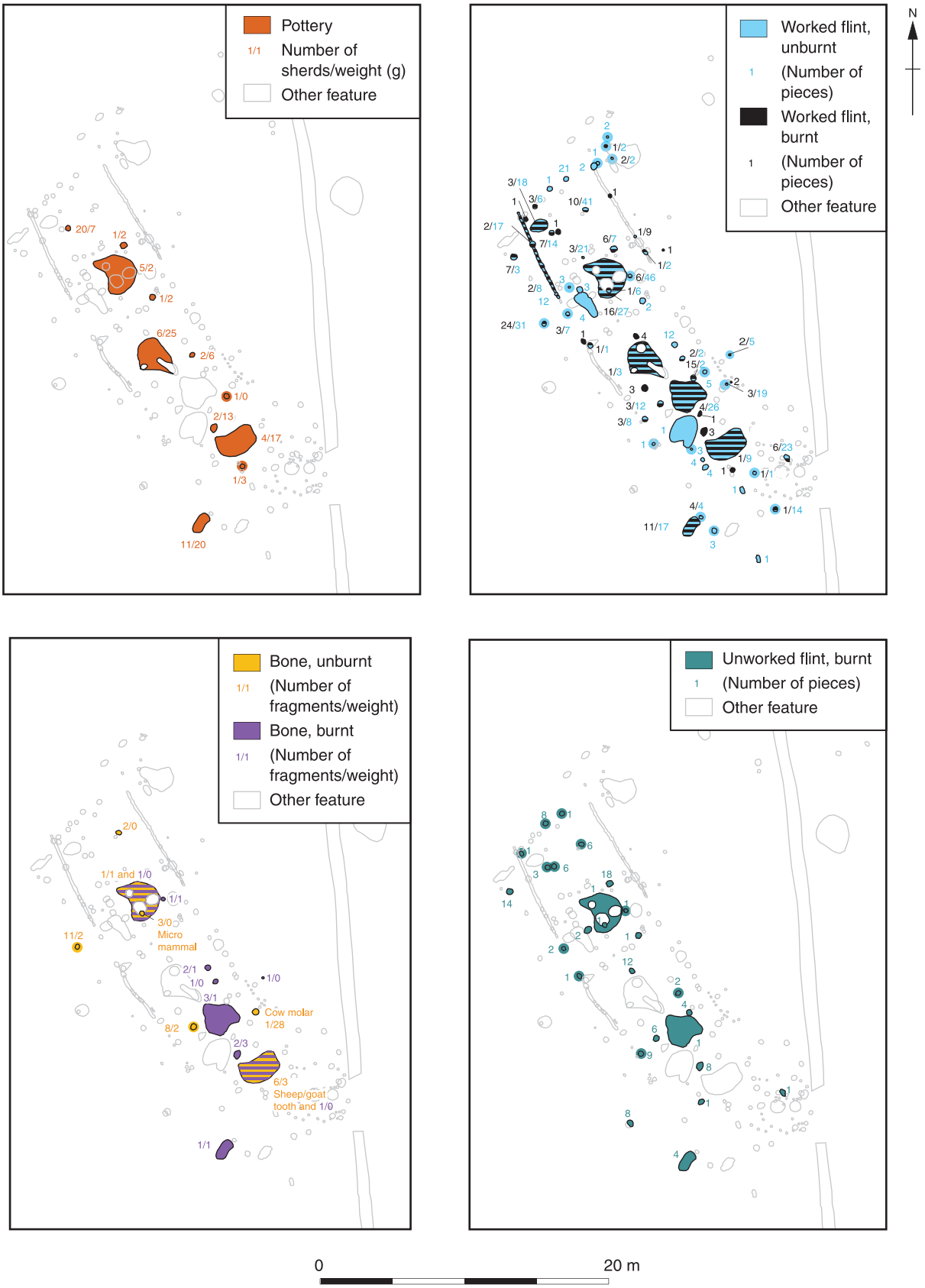


Figure 3.21 White Horse Stone long hall: distributions of Early Neolithic artefacts, animal bones and burnt flint in excavated features

that it relates to later activities in the area of the building, possibly centuries after it was abandoned. Only one identifiable animal bone fragment was found in a feature definitely associated with the Early Neolithic structure: a cattle molar in posthole 4902. Identifiable charred plant remains and charcoal fragments were nearly as scarce, comprising only a single grain of wheat (posthole 5280), unidentified cereal grains and a fragment of hazelnut shell (posthole 4817), and small quantities of charcoal in several postholes, including oak, ash, hazel/alder and Maloideae, alongside some residual Early Holocene pine charcoal (Stafford 2006b).

Many of the artefacts and bone fragments were burnt, presumably having been raked out of hearths or moved from other places of burning at some stage during their depositional histories, whether within the building or elsewhere. It has been suggested that this material represents occupation debris that was trampled, crushed and 'scuffed' around the floor of the building before collecting in hollows around standing posts, subsequently being incorporated in the fills of the structural features as the posts decayed (Hayden 2006a, 44). Larger items, it is supposed, were removed in the course of cleaning activities and re-used or discarded somewhere outside the structure. At one level, this is a convincing enough interpretation of the limited evidence, although it is notable that the absence of a definite Early Neolithic hearth, limited signs of burning in general, and the lack of any overall pattern in the distribution of burnt material, must raise questions about where, how and when items were burnt. Although it is possible to identify spatial patterns in the deposition of different material categories (see Fig. 3.21), especially the relatively higher concentrations of flint knapping debris at the northern end of the building, unburnt bone around the middle of the structure, burnt bone at the southern end, and pottery outside the southern end of the building, the extent to which this relates to some level of spatial organisation and perhaps separation of different activities when the building was in use is uncertain. The fact that overall distributions of different finds categories were fairly even and widespread, and that only very small amounts of material were recovered, all from building foundations, makes it very difficult to draw specific conclusions about possible building use. This issue becomes further complicated if the building is seen as a two-phase extended structure, in which case the 'pattern' of material deposition may relate more to changing activities over time than one phase of spatial organisation.

Just as problematic are the close similarities, noted by Hayden (2006a, 41–3), between the assemblages from contexts related to activities that took place before or during construction, such as post packing fills, and those from contexts relating to activities that took place during and after the use of the building, such as postpipes and secondary fills. This applies both to the quantities and the proportions of different material categories. It is possible, therefore, that much of the total assemblage was in fact residual and related to pre-building activities (especially as it seems unlikely that practices remained unchanged from the pre-building to the building occupation phases). Certainly, the finds assemblages recovered from definite pre-building contexts, such as the fills of hollows 5255 and 5380, are very similar to those from posthole contexts. Hayden takes the view that most of the finds relate to building use, suggesting that material which accumulated during the life of the structure became incorporated into pre-building contexts through taphonomic processes (eg by burrowing rodents). This seems extremely doubtful as a general explanation of finds deposition: it might be expected, for example, that Grooved Ware, which is present in several features within and around the structure, would also have been incorporated in both building and pre-building features in the same way that Early Neolithic finds supposedly were, but this is not the case. It is far more likely, in fact, that the finds recovered from the White Horse Stone building comprise a mixed assemblage derived from more than one phase of activity, including re-deposited pre-building material, and that the spatial 'patterns' identified relate as much to pre- and post-building activities as they do to occupation practices within the standing structure.

The White Horse Stone building is presently the best dated Early Neolithic 'long hall' in Britain (see M Allen 2006). Eleven radiocarbon dates were obtained from contexts associated with the building (see Appendix 3), four of which can be excluded from dating the structure itself. Two dates on pine charcoal from postholes 5113 and 4834 produced Early Holocene age ranges (8530–8280 cal BC and 7600–7520 cal BC) and must derive from redeposited ancient charcoal. The dates from hearths 4830 and 4874 probably derive from Early Neolithic charcoal redeposited in Late Neolithic contexts. As the hearths cannot be associated directly with the Early Neolithic building on architectural or stratigraphic grounds, the value of samples from these contexts for dating the building would have been doubtful anyway. The remaining seven dates (one from posthole 5280 in the central part of the building; and six from postholes 4820 (two dates), 4817 (three dates) and 4902 (one date) close to or at the southern end of the building) all fall within the period 4050–3530 cal BC (Table 3.1). Unfortunately, it is not possible to distinguish potential construction phases chronologically, or carry out Bayesian statistical modelling to compare the dating of the two building units, as all but one of the seven relevant radiocarbon dates derive from the southernmost part of the building. The remaining date, from posthole 5280, whilst falling in the earlier part (3960–3660 cal BC) of the overall calibrated age range for the date series, is also the least precise (Table 3.1) and certainly cannot in itself be used as a basis for making a particular chronological interpretation either way.

The first application of Bayesian modelling to narrow the overall age range and estimate the span of time during which the building was in use (M Allen 2006; M Allen *et al.* 2006), based on the assumptions that it represents a single, continuous phase of activity and that the dates are evenly distributed throughout the period of use, produced a range of 3980–3630 cal BC (Hayden 2006a, 45–7). More recently, all nine early 4th millennium dates have

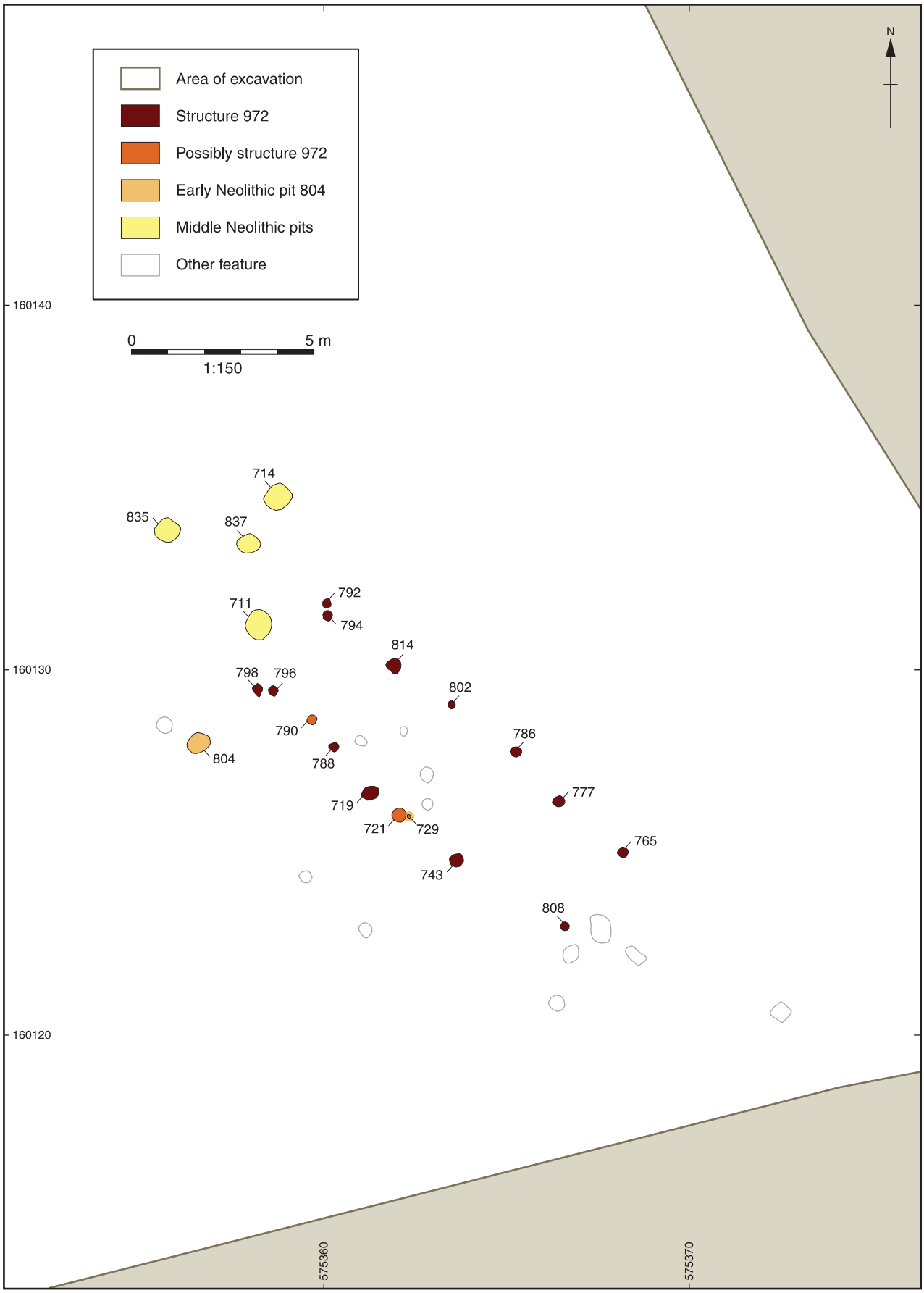


Figure 3.22 Pilgrim's Way Early Neolithic long hall, Structure 972: plan of the postholes of the building and other Neolithic features including the Middle Neolithic pit group

Table 3.1 Radiocarbon dates for the White Horse Stone Early Neolithic long hall (Structure 4806).

Feature	*Lab No.*	*Sample material*	*δC13*	*Uncalibrated date bp*	*Calibrated date (cal BC)*
Posthole 5280	NZA-21504	Charred grain (Triticum)	-25.98	5007 +/- 75	3960-3660
Posthole 4820	NZA-21279	Maloideae charcoal	-25.13	5123 +/- 30	3980-3800
	NZA-21769	Burnt animal bone (unidentified)	-17.4	4949 +/- 30	3800 3660
Posthole 4817	NZA-21770	Burnt animal bone (unidentified)	-24.60	5067 +/- 30	3960-3790
	NZA-11464	Charred hazelnut shell	-24.13	4974 +/- 60	3950-3640
	NZA-11463	Charred grain (unidentified)	-23.37	4911 +/- 60	3920-3530
Posthole 4902	NZA-21278	Cattle molar	-23.38	5028 +/- 30	3950-3710
Hearth 4874 (Late Neolithic)	NZA-21506	Charred grain (unidentified)	-26.54	5039 +/- 25	3950-3770
Hearth 4830 (Late Neolithic)	KIA-25383	Maloideae charcoal	-25.22	5165 +/- 31	4050-3810

been remodelled as part of the comprehensive chronological analysis of British causewayed enclosures and other Early Neolithic site categories by Whittle *et al.* (2011). The new model suggests the long hall was probably built in 4065–3940 BC and abandoned in 3745–3635 BC, having been used over a period of *c* 300–350 years (ibid., 379–81, fig. 7.26). Although this may be too simplistic if it was indeed a two-phase building, nonetheless the dating model suggests initial construction during the late 41st or early 40th century BC, making the White Horse Stone long hall presently the earliest well-dated Neolithic structure in Britain.

The Pilgrim's Way building (Structure 972)

A second rectangular post-built structure (972), probably also Early Neolithic in date, was found 240m to the south-east of the White Horse Stone building amongst a cluster of pits and other features on the west slope of the dry valley, close to the south-east corner of the Pilgrim's Way site. This structure, first recognised by Alistair Barclay, consisted of two roughly parallel lines of posts some 10.5m in length and 2.5–3.3m apart, aligned north-west to south-east (Fig. 3.22). The post lines had a slightly bowed appearance in plan, especially on the western side, so that the gap between the rows was wider in the middle and narrower at the ends. In most cases the postholes formed opposed pairs spaced at fairly regular intervals, though several lacked partners in the opposite row and the overall lay-out appeared less regular than that of the White Horse Stone building.

The original form of this structure is difficult to determine as it was severely truncated, but Hayden notes that the spacing of the rows of posts is very similar to that of the internal post rows at White Horse Stone and that the post sizes are also comparable (2006a, 50). Shallower outer post rows and features like gullies could easily have been destroyed at this location by ploughing, leaving just the remnant deeper foundations of what was once a large and elaborate building. Unfortunately, no sieving was undertaken and only a small number of flint chips and flakes, a serrated flake and a retouched blade were recovered from the post rows, together with a single small sherd of possible Grooved Ware (from posthole 808) which could be intrusive. An Early Neolithic rim sherd, similar to some of the pottery from the White Horse Stone building, was found in pit 804, located just to the west of the post rows. Several similar pit features nearby, at the north-west end of the structure, contained Middle Neolithic pottery. Although the artefactual evidence is thus limited and ambiguous and radiocarbon dates are lacking, the features and lay-out of Structure 972 do closely resemble parts of the White Horse Stone building, the southern half of which appears to be aligned on the Pilgrim's Way structure. It is likely, therefore, that two contemporary, spatially inter-referenced timber buildings existed in close proximity in the Early Neolithic landscape.

The White Horse Stone and Pilgrim's Way buildings in insular context

The White Horse Stone and Pilgrim's Way 'longhouses' are significant additions to the very small number of substantial rectangular timber buildings of Neolithic date recorded in Britain (Darvill 1996; Bradley 2007, 38–9), although there are far more numerous examples in Ireland (now over 100: Cooney 2000, 54; Grogan 1996, 2002; Smyth 2007). These were probably all built within the period 4000–3400 BC, though this wide age range may encompass a great deal of regional variation and one or more narrower temporal phases of building construction, as Smyth has suggested for Ireland (ibid., 233–34) and Alistair Barclay has proposed for England (pers. comm.; discussed further below).

One of the most notable features of Early Neolithic British and Irish timber structures is their great diversity in terms of spatial designs, scale, constructional technologies and associated material deposits, all of which continue to escape easy classification. Darvill's attempt to use construction methods and ground plans as the basis for a building typology (1996) was constrained by the very limited number of examples for comparative analysis and by the lack of dating evidence. Further attempts to distinguish building types based on the number of post rows or post arrangements (eg Hayden 2006a, 55–6) do not seem to offer a stronger basis for identifying shared building traditions or specific influences. As Figure 3.23 shows, the ground plans of the British post-built structures exhibit almost no shared design features of any kind. Distinctive construction techniques may show a little more patterning but this is

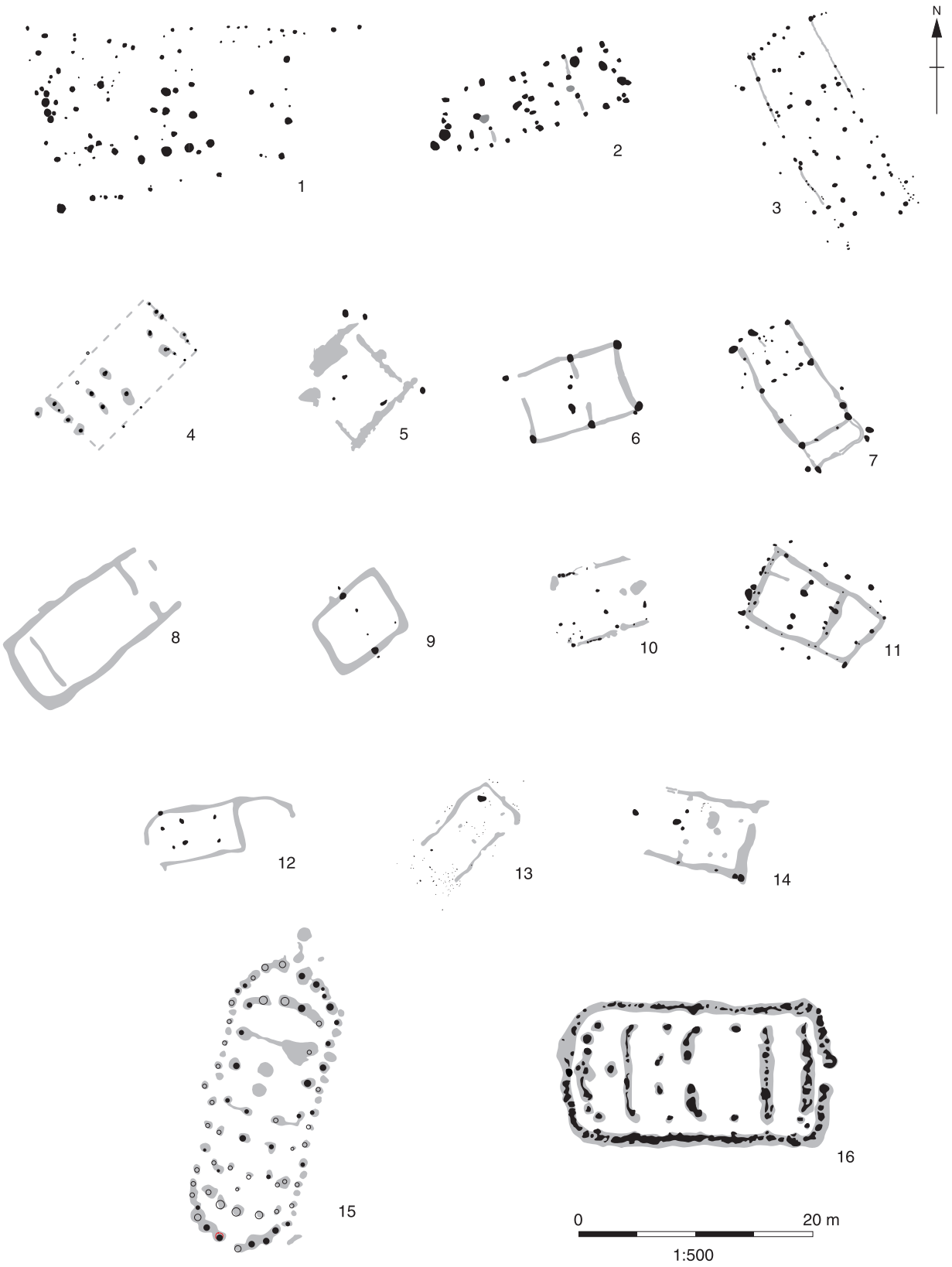


Figure 3.23 Comparative plans of Early Neolithic buildings in Britain and Ireland, showing variation in size, shape, post settings, presence of bedding trenches, and building orientations: 1. Yarnton, Oxfordshire (Hey with Robinson 2011, fig.11.6); 2. Lismore Fields A, Derbyshire (Garton 1991, fig.1.2); 3. White Horse Stone, Kent (Hayden 2006a, fig.13); 4. Llandegai 1, Gwynedd (Lynch and Musson 2004, fig.8); 5. Fengate, Cambridgeshire (Pryor 1974, fig.5); 6. Horton, Berkshire (Hey with Robinson 2011, fig.11.8); 7. Ballyglass 1, Co. Mayo (Ó Nualláin 1972, fig.2); 8. Tankardstown 1, Co. Limerick (Grogan 1996, fig.4.2); 9. Tankardstown 2, Co. Limerick (Grogan 1996, fig.4.2); 10. Ballnagilly, Co. Tyrone (ApSimon 1969, fig.1); 11. Corbally 1, Co. Kildare (Purcell 2002, fig.3); 12. Balleygalley 1, Co. Antrim (Grogan 1996, fig.4.2); 13. Thornhill E, Co. Derry (Smyth 2007, fig.2); 14. Newtown, Co. Meath (Smyth 2007, fig.2); 15. Claish Farm, Stirlingshire (Barclay *et al.* 2002, illus.23); 16. Balbridie, Grampian (Brophy 2007, fig.7).

never exclusive or simply related to a wider set of building attributes. Vertical plank construction, for example, appears to have been used widely in Ireland for both long rectangular and shorter more square-shaped buildings (Grogan 1996, 43), including sites such as Ballyglass 1, County Mayo (Ó Nualláin 1972), Ballyharry, County Antrim (D Moore 2003), and Ballynagilly, County Tyrone (ApSimon 1969; 1976). In contrast, the evidence from England and Wales suggests rarer use of this technique, and there may well have been contrasts in the way planking was used: at White Horse Stone, for example, the presence of stakes set along the bedding gullies suggests these supported horizontal rather than vertical planks, unlike most (but not all) of the Irish examples (Hayden 2006a, 33; cf. Ó Drisceoil 2003, 178).

Despite recent discoveries, basic problems of classification remain, and it is increasingly likely that this may not be due so much to a lack of evidence but rather to a high degree of intrinsic functional, social and stylistic variation that varied over time, among a small number of rarely-built structures. It is possible, for example, that these buildings had several functions and/or that their purpose and use changed during the first half of the 4th millennium BC. There is also increasing recognition of regional architectural styles, especially the round-ended buildings found in Scotland at sites such as Balbridie, Claish and Warren Field (Brophy 2007, 79–85) and the short rectangular two- or three-room bedding trench-built structures in Ireland (Grogan 1996, fig.4.2; Smyth 2007, figs. 2, 3), which point to considerable cultural variation from one area to another in the practical, symbolic and aesthetic qualities of this architecture.

The closest insular parallels for the White Horse Stone and Pilgrim's Way buildings are found mostly in southern Britain (Fig. 3.24), notably Lismore Fields A, Derbyshire (Garton 1991), Yarnton, Oxfordshire (Hey 1997; Hey with Robinson 2011, 228–31), and Llandegai 1 and 2, Gwynedd (Lynch and Musson 2004), together with the Ballyglass 1 building in Ireland (Ó Nualláin 1972). Even with this small set of comparable buildings it is remarkable how their shapes, sizes, ground plans and orientations differ. Other Early Neolithic buildings in southern Britain are yet more diverse (cf. Darvill 1996; Hey and Barclay 2007, 413–16; Hey with Robinson 2011, 227–36), though most are small short-rectangular/square one- or two-room structures, either post-built like Lismore Fields B (Garton 1991) or with continuous bedding-trenches such as the Padholme Road building at Fengate, Cambridgeshire (Pryor 1974), and the recently-excavated building with distinctive concave end walls at Kingsmead Quarry, Horton, Berkshire (Alistair Barclay pers. comm.; Wessex Archaeology 2009).

This characterisation of British building designs conforms to the very broad division between long rectangular and short rectangular/square buildings made by Grogan for Irish Neolithic houses (1996, 43–4), and to Darvill's separation of building Types A and C in Britain (1996, 85–8). It is possible, however, that the apparent difference between these two forms relates in some cases to modular construction methods; the longer rectangular buildings in fact comprising two or more shorter modules built in succession. This could well explain the slightly angled forms and possible multi-phase modular designs of White Horse Stone, Lismore Fields A (Garton 1991), Yarnton (Hey *et al.* 2003; Hey and Barclay 2007, 413–15), Ballyharry 1 (J Moore 2003) and Ballyglass 1 (Ó Nualláin 1972). Most other Early Neolithic buildings in Britain and Ireland, however, appear to have been designed as complete single-build structures and few have strong evidence for major episodes of repair or extension.

It may be more helpful to reformulate the variation evident at ground level in relation to possible building superstructures. This highlights a different set of contrasts, especially between those buildings which had internal grid-like settings of substantial posts forming the main load-bearing elements, with only lightweight external walling, and those which had bedding trenches holding more substantial load-bearing vertical post- and plank-built walls, with only a few internal timber post settings—if any—to support roof structures. These constructional forms are not exclusive, as the White Horse Stone building demonstrates, and it is possible that shallow bedding trenches may have been destroyed at post-built sites truncated by ploughing, but nonetheless this does seem to be a real contrast with important implications for construction methods and building use. The close-set arrays of vertical timbers, some massive, in the post-built forms suggests they were designed to support tall buildings (perhaps with an upper storey) and/or heavy roofs (possibly plank-built, for example). At the same time, these post arrangements may have been used to create durable internal compartments while constraining the amount of open space inside for social activities. In contrast, the buildings with bedding-trench foundations are often wider and shorter than the post-built structures and the lack of substantial earth-fast internal posts suggests that roof structures must have been relatively light, perhaps thatched. These seem to have been designed to maximise the amount of open interior space and/or to allow for considerable flexibility in spatial organisation (eg by using temporary screens or light-weight partitions). Yet another category of large rectangular buildings, lacking ground-fast timber structural elements entirely, may possibly be represented in the evidence from pit groups in eastern England, which define 'open areas' of a size comparable to known timber structures (Bradley 2007, 44, fig. 2.5; Garrow *et al.* 2005). It is assumed the superstructures of such buildings, if they existed, consisted mainly of turf, clay or cob walls, and/or lightweight post, stake and wattle components.

On present evidence, larger and more substantial rectangular post-built structures seem to be relatively more common in England and Wales, while the buildings with continuous bedding trenches appear to be relatively more common in Ireland. There may also be a chronological distinction (Barclay and McCulloch 2009): post-built structures appear to be broadly earlier, with current dates for construction falling mainly in the period 3950–3650 BC, whereas buildings with bedding trenches seem to broadly later (cf. Smyth 2007). However, recent

detailed analysis and modelling of the radiocarbon dates for Irish houses suggest that these were all built and used within a very short time-frame, *c* 3715–3615 cal BC (Whittle *et al.* 2011, 598). A similar short period of construction and use is indicated for the massive Scottish timber halls at Crathes, Balbridie and Claish, between *c* 3780 and 3645 cal BC (ibid., 832–3). It is therefore likely that complex chronological sequences and distinctive short-duration architectural styles will be recognised in the future at a regional level in other parts of Britain as well. Indeed, the great diversity of rectangular post-built timber structures in England and Wales, in terms of their

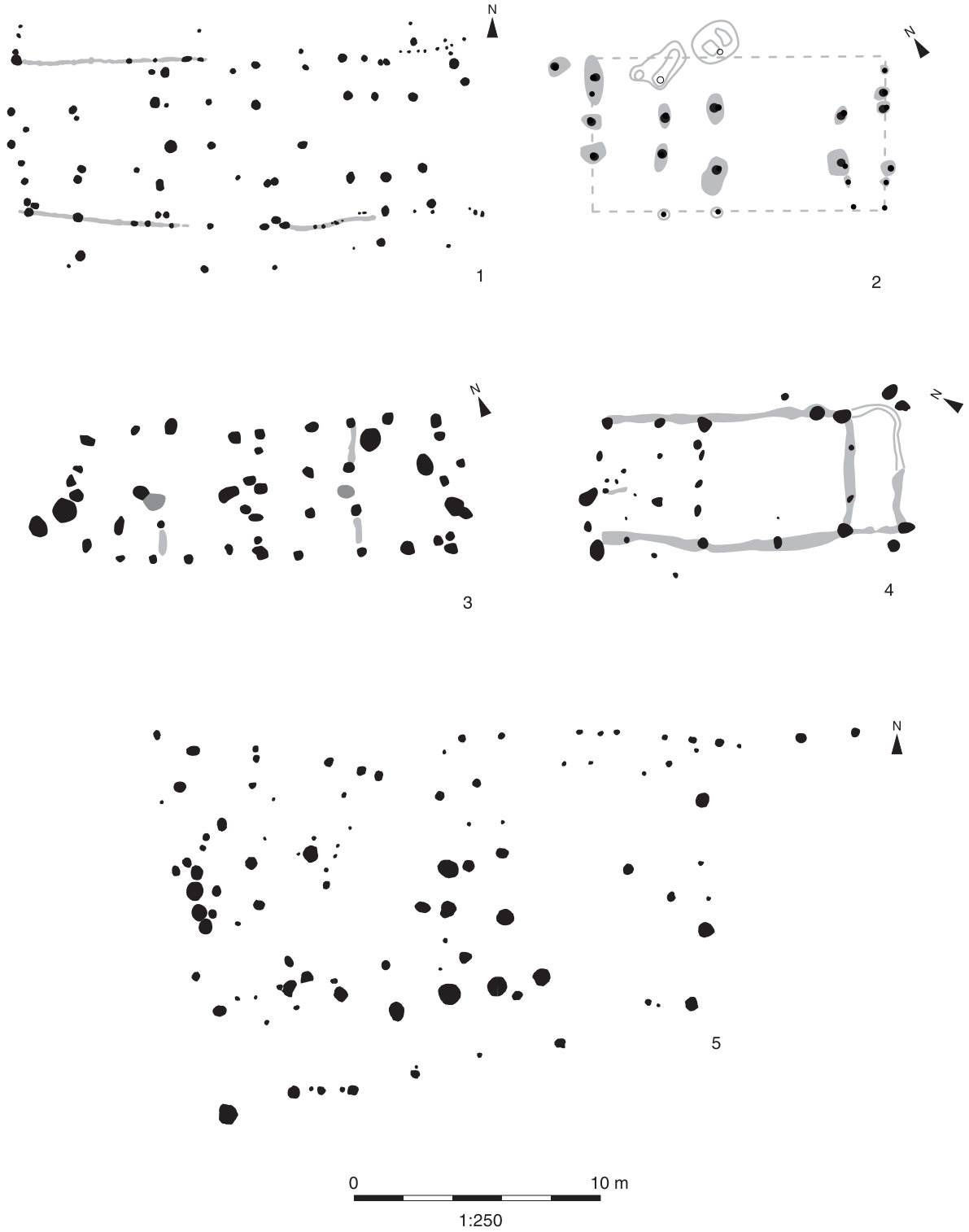


Figure 3.24 Early Neolithic rectangular post-built buildings in Britain and Ireland. Detailed plans of the closest parallels to the White Horse Stone and Pilgrim's Way buildings: 1. White Horse Stone, Kent (Hayden 2006a, fig.13); 2. Llandegai 1, Gwynedd (Lynch and Musson 2004, fig.8); 3. Lismore Fields A, Derbyshire (Garton 1991, fig. 1.2); 4. Ballyglass 1 Co. Mayo (Ó Nualláin 1972, fig. 2); 5. Yarnton, Oxfordshire (Hey with Robinson 2011, fig.11.6)

shapes, sizes, internal divisions and design features, seems to be indicative of construction events that varied in frequency and form from one area to another and over time, depending on selective and perhaps highly localised applications of building techniques and styles.

Times and places for 'longhouses': European perspectives

Parallels for British Early Neolithic timber buildings have often been sought in continental Europe, where Neolithic longhouses are widespread, especially to discover possible 'origins' for insular traditions of rectangular building construction. The early date of the White Horse Stone and Pilgrim's Way buildings, and their location in south-eastern England, invite renewed debate about continental sources of inspiration for these structures and possibly direct ethno-cultural influences (eg through population movement or emulation).

Interpretations of Neolithic long timber buildings in Britain still rely at least partly on comparisons with central and north-west European Early and Middle Neolithic Linearbandkeramik (LBK) and Post-LBK settlement architecture of the period *c* 5700–4500 BC (Villeneuve-St Germain, early Rössen, Grossgartach, Stichbandkeramik, and early Lengyel cultures) (for relevant chronological and terminological schemes see Last 1996, fig. 3.1; Whittle 1996, fig. 6.3; J Thomas 1996a, fig. 17.2; Andersen 1997, fig. 179). This frame of reference still seems remarkably resilient, even in the light of Thomas' incisive critique of LBK-inspired 'house' interpretations of British timber halls (1996b), which showed that these comparisons lacked validity in chronological and cultural terms.

Although comparisons with LBK and post-LBK buildings may be instructive from an architectural perspective, it is apparent that a considerable span of time (500–700 years) separates these classic 'longhouses' from British and Irish timber buildings of the early 4th millennium BC. It is also notable that post-LBK buildings are a great deal rarer than LBK longhouses and far more varied in architectural terms (cf. Coudart 1998; Hampel 1989; Last 1996), suggesting a process of regionalisation, short-lived design styles, local settlement variation and a general trend towards greater residential mobility that prefigures the British pattern. Despite superficial resemblances in terms of rectilinearity (Fig. 3.25), insular buildings are flimsier and smaller (*c* 7–22m in length) than LBK and post-LBK buildings (most of which range between 15 and 40m in length), and their straight-sided rectangular shape is quite unlike the trapezoid and naviform shapes of post-LBK structures (Coudart 1998, 74–6). Moreover, unlike British timber buildings, LBK and post-LBK longhouses usually occur in clusters of 4–10 buildings and often in landscape areas which saw sustained occupation over many centuries (eg in the Merzbach valley; Lüning and Stehli 1994). The dense material deposits found in and around many of these buildings, interpreted as occupation debris, are also largely absent from British examples, which again suggests different kinds of inhabitation if not different functions entirely.

In this light, it is misleading to expect direct emulation of continental forms of architecture that were not only distant in time, space, and cultural context, but already declining in terms of their social and economic significance and landscape presence a thousand years before 'similar' buildings were constructed in Britain. It is far more appropriate instead to look for parallels amongst the buildings of the north-west European Middle and Late Neolithic and early Chalcolithic in the late 5th and early 4th millennia BC, which immediately prefigured or were contemporary with those of the British 'Early Neolithic' (cf. J Thomas 1996b, 5–6). It is surely in these spatially, temporally and culturally 'closer' contexts, when the transmission of 'Neolithic' ideas, technologies, materials and living things from the continent must first have taken place (J Thomas 2007a, 428–30; 2008, 62–5), that exogenous origins for the presence of rectangular timber architecture in Britain are best sought.

It is immediately apparent that continental Middle Neolithic buildings of the Cerny and Rössen cultural phases in France, western Germany and the Low Countries are notable for their rarity, spatial isolation/dispersal and relatively low levels of associated artefacts and other cultural material. This pattern is plainly far more similar to the British situation than LBK and post-LBK settlement archaeology. In central-northern France, for example, there are no definite durable timber buildings associated with Cerny material culture (*c* 4600–4100 BC), marking a radical break with the post-LBK phase of long house building in this area (Mordant and Simonin 1997, 319). In north-east France and north-west Germany late Rössen buildings are extremely rare and also mark a clear break with earlier longhouse traditions in being smaller and having only two or three rooms at most, such as Schernau house 1 (Last 1996, 36; Lüning 1981), the buildings at Berry-au-Bac and Osly-Courtil in the Aisne area of north-east France (Dubouloz 1991; Dubouloz 2000), and the building at Cairon, Normandy, sealed beneath a passage grave (Clément-Sauleau *et al.* 2000).

Hayden argues that the buildings at Berry-au-Bac and Osly-Courtil, dating to *c* 4300–4100 BC, provide the closest parallels for the timber structures at White Horse Stone/Pilgrim's Way (2006a, 56). All three sites have rectangular post-built buildings of broadly similar shape and size, with bedding gullies and internal partitions present at the largest building at Berry-au-Bac and White Horse Stone, and the structures at Osly-Courtil and White Horse Stone both have lateral rows of four posts (see Fig. 3.25). The three smaller buildings at Berry-au-Bac are also similar to Lismore Fields B (Garton 1991, fig. 1.2) and in form and size to the two-room bedding-trench structures in Ireland such as Corbally 3 (Purcell 2002), Coolfore 2 (Ó Drisceoil 2003) and Tankardstown 1 (Grogan 1996, fig. 4.2), and in Britain at Fengate and Gorhambury (Darvill 1996, fig. 6.5).

In other respects, however, the associations made are tenuous. The late Rössen buildings at Berry-au-Bac and

Osly-Courtil are at least 200 and perhaps 500 years older than the British structures and there are presently no known material culture connections suggesting shared traditions of practice or interactions across these regions over this span of time. Moreover, whilst they have some similar attributes the buildings are not really close parallels architecturally. The Berry-au-Bac and Osly-Courtil buildings are slightly larger in size, relatively

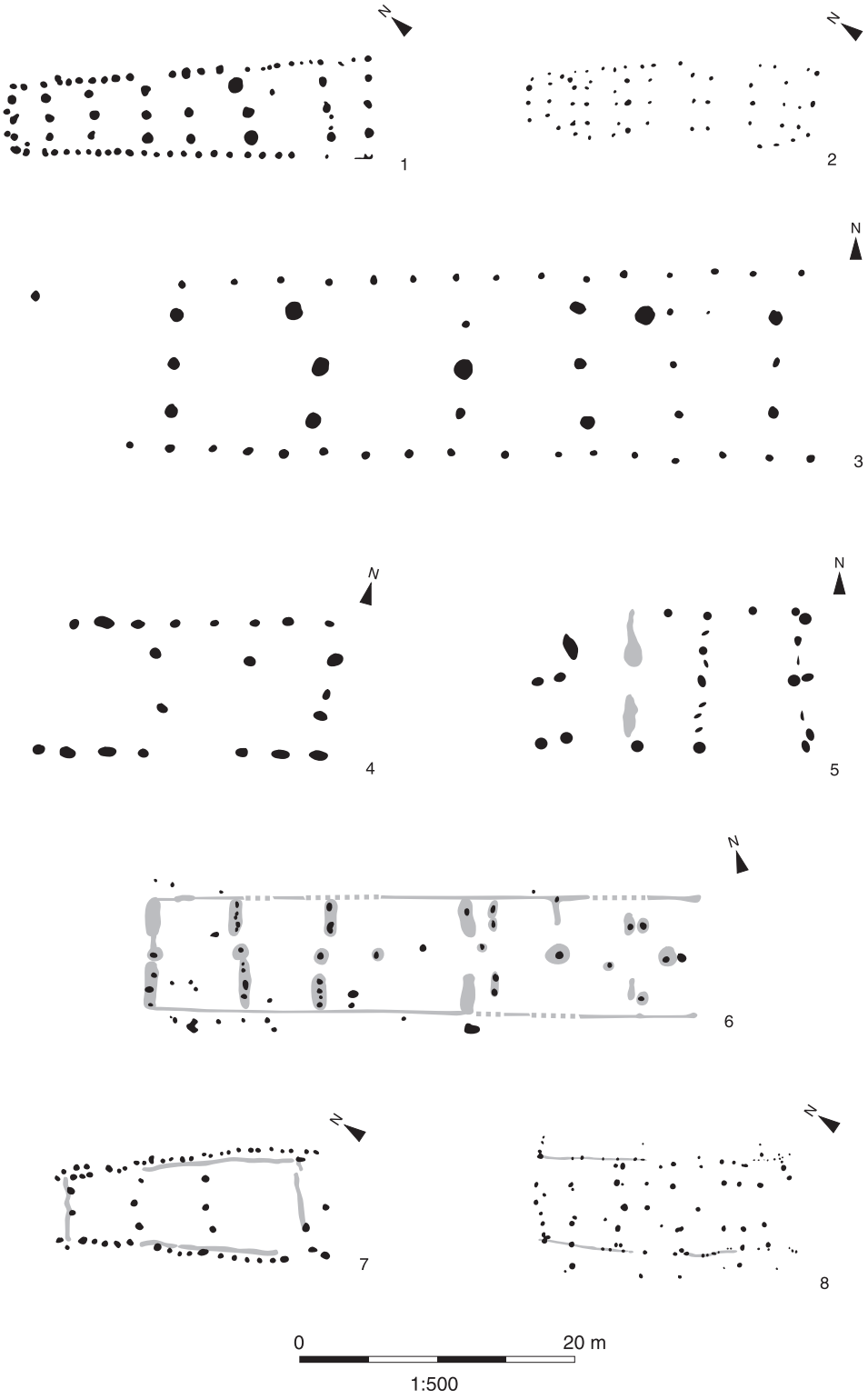


Figure 3.25 Comparative plans of Early/Middle Neolithic buildings in north-west Europe dating to the 5th millennium BC: 1. Berry-au-Bac/La Croix Maigret, Aisne, Picardie, France (Coudart 1998, fig.123); 2. Bochum-Kirchharpen, Kr. Bochum, Nordrhein-Westfalen, Germany (Coudart 1998, fig.172); 3. Echilleuses/Les Dépendances de Digny building 1, Loiret, Centre, France (Coudart 1998, fig.178); 4. Osly-Courtil building 150, Aisne, Picardie, France (Dubouloz 2000); 5. Berry-au-Bac building 206, Aisne, Picardie, France (Dubouloz 2000); 7. House 1, Hambach 260, Kr. Düren, Nordrhein-Westfalen, Germany (Coudart 1998, fig.179); 8. White Horse Stone, Kent (Hayden 2006a, fig.13)

wider (*c* 9 x 18m), and more massively-built with large post pits presumably to support heavy timber superstructures. In addition, the longitudinal rows of relatively close-set posts at White Horse Stone contrast significantly with the two lateral rows of posts and bedding trenches within the largest Berry-au-Bac house and the single pair of internal posts at Osly-Courtil, which divided the internal spaces of these buildings into large open rooms. The Cairon building, despite being similar to the White Horse Stone structure in terms of scale and post sizes, seems to have an irregular internal layout and is also earlier in date, again probably belonging to the late MN1/early MNII transition (*c* 4300–4100 BC) on the basis of limited ceramic evidence. Their landscape settings are also very different, especially in the way the houses at the two Aisne sites are associated with enclosures, and at Berry-au-Bac form a linear group, which is quite unlike the unenclosed and dispersed settings of British and most Irish rectangular buildings. The 'fortified settlement' characterisation of Berry-au-Bac, with its ditched enclosure, internal palisade and group of 'houses', is also plainly specific to this site and not applicable to British examples. These contrasts suggest that the British and French buildings are more different to one another—culturally, formally and functionally—than they are similar. This perhaps illustrates, once again, the dangers inherent in formal comparisons based only on selected empirical attributes such as shape, size and number of post rows.

The same points can be made when comparing the White Horse Stone and Pilgrim's Way structures with Late Neolithic and Chalcolithic buildings of the Chasséen, Michelsberg and Trichterbecher (TRB) 'cultures' of northern France, the Low Countries, northern Germany and southern Scandinavia (see Midgley 1992, 317–41; Last 1996, 35–8; Whittle 1996, 215–39). The early parts of these cultural phases are contemporary with the British and Irish Early Neolithic and it is possible to identify some parallels in terms of building architecture, although none is very close in formal or constructional terms and there are no material culture 'packages' or shared ceramic types spanning the Channel or North Sea (Sheridan 2007; J Thomas 2008, 74–7). Just as striking as the few similarities are the many and varied contrasts. Durable buildings of this period are very rare and seem to be entirely absent in some periods and areas, including Flanders (Vermeersch and Burnez-Lanotte 1998, 47) and in Chasséen areas in France (Whittle 1996, 233, 332). Examples of especially distinctive but localised or even unique kinds of architecture (eg the huge rectangular structures recorded only at Mairy in the Ardennes; Marolle 1998), and the great variety of landscape contexts and spatial organisations of buildings across this vast geographical range, suggests there was little cultural interaction involving the spread or emulation of building styles. In many cases, the ambiguities of the structural and material culture evidence are such that the once-assumed 'domestic settlement' function of these buildings is increasingly open to question, not only among British prehistorians but also more widely.

Two western Michelsberg enclosures, for example, have evidence for internal buildings but in both cases the character and purpose of these are uncertain. At Thieusies, in central Belgium (Vermeersch and Walter 1980), these consisted of small ephemeral structures (*c* 5 x 3.5m) with close-set arrays of posts that may have been impractical for residential purposes (Hayden 2006a) and instead suggest non-domestic uses such as elevated granaries or ceremonial platforms. At Mairy in eastern France (Marolle 1998), at least 20 very large rectangular timber structures (the complete examples ranging between 10–13m wide and 20–60m long, with bedding trenches up to 1.5m deep), may not have been roofed (as also suggested for the Balfarg Riding School and Littleour 'halls' in Scotland; Brophy 2007, 85–6) and have been likened to contemporary clusters of funerary monuments and ceremonial long enclosures (Mordant 1989, 44; Andersen 1997, n.224).

In northern Germany and south Scandinavia, Michelsberg and TRB-associated buildings (Fig. 3.26) appear more like 'houses' but are still very rare and are often difficult to interpret (Midgley 1992, 324–41). In the case of the D-shaped building at Hanstedgård in Denmark, for example, it was noted that even though it provided the least ambiguous evidence for a Nordic TRB dwelling, a reconstruction was "not self-evident" (Eriksen and Madsen 1984, 70). There are few close architectural parallels for the White Horse Stone building, although the post-built structure at Piledal, Skåne, in southern Sweden (Tilley 1996, fig. 4.6), is similar in terms of its size and two-unit angled lay-out, consisting of a trapezoidal or bowed-walled building with a rectilinear extension at its west end (see Fig. 3.26, no. 5). A common feature of the continental Middle Neolithic evidence is the apparent isolation or dispersal of buildings, although 'occupation areas' may be extensive, as at Flögeln in north Germany (Zimmermann 1979, abb.14) and Runegård East, Bornholm, in Denmark (Kempfner-Jørgensen and Watt 1985, 94–8). Only in the Danish archipelago and southern Sweden is there evidence for relatively dense and more sustained settlement sites, sometimes with series of buildings, as at Limensgård and Grødbygård, Bornholm (Nielsen 1999; Kempfner-Jørgensen and Watt 1985), and Kabusa IVb, Skåne (Tilley 1996, 175). Similar settlement foci comprising groups of buildings, both dispersed and nucleated, are also known further south, for example in central Germany at Wallendorf (Midgley 1992, 320, 331–33, fig. 94), and in Baden-Württemburg at Hochdorf (Keefer 1988) and the Goldberg (Bersu 1936).

In most cases, unlike contemporary British structures, these buildings are associated with significant material deposits which may have resulted from everyday inhabitation practices, although other interpretations are possible. South Scandinavian buildings, for example, were often located close to funerary monuments, which suggests that even if they were occupied in a domestic sense they may have served special functions or social groups (eg at Stengade; Bradley 2005, 62–4). In addition, there are a number of short rectangular house-like structures in Jutland, dating to the later 4th and early 3rd

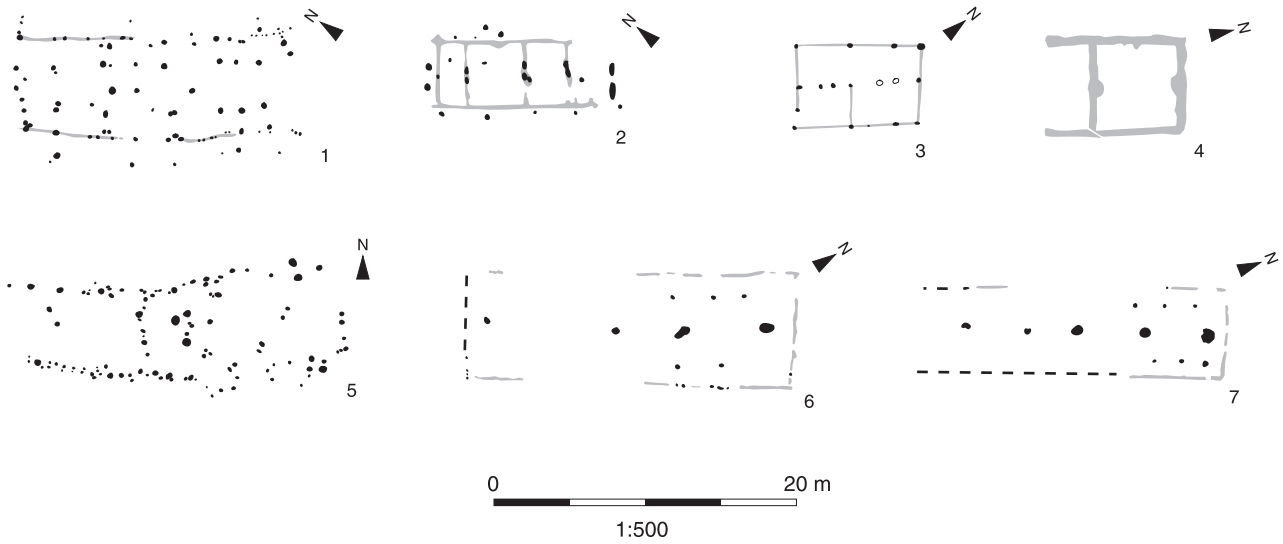


Figure 3.26 Comparative plans of Middle/Late Neolithic buildings in north-west Europe dating to the 4th millennium BC (the continental examples all have Michelsberg or TRB associations): 1. White Horse Stone, Kent (Hayden 2006a, fig.13); 2. Flögeln, Kr. Cuxhaven, Neidersachsen, Germany (Zimmermann 1979); 3. House B, Goldberg, Neresheim, Baden-Württemberg, Germany (Bersu 1936, abb.4); 4. Herrup cult house, Jutland, Denmark (Larrson 2008, fig.4); 5. Piledal, Skåne, Sweden (Tilley 1996, fig.4.6); 6. Grødbygård House A, Bornholm, Denmark (Nielsen 1999, fig.7a); 7. Limensgård House Y, Bornholm, Denmark (Nielsen 1999, fig.7c)

millennia BC, interpreted as cult houses or temples: these are *c* 5 x 6m in size with plank-built walls set in bedding trenches (very similar to the smaller Irish buildings) and associated with large deposits of pottery and evidence for burning (eg at Ferslev, Tustrup and Herrup) (Tilley 1996, 275–9; Larsson 2008, 198–9).

By evaluating the full range of evidence for settlement architecture in north-west Europe in the late 5th and early 4th millennia BC it becomes clear just how few timber buildings are known and the great variety of their designs, scales and constructional features. From this perspective, supposed contrasts between Britain and continental Europe in terms of the relative presence/absence of durable timber buildings are misleading: such buildings were relatively rare, dispersed and locally diverse everywhere. In this light the surprise sometimes expressed about the 'enigmatic' nature of the British 'longhouse' evidence seems misplaced. In this wider chronological and cultural context the diverse British and Irish buildings appear more like regional variations on broadly shared north-west European architectural themes that were realised locally in terms of distinctive modes of cultural expression, dwelling and social life, which only in some areas took on a fully 'domestic' character. Hayden is right to emphasise that "the structures in the British Isles were not simply copies of continental prototypes" (2006a, 57), but the widely-held desire to seek a 'continental tradition' from which they derived perhaps misses the point. It is becoming increasingly apparent that however extensively the idea of a rectangular durable timber 'house' might have been disseminated, this seems to have been interpreted differently from one area to the next, translated into new forms for a range of purposes and even reinvented on several occasions with only the vaguest reference to precursors, whether real or imaginary. In this view, the search for discrete supra-regional building traditions and 'diffusions' of architectural styles or technologies may be especially unrewarding: the point is precisely that such 'traditions of practice' were local in character and often short-lived, as exemplified in many ways by the White Horse Stone building and other contemporary structures in southern Britain.

The diversity of these buildings, and recurrent characteristics such as spatial isolation and the absence of evidence for sedentary occupation, should also be understood with respect to much wider cultural and economic changes that took place in Europe during the 5th and 4th millennia BC. This period saw far-reaching transformations in social life marked by the renewed expansion of agriculture into areas previously at the margins of Neolithic farming societies (including Britain), and by the spread across the whole of temperate Europe of new agricultural and other productive technologies such as animal traction, the ard plough, and extensive animal husbandry associated with new and more diverse forms of 'secondary production' (as synthesized by Sherratt 1981; 1997, 6–27). These changes, while pervasive, took place at different tempos, in varying combinations and at several geographical scales, involving localised technological adoptions, material exchanges and movements of people. In other words, we can recognise a multiplicity of cultural conjunctures, especially around the fringes of the north-west maritime zone (Kinnes 1982, 1984, 2004; Sherratt 1990, 1995), that articulated newer and older social and economic forms, modes of practice and materiality in unique ways, through dynamic cultural interactions brought about by new, expansive, relatively fluid socio-economic systems and new kinds of exchange and communication. This seems everywhere to have included a high level of

residential and group mobility, sometimes including forms of 'migration'.

In areas such as Britain and Ireland, where 'things Neolithic' were almost wholly novel, the impact of these interactions appears to have led to radical cultural changes (eg in terms of dietary habits and monument building; J Thomas 2008, 70–4; Schulting 2008). Yet, at the same time, the high degree of mobility, concern with animal behaviours, and the diverse economic regimes in Early Neolithic Britain that combined agrarian farming, animal herding, hunting and wild food gathering, accord closely with many of the characteristics associated with Mesolithic hunter-gatherers (cf. Bradley 2007, 27–38; J Thomas 2007a, 2008; Finlayson and Warren 2010). This may help to explain the integrative nature of the new worlds brought into being in Britain in the early 4th millennium BC. These were forged out of complex exchanges, compromises, and novel articulations of sociality and practise that engaged both those that mainly farmed and those that did not in perhaps equal measure, to the point where such distinctions were eventually no longer prominent in definitions of identity. From this perspective, the conventional dichotomies between hunter-gather/Mesolithic and farmer/Neolithic may be especially unhelpful for understanding cultural change in the late 5th and early 4th millennia BC. Instead, it may be best to focus on the ways in which social tensions and new religious and political agendas were expressed, negotiated and resolved. This is especially significant in relation to the emergence at this time of increasingly overt contrasts between sedentary and mobile forms of residence, between static and fluid socio-economic practices (eg between agrarian farming and transhumant pastoralism), and between ascriptions and constructions of sacred domains (for example, between 'natural places made sacred' and built monuments).

This approach may help to account for the changes evident in the character and purpose of durable built places in the landscape, and the significance of these with respect to the wider transformation of society in this period. In particular, the construction of timber long halls such as the White Horse Stone building seems on present evidence to represent a radical new articulation of social relationships at the very beginning of the Neolithic. Whatever the exact purpose of this building (discussed below) it is evident that it represented an entirely novel and surely emblematic statement of enduring presence in the landscape. Whether actually occupied by living people or not, the longhouse-like form of the building is redolent of a sense of dwelling, which—allied with expressions of permanence—would have provided a primary medium for negotiating concerns about identity and belonging in a changing world (cf. Hodder 1990, 136–40; 1994; J Thomas 1996b, 8–10). The fact that the form of the structure was in a sense 'foreign' might well have accommodated exogenous technologies and material kinds in an unthreatening, literally homely manner, while at the same time enabling group expressions of solidarity and belonging in the landscape. The absence of continental material culture from British timber buildings suggests that these were built essentially by and for 'indigenous' communities even if incomers were involved in their construction, and as such may have had a role in reaffirming or formulating a 'primordial' presence at the heart of ancestral homelands or at especially significant places along ancient pathways.

It is possible to extend this argument still further by considering the end of timber hall construction and use. It is a striking feature of recent appraisals of the dating evidence from rectangular timber buildings (eg J Thomas 2008, 79; Whittle *et al.* 2011, 840–42, fig. 14.180) and megalithic tombs (Whittle *et al.* 2007) that the former went out of fashion as the construction of the latter became common, broadly within the period *c* 3750–3650 BC (cf. Whittle 2007, 389–90). This shift of emphasis in the nature of monumental architecture has long been recognised at a European scale over the longue durée of the 6th to 4th millennia BC, during which—it is suggested—the beliefs and concerns formerly invested symbolically in 'houses' (Hodder 1990, 44–6, 68–70) appear to have been transferred to 'tombs' (ibid., 169–74; cf. Bradley 2007, 59–62). At first sight, it would seem that a similar process occurred in Britain over a relatively short temporal scale of a century in the early 4th millennium BC. This may, however, be a misleading imposition of Hodder's interpretative model on a body of evidence dissimilar in both chrono-geographical scale and cultural context. Indeed, the absence of evidence for everyday inhabitation of British buildings may indicate that these were never dwellings of the living but—amongst other things—already 'dwellings' of ancestors or spirits. This would help to explain why timber buildings appear to have given way to tombs. If these structures served similar symbolic purposes, bound up with ideas of identity, place, kinship, the past, the ancestors and the dead, then we may be seeing a process that at one level simply extended and formalised these cultural themes through more durable, substantial architectural forms and spaces, while at the same time rendering them more specifically associated with newly-dead members of society and the conduct of mortuary rites.

Purpose, practice and meaning: interpreting the Early Neolithic timber buildings

Interpretations of this kind invite renewed scrutiny of the material evidence from the White Horse Stone and Pilgrim's Way buildings. Questions concerning the forms, functions and cultural significance of British Early Neolithic timber long halls have generated intense debate and often highly polarised interpretative positions. Central to these arguments, as the previous discussion highlights, is the issue of whether the buildings were 'domestic', lived-in structures which can be described as 'houses' (Rowley-Conwy 2003), or whether they had one or more 'non-domestic' roles ranging from storage facilities to shrines (J Thomas 1996b; 2008, 67–70, 79–80). These interpretations are not by any means exclusive, of

course, as numerous ethnographic examples demonstrate (cf. Bourdieu 1990; H Moore 1986; Parker Pearson and Richards 1994; Hugh-Jones 1995, 1996; Richards 1996a; Waterson 1990), and it is increasingly accepted that prehistoric architecture must be seen as richly 'meaningful' at a multiplicity of levels, whether communicated formally through symbolic media or perceived more experientially or emotionally (Parker Pearson and Richards 1994; Bloch 1995b, 1995c). Houses, from this perspective, can be seen as places in which both everyday and special 'ritual' activities took place (cf. Gibson 2003), imbued with religious and other kinds of cultural significance that embodied no simple dichotomy between 'secular' and 'sacred' (cf. Brück 1999a; Bradley 2005, 2007b).

Even so, we must assume that Early Neolithic timber buildings were built by distinct groups of people with particular practical purposes and kinds of signification in mind (whether fully shared or not), and that activities were performed within and around these structures by social groups of particular sizes and compositions. Plainly, to understand individual buildings and the specific roles they were built to address in contemporary cultural landscapes, about which there would have been little ambiguity at the time (however complex those roles may have been), it is important to make sense of their construction and use in terms of deliberate and explicable sets of social actions. At present, however, interpretations of these buildings tend to treat questions of purpose, practice and meaning in an abstract manner, with diverse allusions to ideas such as 'dwelling' and permanence (eg Cooney 2000, 67), 'house societies' (after Levi Strauss 1983, 163–87; eg Cooney 2003; Bradley 2007b, 349), 'communality' and social solidarity (Cross 2003), ancestors and mortuary rites (J Thomas 1996b, 10; Brophy 2007), house biographies and body symbolism (eg Bradley 2007b), and 'great houses' and communal gathering places (Bradley 2005, 65–78; J Thomas 2008, 79). These overlapping characterisations may well touch on some of the qualities and kinds of meanings that were attached to these buildings, but they also seem largely detached from particular forms of social agency: people, acting purposefully, in real social situations, in ways that produced, inhabited and gave meaning to these built structures, seem to be absent.

The fundamental problem with pursuing more precise or definitive interpretations of the purposes and meanings of these buildings is, of course, an empirical one. The absence of surviving floor layers, and the thin and ambiguous nature of the artefactual and other material evidence, severely limit the potential for both functional and spatial analyses. The White Horse Stone building exemplifies this condition of the evidence perhaps even more forcibly than other examples because of the relatively good preservation of the structure sealed beneath later

Figure 3.27 White Horse Stone Early Neolithic long hall: artist's building reconstruction

colluvial deposits. Even in this case, in such favourable circumstances, it is impossible to identify specific kinds of activity or 'activity areas' with any confidence. The lack of material deposits can itself be explained in many different ways, largely in the light of *a priori* assumptions about whether the building was essentially 'domestic' or essentially 'non-domestic' (Fig. 3.27). Alternative interpretative scenarios include the following:

1. The building was routinely and perhaps continuously inhabited as a well-maintained 'house', involving regular clearance of domestic refuse which was moved to middens elsewhere leaving only tiny fragments to be incorporated in posthole fills.
2. The building was inhabited episodically, perhaps for only short periods (eg as part of a seasonally-organised residential system) giving rise to low levels of material deposition which may also have been cleared periodically.
3. The building was not intended for everyday inhabitation, but occupied only on special occasions (eg as a cult-house) by particular social groups participating in ceremonial or other events that took place within the structure, or at other locales in the landscape around, thus giving rise to little material deposition.
4. The building was not used for residential purposes at all, but rather as a 'hall' to which people came for special gatherings such as marriages, death rituals or political assemblies, with episodic deposition of placed objects and/or debris scatters that were cleared between events.
5. The building served a religious purpose as a shrine at which ritualised acts of destruction, fragmentation and consumption took place, giving rise to material residues that were removed after each ritual performance or periodically cleared.
6. The building was not used for residential purposes or formal social gatherings but as a storehouse or repository for 'housing' valued objects, materials and substances that were periodically displayed, out-exchanged or consumed, leaving little material trace within the structure.

On present evidence it is not only possible to argue the case for all of these interpretations, but also to imagine various combinations of them, whether as multiple contemporary functions (including non-separation of domestic/non-domestic activities), sequences of distinct modes of use over yearly cycles, or more general changes of use over more extended periods of time. There is certainly no lack of ethnographic and historical comparanda to support all manner of interpretative analogies (eg long houses, chiefly halls, cult houses, shrines, tithe barns and churches, etc.). At the same time, there is nothing about the nature of the materials deposited that supports one kind of activity over another: the same bowl could be used for daily use as much as ritualised consumption; the same flint flake could be broken or chipped in the course of a domestic task or during a ceremony, the same joint of meat could be eaten as part of a communal feast or as part of a family meal; and milk could be perceived as daily sustenance or as a central symbol of fertility and reproduction (and, of course, both of these things). Attempts to contextualise the evidence from Early Neolithic timber buildings with respect to their landscape settings (environment, buildings and monuments nearby, and wider patterns of deposition) encounter similar problems of limited empirical data, lack of chronological resolution and interpretative ambiguity. Although the landscape context of the White Horse Stone and Pilgrim's Way sites, discussed in more detail below, is revealing in the sense that it highlights potential relationships between the timber buildings and stone- and earth-built monumental structures nearby, the nature of these relationships is open to many alternative interpretations.

It is symptomatic of the wider contrasts and contradictions inherent in present interpretations of Early Neolithic rectangular post-built timber buildings that Hayden (who synthesised the evidence for the site report: 2006a) and the present author should arrive at different conclusions. Hayden proposes that the finds at White Horse Stone suggest a domestic function and relatively intense and/or long occupation (although he also observes that: "the finds themselves are insufficient to show whether it is appropriate to interpret the structure as domestic or as having had a more specialised role"; ibid., 64). The present author, in contrast, is extremely doubtful that the finds can be taken to suggest either intensive or long-term everyday use, especially given the apparent longevity of the building as a maintained structure over 300–350 years (Whittle *et al.* 2011, 380), and because of its architectural design and landscape situation, which are difficult to account for in any conventional 'domestic' sense. Instead, it seems necessary to imagine less routine and perhaps more complex and diverse activities. This evaluation of the White Horse Stone and Pilgrim's Way evidence is based on the following observations:

1. The monumental character and scale of these timber structures, and the extreme rarity of buildings of this kind throughout Britain (cf. J Thomas 2008, 69–70), sets them apart from what appears to be the usual material 'signature' of occupation sites of this period, marked by pit groups and occasional stake- and postholes indicative of insubstantial and short-lived dwellings (cf. Bradley 2007, 44, fig. 2.5; Garrow *et al.* 2005).
2. The timber buildings at these sites have some features in common with the wooden structures found in pre-mound construction contexts at some long barrow sites, most notably at Nutbane, Hampshire (Morgan 1959; cf. Barrett 1988, 36–7), and the post-built long enclosure structures in Scotland (J Thomas 2006), in both cases pointing to ceremonial performance and specific kinds of ritualised actions guided spatially by monumental timber architecture.
3. The deliberate alignment of the southern unit of the White Horse Stone building on the Pilgrim's Way

structure suggests a desire to articulate the building with the wider cultural landscape and significant places within it, in a way similar to the alignment of long mounds at Thickthorn Down, Dorset (Barrett *et al.* 1991, 50–1) and the long mounds and long enclosures at Giant's Hills, Skendleby, Lincolnshire (Field 2006, fig. 52).

4. The location of the White Horse Stone and Pilgrim's Way buildings amongst a (probably later) group of megalithic structures (discussed further below), may suggest that their meanings—evoked in the course of activities inside them and in relation to their wider cultural landscape setting—had significance that extended well beyond introspective 'domestic' spheres of practice.
5. The locations selected for the construction of these buildings are very surprising if the intention was to use them as everyday dwellings: in both cases they are positioned on awkward slopes at locales that are at least 400m from the nearest known water sources.
6. The pre-building features and long-lived character of the White Horse Stone building, which may have encompassed two constructional phases, together with the limited evidence for material deposits (some of which may in any case pre-date or post-date building use), suggest an extended period of activity marked by low-intensity or episodic depositional practices. The absence of definite evidence for contemporary hearths or significant quantities of fire residues, especially charcoal but also burnt flint and bone, further suggests a lack of sustained occupation.
7. The current chronology for Early Neolithic rectangular post-built structures places them at the very beginning of the insular Neolithic, *c* 4050–3700 BC, in many cases pre-dating tomb and long mound construction. In this social and economic milieu these buildings—exemplified by the White Horse Stone and Pilgrim's Way structures—appear to have been architecturally innovative, built on an unprecedented scale, and to have had a striking presence in the cultural landscape, quite unlike that of 'ordinary' occupation sites.

The Early Neolithic timber halls at White Horse Stone and Pilgrim's Way thus appear to have been special places serving special needs, possibly occupied recurrently but not inhabited in a routine 'domestic' sense. This view is broadly consistent with the wider range of recent interpretations of this kind of monumental timber architecture in southern Britain and beyond (eg Bradley 2005, 41–80; 2007, 38–46; Brophy 2007, 89–94; Cross 2003; J Thomas 1996b; 2007, 434; 2008, 69–70, 79). This appreciation of the evidence can be extended further by reconsidering the spatial organisation and geographical settings of the timber halls, and their significance in the cultural landscapes of the early 4th millennium BC. The evidence from White Horse Stone/Pilgrim's Way provides some important new insights in this respect, both in terms of their spatial positioning and their relationships with contemporary and later monuments.

Early Neolithic buildings in the landscape

There are now several Early Neolithic post-built timber long halls that can be placed in their local landscape contexts with some confidence, primarily as a consequence of large-scale developer-funded excavations that have involved extensive topsoil stripping to expose features and deposits over very large areas. These include the sites at White Horse Stone/Pilgrim's Way, Lismore Fields in Derbyshire (Garton 1991; Davies 2009), Yarnton, Oxfordshire (Hey 1997, 2001; Hey and Bell 1997; Hey, in prep.), and Llandegai, Gwynedd (Lynch and Musson 2001; Davies 2006, 47–53). Although different architecturally and possibly later in date, the timber structure and the wider areas excavated at Horton, Berkshire (Alistair Barclay pers. comm.; Wessex Archaeology 2009), also provide useful comparative evidence for landscape organisation in this period.

The timber long halls at all these sites share a number of features in common, both in terms of the spatial positioning of the buildings and their immediate landscape settings. In three cases, there are two Early Neolithic post-built structures located within 450m of each other: the White Horse Stone and Pilgrim's Way buildings are 240m apart; Lismore Fields A and B are about 65m apart; and Llandegai 1 and 2 are 445m apart (Fig. 3.28). The buildings were inter-visible at each of these sites, and in each case one may have been built at a location chosen specifically to allow for spatial referencing and/or a clear view of the other. At White Horse Stone, it is striking that the long axis of the southern half of the building is oriented directly on the Pilgrim's Way structure to the south-east. At Lismore Fields, the long axis of the eastern half of Building 1, a two-compartment angled (and perhaps two-phase) structure like the White Horse Stone building, is oriented on the north side of Building 2 some 73m to the west. At Llandegai, the hillside location of Building 2 overlooks Building 1 to the north-west, and both have similar south-west/north-east orientations. Although Yarnton appears to be an isolated structure it is worth noting that this is oriented on the west end of a long enclosure some 260m to the east, in Site 5 (Hey, in prep.).

Although it is possible that these spatial relationships are coincidental, and perhaps even products of the particular spatial configurations and extents of the excavated areas created archaeologically, nonetheless they offer the intriguing possibility that these buildings embodied sets of symbolic referents that not only lent special significance to the buildings themselves but also articulated those meanings in a spatially extensive manner, engaging and linking them with other structures, the wider landscape and the cosmos. Moreover, whilst there is no suggestion that a single, coherent symbolic scheme was expressed in timber long hall architecture, it is evident that there are a number of shared building orientations. These do not seem to mark specific celestial events, although it is worth noting the approximate east-west equinoctial alignments of the Yarnton and Lismore Fields 2 buildings, and the rough orientation of the southern half of the White Horse Stone structure on southern moonrise at the major

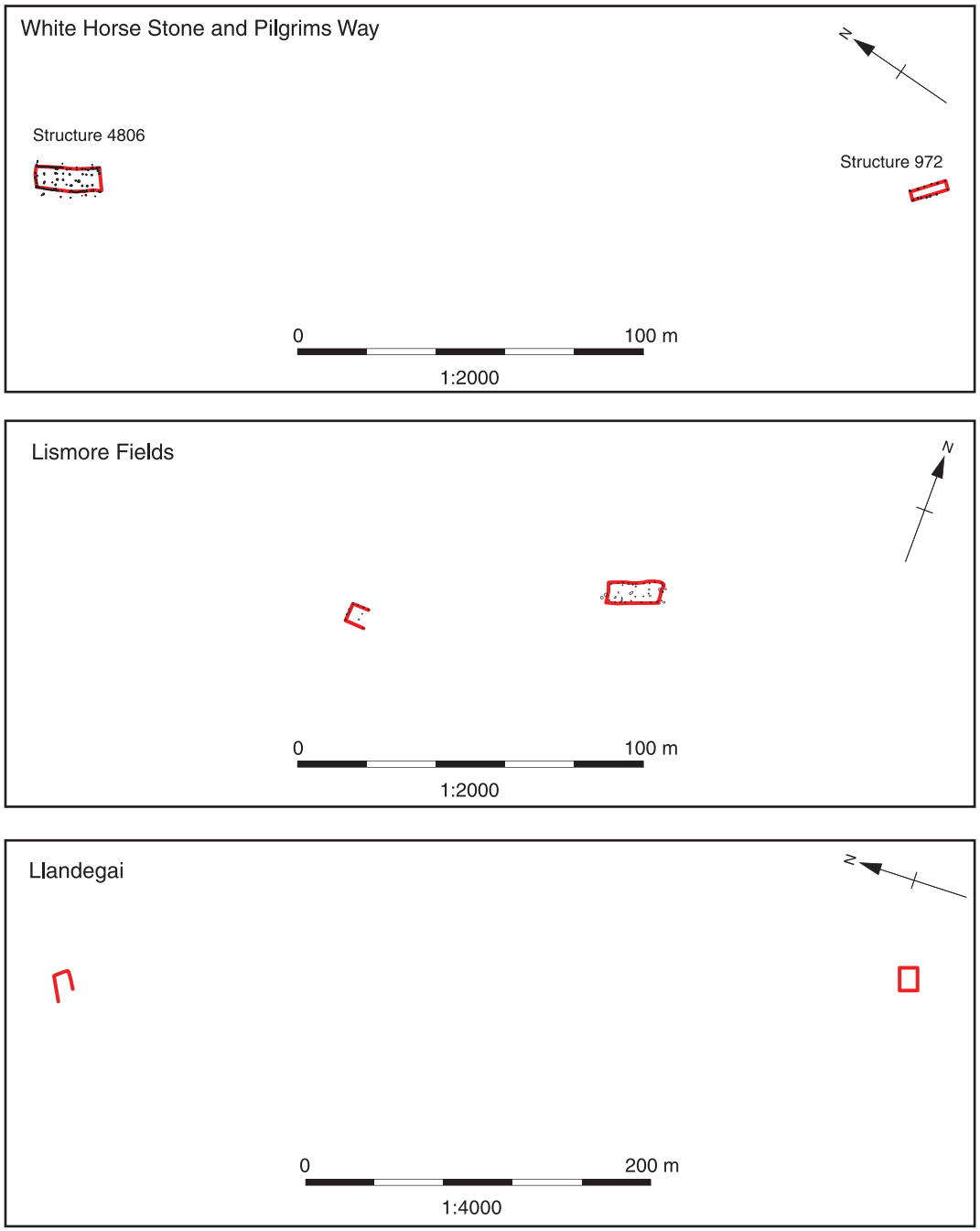


Figure 3.28 Early Neolithic 'paired' buildings: White Horse Stone/Pilgrim's Way, Kent (top); Lismore Fields, Derbyshire (middle); and Llandegai, Gwynedd (bottom). Note the different map scale for Llandegai

standstill (see Ruggles 1999, 36–7, 57). It is more likely, however, that shared building alignments evoked—in different ways—a range of conceptual/perceptual themes concerned with the same principal seasonal and celestial transitions, similar landscape and skyscape aesthetics, and similar social practices, sensory qualities and bodily dispositions (cf. Bourdieu 1977, 87–95, 143–58).

The extensive areas now investigated around several post-built timber long halls also suggest these buildings had similar kinds of physical and social 'presence' in their immediate landscape settings. It is apparent, in most cases, that they occupied localised clearings in otherwise wooded terrain (Stafford 2006b, 18; Giorgi and Stafford 2006, 17; Edmonds and Seaborne 2001, 48–9; Lynch and Musson 2001, 32; Hey, in prep.; Hey 1997, 106–8), which would have restricted both the visibility of these structures and what could be seen from them. In addition, apart from the existence in some instances of second buildings nearby, these structures appear to have stood in isolation, separated spatially from areas in which activities associated with everyday social and economic routines took place. There is no evidence for midden deposits anywhere close to any of the excavated buildings, Early Neolithic pit deposits are extremely rare, hearths and cooking sites are mostly absent, there are no ditched or fenced enclosures (eg for livestock or fields) associated with them, and even nearby tree-throw holes are largely devoid of artefacts and other cultural

materials that could have been contemporary with building use. Instead, the only signs of activity close to the buildings consists of a few isolated or dispersed pits and tree-throw holes at White Horse Stone (discussed above), Yarnton (features 3815; 3884; Hey, in prep.), and Llandegai 1 (Lynch and Musson 2001, 29–30), and some possible (but poorly-dated) short post lines or fences at Lismore Fields (Garton 1991, fig. 2.1) and possibly Yarnton (Hey, in prep.). Taken together, these observations reinforce the view that these structures were not farmhouses occupied on an everyday basis.

Relationships between timber long halls and contemporary and later funerary and ceremonial sites are also revealing. In most cases, it is apparent that post-built rectangular long halls have no close spatial or visual connection with contemporary Early Neolithic funerary monuments. There are no known tombs or mounds of 4th millennium date within 3km of the Lismore Fields, Llandegai, or Yarnton sites. Moreover, viewshed analysis suggests that no deliberate attempts were made to situate funerary monuments in the landscape in such a way that they were inter-visible with the sites of timber buildings (see Davies 2006). In striking contrast, there are now several examples of timber structure being sealed by later tombs: including Gwernvale, Powys (Britnell and Savory 1984, 139–42); Sale's Lot, Gloucestershire (Darvill 1996, 104, fig. 11.8); and Ascott-under-Wychwood, Oxfordshire (McFadyen *et al.* 2007, 27–31; Hey with Robinson 2011, 231, fig. 11.10). This raises interesting questions about the location of the White Horse Stone and Pilgrim's Way structures close to an Early Neolithic megalithic tomb, Kit's Coty House (see Fig. 3.30), and several more possible megalithic structures forming the eastern group of the 'Medway megaliths' (see Ashbee 2000).

The Early Neolithic megalithic structures in the Lower Medway Valley, built of local sarsen stone (Fig. 3.29), represent one of the most important groups of surviving monuments of this period in south-east England, of

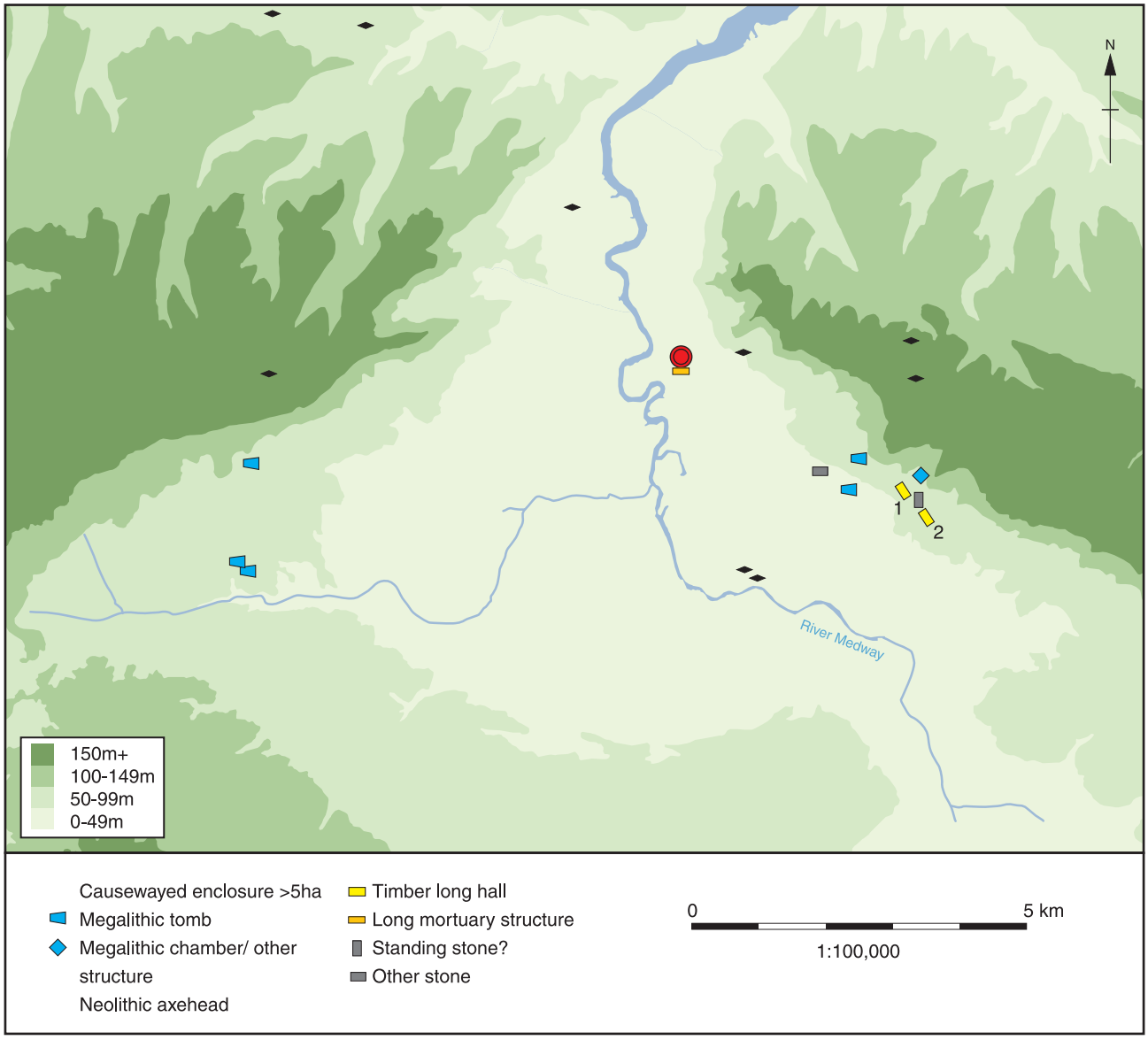


Figure 3.29 Early Neolithic timber long halls, megalithic monuments and stone axe finds in the Medway Valley, Kent. HS1 sites: 1. White Horse Stone; 2. Pilgrim's Way

Figure 3.30 Kit's Coty House megalithic chamber viewed from the north-east, with the Medway Valley in the background (copyright: Paul Garwood)

considerable research significance at both national and European scales. They comprise some well-preserved architectural remains, several damaged and less visible structures, and a number of possible monuments (Holgate 1981; Philp and Dutto 1981; Ashbee 1993, 2000). The monument group to the west of the Medway includes Coldrum, located on the south side of the downland escarpment, and The Chestnuts and Addington sites on the Greensand ridge *c* 2km to the south. The monument group to the east of the Medway is located below the downland escarpment on the slopes to the south of Blue Bell Hill. The megalithic sites consist of Kit's Coty House (a sarsen chamber and long mound; Fig. 3.30), Little Kit's Coty House (a possible collapsed megalithic structure), and Smythe's megalith (a stone-built chamber, now destroyed). Other possible fragments of megalithic structures such as the Coffin Stone, Upper White Horse Stone and Lower White Horse Stone (the latter destroyed in the 19th century) are far more doubtful (Evans 1950, 65–9; Ashbee 1993, 86–9). Only the Upper and Lower White Horse Stones and Smythe's megalith could have been inter-visible with the White Horse Stone and Pilgrim's Way timber buildings (Davies 2006, 60). The presence of a large causewayed enclosure at Burham, close to the Medway *c* 2.5km to the north-west of Kit's Coty House (Oswald *et al.* 2001, 63, figs 4.12, 5.20, app.44), further emphasises the significance of this area in the Early Neolithic.

Unfortunately, except for Coldrum (see Whittle *et al.* 2011, 381–3; Wysocki *et al.* in prep.), there is no reliable dating evidence from these sites, which is especially problematic given the claims made about the very early date of at least some of the Medway megaliths (eg Ashbee 1998; 1999). The evidence relating to tomb use and mortuary practices is also very limited, again except in the case of Coldrum (Ashbee 1998; Whittle *et al.* 2011, 381–3.). Reports of other possible sarsen structures in this area (eg Philp and Dutto 1981, 11; site 10) have not been substantiated, while the groups of natural or re-deposited sarsen stones recorded around Cobham and Tottington are unlikely to be the remnants of prehistoric monuments (Ashbee 2000). This view is reinforced by the natural concentrations of sarsen boulders found at Tollgate during work on the HS1 scheme (Bull 2006b). However, the natural occurrence of massive stones in the chalkland landscape, probably originally as 'sarsen fields' similar to those that survive on the Marlborough Downs in Wiltshire, may in the Neolithic have given the area a distinctive character that was perceived as 'special' and perhaps significant in religious terms.

The spatial relationship between the White Horse Stone and Pilgrim's Way long halls and the megalithic monuments nearby is relevant to a range of interpretative debates concerning monument groups and settlement in this period. Contrasts have often been drawn, for example, between 'secular' landscapes of settlement and farming and 'sacred' landscapes of ceremony, monumentality and cosmography (cf. Bradley 2000; Field 2004; Parker Pearson and Ramilisonina 1998; Richards 1996b; Richards and Parker Pearson 1994; Tilley 1994). There is also a persistent interpretative division between those who see monument groups and settlement areas as being more or less co-extensive, and those who see them as being largely separate. Even where there is agreement that occupation sites existed within or around monument groups, it is far less clear whether inhabitation was continuous or discontinuous, how it was organised spatially and temporally, and whether it differed from occupation sites in areas without monuments. At first sight, the White Horse Stone/Pilgrim's Way buildings seem to side-step these debates, not only because it is far from certain that they were inhabited structures at all, but also because it is likely that post-built timber long

halls generally pre-date funerary monuments (Whittle *et al.* 2007). However, the very early 4th millennium BC radiocarbon dating of some of the human bone from the mortuary deposits excavated at Coldrum (Whittle *et al.* 2011, 381–3), suggests a chronological overlap in the construction and use of timber buildings and tombs in the Medway landscape. Plainly, there is an urgent need to recover reliable dating evidence from all of the Medway megalithic monuments in order to determine chronological and thus cultural relationships more precisely.

Funerary monuments have long been central to interpretations of Early Neolithic society in Britain (cf. Bradley 1984, 1998a, 2004; Darvill 2004; J Thomas 1999). The spatial distribution of tombs and long mounds, for example, has sometimes been seen as a reflection of social organisation, with tombs occupying central locations within agricultural territories (eg Renfrew 1976; Bradley 1984), although the aggregation of the Medway sites in two groups does not sit easily with this model (Holgate 1981, 230). Similarly, larger-scale 'patterned' distributions of tombs, long mounds, causewayed enclosures and flint mines in regions such as Sussex and Wessex, have been interpreted as reflections of coherent cultural systems (eg Drewett *et al.* 1988, fig. 2.9). The evidence for complex mortuary practices at tombs and long mound sites, involving body disarticulation, movement of bones and collective deposits of human remains (cf. Darvill 2004; J Thomas 1999, 2000), has been widely interpreted in terms of practices that transformed the dead into 'ancestors' and their installation in tombs as the central symbolic foci of living social groups (ie as 'houses for the ancestors'; Bradley 1984; Barrett 1988). The Medway tombs are thus likely to have been focal elements in a landscape in which the ancestral dead had a special and pervasive presence.

In this light, it is striking that both groups of megalithic monuments in the Medway Valley occupy similar 'liminal' locations between the chalk escarpment on one side and the floodplains and terraces of the river Medway and its tributaries on the other, and—at a larger spatial scale—between the chalk downs to the north and the clay vales and High Weald sandstone ridges to the south. This may relate to very large-scale cosmographic structuring of the Early Neolithic landscape (cf. Darvill 1997; Field 1998, 2004): the tombs marking places of transition not only in themselves (from the living to the dead) but also in their positions on a dramatic topographic and geo-environmental boundary. They stand betwixt and between parts of the landscape with contrasting physical and sensory qualities, easily translated into series of classificatory or symbolic oppositions which could have been evoked at many levels of meaning, not least in the course of passages (transitions) between them. The occurrence of sarsen stones, protruding in strange jumbled masses from the soil in the combes and along the slopes of the chalk escarpment, may have further provided this liminal zone with an especially other-worldly character. The clustering of monuments, in this context, suggests the creation of focal areas along this boundary for the articulation of physical, visual and symbolic inter-relationships, forging a powerful sense of coherence and significance displayed in massive, durable stone and earth structures (cf. Bradley 1993; 1998a, 119–31; J Thomas 1999, 45–61).

The presence of the White Horse Stone and Pilgrim's Way buildings within one of these monument groups, amidst the sarsen fields at the base of the chalk escarpment and within 100m of the cluster of sarsens in the valley bottom, seems more than fortuitous. At the very least, the existence of ancient timber buildings, still standing when the first tombs were constructed, would have provided a human time-depth and resonant historical, biographical and spiritual meanings to set alongside the mythical temporalities and narratives embodied in the sarsen stones nearby. From this perspective, irrespective of their original purpose and use, the timber buildings may represent one episode in the longer-term formation of a sacralised landscape that encompassed the translation of the living into the dead, the transformation of a social present into an ancestral past, and the incorporation of sarsen stones—redolent of other times and places—in structures built to 'house' the ancestral dead and their spirits.

Changing the world: first farmers and the Early Neolithic of south-east England

The White Horse Stone long hall and the creation of farming communities

The origins of the earliest Neolithic communities in Britain and the manner by which they came into being continue to be some of the most compelling and challenging interpretative problems in British prehistory. The contrasting and sometimes contradictory explanatory frameworks that guide current debates, mentioned in the previous sections, in most respects have persisted in similar guises for 20 years or more, and may well continue to do so for some time to come. At the present time, the principal interpretative fissure lines, more nuanced and qualified than before perhaps but still capable of generating heated argument, lie along the boundaries of exogenous versus endogenous processes of change (the old colonisation versus acculturation question), 'westerners' versus 'easterners' as the sources of insular adoptions/colonisations and influences, sedentism versus residential mobility as the prevailing mode of settlement organisation, and of course agrarian versus non-agrarian subsistence and all this implies. As the preceding discussion of long house architecture, social activity and cultural landscapes have demonstrated, it is possible to arrive at a multiplicity of alternative interpretations of both specific aspects of the evidence and wider social and cultural processes during the late 5th and 4th millennia BC. Although many interpreters have sought recently—with these kinds of observations in mind—to integrate the different strands of evidence available in sophisticated models of cultural diversity and social and economic complexity (eg Bayliss, *et al.* 2008; Bradley 2007, 2008; Sheridan 2007, 2010; Thomas 2007a, 2008; Whittle

2007), certain interpretative positions on either side of those fissure lines are inevitably favoured over others.

The latest, hugely significant contribution to this field of study is the comprehensive analysis of British and Irish Early Neolithic chronology by Whittle *et al.* (2011). Although this focuses on the radiocarbon dating of causewayed enclosures and related sites, it includes in-depth surveys of the dating evidence available for all contemporary classes of site, material culture categories and kinds of social practice of the late 5th and 4th millennia BC in southern Britain and Ireland. The critical application of Bayesian modelling throughout the entire study, as a means of evaluating sets of radiocarbon dates and above all to narrow appreciably and fix more precisely in time the age ranges for each category of evidence, has produced an extraordinarily detailed high-resolution chronological framework for the insular Early Neolithic.

The interpretative implications of this work, and the debates that ensue, will take many years to be played out or re-worked (and in some aspects modified as new evidence becomes available), but the overall narrative of Neolithicisation presented immediately establishes a new explanatory model based on multiple high-quality data sets, in relation to which all other interpretative arguments can be judged. In particular, it is argued that there was a geographically-expansive process of Neolithicisation across Britain, starting in south-east England around 4050 BC, perhaps initially in the Thames estuary zone, extending to Wessex, the Cotswolds the east Midlands and East Anglia by 3900 BC, reaching south-west and northern England, southern and eastern Scotland and possibly Ireland by 3800, and finally north-west Scotland, Wales and Ireland fully by 3700 BC (ibid., 863, fig. 15.8). Although the earliest origins of things Neolithic in the south-east is, in fact, based essentially on just four sets of radiocarbon dates, from the Sussex flint mines (ibid., 255–62), the Blackwall single grave (ibid., 361–4), the Coldrum skeletal material (ibid., 381–4), and White Horse Stone long hall (ibid., 378–81), nonetheless the consistently early dates for these sites cannot be matched by other sets of dates of similar age in other regions. In this context, the White Horse Stone long hall evidence clearly represents a key element in an emergent narrative of Neolithic beginnings in Britain that places south-east England centre-stage.

This new narrative challenges the strongly-held view amongst some prehistorians that primary Neolithicisation followed a western British and Irish axis of maritime interaction (Sheridan 2010). Whereas the Whittle *et al.* model (2011, 853–61) looks to north-eastern France, the Low Countries and northern Germany for the immediate source areas of influence in the development of the first insular farming communities in south-east England, the alternative 'western' model seeks origins in western and northern France, transmitted over seaways across the western Channel and the Irish Sea (Garrow and Sturt 2010; Sheridan 2003, 2010; Tresset 2003). There is no question, however, that the compelling case Whittle *et al.* make for the geographical primacy of the south-east, in adopting and disseminating Neolithic lifeways and material culture, redirects attention to the near-continental areas across the southern North Sea and eastern Channel to identify their points of origin. Yet specific source communities for British Early Neolithic material culture repertoires (both ceramic and lithic) and architectural forms are almost as obscure now as they were when Whittle reviewed the continental background of the earlier Neolithic of southern England 35 years ago (Whittle 1977). Despite the recognition of affinities for Carinated Bowl pottery in Michelsberg ceramic traditions (Sheridan 2007), and the presence of artefact assemblages in Flanders that partially resemble those found in British contexts (Whittle *et al.* 2011, 859), no sign of a single 'ancestral homeland' for the initial south-east English Neolithic is to be found anywhere.

This seems paradoxical if a process of colonisation rather than acculturation is proposed to account for the inception of the Neolithic in Britain. The idea of acculturation, of complex modes of indigenous experimentation and selective adoption of agricultural and other technologies, clearly remains a powerful way to account for the distinctive insular character of the British Early Neolithic, the continuity of aspects of hunter-gatherer life and the absence of evidence for transmission of 'whole' assemblages of continental cultural material through 'folk migration' (Thomas 2007; 2008). Even so, the acculturation hypothesis struggles to explain the radical and dramatic character of the innovations that occurred within a short time-frame in southern Britain in the period *c* 4050–3900 BC (Whittle *et al.* 2011, 852–3, 864–6). Moreover, the early geographical focus in south-east England points to a specific directional cross-Channel process of cultural transference that argues against a model of generalised synchronous transformation by culturally-diverse indigenous communities alone (ibid.).

The idea of colonisation to explain some aspects of the origins of the British Neolithic, in combination with indigenous adoptions of farming technologies, has seen a qualified revival in recent years (eg Bradley 2007, 86) and is favoured by Whittle *et al.* (2011, 852). Although the specific modes and social conditions of such colonisation, if such indeed took place, are as difficult to identify materially as all other aspects of the Mesolithic-Neolithic transition, Whittle *et al.* (858–61) argue convincingly that if it did occur it most likely took the form of small-scale, planned, long-distance migration to well-scouted destinations by narrowly-defined kin groups living in geographically restricted home territories. The motives for such ventures, involving high-risk journeys into foreign lands, and land-take amongst pre-existing, potentially hostile native populations (though integration and mutual advantage are equally possible outcomes), must have related to expectations of economic advantage, greater security, achievement of positions of dominance and/or political success, as well as realisations of cultural and religious ideals (Neolithic versions of 'manifest destiny' perhaps).

The specific cultural values and socio-economic circumstances that might have stimulated migration of these kinds into Britain are unknown, although the

dynamic and unstable conditions of agricultural expansion and social change evident in Michelsberg regions in the late 5th and early 4th millennia BC suggests a common backdrop to Neolithicisation and other changes more widely in northern Europe at this time (Whittle *et al.* 2011, 860–1). This might well account for the broadly contemporaneous character of the major cultural transformations that took place around the margins of the Michelsberg zone in south Scandinavia, north Germany and southern Britain. In the British context, this may not have involved significant long-term patterns of migration involving large numbers of people, but rather the movement and settlement of small 'founder' groups over one or two generations, with unforeseen longer-term effects through fusion with indigenous populations and the wider adoption of new Neolithic ways of life (ibid.). From this perspective, the likelihood of small-scale localised colonisation events, the lack of evidence for wholesale transmission of total cultural repertoires and sustained cross-Channel interactions, as well as the evidence for significant indigenous contributions to the construction of distinctively insular Neolithic societies, can all be accommodated within the single interpretative narrative proposed by Whittle *et al.* (ibid.).

Whether this account of the origins of the British Neolithic is correct or not, the White Horse Stone long hall surely provides a window on the very earliest British Neolithic if not the 'pioneering' phase itself. As the earlier interpretation of the building emphasises, however, a simple 'domestic' function is doubtful and there is absolutely nothing in the artefactual record or architectural design that hints at specific continental cultural origins or inspirations. At first sight, the geographical location of the long halls at White Horse Stone/Pilgrim's Way is also not the most obvious primary target area for incoming farming communities, situated about 25km inland along the meandering Medway river from the modern estuary and—given the likely extent of sea-level rise—more than twice that distance from the coast in the late 5th millennium BC. Whilst it is certainly possible that adventurous scouting parties could have penetrated deep into the interior along the river valleys of southern Britain at this time, their desire to do so is difficult to account for unless there was a deliberate intention to avoid or by-pass coastal areas and their hinterlands, probably occupied by denser populations of native hunter-gatherers. It is possible, of course, that initial colonisation events took place along the coastlands, followed only later by secondary inland migration by already 'successful' farming communities (comprising descendents of both foreign settlers and native inhabitants), though environmental conditions along the coasts (discussed below) are perhaps more likely to have deterred agricultural settlement in the maritime zone.

Whether we should imagine migrants direct from continental Europe following scouts or local guides, or groups budding off from already established coastal agricultural communities, subsequent movements of settler groups and their land-taking activities upstream along the Medway Valley would certainly have been highly visible and—unless negotiated with indigenous communities—potentially highly dangerous. If these kinds of colonisation events did take place, their success would probably have depended heavily on peaceful management and mitigation strategies, engaging both newcomers and natives in mutually-acceptable arrangements concerning areas of inhabitation, routes through existing territories, rights over significant places, access to woodland resources and water sources and so forth, as well as new articulations of authority and status satisfactory to both sides. Indeed it is difficult to imagine this process talking place at all without positive advantages and benefits being perceived by the hunter-gatherer groups involved. Even the alternative scenario of local hunter-gatherer communities adopting farming technologies and associated material culture, marking out a new kind of presence in the landscape through built structures, would have demanded radical changes in social relationships, residence patterns and rights to resources, and their acceptance by the wider kin and corporate groups affected.

From this perspective, the absence of evidence for Late Mesolithic activity at White Horse Stone/Pilgrim's Way may be consistent with the selection by farming groups (whether incomers or not) of a site for building construction that impacted only minimally on pre-existing patterns of hunter-gatherer inhabitation and resource procurement. This locale is far from the coastal zone and some distance from the Greensand Ridge to the south; areas where hunter-gatherer populations may have been especially concentrated. It is also set back from the River Medway, probably the most intensively used transit route between the coastlands and the interior, while situated on a dry valley route linking the chalk downlands (the landscape zone least intensively exploited by existing hunter-gatherers) with the Medway Valley. The lack of any evidence to support the idea that a significant prehistoric east-west route existed at the foot of the escarpment, prefiguring the medieval Pilgrim's Way, further emphasises the marginality of the landscape setting. Wherever the builders of the White Horse Stone and Pilgrim's Way long hall came from, and whatever their ancestry, they chose what appears to have been a secluded and remote place of little or no prior social significance for the construction of their timber buildings. This is consistent with the idea of a deliberate 'new start', involving the self-conscious creation of a new kind of world in a place suitably without history or ties of social memory, more or less hidden from external scrutiny. At the same time, this location may well have been endowed with cosmological significance and a sense of otherworldliness, as discussed previously, bound up with its liminal position in relation to the lie of the land and patterns of inhabitation, and the presence of 'strange' sarsen rock outcrops scattered across the valley floor.

Whether 'houses' of some kind (real and/or imagined) or structures that protected valued people, materials or substances, they seem designed purposefully to convey a powerful sense of 'difference' by virtue of their unprece-

dented scale, formal properties and their landscape situations. Yet such qualities may perhaps have been appreciated only by those who 'belonged', who could gain access to the secluded setting the buildings occupied. In the same way that hunter-gatherer societies articulated their cultural identities with reference to core sacred territories and pathways exclusive to themselves, it is possible that the White Horse Stone and Pilgrim's Way buildings were created in part to act as moral foci for a community eager to establish a unique and inalienable place for themselves in the cultural landscape. The translation of such concepts and sentiments from structures built of organic materials to enduring structures built of stone and earth is not hard to imagine. This is precisely what seems to have transpired in the Medway landscape in the centuries that followed the initial stage of Neolithicisation, as the monumentality of the timber halls was superceded by the monumentality of megalithic architecture. The main difference is that the building of megalithic structures, such as Kit's Coty House (see Fig. 3.30), only 900m to the north-west of White Horse Stone, took place at locations that were prominent and visible in the landscape, as if the process of translation also entailed a transformation in the way the community's presence in the landscape was expressed in far more explicit, confident and unambiguous ways than before.

It is evident that the White Horse Stone evidence does indeed provide a window on the earliest Neolithic in Britain, but our interpretations of what can be 'seen' rely as much on assumptions about the wider context of social change at this time as all previous interpretations. The exciting new chronological framework now available certainly situates the long hall more precisely in a spatio-temporal context with intriguing interpretative implications, yet in many respects inevitably raises far more questions than it resolves. There is plenty of potential for contrasting understandings of the building and its significance, with multiple variations on the themes explored above, not only because of the many ambiguities of the White Horse Stone evidence but because at present there is very little with which to compare this evidence locally, regionally or more widely. The uncertainties surrounding contemporary Neolithic societies on the near-continent, and—above all—the very limited evidence available with which to construct a regional context for the long hall, undermine all attempts at precise interpretation. In order to assess fully the White Horse Stone evidence and what it signifies, it is important therefore to explore the regional parameters of study and their present limitations.

Regional perspectives on the Early Neolithic evidence

We now know a great deal more about the origins and character of Early Neolithic cultural worlds in south-east England, to a large extent as a consequence of the HS1 work and especially the chronological analyses undertaken by Whittle *et al.* (2011). It is apparent, however, that there are several major areas of uncertainty when we try to evaluate the significance of the evidence from the HS1 sites and how representative these are of Early Neolithic inhabitation of the landscape at a regional scale (see Figs 3.10 and 3.11).

First, it is uncertain how Early Neolithic activity on the northern fringes of the Greensand ridge, which comprises the greater part of the central and eastern parts of the HS1 Section 1 route, relates to the activity below the chalk escarpment at White Horse Stone and on the Downs to the north, or how far this can be usefully compared with the evidence for activity on the northern fringes of the chalk traversed by the western part of the HS1 corridor. Although artefacts of this period have been found right across the North Downs and north Kent plain, the number of finds remains low and these are thinly scattered. This may, in part, reflect the widespread presence of modern woodlands and pasture across the western parts of the downland escarpment and adjacent areas to the north, as well as historically low levels of systematic surface artefact collection in Kent as a whole. It is remarkable that apart from the programme of work in advance of HS1 construction between the Medway and the Ebbsfleet, there have been no large-scale fieldwalking surveys on the Kent Downs, nor any county-level synthesis of known lithic finds (in marked contrast to the situation in Sussex: eg Drewett 1982a; Garwood 1984; J. Gardiner 1984). Moreover, except for excavations along the westernmost portion of HS1 Section 1 and the A2 corridor just to the north, and on the Isle of Thanet at the east end of the county, there have been no large-scale developer-funded excavations on the Kent chalklands. Research-led fieldwork projects concerned with early prehistoric landscapes in Kent have been entirely lacking, even around known monument groups, until very recently (Garwood, in prep. a).

Whilst Early Neolithic finds from both surface collection and excavation were extremely scarce along the HS1 and A2 corridors (P Harding 2006, 4–6, 322-46, tbls.1–4, figs 2, 3, 13–15; Barclay and Edwards 2006, 24–7, tbl.2.4; Lis Dyson pers. comm.), again suggesting a general low level of occupation, this need not necessarily be representative of occupation or activity on the chalklands generally. Recent discoveries of enclosures and definite or possible long enclosure and mound sites in east Kent, and the evidence for Early Neolithic activity in deeply-buried sub-colluvial contexts in chalkland valleys, notably at White Horse Stone, together suggest there is great potential for significant new appreciations of the inhabitation and monumentalisation of these parts of the Early Neolithic landscape in the future.

Second, the extent and character of Neolithic activity in the Weald, including the Gault Clay vale that lies mainly to the north of the HS1 corridor, and the Greensand ridge and the alluvial plain of the Beult and East Stour rivers to the south, are little understood. A notable feature of regional distribution maps is the virtual absence of Early Neolithic sites and finds from the Weald (M Gardiner 1990). Although the HS1 fieldwalking and site data (eg from Eyhorne Street, Sandway Road and Beechbrook Wood) can now be

added to records of surface finds of arrowheads, stone and flint axe heads (some probably deposited deliberately), and occasional flint scatters suggesting occupation sites (cf. Drewett *et al.* 1988, 46–7; M Gardiner 1990, 42; Healy 2008, 11–13), this evidence offers only tantalising glimpses of small parts of the Wealden landscape. Indeed, the non-presence of Early Neolithic activity may be just as revealing, especially the extremely low levels of lithic finds recovery from surface contexts between Ashford and Saltwood (P Harding 2006), and the complete absence of features and deposits from the sites excavated along this part of the route, including Mersham (Helm 2006), Bower Road (Diez 2006b), Little Stock Farm (Ritchie 2006), and Westenhanger (Gollop 2006). We are left with the persistent general impression of low-density occupation and low-intensity resource procurement, together with occasional 'special' deposits.

Third, the previous regional research emphasis on upland chalkland areas with surviving monuments and large lithic artefact concentrations, especially the Sussex Downs, has biased our overall appreciation of the overall distribution and density of Early Neolithic settlement. The uneven character of previous fieldwork is perhaps most marked in relation to river valleys, where there is increasing evidence for occupation in settings now covered by alluvial deposits (eg T Allen *et al.* 2004; Hey 1997; Jackson 2007; Knight and Howard 2004; Needham and Trott 1987). This has significant implications for a general re-evaluation of the wider social geography of Early Neolithic inhabitation, perhaps especially the initial phase of colonisation and agricultural innovations represented so far only at White Horse Stone. Unfortunately, very few riverine sites have been investigated in Kent and only in the Ebbsfleet Valley is there any detailed evidence relating to Neolithic activity. Early excavations (Burchell and Piggott 1939, Sieveking 1960) and the recent series of investigations at Springhead and Northfleet in advance of HS1 Section 2 and the STDR4 road scheme (Liz Stafford, pers. comm.), indicate episodic occupation on the sides and floor of what was a deep-cut valley during the 4th millennium BC. The extent, intensity and character of this activity remain uncertain but there is certainly no evidence for large-scale midden deposition of the kind explored recently at Dorney in the Thames Valley (T Allen *et al.* 2004). However, the particular geo-environmental setting of the Ebbsfleet Valley sites, situated in a narrow valley close to the coast and affected by alder carr and peat formation in the course of the late 5th and early 4th millennia BC (Liz Stafford, pers. comm.), may be unrepresentative of river valley settlement in general and especially the inland parts of the larger river systems and their wider floodplains and terraces.

At present, therefore, the potential of river valley sites remains largely unexplored in south-east England and it is impossible to judge the extent or character of settlement with any confidence, although there is enough (ambiguous) evidence to suggest extensive exploitation of riverine environments and adjacent terraces as well as the possibility of sustained occupation at some locales. From this perspective, the HS1 corridor, which largely bypasses the North Downs (except on the northern edge of the chalkland plateau between Strood and Springhead) and bisects only small sections of the major Kent river valleys, might well have missed areas where settlement was densest in this period and instead traversed some of the more marginal parts of the Early Neolithic landscape.

Fourth, the far-reaching impact of sea-level change on Late Mesolithic and Early Neolithic coastal environments and settlement along the north and east Kent littorals remains largely unknown. This must fundamentally affect wider interpretations of cultural geography based on terrestrial sites and finds distributions, including the HS1 evidence. At present, although there have been general studies of sea-level change during the Holocene (eg Devoy 1982; Long *et al.* 2000; Shennan and Horton 2002; Shennan *et al.* 2006), and one attempt to model the changing configuration of prehistoric land surfaces along the North Kent Coast (Wessex Archaeology 2000), the morphologies of ancient coastlines, tempos of landscape change and the environmental character of the landscapes now beneath the North Sea and English Channel are not well-understood (Bates and Whittaker 2004, 50–1). Even less is known about local environmental histories, including the ways in which the major river systems of south-east England were affected by sea-level changes, although this is beginning to change in the light of landscape-scale studies of areas such as Langstone Harbour (Allen and Gardiner 2000), Romney March (Long *et al.* 1998; Long *et al.* (eds) 2002; Waller 1994), the east Kent fens (Long 1992), the Ebbsfleet valley (Stafford forthcoming) and the Lower Thames Valley and Thames estuary (Bates and Whittaker 2004; Bates forthcoming).

These studies reveal a general process that saw Late Mesolithic coastal landscapes (of the early 5th millennium BC), lying mainly at -14m to -12m OD, rapidly submerged by continuing sea-level rise. By *c* 4000 BC the coast in most areas lay at -7m to -5m OD (M Allen *et al.* 2008, 277; Champion 2007c, 70–1; Shennan and Horton 2002). This led to the backing up of rivers and influxes of estuarine waters into lower river valleys, with minerogenic sedimentation and salt marsh and reed swamp formation. From about 4300 BC and especially after 4000 BC, however, the rate of sea-level rise slowed and in some areas there was relative sea-level fall, leading to widespread organic sedimentation and peat formation in alder carr and brackish marshland situations (Bates and Whittaker 2004). It was in this environmental context that initial colonisation events by Early Neolithic farmers and/or indigenous acculturation episodes took place from around 4050 BC (Whittle *et al.* 2011). It is possible that the presence of extensive coastal marshlands and wide intertidal zones at this time discouraged both cultural contacts and primary settlement in coastal zones by intrusive farming groups. Instead, such interaction and possible colonisation may have been channelled into river valleys in the interior, in landscape settings with more direct access to fresh water sources, viable agricultural land and more comfortable inhabitation areas. This might in part explain the very early presence of Neolithic communities in the

Medway Valley to the south of the chalklands (at Coldrum and White Horse Stone), an area which at this time was probably upstream of the high water tidal range.

The wider Early Neolithic settlement pattern, however, is extremely difficult to reconstruct as so little is known about the real configuration of the coastline, how this varied geographically or how coastal zones were inhabited and used either by hunter-gatherers or farmers. There is no question that extensive low-lying coastal plains extended for between three and ten kilometres to the north of the present Kent coast, especially to the north and east of Sheppey, with wide inter-tidal zones and prominent sandbanks beyond (Wessex Archaeology 2000, 27–8, 44–5, fig. 6). The only detailed site-based assessment of the coastal environment in north Kent is based on the evidence from the Kingsborough Farm enclosures on Sheppey (M Allen *et al.* 2008), and relates to the later part of the Early Neolithic, several centuries after the first farming communities were established. The immediate hilltop setting of the enclosures, which had been open grassland for some time before the first enclosure was built early in the 37th century BC, was surrounded by an undulating plain dominated by open grassland with localised shrub woodland, fringed by salt marshes along the coast (ibid, 278–9). The nature of this landscape, however, remains difficult to characterise from the limited evidence available and it is possible that there was considerable environmental and settlement variation at both macro- and micro-scales. The evidence from the Blackwater estuary, for example, suggests a far more wooded landscape, with small clearings and widespread occupation, bordered by extensive tidal flats and gravel and sand ridges along the coast. It is indeed possible that the lower-lying areas around Sheppey, by the mid-4th millennium BC, consisted mostly of marshes interspersed with low grassland ridges and hills. The nature of settlement in this area is unknown but it is apparent that continuing sea level changes would have had the most extreme impact on these low-lying areas, including occasional catastrophic flood events, which may well have discouraged sustained settlement except on the most elevated and drier land.

More gradual sea level rise over the 4th to 2nd millennia BC led to inland expansion of the wetland front, with coastlines reaching -3m to -2.5m OD by 1500 BC. Local marine incursions after 2000 BC and more general sea level rises from about 1200 BC resulted in widespread marine sedimentation and erosion of coastal and riverine peatlands, with further major changes to ancient coastlines during the late 2nd and 1st millennia BC. By the 2nd millennium BC, almost all of the former coastal plains had either been inundated or had developed into saltmarshes and Sheppey itself had become an island (Wessex Archaeology 2000, fig. 7).

It is thus very difficult to evaluate the HS1 evidence in relation to wider patterns of landscape organisation, settlement and economic practices. Whilst coastal plain populations may have been considerable, perhaps based economically on intensive pastoral exploitation of a grassland landscape, as well as marine, freshwater and terrestrial hunting and gathering, it is equally possible that wetlands and wooded areas predominated on the lower ground, and that more seasonal and dispersed occupation prevailed in conditions that were unstable environmentally, with coastal erosion and frequent marine inundations and river flood events. What is clear, however, is that our interpretation of the White Horse Stone and Pilgrim's Way buildings, and the relatively low levels of sites and artefacts along most other parts of the HS1 route, must recognise the potential scale and character of Early Neolithic occupation in now-submerged coastal areas and in sub-alluvial contexts in river valleys.

Finally, it is noteworthy that the development of monument groups in the region during the 4th millennium BC, and the relationships between them, are poorly understood and much in need of comparative landscape-scale studies. The general impression is one of diversity and contrasts rather than any kind of consistent pattern, though this is based on very little detailed evidence. The monument clusters in the Medway Valley are different from one another, and both differ from the 'group' of monuments in the Stour Valley, which in fact consists of three widely dispersed earthen long mounds occupying diverse landscape positions (Fig. 3.31). Julliberries Grave is situated on a low ridge on the east side of the Stour where the narrow river valley cuts through the chalk downs; the mound at Boughton Aluph is on the edge of the chalk escarpment to the west of the Stour with wide vistas overlooking the clay vales and sandstone hills to the south; whilst the Elmstead mound is situated on the chalk uplands to the north of the downland ridge and overlooks a northwards-running dry valley (Parfitt 1998). The Stour monuments thus appear quite unlike the closer groupings of Medway sites and rather more similar to the earthen long mounds of the South Downs, both in architectural terms and their dispersed distribution. In addition, the presence of the huge causewayed enclosure at Burham in the Medway Valley is not matched by any enclosure sites in the Stour. Although these patterns may change as a consequence of future fieldwork, there is the sense that the monumental architecture and landscape organisations of the two areas were profoundly different.

It is also notable that there is no evidence for sustained Early Neolithic inhabitation or long-lived settlement from the Stour Valley section of the HS1 route to the north of Ashford or from the Greensand ridge to west and east. The small number of pit deposits and redeposited artefacts at Tutt Hill (Brady 2006b) and Beechbrook Wood (Brady 2006a), discussed above, and surface scatters of lithic artefacts from this part of the HS1 corridor (P Harding 2006), suggest episodic, short-lived and dispersed occupation events of uncertain character. This picture is reinforced by the low levels of datable surface finds recovered from this area in the past (M Gardiner 1990, 42–3), with few leaf-shaped arrowheads or flint and stone axe heads (Woodcock *et al.* 1988), and by the lack of evidence for Early Neolithic activity from the extensive development sites excavated around Ashford recently, such as Westhawk Farm and Bisley Farm (Lamdin-Whymark 2008b; Lis Dyson pers.

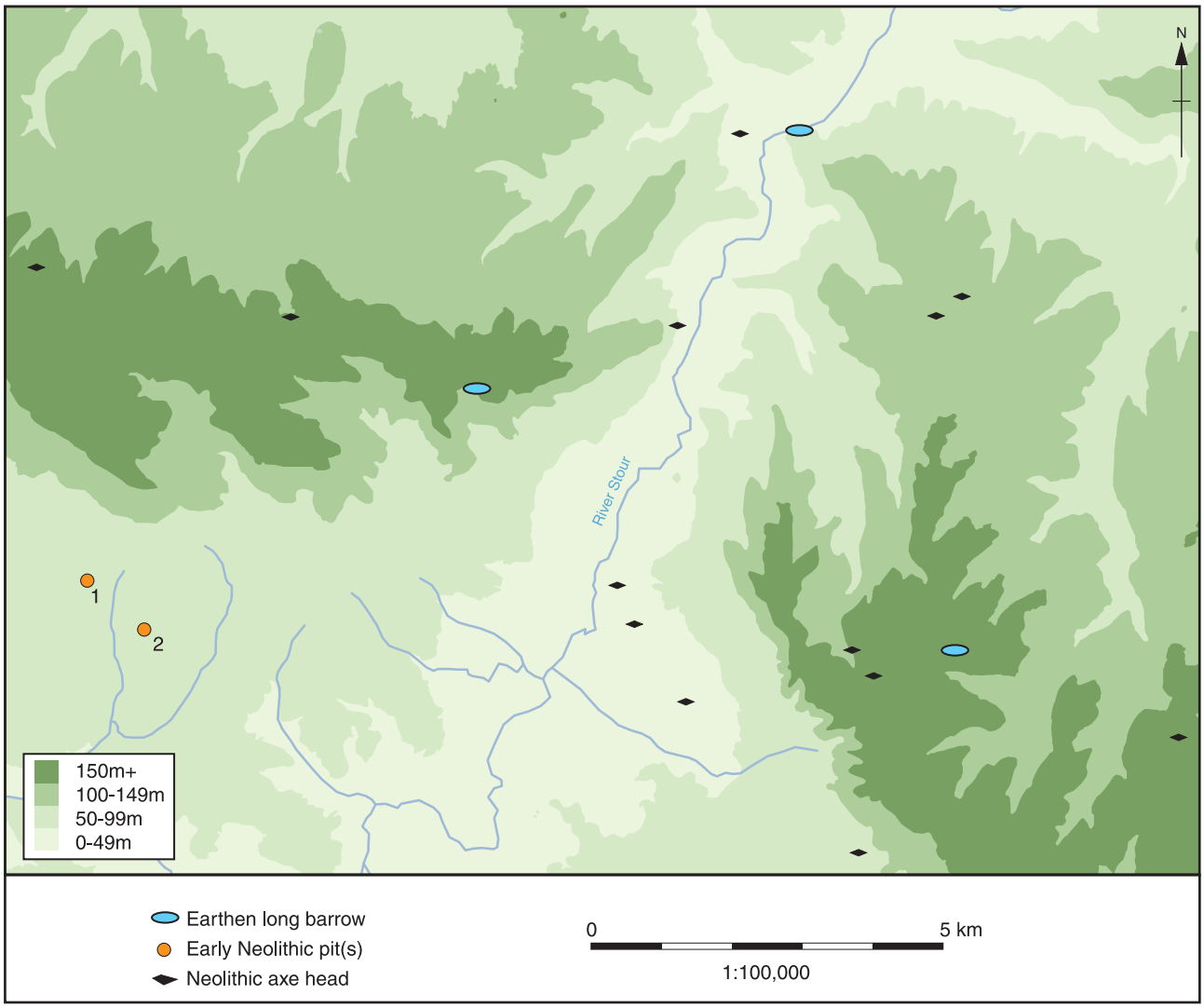


Figure 3.31 Early Neolithic earthen long barrows, pits and stone axe finds in the Stour Valley, Kent. HS1 sites: 1. Tutt Hill; 2. Beechbrook Wood

comm.). This again contrasts with the Medway where there is significant evidence for both Late Mesolithic and Early Neolithic activity on the Greensand ridge at Addington to the west of the river (Alexander 1961). Overall, therefore, current evidence suggests significant contrasts in the landscape histories of the Medway and Stour valleys during the Early Neolithic, and especially differences in the way that the Medway seems to have been a more important focus for monument construction from an unusually early stage in the 4th millennium BC (cf. Whittle *et al.* 2011, 381–3, 872).

Later Neolithic and Chalcolithic settlement and everyday practices

The later Neolithic and Chalcolithic in southern Britain: interpretative approaches

It is common to distinguish the Middle Neolithic (*c* 3500–3000 BC) and Late Neolithic (*c* 3000–2500 BC) from the Early Neolithic in terms of new artefact types, the appearance of new monument forms, and the development of ceremonial centres. The Middle Neolithic is associated, in particular, with cursus monuments (Barclay and Harding (eds) 1999; Loveday 2006) and Peterborough Ware ceramics (Gibson and Kinnes 1997), and the Late Neolithic with henge monuments, stone circles and avenues, timber circles (Gibson 1998; J Harding 2003), palisade enclosures (Whittle 1997b, 139–70; Gibson 2002) and Grooved Ware ceramics (Cleal and MacSween (eds) 1999). In social terms, these periods are still widely seen to mark the transition from minimally ranked societies to chiefdoms (Renfrew 1973) or 'prestige goods systems' (Braithwaite 1984), although models of increasing social complexity of this kind have been widely questioned (eg Shennan 1982; Barrett 1994).

The period 2500–2150 BC, marked by the appearance of copper and bronze metalwork, Beaker single graves and increasing numbers of round barrows, once seen as emblematic of the 'Bronze Age', alongside continued use of henges, stone and timber circles and Grooved Ware, traditionally regarded as archetypal features of the Late Neolithic, is especially difficult to characterise and prone

to terminological confusion, being variously described as 'Late Neolithic', 'Final Neolithic' and 'Early Bronze Age'. The recent revival of the term 'Chalcolithic' to encompass this period is perhaps welcome because it creates a sense of cultural distinctiveness and identifies interpretative agenda that are not predetermined simply by reference to the preceding and succeeding periods. It is important to recognise, however, that the duration and character of the cultural phenomena that characterise this 'period' appear to vary regionally and in south-east England, where there is relatively little evidence for early copper metallurgy or early Beaker graves, may have persisted for no more than one to two centuries (Alistair Barclay pers. comm.).

In this wider context, 'ceremonial centres' and 'sacred landscapes' have attracted special research attention, focussed on cosmographic schemes (eg Bradley 1998a, 116–31; Darvill 1997a; Field 2004, Parker Pearson and Ramilisonina 1998; J Thomas 1999, 163–8) and the phenomenology of architectural forms and landscapes (eg Tilley 1994; 2004). Whilst there is agreement that settlements existed within and around such monument groups, the scale and duration of inhabitation sites are generally uncertain and there appear to be considerable contrasts spatially and temporally from one monumentalised landscape to another in terms of the separation/integration of ceremonial, funerary and occupation areas. These contrasts may be far less pronounced, however, if landscapes are studied at a larger scale: changes in the nature and intensity of activity at one monument group often appear to be complemented by changes at others nearby, suggesting that 'separate' monument groups and settlement foci were in fact interrelated within far more extensive cultural landscapes (Garwood 1999a, 292–98; J Thomas 1999, 195; cf. Whittle 1997a).

At first sight, the evidence from the HS1 route and south-east England more widely appears to have little direct relevance to these interpretative themes. Middle and Late Neolithic enclosures and related monuments were not encountered along the HS1 corridor and are almost entirely absent from the region, which has no known cursus monuments, while pit circles and 'hengiform' sites are extremely rare, with examples only at Lavant in West Sussex and possibly on Thanet. Large henge enclosures and palisaded enclosures appear to be absent altogether, and the only definite henge monument is the small single-entrance enclosure at Ringlemere in east Kent (Parfitt 2006b). The very limited evidence for large-scale monument construction in south-east England, and the apparent lack of 'ceremonial centres', clearly raises questions about the regional character of social organisation, especially if the scale and complexity of monument building is seen as an index of relative social complexity or hierarchy. However, as the relatively recent discovery of causewayed enclosures in Kent demonstrates (Oswald *et al.* 2001, 81, 84–5), the lack of Middle and Late Neolithic monuments may be more apparent than real.

The other main sources of evidence for Middle and Late Neolithic social life in southern Britain are flint scatters, pit deposits and a few houses. These are subject to interpretative debates similar to those that pervade Early Neolithic studies. There are still divisions, for example, between those that emphasise short-lived occupation and residential mobility (eg J Thomas 1996b; Pollard 1999, 2000) and those that emphasise agricultural intensification and a greater degree of sedentism (eg Darvill 1996, Gibson 2003). These differences are partly paralleled by divergent emphases on symbolic or practical aspects of deposition at occupation sites (cf. J Thomas 1996b, 1999, 64–88; Gibson 2003). These contrasting perspectives have tended to polarise interpretative approaches and clearly over-simplify divisions between things sacred and secular (Bradley 2005; Brück 1999a). Equally problematic are site- and context-type classifications that have encouraged narrow analytical and interpretative frameworks. For example, pits have usually been treated as an isolatable category, the nature and purpose of which remained more or less consistent throughout the 4th and 3rd millennia BC, rather than as just one dimension of cultural practices that encompassed a diverse range of activities and meanings that changed over time (as noted by Pollard 2001, 2004; cf. J Thomas 1999, 69–72). Although there is now a great deal of evidence relating to small-scale everyday activities, both 'domestic' and 'ritual' in character, especially from pit contexts, the great scarcity and poor survival of domestic architecture and surface layers, the truncation of pit group sites, and the rarity of precise radiocarbon dates usually leaves interpretation of both built structures and pits ambiguous at best.

It is unsurprising, in this light, that very little is known about the character of Middle and Late Neolithic and Chalcolithic settlements and everyday practices in southern Britain. The outstanding evidence from recent excavations at Durrington Walls provides significant new insights into the spatial organisation of settlement architecture and social practices, and the temporal rhythms and durations of occupation episodes (Parker Pearson 2007; J Thomas 2007b), but there is very little to compare this with and the possibility remains that the settlement is in many respects unusual. More widely, despite increasingly confident identification of pits as remnant features belonging to occupation sites, with more critical appreciation of the complexities of the evidence (eg J Harding 2006; Lamdin-Whymark 2008, 100–33), an understanding of the specific purpose of pits and their spatial and practical relationship to houses and other built structures remains elusive.

Recent reviews of the evidence at both regional and county scales (Drewett *et al.* 1988, 66–8, 71–7; Champion 2007c; Garwood, in prep. b), syntheses and gazeteers of particular material culture types (notably Grooved Ware: Wainwright and Longworth 1971; Longworth and Cleal 1999), and publications of recent field project results and finds (eg in Cotton and Field (eds) 2004), have shown that south-east England is still relatively lacking in Middle and Late Neolithic pit deposits and settlement evidence. This may now be changing, however, as a consequence of new discoveries of Grooved Ware at sites such as Betchworth, Surrey (D Williams 2004), Westhampnett in West Sussex (Chadwick

2006), and above all in Kent, at Ringlemere (Parfitt 2006b, 8–14; Varndell 2006) and several sites along the HS1 route, especially White Horse Stone/Pilgrim's Way. The HS1 evidence, in this context, is particularly important as it provides significant new information about later Neolithic occupation sites and pit deposition relevant to wider interpretative debates.

Middle Neolithic pits and material culture

Middle Neolithic pottery was recovered from eight HS1 Section 1 sites: Cobham, White Horse Stone, Pilgrims Way, Eyhorne Street, Sandway Road, Tutt Hill, Little Stock Farm, and Saltwood Tunnel (Barclay *et al.* 2006, 26–7). In most cases this material was redeposited in later features, such as the fills of three of the ring ditches at Tutt Hill (Brady 2006b, 9–11), while the fragmentary and worn Peterborough Ware sherds found at Sandway Road had probably been discarded on the surface (Barclay *et al.* 2006, 19; contra Trevarthen 2006, 12). Only at two sites were Peterborough Ware assemblages found in pit contexts: at Little Stock Farm (Pits 2507, 2214; Ritchie 2006, 5), and at Pilgrim's Way (Pits 711, 714), at the north end of the probable Early Neolithic rectangular timber building Structure 972 (Hayden 2006a, 67–9). Each assemblage consisted of just a few sherds associated with flint artefacts and small quantities of charred plant remains. Even so, the Middle Neolithic evidence recovered from these pits and other contexts along the HS1 route is important regionally, adding significantly to the total number of Peterborough Ware finds in south-east England.

At Little Stock Farm, a large shallow kidney-shaped hollow (2214) described as a pit in the excavation report (Ritchie 2006, 5) but possibly a tree-throw hole, contained a small amount of pottery and an end scraper. Some 5m away, a much smaller, shallow bowl-shaped pit (2507) produced Fengate style Peterborough Ware sherds together with a small flintwork assemblage including a *petit tranchet* arrowhead (Fig. 3.32). Charred plant remains in both features included cereal grains and hazelnuts, one of which from Pit 2507 produced a radiocarbon date of 3350–3030 cal BC (NZA-19918).

At Pilgrim's Way, two small groups of shallow features, one at the northern end of Structure 972 and another some 16m to the west, included pits containing Peterborough Ware pottery. The group at the north end of Structure 972 comprised four circular round-based pits, two of which contained pottery including a base sherd from Pit 711 that could be refitted with body sherds from Pit 714, forming part of a Mortlake Ware bowl with unusual base decoration consisting of concentric circles (Fig. 3.33). The large size and relatively unweathered condition of the bowl

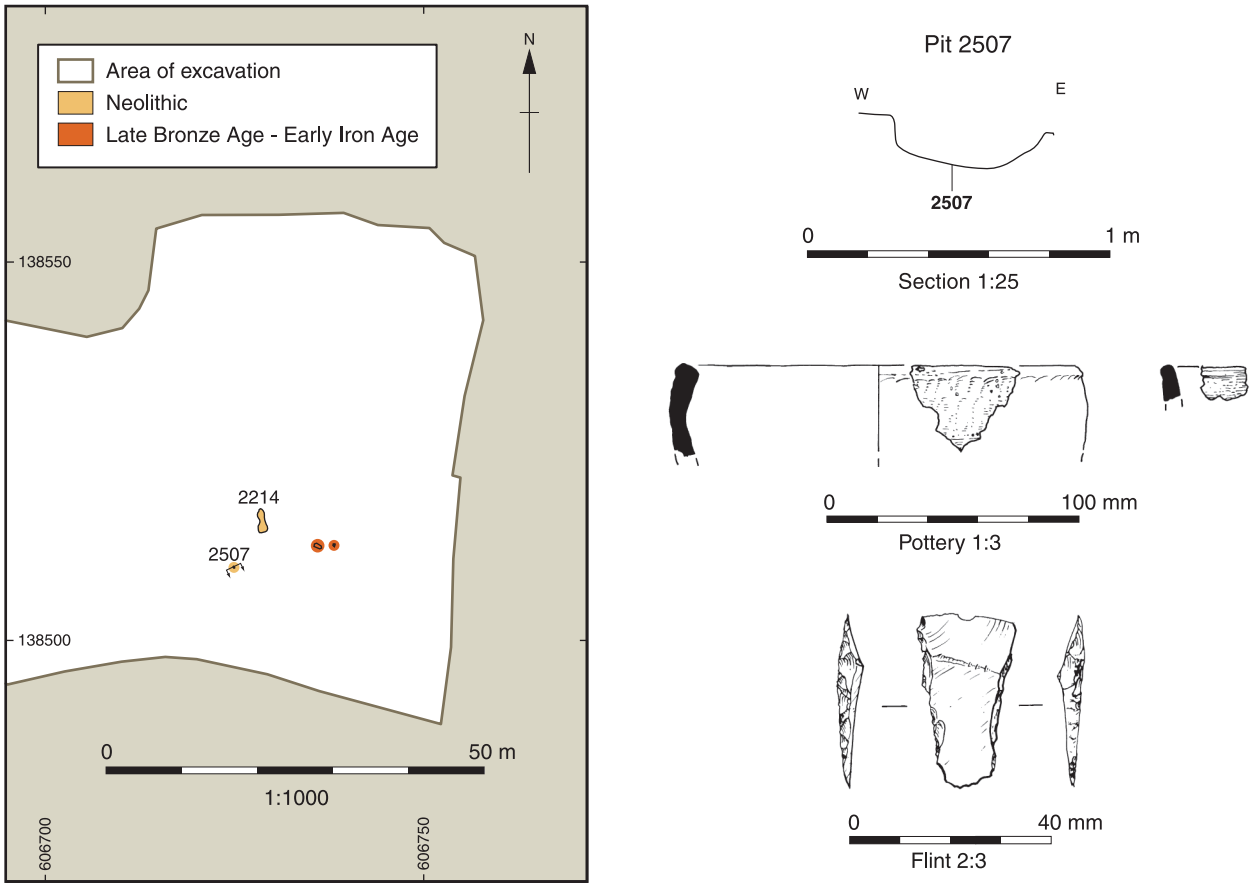
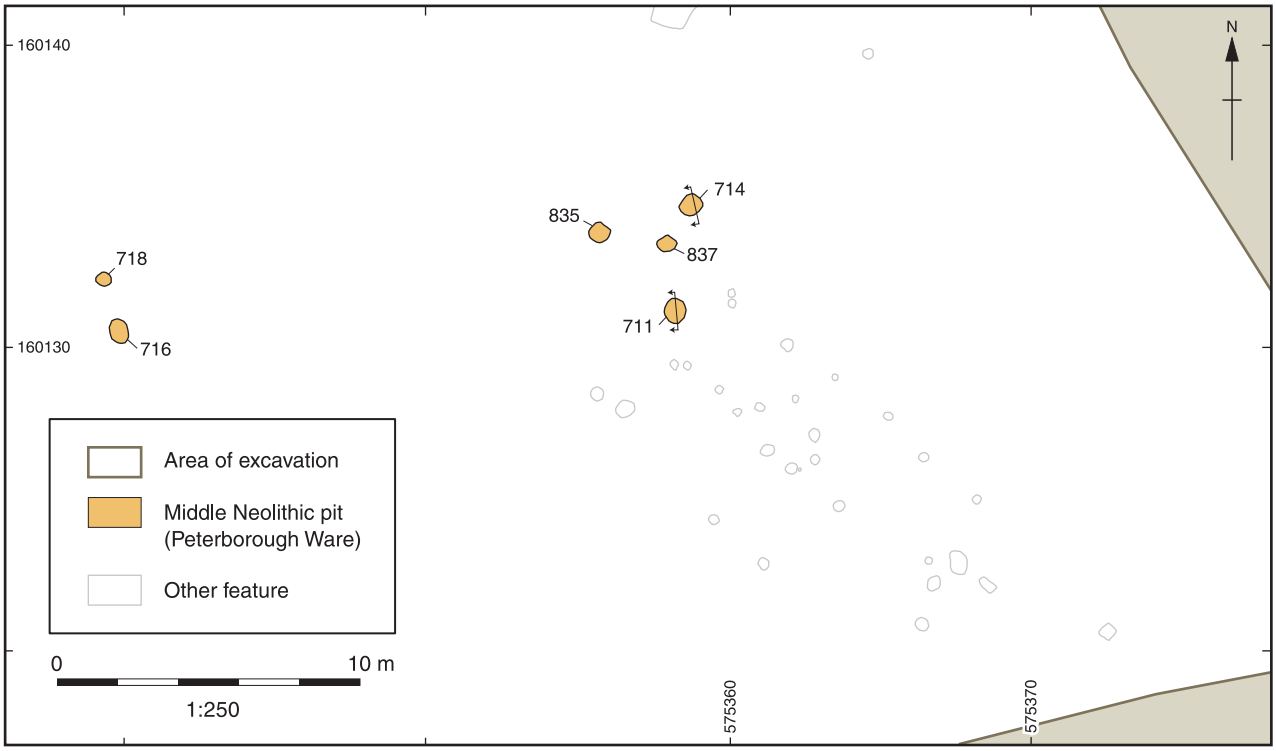


Figure 3.32 Little Stock Farm: Middle Neolithic features: site plan, Pit 2507 section, and artefacts from Pit 2507. Pottery: P30 and P33; Peterborough Ware (Fengate style) rim sherds from bowl vessels. Flint: petit tranchet arrowhead



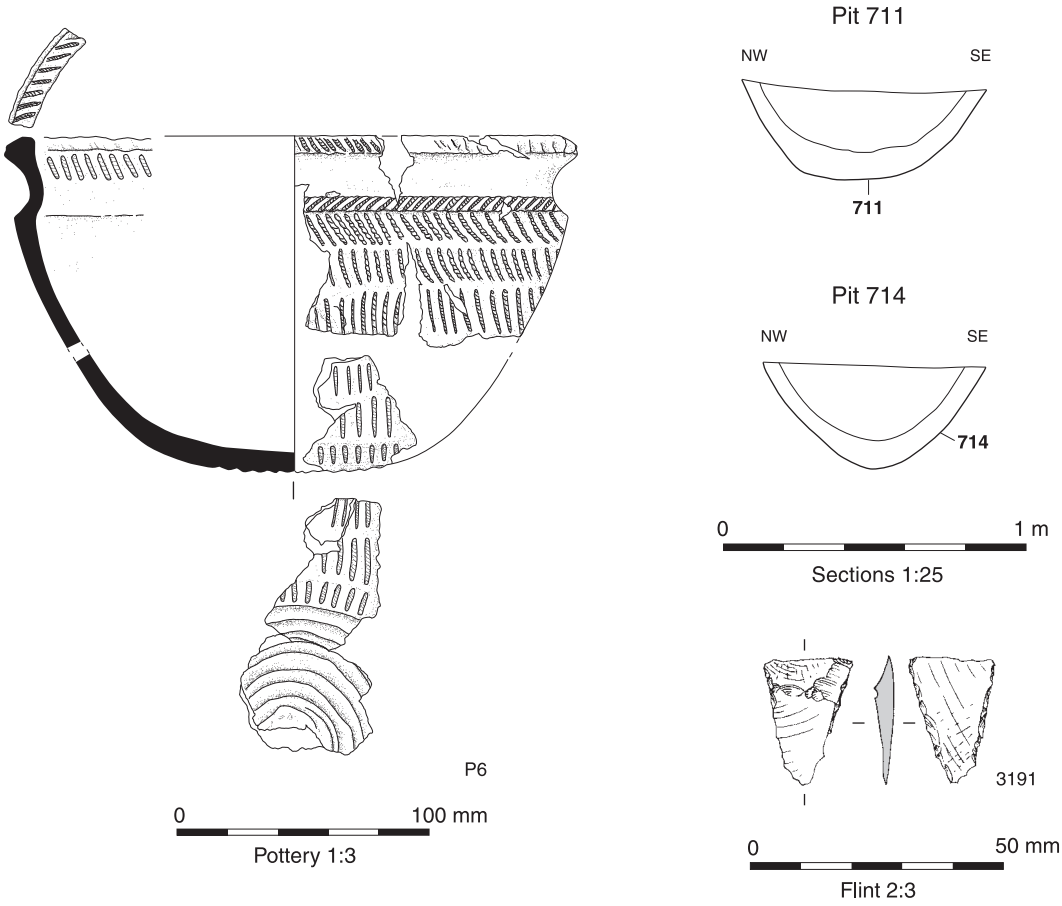


Figure 3.33 Pilgrim's Way Middle Neolithic pits (see also Fig. 3.22): site plan, sections of Pits 711 and 714, and ceramic and lithic finds. Pottery: P6; Peterborough Ware, Mortlake style bowl; base from Pit 711 refitting with body sherds from Pit 714. Flint: petit tranchet arrowhead from Pit 711

sherds suggest that they were deposited in the two pits at about the same time and probably soon after breakage. There were few other associated artefacts in these features, though Pit 711 also contained a petit tranchet arrowhead, which may indicate a purposeful depositional event. The two pits to the west were similar in size to those near Structure 972 but only one contained finds (Pit 716: five small sherds of Peterborough Ware). In every case, the pits containing Peterborough Ware had single fills, and there is no evidence that they were weathered prior to infilling. This may suggest that they were backfilled very quickly after they were dug, or alternatively that they were protected by covers or were located within roofed structures (discussed in more detail below in relation to Grooved Ware pits). Either way, in common with most Peterborough Ware pits excavated in southern Britain, these seem to have been deliberately filled with homogenous deposits containing cultural materials.

It is tempting to interpret this practice as an act of 'closure' at the end of a period of inhabitation (cf. Pollard 2001, 323), or as votive action of some kind, though there is no agreement about the extent to which Middle Neolithic artefacts and other materials were specially selected for deposition (suggested for Peterborough Ware pits in the Middle Thames valley: T Allen *et al.* 2004, 91–2; Lamdin-Whymark 2008, 109, 123), or simply incorporated in redeposited midden material (suggested for pits in East Anglia: Garrow 2007b, 14). There is, however, a general perception of increasing formality and care in material selection and deposition during the late 4th and early 3rd millennia BC, accompanied by more conscious spatial location of pits with reference to cultural features in the landscape (J Thomas 1999, 70–3). It is possible at Pilgrim's Way, for example, that the decayed remnants of Structure 972 would have been visible for some time after the building was abandoned and that the Middle Neolithic pit group at the north end was positioned deliberately to refer to this ancient (perhaps 'ancestral') material presence (cf. Bradley 1998a, 44–5).

The sparse occurrence of Middle Neolithic evidence on HS1 sites, especially the small quantities of artefacts and low levels of burnt materials in pit deposits, appear to indicate either small-scale/short-term occupation episodes, careful spatial separation of settlement activities and residues from pit contexts, and/or occasional visits to significant locales for non-domestic purposes. More generally, it is apparent that Middle Neolithic pits and other deposits are rare throughout the wider region, even in landscape contexts where settlement activity was probably concentrated, such as river valleys. Such apparent low levels of activity should, however, be treated with caution. Pit deposition may well have been subject to a range of proscriptions and spatial controls, as in the case of animal bone excluded from Peterborough Ware pit deposits in north Yorkshire (J Harding 2006, 123) and the Lower Thames Valley (Cotton 2004, tbl.15.1). Furthermore, evidence for Middle Neolithic activity in south-east England derives from a very diverse range of contexts, including buried soils (eg at Baston Manor, Kent; Philp 1973, 4–20), probable midden deposits (eg at Ebbsfleet, Kent: Burchell and Piggott 1939), ploughsoils and truncated subsoil layers (eg at Bullock Down, East Sussex; Drewett 1982a, 47–57), secondary deposits in causewayed enclosure ditches (eg at Whitehawk and Combe Hill in East Sussex; Drewett *et al.* 1988, 66–8), and a small number of pits, such as examples at Selmeston, East Sussex (Drewett 1975), Chalk Hill pit 12, Ramsgate, Kent (Hearne *et al.* 1995, 261, 283–6), and several sites in the Lower Thames Valley (Cotton 2004, tbl.15.1). In this light, it may be misleading to assume that pits were necessary components of Middle Neolithic settlement sites, or that pit deposition had consistent and exclusive significance (cf. J. Harding 2006; Garrow 2007b, 12-14). The shared empirical characteristics of pits, and some common technologies and representational repertoires evident in their creation, use and closure, may in fact disguise a wide range of practical intentions, use-histories and meanings depending on the particular social contexts and agents involved. At the same time, pit deposition was plainly just one means of managing cultural materials and embedding them in the ground, perhaps used especially where there was a special need to mark significant inhabitation events or practices (eg rites of passage of various kinds; cf. Garwood 2011) in an 'earth-fast' manner.

Late Neolithic pits and material culture

The evidence for Late Neolithic activity along the HS1 route in some respects closely resembles the Middle Neolithic pattern, especially in terms of the general rarity of sites and finds of this period and the prominence of pit deposits. Only two HS1 Section 1 sites produced significant Grooved Ware assemblages, White Horse Stone/Pilgrim's Way (Hayden 2006a) and Eyhorne Street (Hayden 2006b), in both cases primarily from pit contexts. A few additional sherds of Grooved Ware were found redeposited in later contexts at Sandway Road, Mersham and Saltwood (Barclay *et al.* 2006, tbl. 2.4). There is no question that the relatively large assemblages of Grooved Ware from White Horse Stone/Pilgrim's Way (475 sherds; 2033g) and Eyhorne Street (33 sherds; 210g), totalling 508 sherds weighing 2243g, represent valuable additions to the regional corpus, second only to Ringlemere in east Kent (where over 5000 sherds have been recovered: Parfitt 2006a; Varndell 2006). The Grooved Ware assemblage from White Horse Stone/Pilgrim's Way was dominated by relatively earlier Clacton style material, with characteristic straight-sided tub-shaped vessels, while pottery from Eyhorne Street, Sandway Road and Saltwood Tunnel has Durrington Walls style features, with more rounded vessel forms, though Clacton style attributes such as horizontal banded decoration were also present (Barclay *et al.* 2006, 27; cf. Garwood 1999b). A distinctive feature of the Late Neolithic features at both White Horse Stone/Pilgrim's Way and Eyhorne Street is their spatial clustering in more or less discrete groups, with evidence for contemporaneous activity at each locale rather than series of events widely separated in time. This suggests the presence of

distinct 'activity areas', and the occurrence of spatially- and temporally-circumscribed occupation episodes.

At Eyhorne Street, Grooved Ware was found in two adjacent pits (19 and 21) (Fig. 3.34). Pit 21 contained a small finds assemblage consisting of 11 Grooved Ware sherds and six worn flint artefacts, some burnt. The pottery has a grog-tempered fabric similar to that of sherds found in Pit 19, including some that may have belonged to the same tall straight-sided jar (P6). Pit 19 contained a larger group of finds, including 22 sherds of

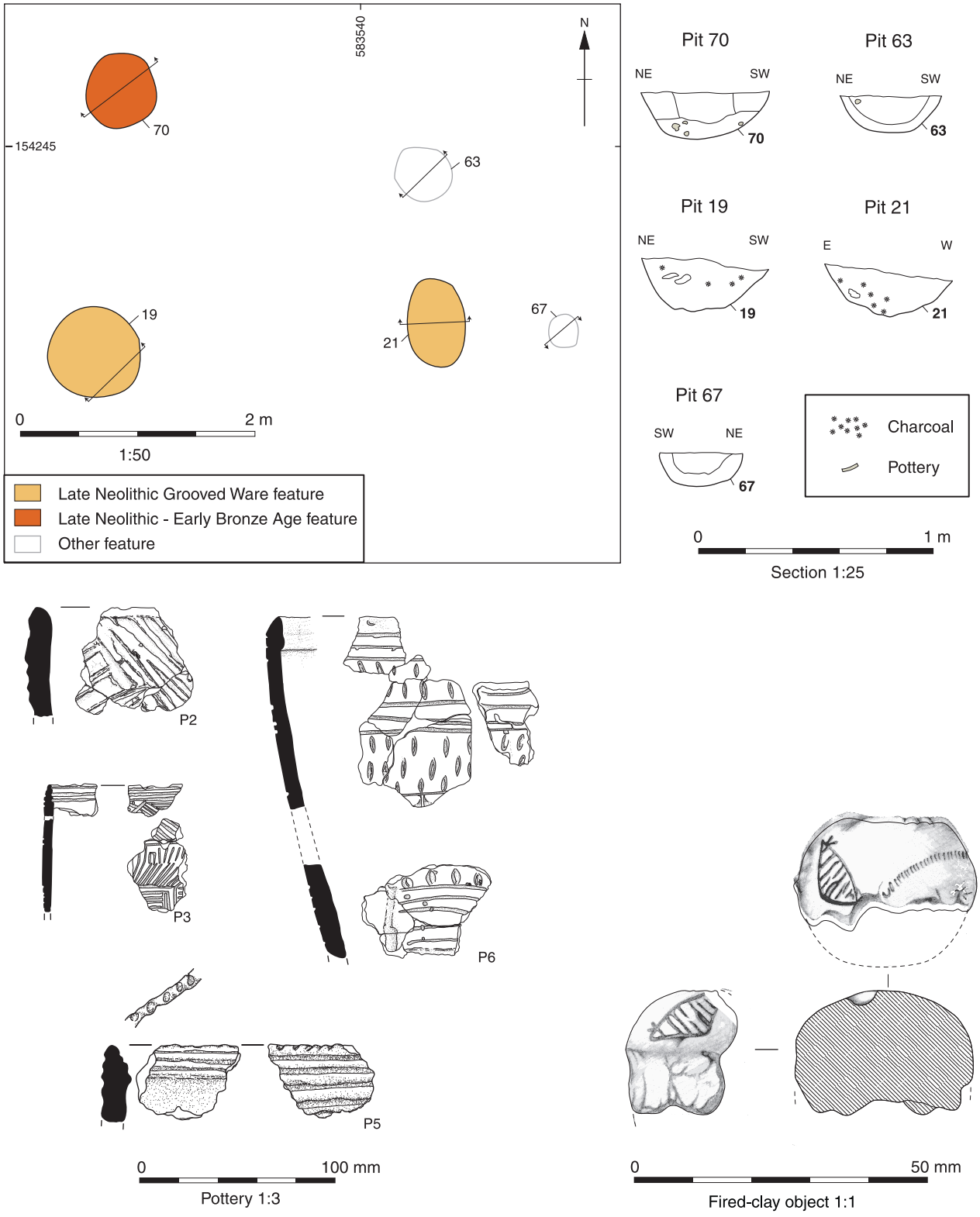


Figure 3.34 Eyhorne Street Late Neolithic pits: site plan, pit sections, and ceramic finds from Pit 19. (Lower left) Grooved Ware pottery: P2, rim sherds of a Durrington Walls style vessel; P3, finely-decorated rim and body sherds, including a 'Greek key' motif; P5, rim sherds of a Durrington Walls style vessel; P6, rim and body sherds with horizontal grooved lines and finger-nail decoration. (Lower right) Spherical fired clay object with incised decoration

Figure 3.35 White Horse Stone/Pilgrim's Way: Late Neolithic structures, pits, hollows and tree-throw holes. Contours show modern surface topography

Grooved Ware from at least five vessels, with elements of both Durrington Walls and Clacton styles, some with charred residues coating their outer surfaces. Some of this material, from one of the sherds of jar P6, was radiocarbon dated to 2880–2500 cal BC (NZA-20418). The pottery also includes a decorated sherd with an unusual 'Greek key' motif set within a herringbone panel (P3), a close parallel for which is the design scratched onto one of the chalk plaques from Amesbury (Barclay *et al.* 2006, 18; P Harding 1988, fig. 2).

Pit 19 also contained fired clay fragments, burnt flints, 19 flint flakes, most of which were burnt and some broken, and a charred crab apple which produced a radiocarbon date of 2840–2460 cal BC (NZA-20417). Most intriguing of all is a fragment from a small rounded clay artefact with incised decoration (Fig. 3.34; Edwards and Fell 2006). The original form and purpose of this unique object are uncertain although it was possibly spherical (*c* 27mm diameter), perhaps with a perforation. This may have been a decorated lug or boss from a vessel, a large bead or spindlewhorl, or a clay version of a Late Neolithic decorated stone ball (Barclay *et al.* 2006, 28-9; Edwards and Fell 2006). Although there are no direct parallels, it is notable that a complete fired clay ball has been found recently in a pit containing Grooved Ware at Horton, Middlesex (Alistair Barclay, pers. comm.). Both Pits 19 and 21 appear to have been infilled deliberately at about the same time with homogenous soil deposits. The presence of finely-decorated Grooved Ware and the decorated clay object certainly suggest purposeful deposits of selected materials and objects, though there is no indication of formal spatial arrangement of specific items.

Late Neolithic settlement at White Horse Stone/Pilgrim's Way

The Late Neolithic activity at White Horse Stone/Pilgrim's Way, far more considerable than that at Eyhorne Street, offers an exceptional insight into the nature of occupation practices in this period. Extending north-south for a distance of at least 220m, from Pit 7000 to the north of the Early Neolithic timber hall, to tree-throw 861 in the south-west part of the Pilgrim's Way excavation area, were 24 Late Neolithic pits and several tree-throws or 'hollows' containing Grooved Ware or other material dating to the first half of the 3rd millennium BC (Fig. 3.35). These features form a linear 'band' no more than 35m wide running down the valley just above its base on its western flank. There is no evidence for Late Neolithic activity anywhere in the extensive White Horse Stone excavation areas to the north-west and east of this line, nor in the Pilgrim's Way excavation area to the east. It is likely, therefore, that Late Neolithic activity was organised alongside or parallel with a route way or linear boundary running from the chalk escarpment down to the Medway Valley (see Fig. 3.43 below). It is surely no coincidence that the Roman road which crosses the White Horse Stone/Pilgrim's Way sites, demarcated by straight parallel ditches some 13m apart (Features 1305/19450), takes almost exactly the same path down the valley (Hayden 2006a, 177–8, fig. 106).

Pits, other features and depositional practices

The majority of the Late Neolithic features at White Horse Stone/Pilgrim's Way were spatially concentrated in five main clusters, those to the south being slightly more dispersed than those to the north but in every case within an area no more than 25m across (Fig. 3.36). From north to south these comprised (features which produced samples used for radiocarbon dating are denoted *):

1. Pit Group 19400 (Pits 4874, 4965*, 5265*), Posthole 5008* and Hearth 4830.
2. Pit Group 19399 (Pits 4929, 4943*, 4952), Structures 5297 and 19140, and Tree-throw 5125*.
3. Pit Group 19413 (Pits 4939, 4994*, 5094*), Pit 4937 and Hollow 5072*.
4. Pit Group 19396 (Pits 958*, 962, 964, 966), Pit 968 and Tree-throw 909.
5. Pit Group 19395 (Pits 911*, 913*, 929), Pits 119/872 and 952*, and Tree-throw 861*.

In addition, two isolated features were recorded further to the north, Pits 7000 and 7024 (the latter possibly associated spatially with Pit Group 19400), and a pair of pits ('Pit Group' 19397: Pits 898, 904) situated about 30m east of Pit Group 19396.

In each case the clusters identified above consist of a very similar range of features, including: (i) three or four closely-spaced pits, of which at least one was relatively deep with steep sides and a flat base (4965, 5256, 4943, 4994, 958), and another very shallow pit, in some cases with signs of *in situ* burning or concentrations of burnt stones (4874, 4952, 4939); (ii) a spatially separate shallow pit or hearth (except for cluster 2), often containing burnt materials (4830, 4957, 119/872); and (iii) a 'tree-throw' or 'hollow' (except for cluster 1, though several undated shallow 'natural' features were recorded nearby). In nearly every case the closely-spaced pits within each group were separated at roughly equal distances (*c* 0.3–0.7m), the only exception being Pit Group 19395 where the pits were intercut in sequence from north to south (913 – 929 – 911). This suggests that most of the pit groups included features that were in use at the same time, and/or that great care was taken to keep each pit and its contents strictly bounded in relation to others. Analysis of the material contents of the Late Neolithic features suggests further patterns: in particular, although the quantities of some finds categories varied greatly from one cluster of features to another, in every case one of the deeper pits (4965; 4943; 4994; 458; 913) contained relatively larger assemblages of animal bone, flint artefacts and—except in one case—pottery, in comparison with the other pits in the group. It is also evident that the hollows and tree-throws in most cases contained especially large animal bone and flint artefact assemblages (5072, 909, 861). Taken together, this evidence suggests

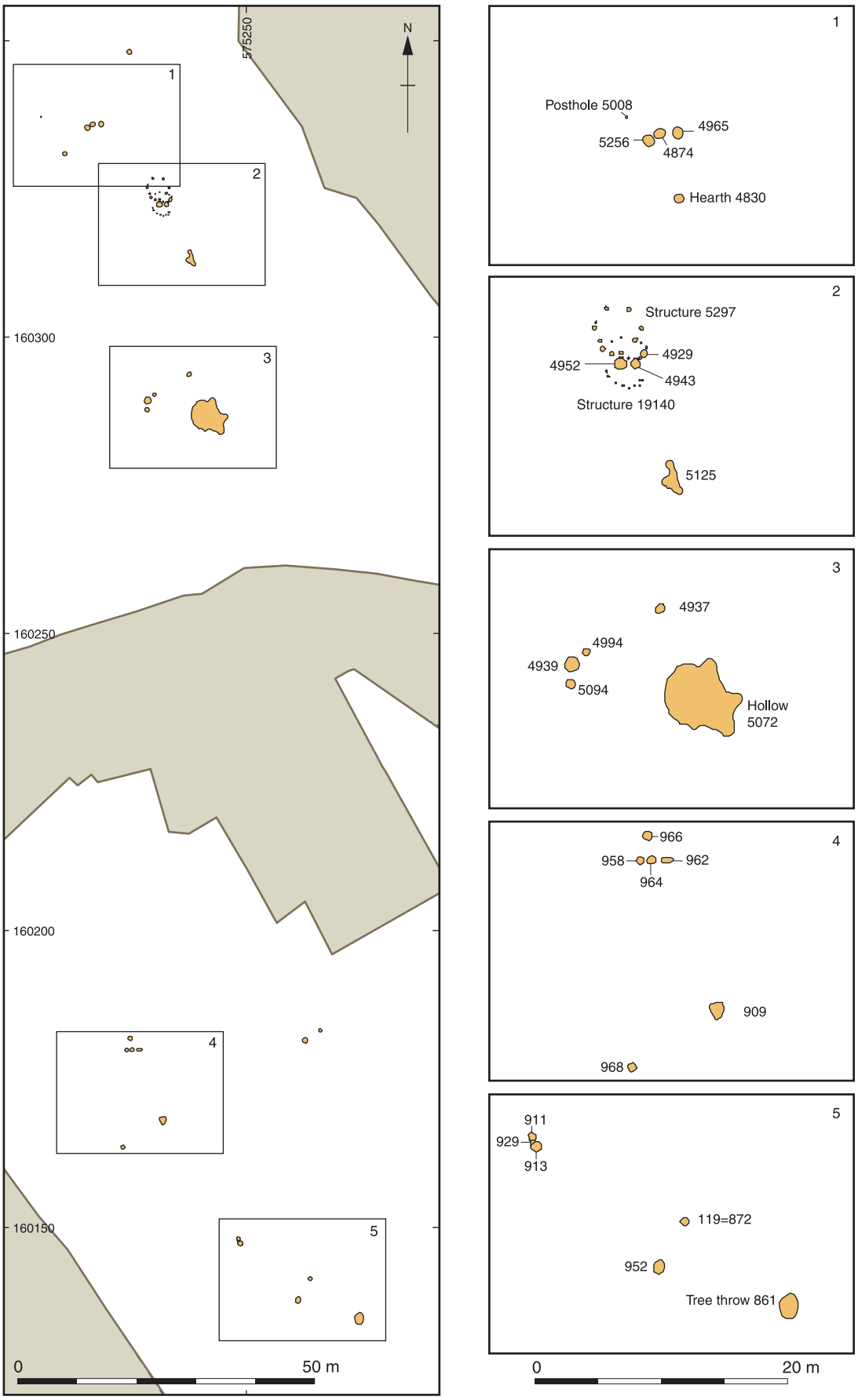


Figure 3.36 Clusters of Late Neolithic features at White Horse Stone/Pilgrim's Way (1-5), each comprising three or four closely-spaced pits, a separate shallow pit or hearth (except for Cluster 2, though this also has posthole structures), and a 'hollow' or 'tree-throw' hole

the presence of distinct, spatially-separated activity areas some 15–40 m apart, each of which comprised a set of similar features and deposits representing consistent and recurrent sets of practices within each area.

The deposits found within pits and other features were extremely varied in terms of the types, quantities and combinations of materials present (Table 3.2; Fig. 3.37). Charcoal occurred in small quantities everywhere, but burnt flint and sarsen occurred only in a few features and other charred materials were extremely rare, especially cereal grains (only four recovered from Late Neolithic contexts: Hayden 2006a, 84). Animal bone and flintwork was also present in most depositional contexts, though few features stand out in terms of large finds assemblages.

Only seven features contained more than 100 flint artefacts. From north to south these were (the number of flint artefacts is shown in brackets): Pit 5256 (233), Pit 4965 (177), Pit 4943 (119), Tree-throw 5125 (205), Pit 4994 (150), Pit 958 (164), and Tree-throw 909 (105). Especially large animal bone assemblages (over 1000g) were also recovered from six features, most of which were wide, relatively shallow tree-throw holes and hollows which seem to have been used for middening or waste disposal: Pit 7000 (4568g), Pit 4994 (3562g), Hollow 5073 (1365g), Tree-throw 909 (1420g), Pit 952 (3758g), and Tree-throw 861 (5186g). Ceramic finds, in contrast, were far less common, being present only in about half of the features belonging to this period, only seven of which contained appreciable quantities of pottery (more than 50g: 4874; 4965; 5256; 4943; 4994; 958; 898) of mainly Clacton-style vessels (Fig. 3.38). Of these, Pit 4965 was by far the richest with 1079g of pottery (about 270 sherds), the next closest being Pit 4994 (216g) and Pit 958 (126g). Two pits at the south end of the site contained tiny fragments of cremated human bone (913, 952), and it is possible that the larger cremated human bone deposit in Pit 119/872 close by (189g; from an adult) associated with a flat-headed bone pin, is a rare Late Neolithic cremation burial (Hayden 2006a, 75–6, 86). Although the pin could be Roman, the partial nature of the cremation deposit and the lack of Roman material nearby support an earlier prehistoric date.

An initial assessment of finds distributions indicated a general contrast between the White Horse Stone and Pilgrim's Way excavation areas (Hayden 2006a, 90–3), especially in terms of the forms of features (eg the occurrence of flat-bottomed pits), the scale and nature of deposits (eg the relative emphases on consumption or redistribution of meat evident in the bone assemblages), and the presence of 'special' items such as polished objects and cremated human bone (found only at the southern end of the distribution of Late Neolithic features). This contrast was interpreted in terms of different practices and kinds of signification—perhaps structured oppositions—between domestic activity in the northern part of the site (in the area of the Late Neolithic circular wooden structures; discussed below), and apparently more communal and ritualised activities in the central and southern parts of the site (from Pit Group 19413 southwards). To some extent, however, identification of such patterning stems from use of the arbitrary site boundary between the White Horse Stone and Pilgrim's Way excavations to define the units of comparison (ibid., 74–81), which produces an artificially exaggerated contrast between northern and southern areas. Closer scrutiny of the evidence, treating both excavations as part of a single site, reveals more of a continuum of variation rather than strict oppositions or exclusive patterning (Table 3.2). Moreover, too little account was taken of site truncation by erosion processes and site excavation methods, which probably explains the decreasing average depth and depositional complexity of the features from north to south across the site, as well as the lower quantities of flint and pottery artefacts in the Pilgrim's Way features, where truncation was greater than further north and where sieving of fills was carried out less consistently. Interpretations based on selective assessments of aspects of the evidence must also be questionable: for example, the identification of practices involving the redistribution of meat from animal carcasses within the White Horse Stone area was based on the contents of only one feature, Pit 4994.

Overall, therefore, spatial analysis of the contents of Late Neolithic features reveals no definite large-scale or exclusive patterning of different kinds of practices or symbolic oppositions between one part of the site and another. Instead, apart from the two exceptionally finds-rich pits among Pit Groups 14400 (Pit 4965) and 19413 (Pit 4994), perhaps the most striking feature of the finds distributions was the presence of large midden deposits in shallow hollows and tree-throw features close to pit groups (from north to south: Tree-throw 5125, Hollow 5072, Tree-throw 909, Tree-throw 861) and in outlying pits at the northern (Pit 7000) and southern (Pit 952) ends of the Late Neolithic linear distribution of features. It is possible that the cremated human bone deposits, especially in Pit 119/872, and the polished objects found in Pit 911 (ibid., 86), reflect less 'domestic' concerns and more conscious symbolic referencing in the depositional acts that took place at the southern end of the site. Some care needs to be exercised, however, in drawing firm conclusions about the overall spatial structuring of practices as nothing is known about Late Neolithic activity outside the excavated zone to the south, nor the extent to which practices in different site areas were contemporary.

Dating evidence in general suggests no significant temporal variation in either the distribution or character of Late Neolithic activity features at White Horse Stone/Pilgrim's Way. Radiocarbon dates produced from animal bone, antler and short-life charcoal samples (17 dates from 12 contexts, fairly evenly spread across the site) all fall within the period 2930–2460 cal BC, and mostly 2900–2600 cal BC (Hayden 2006a, 93). The calibration curve for this part of the 3rd millennium BC is fairly flat, creating wide age ranges, and it is possible that this consistent series of dates disguises an extended sequence of consecutive occupation events rather than contemporaneous practices or long-term occupation. There is, however, no significant spatial variation across the site in terms of relatively later/earlier dates, and in

Table 3.2 Summary of the artefacts and other materials recovered from the White Horse Stone/Pilgrim's Way Late Neolithic features, with a list of radiocarbon dates. The features are listed from north to south and grouped with reference to the spatial clusters identified in the text (see Fig. 3.37).

Feature	*Grooved Ware ceramics (g)*	*Lithics (no.)*	*Animal bone (g)*	*Other*	*Radiocarbon dates*
Isolated pits to north of Cluster 1					
Pit 7000	1	66	455	Burnt flint; charred plant remains (wild plants)	
Pit 7024	2	22	19	Charcoal	
Cluster 1 (Pit Group 19400)					
Pit 5265	98	223		Burnt flint; charcoal; charred plant remains (wild plants; hazelnuts; cereals)	Charred hazelnuts: 2910-2670 cal BC
Pit 4874	178	46	8	Charred plant remains (cereals); burnt clay (48g)	Charred grain (residual): 3950-3750 cal BC
Pit 4965	1079	177	277	Charcoal; charred plant remains (wild plants); burnt quernstone fragment)	Cow clacareum: 2920-2660 cal BC
Posthole 5008					Maloideae charcoal: 2880-2630 cal BC
Hearth 4830	2				Maloideae charcoal (residual): 4050-3810 cal BC
Cluster 2 (Pit Group 19399)					
Pit 4952		22		Charcoal; burnt clay (60g)	
Pit 4943	53	119	12	Charcoal; burnt stone	Charred hazelnuts: 2880-2620 cal BC
Pit 4929		38		Charcoal; charred plant remains wild plants; cereals)	
Structure 5297	34	62		Charcoal	
Structure 19140		9			
Tree-throw 5125		205	108	Burnt flints & stones; charcoal (large amounts); charred plant remains (wild plants)	Cow radius: 2890-2630 cal BC
Cluster 3 (Pit Group 19413)					
Pit 5094		48	617	Burnt stones; charcoal	Red deer antler: 2920-2690 cal BC
Pit 4939		1		Burnt flints (large amounts)	
Pit 4994	216	150	3542	Burnt flints & stones; charcoal	Cattle scapula: 2860-2490 cal BC
Pit 4937				Burnt stones	
Hollow 5072	12	66	1365	Burnt stones; charcoal	Cattle skull: 2930-2690 cal BC Cattle calcareum: 2890-2620 cal BC Pig scapula: 2880-2610 cal BC
Cluster 4 (Pit Group 19396)					
Pit 958	126	150	391	Charcoal; charred plant remains (cereals)	Aurochs vertebra: 2880-2570 cal BC Cattle phalanx: 2870-2500 cal BC
Pit 964	32	7	44		
Pit 962		7	65		
Pit 966	8	13	19		
Pit 968	3	2			
Tree-throw 909	1	105	1420	Burnt flints; charcoal	
Cluster 5 (Pit Group 19395)					
Pit 911		44	458	Polished ironstone ball; charred plant remains (wild plants)	Pig mandible: 2870-2490 cal BC
Pit 929	1				
Pit 913	5	22	85	Cremated human bone (3g)	Cattle phalanx: 2880-2620 cal BC
Pit 119/872				Cremated human bone (adult; 189g); burnt bone pin; charcoal	
Pit 952		47	3758	Cremated human bone (1g); charcoal	
Tree-throw 861		59	5186	Charcoal; charred plant remains (wild plants)	Cattle tibia: 2890-2660 cal BC
Isolated pit group 19397 (to east of Cluster 4)					
Pit 904	33	65	596	Burnt flints; charcoal; charred plant remains (wild plants)	Pig radius: 2840-2460 cal BC
Pit 898	131	12	28		

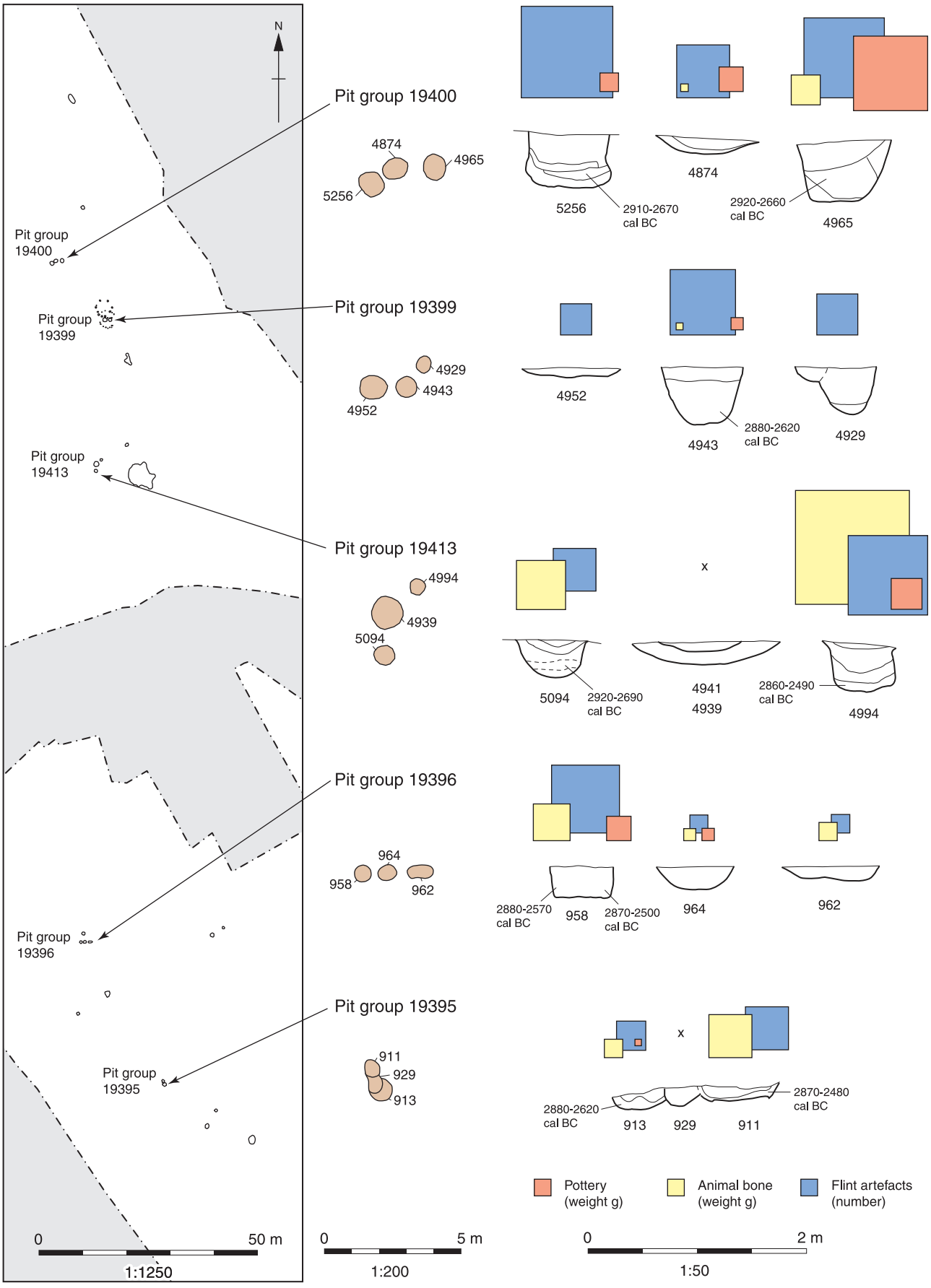


Figure 3.37 Late Neolithic pit groups at White Horse Stone/Pilgrim's Way: plans, sections and finds assemblages, showing the quantities and relative proportions of ceramics, lithics and animal bones.

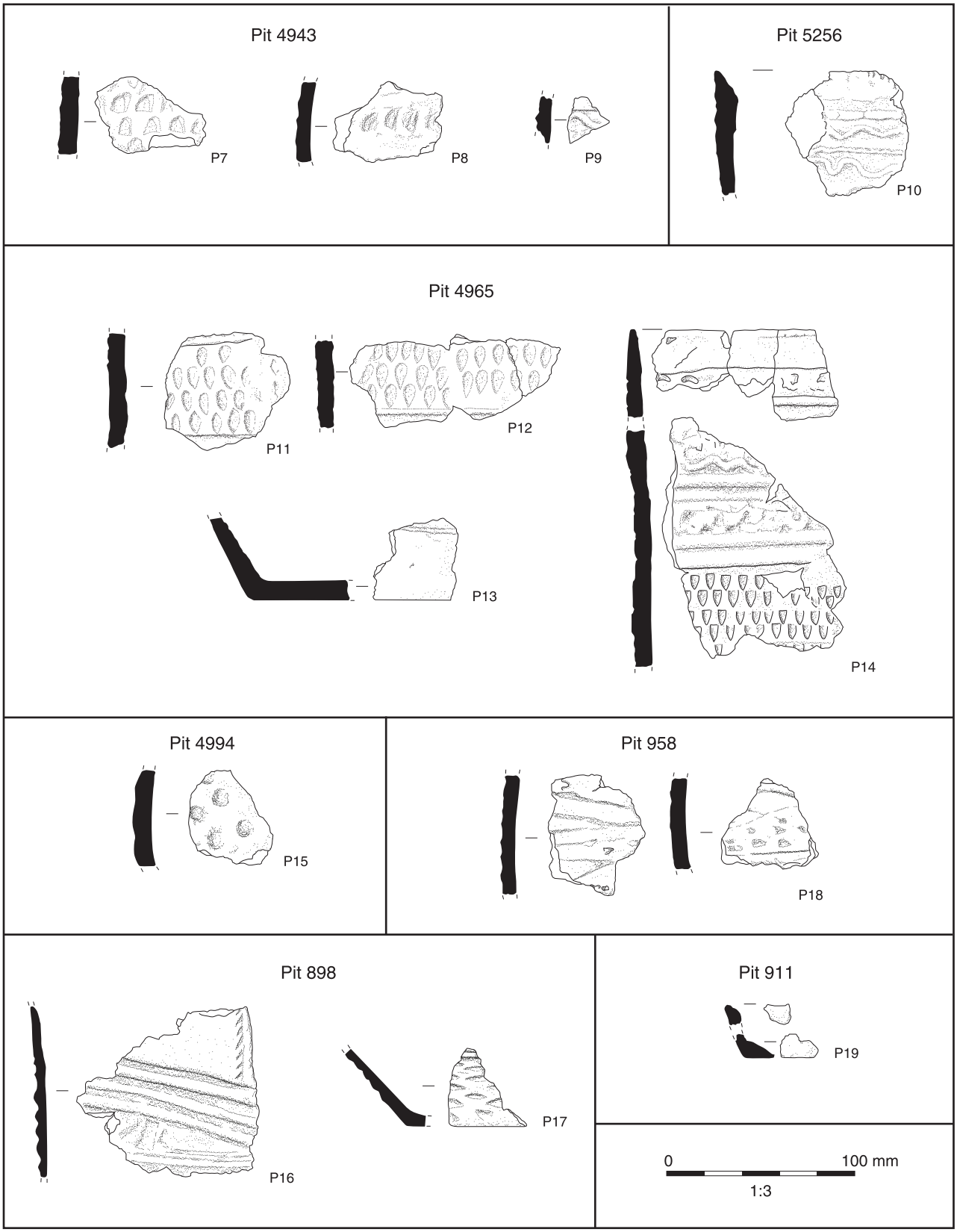


Figure 3.38 Grooved Ware pottery (all Clacton style) from White Horse Stone/Pilgrim's Way pit contexts, showing the range of decorative designs and motifs present. Most of the sherds illustrated are from tub-shaped vessels, except for the base of a bowl from Pit 898 (P17) and fragments of a cup or miniature vessel from Pit 911 (P19)

most cases sets of radiocarbon dates from clusters of features and from spatially-related pit groups give no indication that activities were widely-separated in time. The only apparent exception to this is Pit Group 19413 where the relatively late radiocarbon date from Pit 4994 (NZA-21325: 2860–2490 cal BC) contrasts with the earlier date from Pit 5094 (NZA-22813: 2920–2690 cal BC) and the three dates from Hollow 5072, which all fall within the period 2930–2610 cal BC (NZA-22749; -22750; -22751). This contrast seems less pronounced, however, once the spatial and contextual relationships among these features are taken into account, and may be due more to the imprecision of the calibrated radiocarbon dates. In particular, the equidistant spacing of the three pits arranged in an arc, and the presence in Hollow 5072 of a placed cattle skull that appears to complement the large cattle bone assemblage in Pit 4994 nearby, which lacks skull fragments completely, suggest deliberate inter-referencing and contemporaneous practices. Overall, therefore, it seems likely that activity in each of the clusters of features, especially the pit groups, took place over short periods of time, and that all the Late Neolithic activity at White Horse Stone/Pilgrim's Way, whether continuous or episodic, occurred in a fairly short period perhaps spanning only a few decades.

The significance of Grooved Ware pit deposits has been the subject of much debate in recent years, especially the 'structured' nature of Late Neolithic social practices and the use of pits, depositional acts and artefacts as symbolic media (cf. Barrett *et al.* 1991, 92–106; Bradley 2000, 117–31; J Harding 2006; Pollard 1995, 2001; J Thomas 1999, 62–8). Central to this theme is the idea of 'structured deposition' first outlined by Richards and Thomas (1984), who argued that 'ritual' is equivalent to symbolic communication, expressed in the degree of formality, repetition and symbolic salience of social actions, and thus visible in the degree of spatial patterning or 'structuring' of artefacts and other materials (1984, 190–2). This approach has been applied widely in British prehistoric studies, though it is now acknowledged that it is impossible to separate ritual from utilitarian behaviour in any simple way (Bradley 2005; Brück 1999a; J Harding 2006). Meaning is conveyed in all actions, for example, while everyday tasks may be formalised and domestic architecture imbued with religious significance (Bradley 2005). The distinctiveness of ritualised actions may instead lie in the propositionality and conscious expression of significant ideas in comparison with the largely uncritical nature of habitual behaviour (Bell 1992; Hill 1995, 99). In material terms, the selection and careful placement of certain material categories in 'special' places suggests purposeful and reflective performance of 'significant' actions separate from those performed on a day-to-day basis.

Interpreting Late Neolithic depositional practices in these terms is, however, fraught with difficulties, primarily because clear boundaries between these qualities of action are extremely difficult to define, even at a site level, and because the objects and materials deployed in ritualised acts were mostly identical to those used in ordinary domestic and production activities. Indeed, it has been recognised for some time that this correspondence can be deliberate, in the sense that many ritual acts are performed as ritualisations of everyday practices, drawing upon the 'domestic' sphere (of reproduction, production, consumption, and sociality) as a rich source of metaphors and symbolic resources for conveying fundamental meanings about the nature of the world (J Thomas 1999, 87; Pollard 2002; Woodward 2002b; 2002c; Bradley 2005). In this light, it is unsurprising that interpretations of Grooved Ware deposition in relation to everyday practices, occupation episodes and settlement are often ambiguous, reflecting a great deal of uncertainty about the nature of Late Neolithic social practices.

In particular, there is a widely-held assumption, which sits uneasily with the prevailing interpretative focus on symbolic and ritual dimensions of deposition, that Grooved Ware deposits in pits and other contexts provide evidence for 'settlement' (J Thomas 1999, 64–87; J Harding 2006; Garrow 2007b, 9–11). Pit groups, from this perspective, have been seen as evidence for sustained inhabitation or repeated occupation episodes at favoured locations, to which groups would return on a regular basis as part of a mobile, seasonally-structured residential system that was 'tethered' in various way to 'fixed' monuments, fields, transhumance routes and perhaps more permanent abodes (Darvill 1997b; Pollard 1999; 2000).

In some cases, pit groups consist of amorphous clusters of dug features, some intercutting, occasionally also associated with 'hollows', hearths, stake holes and/or postholes, for example at Barholm, Lincolnshire (Simpson 1993), Radley, Oxfordshire (Barclay 1999b, 319–20), Firtree Field, Cranborne Chase, Dorset (Barrett *et al.* 1991, 84), and Ringlemere, Kent (Parfitt 2006a). The majority of pits, however, occur singly or in small groups, especially as 'paired' and three-pit arrangements of the kind recorded at White Horse Stone (Fig. 3.39). These spatial patterns are evident at most of the other sites in south-east England where Grooved Ware has been found in pits, including Eyhorne Street, Kent (paired pits; discussed above), Betchworth, Surrey (a three-pit group; Williams 2004) and at Westhampnett, West Sussex (paired pits; Chadwick 2006, 11). Similar groupings are known very widely elsewhere in southern Britain, including the Upper Thames Valley (at sites such as Yarnton Area 7 where 10 of the 19 Late Neolithic pits were arranged in pairs; Hey, in prep.), and in North Yorkshire (eg on Rudston Wold; J Harding 2006, 121). It is also important to note that where extensive excavations have taken place, what might otherwise be seen as 'isolated' single pits and pit groups are often found to form parts of much larger dispersed clusters of features that extend for considerable distances across sections of the landscape, for example at Barton Court Farm, Abingdon, Oxfordshire (Miles 1984, 4, fig. 4), Yarnton, Oxfordshire (Hey, in prep.) and Church Lawford, Warwickshire (Palmer 2006; 2007).

The spatial distribution, clustering and arrangement of Grooved Ware pits, and the assumption that they relate in some way to domestic occupation, invites closer scrutiny

Figure 3.39 Late Neolithic post- and stake-built structures (5297 and 19140) and pit group (19399) at White Horse Stone, viewed from the south-east. The Early Neolithic timber long hall is visible in the background

of their purpose and the nature of infilling practices. Although the non-utilitarian character of such features has been much-emphasised in recent interpretations, based on evaluations of bowl-shaped earlier Neolithic pits, the lack of weathering or erosion of pit sides, deliberate backfilling practices and the increasingly formal nature of deposition during the later Neolithic (J Thomas 1999, 64–73), there is good reason to question these observations and the conclusions drawn from them. As the White Horse Stone/Pilgrim's Way pit groups demonstrate, a large proportion of Grooved Ware pits are in fact steep-sided and flat-based rather than bowl-shaped, suggesting that they were intended for some purpose requiring a level 'floor'. One possible explanation is that they provided a secure setting for flat-based Grooved Ware vessels: each of the flat-based pits at White Horse Stone/Pilgrim's Way, for example, could have accommodated three to five medium-sized Grooved Ware pots. Indeed, bowl-shaped pits could also have been used to stand containers such as round-based pots, baskets or leather bags in fixed positions. In addition, there is no reason why both flat- and round-based pits could not have been covered by wooden, wicker or fabric lids to prevent unwanted materials (dust, etc.) and animals (rodents and insects) contaminating or destroying the contents, as well as accidental damage by humans.

The possible use of pit covers, as well as the possible location of pits within buildings or shelters might well explain the lack of weathering of pit sides. This calls into question the usual assumption that they must have been backfilled soon after they were dug and hence served no utilitarian purpose. The alternative possibility, that pits were protected and used for long periods before infilling took place, has significant implications for our understanding of the temporalities of pit use, dis-use and structured deposition, as well as the idea that pits were primarily 'symbolic' in character. Although a degree of formality in pit-infilling is certainly widely evident, these acts may have taken place only when pits had reached the end of their use-lives, which could well have been extended rather than short. This must cast doubt on the argument that pits were 'dug to be filled' (eg J Thomas 1999, 72–3; Bradley 2007, 44), and undermines the idea that their essential purpose was to provide stages for ritualised deposition. Although some pits and pit deposits may well have been fashioned with these intentions, it seems likely that the majority were used practically before such infilling events took place. From this perspective, while Jan Harding's (2008) recent appraisal of pits and their role within settlement sites rightly emphasises the extended life-histories of pits and their intrinsic significance in relation to everyday practices, it seems misleading to interpret them primarily as media for charting a 'biography of inhabitation', denying their practical functions in everyday settlement activities that may have been unrelated to final acts of deposition. The HS1 evidence and the interpretation proposed here accord more closely with Thomas' view of pit deposition as a means of symbolic 'closure' at the end of a period of residence (1999, 70–3).

In this light, the extent to which overt symbolic signalling pervaded Late Neolithic pit deposition (Richards and Thomas 1984; Bradley 2000, 117–31; Pollard 2001, 325–28; Woodward 2002c, 67–9) needs to be re-evaluated, especially once the extreme rarity of highly-structured depositional processes involving the selection of 'special' items, careful placement of artefacts and controlled filling sequences is recognised. Previous interpretations have depended on readings of evidence from monuments such as henges and timber circles and a small number of pits with complex, materially-rich and exotic contents (eg the Chalk Plaque Pit, Amesbury, Wiltshire; P Harding 1988). In these cases, the practices giving rise to material deposits do appear to have consisted of highly formalised ceremonial acts involving explicit symbolic representation (J Thomas 1999, 80–5; Pollard 1995; 2001, 325–8). It is likely, however, that these bear only slender relation to the depositional acts in less socially-salient or culturally significant pit contexts elsewhere, except in so far as they mark one extreme end of a continuum of variation in the ritualisation of depositional actions. It is striking that apart from a few unusual, finely worked and/or decorated objects found in three pits, there is very little in the HS1 evidence that would suggest special selection of items for deposition or the ordered

placement of pit contents. Instead, it would seem that pit filling—whilst usually deliberate—was conducted in a fairly simple if controlled fashion, drawing upon materials readily to hand, probably derived from middens nearby that had been created during the preceding period of occupancy or perhaps earlier settlement episodes (cf. J Thomas 1999, 70–3; Pollard 1999, 89; Garrow 2007b, 12). The extent to which deliberate material selection took place as part of the pit-filling process is arguable, even where some patterning of material assemblages is apparent, because the creation of middens from which fill materials were taken may already have been subject to various kinds of physical structuring and selection criteria, including spatial organisation defined by domestic routines, religious proscriptions that separated categories of material, and/or ritualised depositional activities.

The Late Neolithic buildings

In this wider context, the presence at White Horse Stone of two successive Late Neolithic timber buildings,

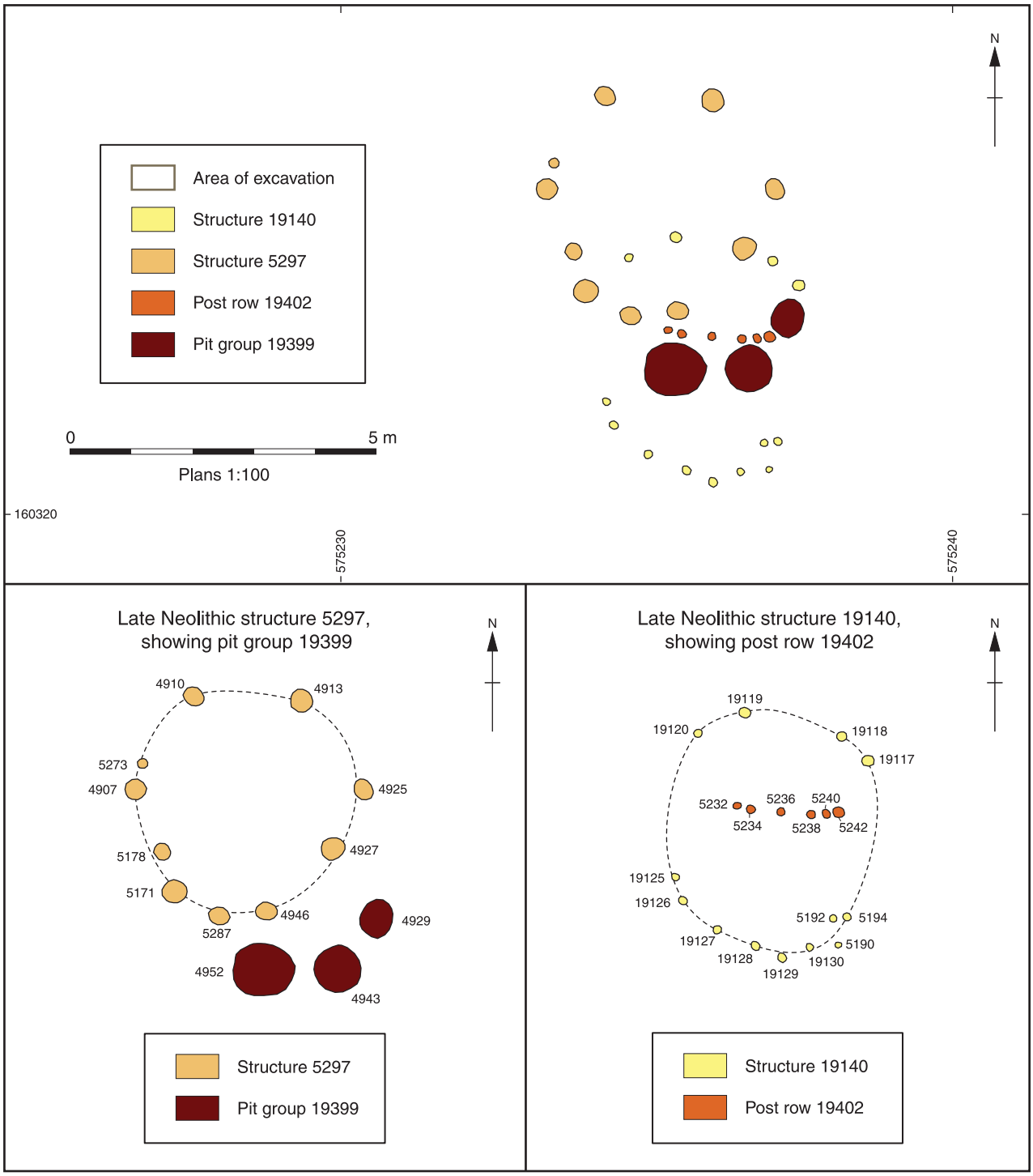


Figure 3.40 White Horse Stone Late Neolithic timber buildings (5297 and 19140): plans of post- and stake-built structures and associated Grooved Ware pit group (19399)

Structures 5297 and 19140 (Fig. 3.40), located at the south-east end of the Early Neolithic timber long hall, is not only of exceptional interest in itself but may help to clarify the nature and significance of the clustering and spatial distribution of pits and other features. This has considerable significance for wider interpretations of pit groups as the possible remnants of short-lived settlements with insubstantial domestic architecture, such as tents, stake-built huts and turf- or cob-walled buildings (eg J Thomas 1996b; Gibson 2003; J Harding 2006, 121). The White Horse Stone/Pilgrim's Way evidence thus has a significant contribution to make to interpretations of settlement in this period more generally.

It is evident, however, that the White Horse Stone buildings and associated Pit Group 19399 present a number of interpretative difficulties, mainly because of the lack of stratigraphic relationships and limited dating evidence. It is uncertain, for example, whether Structure 5297 pre-dates Structure 19140 or vice versa, and there is no definitive way to determine whether the pits were located with reference to Structure 5297, were internal features within Structure 19140, or represent an entirely separate phase of activity. Several alternative interpretations concerning the architectural forms and practical purpose and use of the buildings are therefore possible, although the spacing of features and other physical relationships provide some basis for arguing that Structure 19140 was replaced by 5297, and that Pit Group 19399 was associated with the latter.

Structure 5297

The most clearly defined structure, 5297, consisted of ten postholes arranged in a sub-circular or slightly ovate shape, with a diameter of 3.1–3.4m (Hayden 2006a, 71–2). The Late Neolithic three-pit group 19399, located on the south side of the structure, formed an arc that broadly followed the curvature of the ring of postholes. It is likely, therefore, that the timber building and the pits were either contemporary or the pits were dug while the remains of the structure were still visible. The form of the building superstructure is uncertain, but it is possible that the postholes held the inner post-ring of a large roofed structure that extended over the pits (as suggested for the Late Neolithic buildings at Trelystan; Gibson 1996), with an overall diameter of perhaps 8–9m (Fig. 3.41). The unweathered nature of the deeper pit sides certainly suggests these were covered in some way. The finds from the postholes, mostly recovered from sieving, were generally small and fragmentary but included a large Grooved Ware sherd (33g) and another very small shell-tempered sherd that is probably also Grooved Ware. The other finds consisted of flint chips

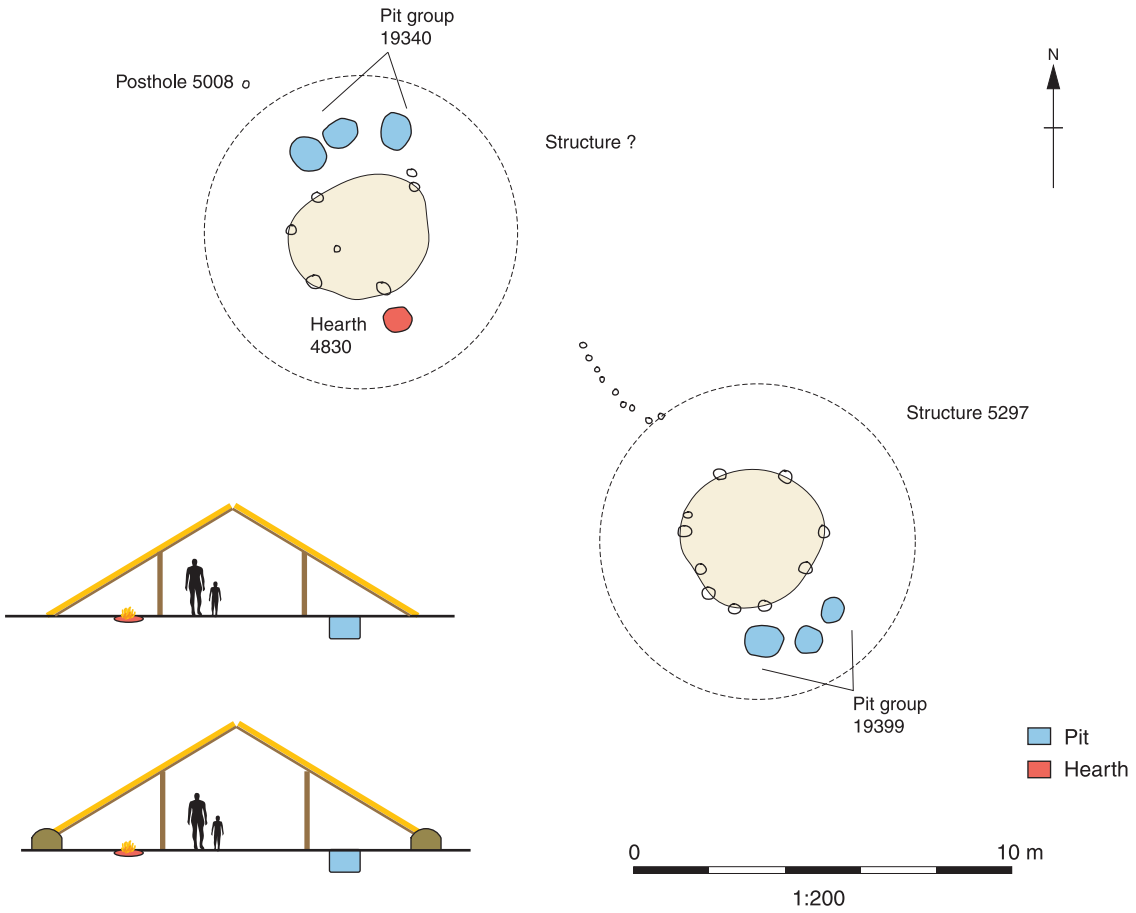


Figure 3.41 White Horse Stone: interpretative plan of definite and possible Late Neolithic buildings, fences and related features in the vicinity of the Early Neolithic long hall. Lower left: schematic cross-sections of possible building reconstructions, shown with and without an outer roof-supporting bank (of turf, earth, or clay)

and flakes, some burnt, though charcoal and other burnt materials were otherwise present in only small quantities and bone was absent entirely. An early to mid-3rd millennium BC date for this building seems highly likely, therefore, based on the direct Grooved Ware pottery association, the spatial relationship with the radiocarbon-dated Grooved Ware Pit Group 19399, and the lack of evidence for later prehistoric activity in this part of the site or nearby.

Structure 19140

The other structure, 19140, consisted of two arcs of stake holes that probably formed an ovate structure with a diameter of 3.6–4.0m (Hayden 2006a, 72). Gaps on the west and east sides may be due to localised truncation or destruction when post-structure 5297 was built, though there was no stratigraphic evidence to confirm this or determine the sequence of construction events. Whilst it is possible that Pit Group 19399 was positioned across the central part of the structure, this seems unlikely given the usual peripheral distribution of pits at Late Neolithic house sites (discussed below). Alternatively, it is possible that the arcs of stake holes did not support a roofed structure but formed screens or windbreaks, perhaps around the Late Neolithic pits, though the more likely relationship of the latter with post circle 5297 makes this unlikely. A row of small stake holes (19402), which appears to run in a curving line across the stake circle structure, could represent an internal partition although there are no other features which may indicate functional distinctions between the different spaces on either side. It is also possible that Pit 4929 destroyed the east end of the line of stakes, which—if these supported an internal wall within the stake-built building—may further support the idea that the pit group is later in date than Structure 19140 and more likely to relate to Structure 5297. Although no dating evidence was recovered from the stake holes of either 19140 or 19402 (the only finds being nine flint chips from the 'partition' stake holes), the overlapping locations of two circular timber structures, one seemingly replacing the other, suggests a close chronological relationship and probably a Late Neolithic date based on the Grooved Ware found in the postholes of Structure 5297.

The White Horse Stone buildings: architectural parallels

There has been very little comparative analysis of Late Neolithic buildings in Britain since Darvill's survey of the evidence 15 years ago (Darvill 1996). Several important new discoveries since then, however, as well as more general assessments of the nature of Neolithic settlement sites (notably: Pollard 1999, 2000; Gibson 2003; M Allen 2005; Garrow 2007a; Brück 2008), provide a new basis for evaluating the White Horse Stone/Pilgrim's Way evidence. It is immediately apparent that buildings dating to the 3rd millennium BC are extremely diverse in terms of their sizes, shapes, constructional technologies, internal design features and likely superstructures (see Fig. 3.42). In addition, modes and temporalities of inhabitation seem to be very different from one building to the next. Some broad distinctions can be recognised, however, in the following terms:

1. Shape: clear design decisions were involved in choosing circular, oval or rectilinear ground plans, presumably relating to intended function, occupancy, available building materials and stylistic and aesthetic criteria.
2. Wall and roof architecture: contrasts can be drawn between buildings with load-bearing internal post- or stake-built structures that supported wider pitched roofs, and buildings with external load-bearing wooden (posts or stakes), turf and/or cob walls, with slighter internal roof supports (if any).
3. Massiveness and durability: although there is wide variation, it is evident that some structures were more substantial than others, for example where timber posts form part of the fabric, which may relate to expected length and intensity of inhabitation.
4. Presence/absence and spatial organisation of internal structures or features: hearths, partitions, fixed furniture (such as dressers and box beds) and pits.

It is apparent that Structures 5297 and 19140 at White Horse Stone are slightly different in size and layout, and can be contrasted in terms of relative solidity (post-built as opposed to stake-built), but they have similar shapes and it is possible that the two building superstructures were not unlike, both perhaps consisting of internal post-/stake-rings supporting wider pitched roofs (like Trelystan 1 and 2; Gibson 1996). They clearly have almost nothing in common with the few rectangular buildings of this period, such as Willington structures B and E, Derbyshire (Knight and Howard 2004, 66–9; Wheeler 1979), Yarnton Structure 4291, Oxfordshire (Hey, in prep.), and Belle Tout Structure 5 (Bradley 1970, 328–30; 1982). There is also no obvious point of similarity with the elongated C-shaped bedding trench associated with Grooved Ware at Briar Hill, Northamptonshire (Structure 145; Bamford 1985, 44, fig. 22), which forms one part of an alignment of post-built structures and was probably not a dwelling. In contrast to these buildings, the White Horse Stone structures both belong to the broad range of small circular/ovate and rounded square-shaped 'domestic' architecture of the 3rd and early 2nd millennia BC.

At first sight, there are a number of possible Late Neolithic, Chalcolithic and Early Bronze Age parallels for Structure 5297 (Fig. 3.42), including Sant-y-Nyll Huts A, B and C, Glamorgan (Peterson 2007, 135–8, fig. 10.6; Savory 1962), Oversley Farm Structure 4, Cheshire (Garner 2007, 37–41), Yarnton buildings 3353 and 3600, Oxfordshire (associated with Biconical Urn pottery; Hey, in prep.), Redgate Hill Structure I, Norfolk (Healy *et al.* 1993, 23–4, fig. 25), Sutton Hoo building S26, Suffolk (Hummler 2005, 416–20), Belle Tout Structure 1, East Sussex (Bradley 1970, 321–3; 1982), and two round buildings with porches at Monkton, Thanet (Structures I and V; Clark and Rady 2008, 12–13; 89–91, fig. 1.18). However, all of these buildings, with the exception of the Monkton structures which are not

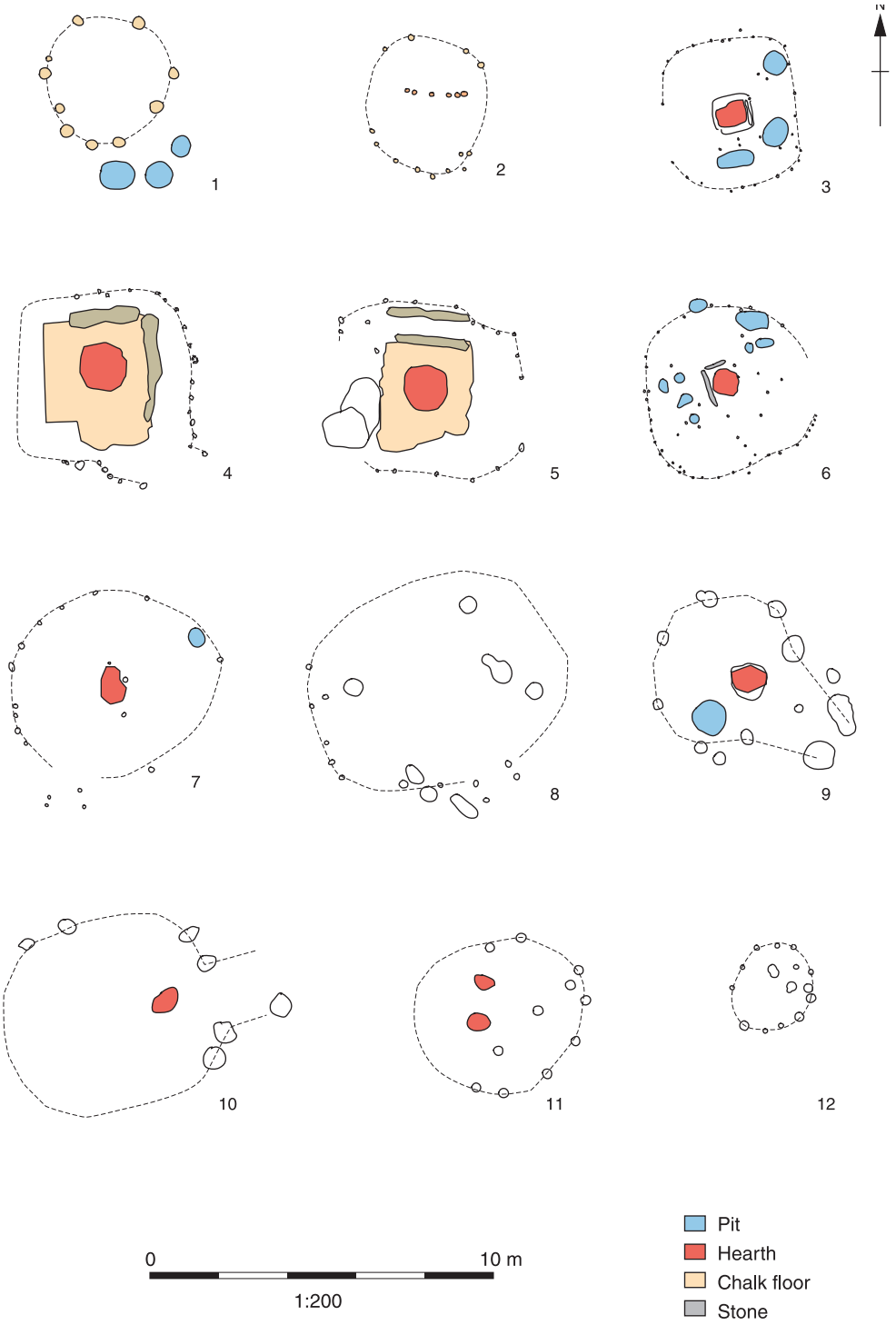


Figure 3.42 Comparative plans of Late Neolithic and Chalcolithic houses in southern Britain: 1. Structure 5297, White Horse Stone, Kent (Hayden 2006a, figs.36, 37); 2. Structure 19140, White Horse Stone, Kent (Hayden 2006a, figs. 36, 37); 3. Structure B, Trelystan, Powys (Britnell 1982, fig.4); 4. House 851, Durrington Walls, Wiltshire (Parker Pearson 2007, fig.12.7); 5. House 847, Durrington Walls, Wiltshire (Parker Pearson 2007, fig.12.7); 6. Structure A, Trelystan, Powys (Britnell 1982, fig.3); 7. Structure 1, Upper Ninepence I, Powys (Gibson 1999, fig.36); 8. Building 1, Wyke Down, Dorset; 9. House S26, Sutton Hoo, Suffolk (Hummler 2005, fig.179); 10. Structure 4, Oversley Farm, Cheshire (Garner 2007, fig.43); 11. Hut A, Sant-y-Nyll, Glamorgan (Savory 1959, fig.3); 12. Hut B, Sant-y-Nyll, Glamorgan (Savory 1959, fig.3)

well-dated, are probably Chalcolithic or Early Bronze Age on the basis of pottery associations, as well as radiocarbon dates for the buildings at Oversley Farm and Yarnton. Two buildings at Wyke Down, Dorset (Green 2000, 71–6), associated with Grooved Ware pit groups and a fence line, are more similar in scale and date to the White Horse Stone buildings, but are plainly different in design terms with internal four-post roof-support structures surrounded by stake rings. These may be dwellings, although their location adjacent to a small

henge monument, the evenly-spaced linear arrangement of the three structures and shared orientation of entrances suggest these may have served 'special' communities and occupation events or were themselves shrines. Other possible Late Neolithic post-built circular dwellings in southern Britain are at best doubtful, such as the hollow associated with postholes at Prospect Park, Harmondsworth, Surrey (Lamdin-Whymark 2008a, 135–6; Andrews 1996, 13, fig. 58). In this light, whilst a Late Neolithic date for Structure 5297 seems well-grounded, exact architectural parallels—in the form of small circular houses with internal post rings dating to the early 3rd millennium BC—are presently lacking.

Comparative analysis of the relationship between pit groups and houses further strengthens the interpretation of Structure 5297 as a Late Neolithic house, particularly the evidence from Trelystan Building B. This was a stake-built structure dating to *c* 3000–2600 cal BC, with a central rectangular hearth and three pits positioned just within the stake ring (Britnell 1982, 140–3; Gibson 1996). The pit group, although positioned differently in comparison with the pit group outside the post ring of Structure 5297, in other respects has the same attributes, comprising two relatively deep flat-based pits and a third shallow feature with a rounded base, arrayed in an arc that respected the curvature of the stake ring but was not exactly concentric with it. The similarities with the White Horse Stone example are striking. Other Late Neolithic buildings are also associated with pit groups (eg Trelystan A, Upper Ninepence Structures 1 and 2, and Wyke Down Buildings 1 and 2), although their spatial organisation, shapes, sizes and contents are diverse, and the chronological relationships between pits and buildings are often uncertain (eg at Upper Ninepence, Powys; Gibson 1999, 35–46). It is also likely, of course, that some pits were external to buildings, intended for activities that took place in open-air contexts, and there is no question that in some cases pit-digging occurred after buildings were abandoned (eg Durrington Walls House 547; Parker Pearson 2007, 138). Even so, the evidence from White Horse Stone/Pilgrim's Way and Trelystan, and the wider occurrence of three-pit groups, suggests that some household activities were organised in such a way that repeated associations of pits and buildings were realised in similar spatial patterns.

In some respects, Structure 19140 has closer Late Neolithic parallels than 5297, especially in terms of stake-ring construction and building size (Fig. 3.42). These include Trelystan Buildings A and B, Powys (Britnell 1982, 139–43; Gibson 1996), Upper Ninepence Structure 1 and possibly Structure 2, Powys (Gibson 1999, 29–47), and the numerous houses at Durrington Walls (Parker Pearson 2007). These buildings are associated with Grooved Ware assemblages and are mostly well-dated to the early 3rd millennium BC. Larger circular stake-built structures at Hockwold-cum-Wilton, Norfolk (Bamford 1982, 9–12), Chippenham Barrow 5, Cambridgeshire (Gibson 1980), and Gwithian Structure 1642, Cornwall (recently re-interpreted as a single-phase building: Nowakowski *et al.* 2007, 25–6; cf. Darvill 1996, 101, figs 6.8.3, 6.10.8; Megaw 1976), are all associated with Beaker pottery and probably date to the late 3rd/early 2nd millennium BC. The apparent partition inside the White Horse Stone stake circle is paralleled by what appear to be internal stake-built walls or other short linear structures within Trelystan A and B (Britnell 1982, figs 3, 4), and possibly Gwithian Structure 1642 (Nowakowski *et al.* 2007, 25–6). Although direct dating evidence is lacking, the architecture of Structure 19140 thus appears to be broadly consistent with the wider range of stake-built circular and sub-rectangular buildings dating to the early/mid-3rd millennium BC.

Pit groups and other possible buildings

The close connection between pit groups and buildings described above suggests that the other Late Neolithic three-pit groups at White Horse Stone/Pilgrim's Way, each of which was very similar to Pit Group 19399 in terms of scale, curved lay-outs and pit forms, were probably also associated with buildings. Direct evidence for these has not survived, though posthole 5008 close to Pit Group 19400 produced a radiocarbon date of 2880–2580 BC (NZA-21280), and there were several more postholes and other features in the same area which do not obviously form part of the Early Neolithic building design and may be Late Neolithic in date. Shallow features such as stake holes may well have been truncated or were difficult to recognise in the fills of the hollows and tree-throws in this area, while larger postholes have simply been assumed to be Early Neolithic because of the presence of the long hall building. In addition, if a full circle is extrapolated from the 19400 pit arc, it is apparent that Hearth 4830—the fill of which contained a Grooved Ware sherd—was positioned on the south side of this circle (see Fig. 3.41). By analogy with the proposed reconstruction of Building 5297, which would place the pit group inside the roofed structure, both Pit Group 19400 and Hearth 4830 may have been internal elements of a second, contemporary timber building.

The possibility that Late Neolithic features were more widespread in the area of the long hall than originally assumed, and the likely 3rd millennium BC date of stake hole Structure 19140, further invites reassessment of the stake holes at the south-east corner of the Early Neolithic long hall. These may, in fact, be Late Neolithic in date and 'associated' with the long hall only by coincidence. It is noticeable that the stake holes are not precisely aligned on the east wall of the long hall, and—rather than being set in a straight line—form a curving arc south-eastwards. One possibility is that they formed part of a fence line similar to those found at other Late Neolithic settlement sites such as Durrington Walls (Parker Pearson 2007, 140, fig. 12.7), Swarkestone (Greenfield 1960b) and possibly Ringlemere (Parfitt 2006a, 9, fig. 6). Viewed together, it is conceivable that the definite and possible Late Neolithic features in the vicinity of the earlier long hall represent a single occupation site with at least two buildings.

The other pit groups to the south were more heavily truncated so that any associated post and stake holes were completely destroyed, but their pit arrangements

and forms suggest they had the same kinds of relationships to built structures as those to the north. The only possible exception to this is the inter-cutting group of pits (19395), which lacked some of the features of the other pit groups (such as a deeper flat-based pit) and which also contained unusual materials including a polished iron pyrite ball and a small amount of cremated human bone. This need not, however, imply complete separation from the domestic sphere: similar inter-cutting pits, for example, were dug into the south-west corner of Durrington Walls House 547 after it was abandoned, one containing a human bone (Parker Pearson 2007, 138, 140). Even as a series of more formal pit-digging and depositional events, it is possible that Pit Group 19395 marks a relationship with a former house.

The Grooved Ware settlement at White Horse Stone in context

The Grooved Ware-associated pits and other Late Neolithic features at White Horse Stone/Pilgrim's Way thus appear to belong to a lineally ordered settlement that originally comprised several widely spaced occupa-

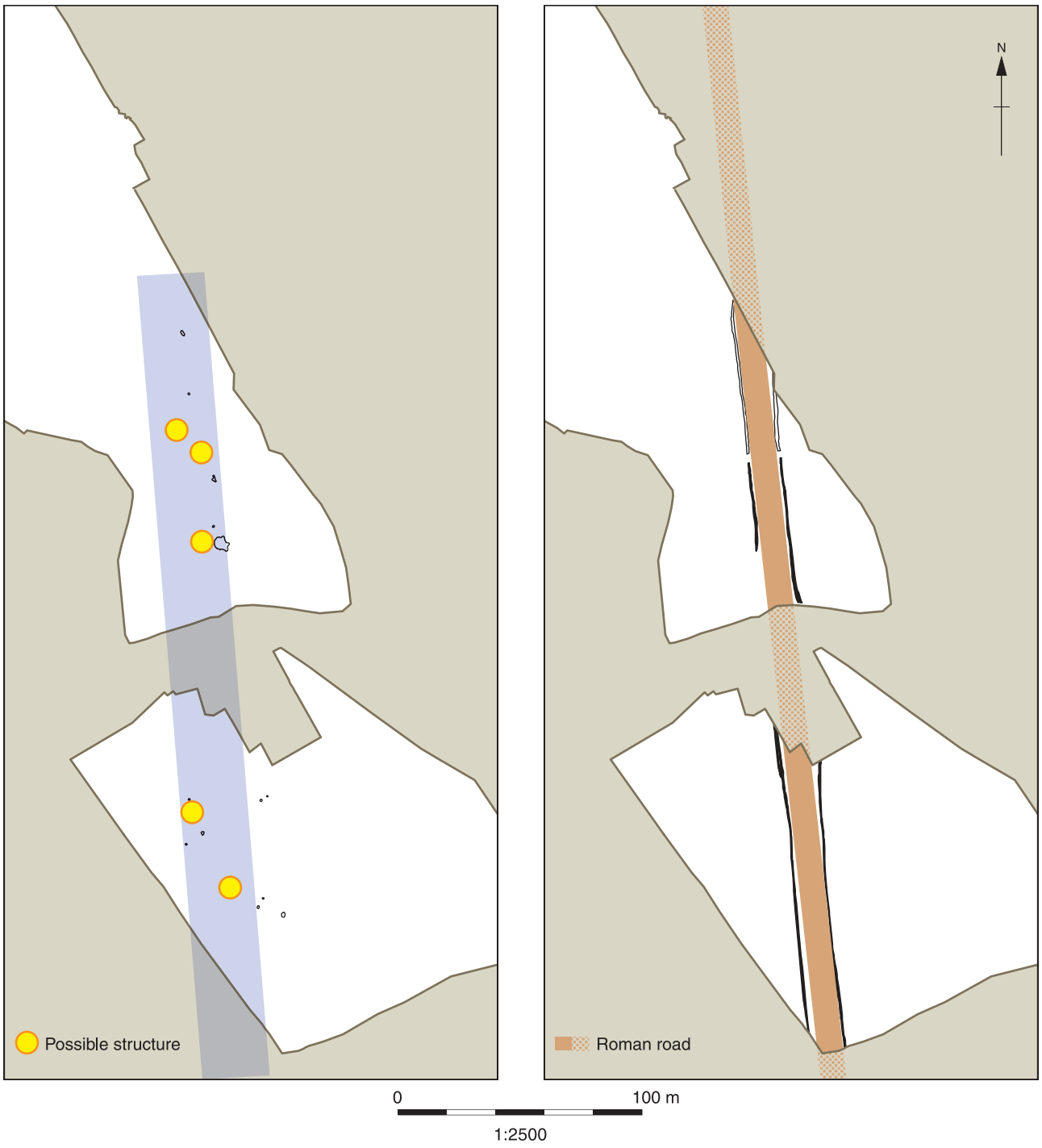


Figure 3.43 White Horse Stone/Pilgrim's Way: the north-south linear distribution of Late Neolithic features, including definite and possible house sites, in comparison with the route of the Roman road

tion areas, each probably consisting of one or more buildings, a pit group and a midden. There is also some evidence for a fence line and a hearth in the least-truncated part of the White Horse Stone excavation area close to the sites of the two successive Late Neolithic post-/stake-built houses. These occupation areas were probably sited beside a north-south route that ran down the dry valley towards the River Medway, on a course that was either maintained for millennia or replicated and formalised—on almost exactly the same alignment—by the construction of a road with flanking ditches at some point during the Roman period (Fig. 3.43).

Linear structuring of activity across the landscape has long been recognised in the spatial organisation of Late Neolithic henges and other kinds of monumental architecture, such as the west-east alignment of Maumbury Rings henge, Allington Avenue linear monument, Flagstones enclosure and Mount Pleasant henge enclosure to the south of Dorchester, Dorset (R Smith *et al.* 1997, 284–7), and the line of henge monuments at Thornborough, North Yorkshire (J Harding 2003, 90–9), but has rarely been noted in non-monumental contexts. This is probably because extensive open-area excavations encompassing sufficiently long sections of such routes to make them identifiable are relatively rare, and because interpretative expectations concerning 'residential mobility', small-scale 'temporary' inhabitation and fluid forms of land division have distracted prehistorians from the possibility of large-scale landscape organisation of settlement and everyday practices (rather than just ceremonial events and monumental architecture).

This may well change as extensive spatial analyses of pits, middens, houses and other features becomes more common (Fig. 3.44). It is noticeable, for example, that most of the Grooved Ware pits at Redgate Hill, Huntstanton, Norfolk, are positioned in a linear band 20m wide running for at least 120m from north-west to south-east (Healy *et al.* 1993, fig. 29). The Neolithic 'holloway' at Oversley Farm, Cheshire, recorded over a distance of at least 120m but probably extending a good deal further, also dates to the mid- to late 3rd millennium BC if not earlier (Garner 2007, 29–41). Two later structures, associated with Beaker ceramics, were built 40m to the east in the period *c* 2130–1750 BC on a line parallel with the holloway (ibid., fig. 25). It is also possible that the line of Late Neolithic circular buildings and other structures running west-east across the northern half of Durrington Walls (Parker Pearson 2007, fig. 12.2; J Thomas 2007b, 152–56, fig. 13.7) were originally aligned along a pathway. Other possible examples of lineally-organised settlements or occupation areas, traced over shorter distances, include the two Late Neolithic buildings on either side of the pit grave at Trelystan, Powys (Britnell 1982), and the Holywell Combe holloway, midden and stake hole structures at the east end of the HS1 route near Folkestone, Kent (Bennett *et al.* 1998).

It is apparent that the northernmost clusters of features at White Horse Stone/Pilgrim's Way were far more closely spaced than the others. If contemporary, these may represent several associated houses and activity areas similar to house clusters and compounds of 3rd millennium BC date elsewhere in southern Britain (Fig. 3.45). Although it is generally impossible to determine specific spatial and functional relationships between different features, or precise chronologies of construction events and occupation practices (with the remarkable exception of Durrington Walls; Parker Pearson 2007), it is apparent in most cases that Late Neolithic, Chalcolithic and Early Bronze Age settlements comprise between one and three buildings, fences (acting as boundaries to separate residential groups and/or demarcate activity areas), and open-air hearths, 'working hollows', pits and middens. Buildings were usually closely-spaced, for example at Durrington Walls (ibid.), Upper Ninepence (Gibson 1999, 29–47), Wyke Down (Green 2000, 71–6) and probably Ringlemere, Kent (Parfitt 2006a, fig. 6), though more isolated or dispersed buildings and compounds seem to be evident at Oversley Farm (Garner 2007, 29–41) and Belle Tout (Bradley 1970; 1982, 68–71).

The longevity and frequency of occupation episodes are particularly difficult to establish, although there is almost nothing to suggest continuous long-term (eg multi-generational) periods of residence. Instead, the overriding impression from all these sites, as often observed, is of temporary/short-term occupation episodes lasting a few years or a generation, sometimes structured on a seasonal basis. There is little evidence for earthworks, which might suggest more substantial commitment to creating 'permanent' places of settlement in this period, though rare exceptions exist such as the curving ditch at Upper Ninepence (Gibson 1999, 37–41), the Belle Tout enclosures (Bradley 1970, 1982) and the Early Bronze Age ditches and palisades at Sutton Hoo (Hummler 2005). There are also very few instances of apparent reoccupation of settlement locales after periods of abandonment, although the replacement of buildings at sites such as White Horse Stone and Sant-y-Nyll (where Huts B and C were not contemporary with Hut A: Peterson 2007, 135–8, fig. 10.6; Savory 1962), and the occurrence of especially dense concentrations of inter-cutting features, at Ringlemere for instance (Parfitt 2006b), may indicate more intensive, sustained and/or repeated occupation episodes.

It is important, in interpreting these 'occupation sites', to recognise that they must have formed part of more extensive settlements and associated areas of land use, our understanding of which is extremely limited. There is sufficient evidence, however, to suggest considerable complexity and variety in the social and economic landscapes of the Late Neolithic, with extensive spatial organisations of people and practices similar to and often integrated with 'ceremonial landscapes'. At Durrington Walls, for example, a dense aggregation of tens if not hundreds of houses may once have existed on the slopes of Durrington combe at its junction with the Avon valley, possibly extending across the whole area occupied by the later henge enclosure (Parker Pearson 2007; J Thomas

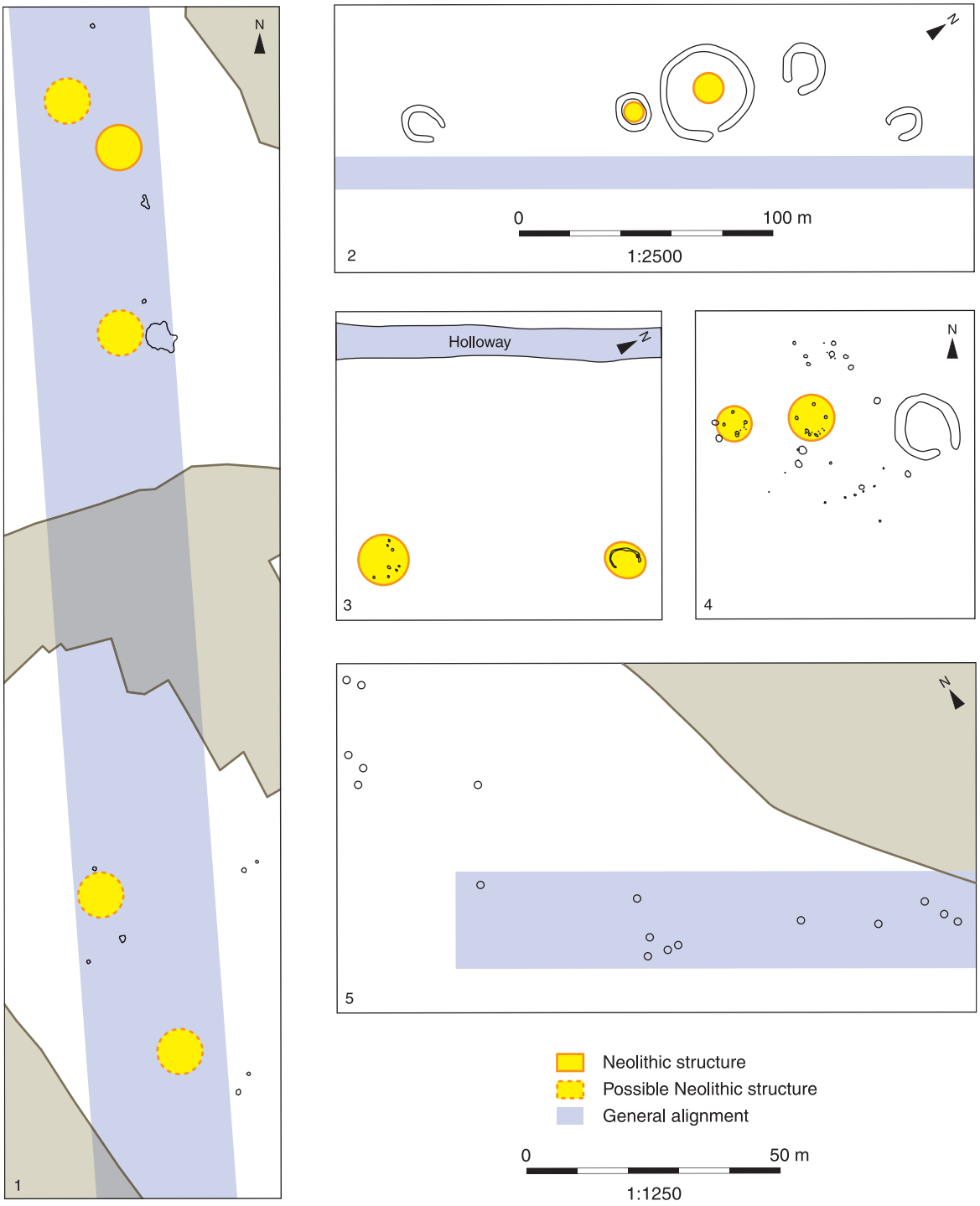


Figure 3.44 Comparative plans of Late Neolithic/Chalcolithic linear 'settlements'/site complexes in southern Britain: 1. White Horse Stone/Pilgrim's Way, Kent (Hayden 2006a, fig.35); 2. Durrington Walls henge enclosure, internal structures, Wiltshire (Parker Pearson 2007, fig.12.2; J Thomas 2007b, figs.13.8, 13.9); 3. Oversley Farm holloway and Structures 3 and 4, Cheshire (Garner 2007, fig.25); 4. Wyke Down Henge 2 and Buildings 1 and 2, Dorset (Green 2000, fig.47); 5. Redgate Hill, Hunstanton, Grooved Ware pit groups, Norfolk (Healy *et al.* 1993, fig.25)

2007b, 155–6). Linear arrangements of houses, house clusters and compounds located beside routes or land boundaries is suggested by the evidence from White Horse Stone/Pilgrim's Way, Redgate Hill, Oversely Farm, and possibly Durrington Walls. The presence of 'holloways' dating to the 3rd millennium BC at Oversley Farm, Cheshire (Garner 2007, 29–41) and Holywell Combe, Kent (Bennett *et al.* 1998), fencelines at an increasing number of Late Neolithic sites, including Trelystan (Britnell 1982), and the enclosures at Belle Tout and Sutton Hoo, further suggest complex and extensive forms of land division, and physical constraints on activities such as animal droving. These only make sense in the context of densely-occupied landscapes that were organised and managed in routinised ways, guided by clear knowledge of rights of ownership and inhabitation,

tenurial arrangements, agricultural regimes, and codes of social responsibility, loyalty and obligation.

From this perspective, generalisations about the nature of everyday social life during the Late Neolithic, based only on small-scale excavations of individual occupation sites, appear increasingly misleading. As the evidence from White Horse Stone/Pilgrim's Way suggests, in common with the small number of extensively-excavated sites of this period elsewhere, it seems more reasonable to imagine durable and structured forms of landscape occupation, landholding and farming which—despite relative material ephemerality—defined everyday social and economic practices in ways that prefigured the more substantial and permanent settlements and field systems created in the 2nd millennium BC (cf. Johnson 2008, 274). In this light, it may well be necessary to reformulate current interpretations of Late Neolithic landscapes based only on readings of the evidence from

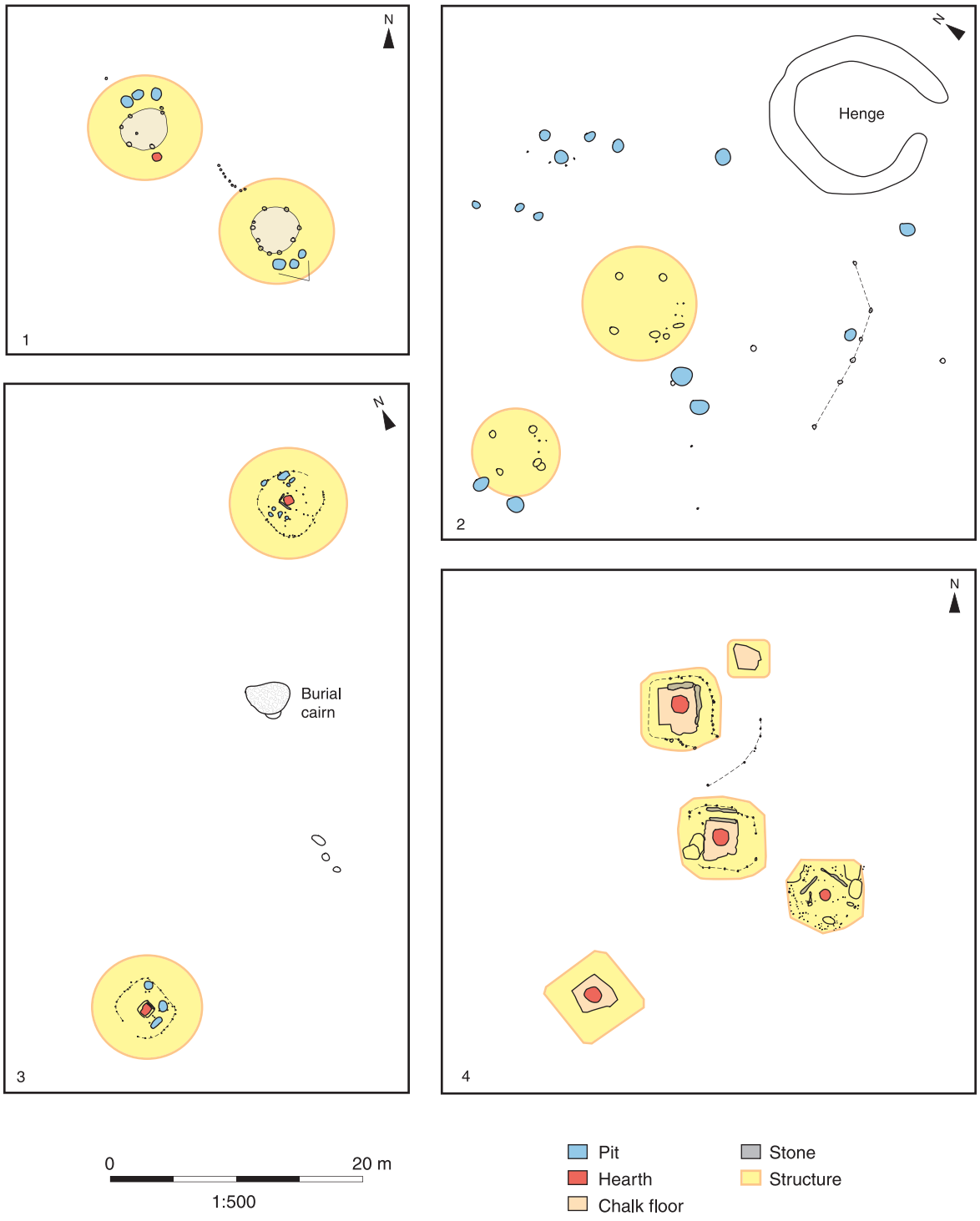


Figure 3.45 Comparative plans of Late Neolithic/Chalcolithic house clusters: 1. White Horse Stone/Pilgrim's Way, Kent (Hayden 2006a, figs. 36, 40); 2. Trelystan, Powys (Britnell 1982, figs. 6, 7, 30.1); 3. Wyke Down, Dorset (Green 2000, fig. 47); 4. Durrington Walls, Wiltshire (Parker Pearson 2007, fig. 12.2)

ceremonial monuments, which have been extended all too easily to other less visible dimensions of cultural life. Although "terrains of ancestral memory" (Field 2008, 204) may have existed in the imaginations of people in the early 3rd millennium BC, alongside cosmographic constructions of landscape focused on the abodes of 'ancestors' (cf. Parker Pearson and Ramilisonina 1997), these interpretations appear to underestimate the relative significance of values and motives bound up with everyday practices, social identities and relationships, and how profoundly these concerns influenced the ways in which people conducted their lives.

It is notable, in fact, that Late Neolithic activity is very rare at ancient cultural places in the contemporary landscape that might be associated with ancestors, mythological domains or historical pasts, such as long mounds and causewayed enclosures. Activity at such sites seems to have been limited to occasional deposits in pits and silted ditch contexts, which may as easily relate to occupation practices as to ritual acts at 'ancestral places'. Similarly, spatial relationships between Late Neolithic and Middle Neolithic monuments and deposits suggest only rare attempts to 'reference' things of the near-past: Grooved Ware pits, for example, mostly appear to be spatially separated from Peterborough Ware pits (suggesting patterns of avoidance), and there is nothing to indicate that the rare presence of Peterborough Ware sherds in Late Neolithic pit deposits is anything other than accidental re-deposition. Deliberate attempts to 'delve into' the past during the Late Neolithic to recover and re-circulate ancient materials or substances seem to be exceptionally rare, if not lacking altogether.

These observations are largely borne out by the evidence from White Horse Stone/Pilgrim's Way. Although the positioning of the Late Neolithic pit groups and structures within and around the area of the White Horse Stone Early Neolithic long hall might have involved deliberate reference to the past, this was not repeated at the second long hall building to the south-east, and it is equally possible that the spatial relationship was coincidental. Insofar as history, memory and acts of remembrance were important, it would seem that at White Horse Stone/Pilgrim's Way these were focused on things of the recent social past, and perhaps on materials that were recognisably 'familiar' and current within the wider material culture of the day, whether in daily tasks or special kinds of exchange and consumption. There seems little question that the majority of Late Neolithic pits were filled with re-deposited midden materials, in most cases in the course of deliberate acts after their original use had ended. This kind of process has been interpreted as a means to commemorate important times in people's lives (J Thomas 1999, 70), as a way of expressing a sense of belonging to certain places or significant relationships with others (ibid., 87–8; J Harding 2006, 124), as acts of closure ('burial') of once-living places of residence, perhaps as a rite of passage to facilitate the process of 'moving-on' (Garwood 2011), and as devotional or sacrificial acts intended to renew the land or assure the good will of spirits or other supernatural forces (J Harding 2006, 124). What is striking in these interpretations, as in the material evidence from depositional contexts, is that nothing of the distant past figures at all, a point that could be made with respect to virtually all Grooved Ware-associated occupation sites and pit groups in southern Britain.

It is likely, of course, that some of the interpretative arguments presented in this section will be tempered in the light of a more detailed understanding of geographical variation in Late Neolithic material culture, settlement and landscape organisation. Grooved Ware deposition in pits, for example, seems to be very rare in some areas, such as the Middle Thames Valley (Lamdin-Whymark 2008a, 121-23). A similar pattern may be evident in parts of south-east England, such as the Ebbsfleet Valley, Thanet and the Sussex Downs, where extensive and/or long histories of fieldwork on prehistoric sites have produced almost no evidence for Grooved Ware deposition of any kind (Garwood, in prep. b). This seems to contrast radically with other regions, especially Wessex, where Grooved Ware deposits are relatively common and widespread, and where pit digging may have reached a peak during the Late Neolithic (eg J Thomas 1999, 69). In south-east England it is also striking that all the Grooved Ware assemblages for which dating evidence is available belong to the period *c* 2900–2500 BC. Although the number of finds is still very low, it is possible that Grooved Ware currency, especially as a symbolic medium, lapsed in this area in the mid-3rd millennium BC, some time before this occurred in Wessex, the Upper Thames Valley and East Anglia (cf. Garwood 1999b). This might help to explain the lack of evidence for complex Grooved Ware depositional practices in pit contexts in the region. The widely-recognised shift from 'simple/domestic' to 'complex/ceremonial' kinds of Grooved Ware deposition, marked by increasing selectivity and formality, enhanced visibility and markers of 'specialness' (eg fine and/or exotic items), especially in pits and around the post settings of timber circles, seems to have been realised most fully in Wessex in the late 3rd millennium BC (cf. J Thomas 1999, 69–73, 86–8; Pollard 2001, 322–8; J Harding 2006), by which time Grooved Ware may have already largely disappeared from material culture repertoires in south-east England. The extent to which this coincides with the appearance of Beaker ceramics is uncertain, as the latter are poorly dated in the region and most recorded examples belong to the period after 2300 BC. Even so, it is possible that the adoption of Beaker pottery and practices—in this area at least—was bound up in some way with the demise of Grooved Ware ceramics and the kinds of social relationships and meanings these represented.

Chalcolithic and Early Bronze Age pits, settlement and landscape change

Long-term patterns of declining pit deposition and shifts in the socio-spatial contexts of this activity from settlements and ceremonial monuments to funerary settings

during the late 3rd and early 2nd millennia BC (J Thomas 1999, 69), seem to be registered in the limited HS1 evidence for pit deposition after *c* 2500 BC. Beaker pottery assemblages, for example, were recovered from just six sites along HS1 Section 1, only three of which had pit deposits: one at Eyhorne Street, one at Saltwood Tunnel and two at Beechbrook Wood, The other Beaker finds comprised two vessels accompanying burials at Northumberland Bottom (discussed below) and small groups of abraded sherds redeposited in later prehistoric and Roman-period features (at Whitehill Road, White Horse Stone and Saltwood Tunnel; Barclay *et al.* 2006, 16–20, 29–30, tbl.2.4). Pit deposits containing other kinds of Early Bronze Age pottery such as Food Vessel, Collared Urn and Biconical Urn material, were almost entirely absent along the HS1 Section 1 route except for a single Collared Urn pit burial at Northumberland Bottom, and Food Vessel-style pottery placed in a pit cutting the fill of Saltwood Tunnel Ring Ditch C10055.

The purpose and significance of non-funerary Beaker deposits are presently little-understood, though these clearly varied in relation to different kinds of pit contexts, their landscape settings, modes of deposition and assemblage composition. Moreover, whilst bearing some similarity to Grooved Ware practices, Beaker pit deposition of all kinds appears to be distinctive in terms of the social actions involved. The evidence from Beechbrook Wood (Fig. 3.46) is especially intriguing, particularly in terms of the scale and diversity of one of the pit deposits, and the spatial relationships between the Beaker pits (1716, 1374, and possibly 1336, which contained a similar ashy fill to 1374 but no artefacts) and other features, notably Ring Ditch 1682, and the later Bronze Age and Iron Age field boundaries.

Pit 1716, a small shallow feature cut into the fill of Ring Ditch 1682, contained a complete Beaker lying on its side. This vessel (Fig. 3.47) is a small globular Beaker decorated all over with incised horizontal lines, consistent with Clarke's East Anglian (1970) and Needham's Globular styles (2005). These are dated by Needham to *c* 2100–1800 BC (ibid., fig. 13), though Clarke believed these vessels belonged to a relatively early stage in the Beaker sequence. It is possible that this was a burial, the skeleton having dissolved in the acidic soils (Brady 2006a, 15), although the form and location of the deposit could also suggest a votive, sacrificial or commemorative act, or perhaps a renewal ceremony.

Pit 1374, in contrast, was a much larger sub-circular feature, 1.7m x 1.3m across and 0.3m deep, with four fills representing a series of separate depositional episodes. The middle two dark ashy fill layers contained charred plant remains, a few fragments of cremated human bone weighing 6g, a possible stone pestle, 111 pottery sherds (1616g), and an exceptionally large flint assemblage of 1370 worked flints, mostly chips and flakes, many burnt and broken, but also including three thumbnail scrapers and a barbed-and-tanged arrowhead (Fig. 3.48). An unusual fired clay object also found in the pit, a roughly-shaped rounded lump with one flat side and a pointed end marked by impressions of small finger tips and nails, including thumbprints that could resemble eyes, may be a toy hedgehog made by a child (Fig. 3.48). Another fired clay fragment may be the curved rim of a flue edge, possibly from an oven (Poole 2006).

The pottery assemblage from Pit 1374 comprises a large and diverse group of Beaker material (Fig. 3.48). Fragments of at least 14 vessels were present including examples of Clarke's Barbed Wire, East Anglian and Southern styles (1970), made in sand, flint and grog-tempered fabrics with varied forms ranging from cups or small bowls to taller carinated and globular vessels (Barclay *et al.* 2006, 24; Brady 2006a, 16–18). The source of this material is uncertain, though like Grooved Ware pit deposits it is likely that the fills derived from middens. This interpretation is supported by the presence of large amounts of burnt worked and unworked flint (possibly indicative of knapping around hearths), and a large quantity of charred plant remains (but only two cereal grains). The wide spread of radiocarbon age ranges obtained from layer 1377, on a charred hazelnut shell (2470–2200 cal BC; NZA-21170), Corylus charcoal (2290–2030 cal BC; NZA-22739) and a charred crab apple (2280–2030 cal BC; NZA-22738), suggest long use of a source midden or the collection of materials perhaps from more than one midden site. The fresh condition of some of the pottery, however, implies that no great length of time had elapsed before this material was finally buried, probably in the period 2200–2100 BC. This chronological evidence, and the diverse range of forms and decorative styles present, are broadly consistent with Needham's chronological framework (2005), which highlights the great variety of Beaker types during the last two centuries of the 3rd millennium BC, and in particular the co-presence of the globular and tall mid- and weak-carinated vessels which dominate this assemblage.

Parallels for Beaker pit deposits of this kind are rare, but appear to conform to a widespread pattern of depositional practice. In every case, the pits concerned are relatively wide ovate or sub-rectangular features ranging from 1.2 to 2.5m in length, 1.0–1.5m wide, and usually around 0.3–0.7m deep, with steeply angled or stepped sides and mostly flat or rounded bases. These contain multiple fill layers deriving from several separate dumps of soil and cultural material over a short period, often with refitting sherds from more than one fill. These features contain considerable quantities of unburnt and burnt flint artefacts, burnt stones/flints, charcoal and charred plant remains. The pottery assemblages, some very large, consist of fragments of incomplete vessels from a range of Beaker types, with a high proportion of decorated pieces, and often a mixture of fresh and abraded sherds possibly resulting from differential exposure to weathering within midden deposits or possibly in the pits themselves. At Whitemoor Haye, Staffordshire, for example, four successive fills within Pit F122W contained 349 pottery sherds from at least 10 vessels, 20 worked flint artefacts including a barbed-and-tanged arrowhead, and burnt stones (Hewson 2006, 21, 108–9; Woodward 2006, 69–70). The large shallow pit excavated at Longmore Hill Farm, Astley, Worcester-

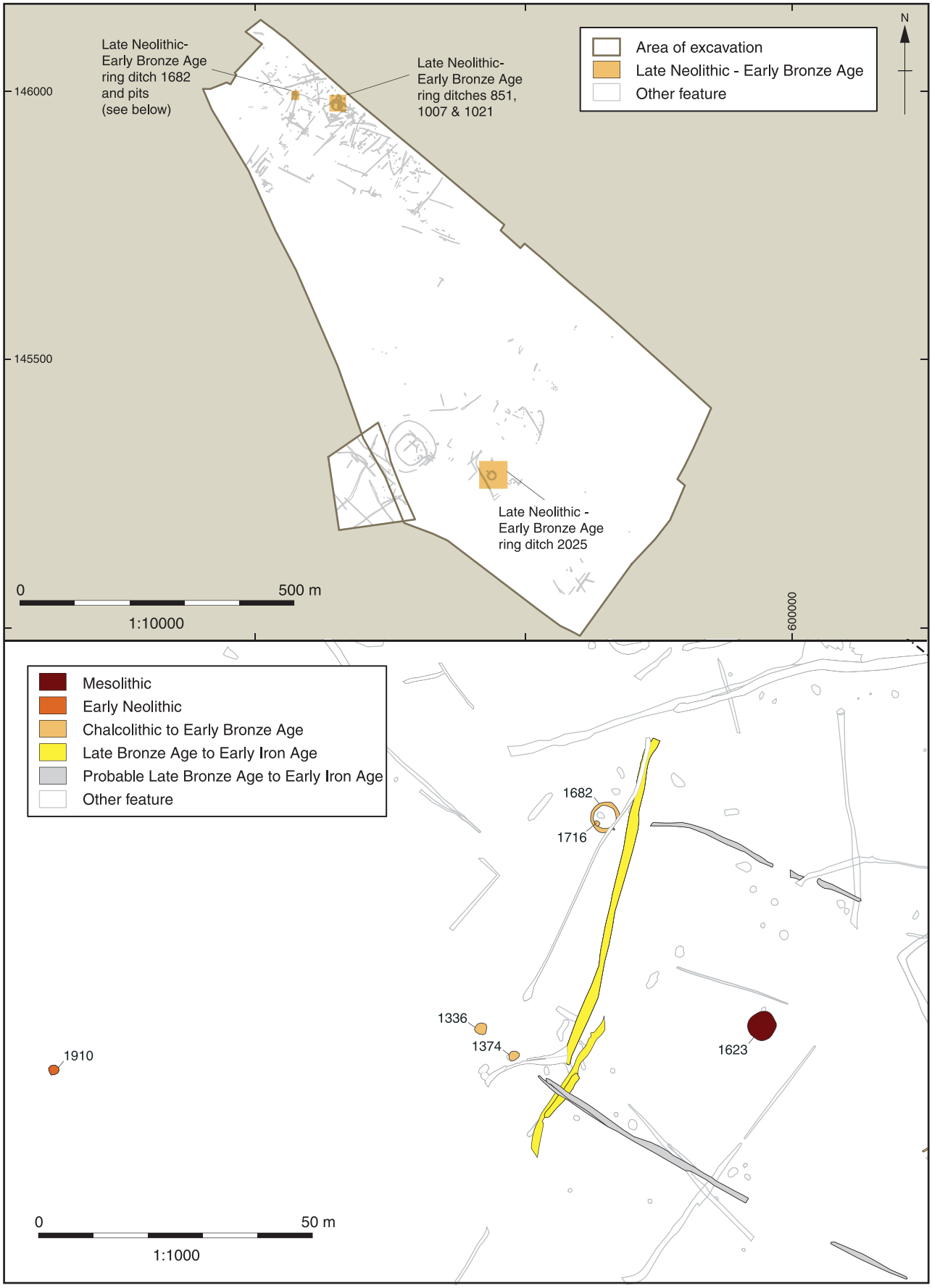


Figure 3.46 Beechbrook Wood Beaker pits. Upper: site plan showing the location of Late Neolithic, Chalcolithic and Early Bronze Age features. Lower: Beaker pits 1716 and 1374 in relation to Ring Ditch 1682, earlier Mesolithic and Neolithic features, and the later Bronze Age and Iron Age field system

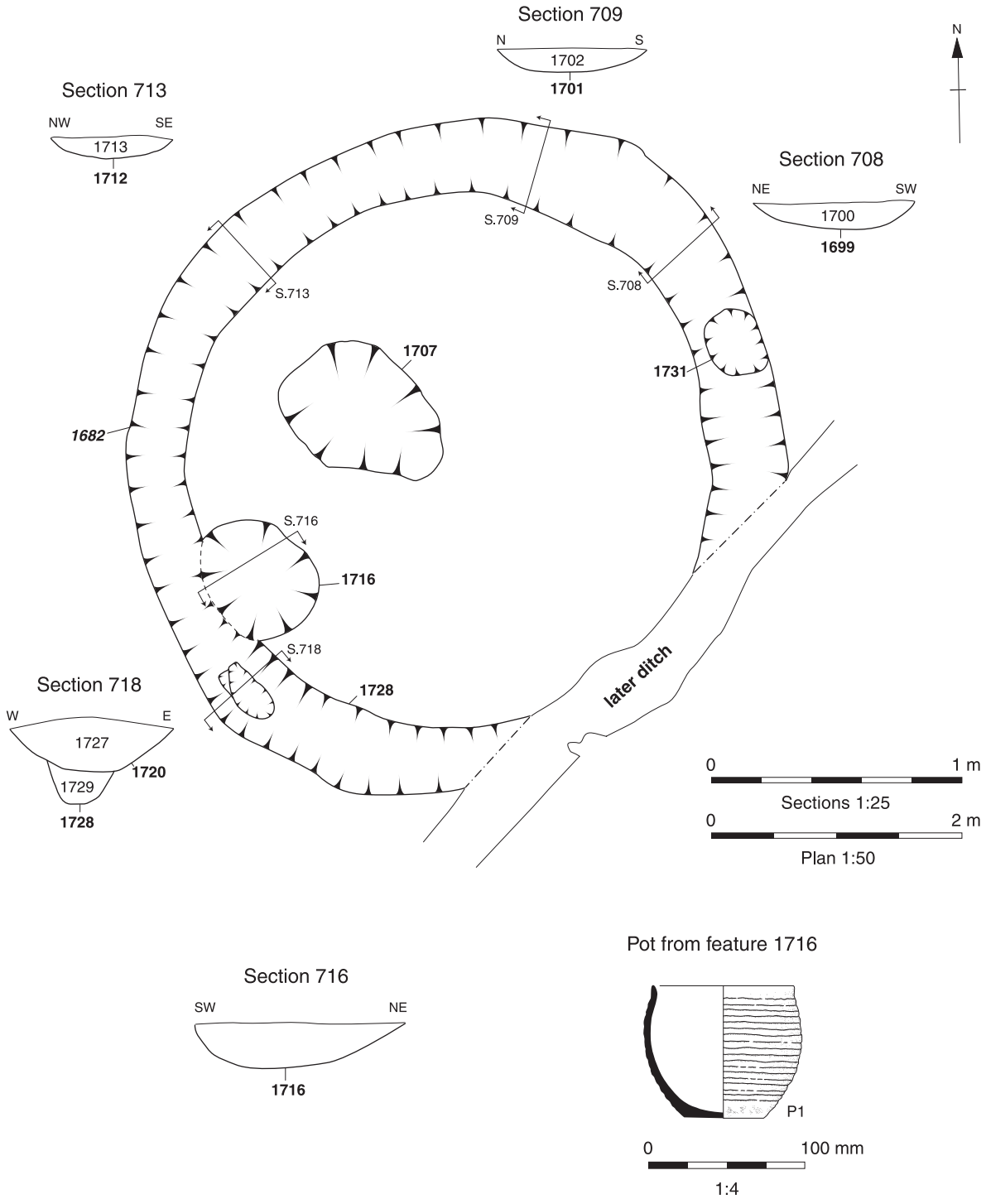


Figure 3.47 Beechbrook Wood Ring Ditch 1682 and Pit 1716, with the East Anglian style globular Beaker pot from Pit 1716

shire, contained 125 pottery sherds from at least 17 vessels, 295 worked flint artefacts including several scrapers, a red sandstone grinding stone, and charcoal and burnt stones (Dinn and Hemingway 1992). Similarly, Yarnton Pit 3119, Oxfordshire, contained 250 Beaker sherds, a small flintwork assemblage, possible saddle quern fragments and a large quantity of burnt stone (Hey in prep.). Other examples include smaller pits at Lakenheath, Suffolk (Briscoe 1960), Longham Pit 178, Norfolk (Ashwin 1998), and Dean Bottom Pit 23, Wiltshire (Gingell 1992, 27). Although Beaker-associated pit deposition spanned the period 2500–1800 BC, the majority of Beaker pits containing such large quantities of cultural material date to the period 2400–2000 BC.

There are also numerous examples of Beaker pit groups containing small mixed artefact assemblages that closely resemble earlier Grooved Ware pit deposits. These are clearly different, however, from the pits with exceptionally large material assemblages described above, the spatial locations of which in relation to contemporary and later features suggest social strategies distinct from those connected with everyday activities at

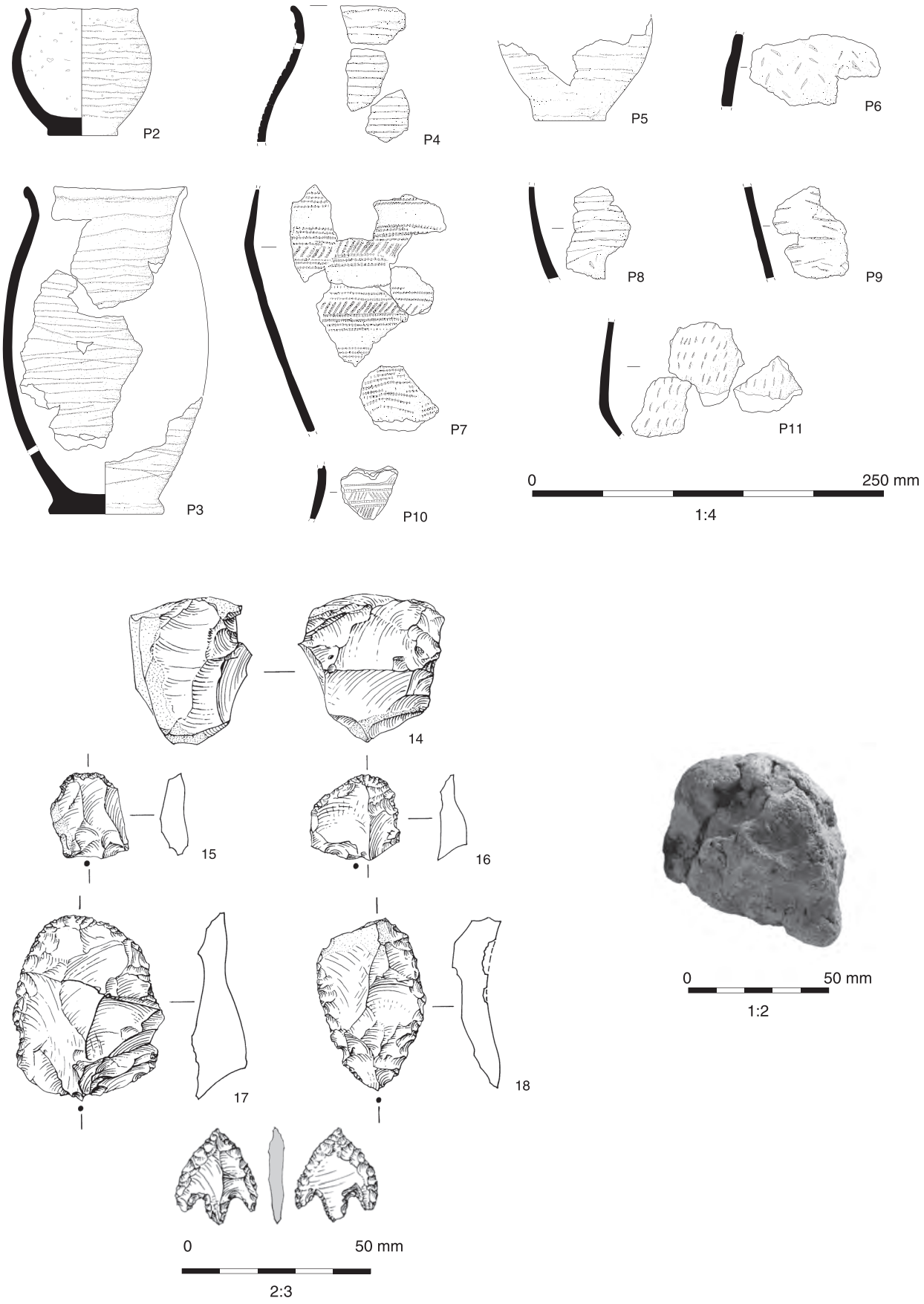


Figure 3.48 Finds from Beechbrook Wood Pit 1374. Top: Beaker pottery, probably all East Anglian style including a small globular cup (P2), taller jars (eg P3) and more substantial 'storage vessels' (eg P7, P11). Lower left: flint artefacts: 14 - Multi-platform flake core; 15 & 16 - Thumbnail scrapers; 17 & 18 - End and side scrapers; 19 - Barbed-and-tanged arrowhead. Lower right: fired clay object, possibly a toy hedgehog

settlement sites. At Beechbrook Wood, for example, Pit 1716 was dug into the side of a small round barrow (Ring Ditch 1682), which was used in the Bronze Age as a marker for the north-west end of a linear field boundary that extended for at least 300m to the south-east, while Pit 1374, located 44m to the south, occupied precisely the same relative position at the western end of another field boundary running parallel to the first (see Fig. 3.46). It is possible, therefore, that Pit 1374 was still visible as a hollow when the co-axial field system was laid out in the late 2nd/early 1st millennium BC, or that another long-lived landscape feature such as a trackway influenced the positioning of both Pit 1374 and the later field boundary. Either way, Pit 1374 and the burial of the Beaker pot in Pit 1716 may have been part of an earlier technology of land division, involving physical marking of the landscape and the embedding of significant cultural materials at key points of transition or delimitation, which the later system of Bronze Age earthworks formalised or enhanced. It may be no coincidence that the double Beaker burial at Northumberland Bottom (discussed below), presumably under a low mound, was also positioned at the junction of a holloway and two later linear earthworks.

The strategic positioning of 'rich' Beaker pits—and the 'Beaker dead'—to mark significant boundaries and routes in the social landscape may well have been a widespread feature of agricultural regimes and landholding systems during the late 3rd and early 2nd millennia BC, although the extent and nature of these practices remains little understood. Linear arrangements of Beaker graves, notably at Radley, Oxfordshire (Garwood 1999c, 304, fig. 9.7), may have been guided by the presence of pre-existing pathways, while close relationships between Beaker pits and later field system boundaries have been observed at several sites, notably Pit F87 at the eastern entrance to the Fengate field system (Pryor 2001, 72). Elsewhere, however, the landscape contexts of Beaker pits are usually unknown, or they appear to be isolated features, while some Beaker graves were certainly positioned according to locational criteria other than the need to mark significant routes and boundaries.

The specific motives and rationales underlying complex pit deposition events are also obscure. It is possible, however, that the assemblage of a diverse range of Beaker ceramics and other materials involved several social groups with shared interests (cf. Woodward 2006). This becomes a more compelling argument if related to a process of landscape organisation in which a number of communities or kin groups were committed to the consolidation or creation of a system of landholding in which each had a stake, marked by ceremonial events involving the collective assemblage of significant materials that were then embedded in the earth at places important for the wider structuring of the landscape. From this perspective, the use of midden materials containing pottery fragments, flint tools and burnt materials, all redolent in various ways of production, consumption, sociality, belonging and domesticity, seems especially apposite for symbolic acts that transformed or appropriated domains of inhabitation and reproduction (Barrett 1994, 146–53).

The evidence from HS1 Section 1 for settlement and landscape organisation during the 3rd millennium BC broadly suggests increasing commitment to more durable modes of residence, and more complex, structured landscapes of production and social interaction in comparison with the spatially more fluid and temporally fragmented or discontinuous patterns of social life during the Early Neolithic (cf. Pollard 2000; Johnston 2008; Schulting 2008). Concerns with formalising routes and boundaries, in this context, may have been closely bound up with increasing population densities and with agricultural practices that gave greater emphasis to values of possession and the physical control of spaces, people and resources (Barrett 1994, 146–53). The extent to which these changes involved greater reliance on agrarian farming, however, and thus a preoccupation with more permanent social and spatial structures required for the maintenance of fields and effective cereal production, remains uncertain.

Environmental evidence for clearance and farming along the HS1 route during the 3rd millennium BC is limited and ambiguous. The charred plant remains recovered consisted mainly of the residues of wild foodstuffs, especially hazelnut shells (in large amounts at White Horse Stone, Eyhorne Street, and Little Stock Farm), together with crab apples, while cereal grains in Grooved Ware and Beaker pits were extremely sparse everywhere (Giorgi and Stafford 2006). This seems surprising if cereals were a dietary staple, although their presence in depositional contexts may have been limited because of crop-processing methods (Robinson 2000), and food preparation techniques (eg soaking and indirect heating) that involved only a very low risk of charring and thus low potential for on-site preservation. Taphonomic factors may also have led to differential survival of some categories of carbonised material, especially durable hazelnut shells in comparison with cereals. It is difficult, therefore, to evaluate either the scale of agrarian production or the degree of subsistence dependency on cereal production. Similar problems arise with the interpretation of animal bone assemblages. These were recovered almost entirely from the Late Neolithic pits, hollows and tree-throw holes at White Horse Stone, mostly comprising cattle remains but also including pig, sheep/goat and a small number of dog bones. The cattle bones were predominantly from juvenile animals, which may indicate a significant emphasis on dairy production as well as meat consumption, while the relatively high incidence of bones from younger pigs may also suggest a meat-rich diet. The presence of a few aurochs and roe deer bones also suggests hunting in woodlands.

Land snail assemblages from Late Neolithic pits at White Horse Stone were dominated by shade-demanding species, but variation from one context to another suggests this may relate more to the micro-environments existing around features rather than the wider character

of the landscape. Certainly, the presence of open country species suggests areas of scrub and lightly-grazed grassland. The apparent increase in open country xerophile species during the late 4th and 3rd millennia BC may indicate a trend to more open grassland conditions in the valley bottom (Stafford 2006b), but it is impossible to know how far this is representative of environmental changes during this period along the HS1 route or in south-east England more widely (Wilkinson 2003). Indeed, there must have been considerable local diversity, with some areas cleared, and then cultivated or used for pasture in a sustained way for centuries, with many different local histories of woodland or scrub regeneration (K Thomas 1982; Preece and Bridgland 1998; Wilkinson 2003).

Whilst the palaeo-environmental sequence across south-east England is thus ambiguous at best, there is no question that the cultural landscapes of the late 3rd and early 2nd millennia BC underwent a significant transformation as new monuments—round barrows—were constructed in great numbers, often in places that had been thinly inhabited previously. In some areas, especially to the south of the chalk escarpment in the northern part of the Weald, these construction events appear to be related to wider woodland clearances and more sustained occupation, possibly associated with greater investment in agrarian production. Although it is often difficult to establish the exact character of land use or the environmental settings in which such monuments were built, it is clear that these structures and the funerary practices associated with them articulated new kinds of relationships between living communities, the dead and the landscape.

Chalcolithic and Early Bronze Age monuments and the landscapes of the dead

The period between *c* 2500 and 1500 BC is associated with a wide range of burial traditions and the proliferation of round barrow funerary monuments—to such an extent that they seem to dominate the cultural landscapes of the Early Bronze Age. This coincides with the appearance of copper and bronze artefacts, the end of large-scale ceremonial monument construction and the demise of Grooved Ware-associated depositional practices. Within this broader framework it is now possible to distinguish three phases of funerary practice and monumentalism in southern Britain, based on reassessments of burials, material culture (eg Needham 2005) and round barrow chronologies (Garwood 2007a):

2450–2150 BC. This phase is marked by the first appearance of metalwork (copper) and early Beaker burials, some associated with a distinctive artefact set including items such as tanged copper daggers (Needham's 'primary package'; 2005). Burial monuments consisted of relatively small, mostly single phase round mounds with single central inhumation burials, primarily of adult males. Also fairly common were 'open arena' ceremonial monuments such as ring barrows and ring cairns, usually without burials.

2150–1850 BC. The beginning of this phase is marked by the transition in Britain from predominantly copper to bronze production (Pare 2000), and by increasing numbers of Beaker burials associated with a diversified range of vessel types and overlapping artefact sets (Needham's 'fission horizon'; 2005). Other distinctive funerary ceramics also appear during this phase, notably Food Vessels (from *c* 2150 BC) and Collared Urns (from *c* 2000 BC), the latter related to the increasing frequency of cremation burials. Small round barrows continued to be built throughout this period, but there are also numerous examples of large multi-phase mound structures, complex burial sequences and free-standing timber structures such as stake-circles. Open arena monuments built at this time, such as ring barrows, ring cairns and pond barrows, were also often associated with multiple burial deposits.

1850–1550 BC. Although there are examples of later mound enlargements and other kinds of elaboration after 1850 BC, most round barrows appear to be single-phase mounds built over centrally-placed single graves. These structures should not, however, be viewed in isolation: one of the most striking and evocative features of round barrows built during this phase is their deliberate positioning to create monument groups, especially the impressive linear arrays found mainly in southern and eastern England, which suggest narratives of 'lineal' descent or succession (Garwood 2007a). Cremation burials predominate, many just with urns (eg Collared, Food Vessel, Cordoned and Biconical) or unaccompanied by durable artefacts, but there are also numerous examples of 'rich' graves defined by the large scale and complexity of assemblages including exotic items made of materials such as gold, amber, marine ivory, jet and faience (eg 'Wessex' burials).

As this chronological summary demonstrates, there was considerable variation in the purpose and use-histories of different kinds of monuments, and major transformations in the significance of funerary architecture over time. Although some round barrows may well have acted essentially as memorials, fixing the presence of the significant dead in the landscape, their architectural forms and positioning also suggest that they were designed to guide ritual action both spatially and semantically. Linear round barrows groups, for example, appear to have been monument complexes incorporating avenues and arenas that provided stages for repeated ceremonial performances (Garwood 1999c, 298–309; 2003, 60–1; 2007a). Moreover, whatever their social and political significance, it is clear that funerary monuments and rituals reified cosmological schemes, invoking beliefs concerning spirits and powers that transcended everyday

social concerns (ibid.; Healy and Harding 2007; Last 1998; Owoc 2001a, 2001b). Conceptualisations of the past, history and 'belonging' appear to have been given particular prominence in funerary symbolism during this period, especially after 2150 BC when there is widespread evidence for the reworking of old monuments and human remains, burial sequences within graves, and heirlooms among grave goods (Woodward 2002a). Indeed, the locations of round barrows in many cases close to earlier ceremonial and burial monuments suggests the creation of particular relationships with 'past' features of the built landscape, so that the meanings attached to burial events were bound up with the meanings attached to the locales chosen for funerary deposition. The spatial and landscape contexts of Chalcolithic and Early Bronze graves and monuments are thus crucial for understanding their significance.

In comparison with the attention paid to the Chalcolithic and Early Bronze Age funerary archaeology of Wessex, there has been relatively little previous research work on round barrows in south-east England, although some recent county-scale and local surveys of the evidence from Kent (Champion 2007c, 87–92; Grinsell 1993; Perkins 1999), Surrey (Needham 1987, 105–8) and Sussex (Garwood 2003), provide a basis for regional synthesis and interpretation (Garwood, in prep. b). The distribution of round barrow investigations in the region is notably uneven, with very few sites excavated on the North Downs in comparison with the South Downs, and a general dearth of round barrow excavations in the central Weald and the Sussex and north Kent coastal plains. In Kent, with the notable (recent) exception of the Isle of Thanet, where intensive developer-funded work since 1995 has quadrupled the number of excavated sites, there have been remarkably few round barrow excavations either by antiquarians or archaeologists. In this context, the 16 ring ditches and two probable unditched round barrows investigated along the HS1 route comprise about a third of the Chalcolithic and Early Bronze Age funerary sites excavated to modern standards in the whole of Kent.

Chalcolithic and Early Bronze Age funerary monuments

Details of the Chalcolithic and Early Bronze Age round barrows and related sites excavated along the HS1 route are summarised in Table 3.3, and their ground plans are shown in Figure 3.49. Although these represent a significant addition to the regional corpus of sites excavated under modern conditions, the evidence from these sites is problematic in several respects and most provide relatively little information concerning monument architecture and use.

These monuments were all truncated by ploughing (and at Whitehill Road also levelled by 19th century railway construction: Bull 2006a, 7), so that even the presence of mound superstructures remains uncertain. The former existence of internal mounds can be inferred by asymmetrical ditch fills at Cobham Golf Course (Davis 2006, 8), the concentric arrangement of the outer ditch and pit features around the inner ditch at Whitehill Road (Bull 2006a), and by the positioning of later pits and linear features that respect a 10m diameter area around the Beaker grave at Northumberland Bottom (Askew 2006, 12). The presence of a mound within Beechbrook Wood Ring Ditch 851 may also be suggested by the form of a later ring ditch (1007) which became shallower where it crossed the earlier ditch and its interior (Brady 2006a, 13), possibly where it cut through a raised mound. Evidence for more elaborate architectural features is generally lacking though a low external bank may perhaps be indicated by asymmetrical ditch fills at Tutt Hill Ring Ditch 156 (Brady 2006b, 9). The spatial design and scale of the 16 recorded ring ditches offer little additional information, although the continuous circuits, large diameters and greater depths of at least eight of these, allied in a few cases with dating evidence, suggest they are best interpreted as 'classic' Early Bronze Age round barrows with central mounds: Whitehill Road Ring Ditch 40130; Tutt Hill Ring Ditches 89, 90, 156; and Saltwood Tunnel Ring Ditches C10055, C10082, W201 and W33. Whilst it is possible that some of the ring ditch sites represent un-mounded 'open arena' monuments such as ring barrows (Garwood 2007a, 34–6) or Late Neolithic 'hengiforms', this is not demonstrable on the basis of the evidence available and certainly cannot be assumed because of the presence of penannular or segmented forms with 'entrance' gaps, which by comparison with better-preserved monuments elsewhere are just as likely to have surrounded mounds as open areas: eg Amesbury 51, Wiltshire (with a segmented ditch; Ashbee 1975/76), and Kingston Russell 6g, Dorset (with a penannular ditch; Bailey 1980). Overall, therefore, while it is impossible to be certain about the architectural forms of any of the Chalcolithic and Early Bronze Age monuments, the majority probably had central mounds.

Similar uncertainties surround the purpose and use-histories of these monuments. The high degree of truncation and other disturbance at each of these sites resulted in the almost complete destruction of evidence for pre-mound and later free-standing timber and earthen structures, burials and material deposits. Several postholes and pits within the inner ring ditch of the Whitehill Road barrow (Bull 2006a), and an incomplete rectilinear arrangement of postholes or small pits just to the south and west of the central grave of Saltwood Tunnel Ring Ditch C10082 (Riddler and Trevarthen 2006, 11), may represent structures or activity areas, but their purpose is unknown and dating evidence is lacking in both cases. The temporalities of phases of monument construction, use and disuse, and the nature and rapidity of erosion and soil formation processes, are also not well-understood at any of the HS1 ring ditch sites, although in every case where evidence is available there appears to have been a process of uninterrupted natural silting of ditches (eg the Saltwood Tunnel sites), with no sign of re-cutting or cleaning.

Table 3.3 Round barrows, ring ditches and associated monuments investigated along HS1 Section 1.

Site	*Monument form*	*Ditch/mound int. diameter Ditch max. width/depth*	*Dating evidence for construction C14: 2-sigma age ranges, cal BC*	*Burials Other placed deposits*	*Reference*
Whitehill Road 40131 (inner ring ditch; 3)	RD: circular; continuous	10.25m 1.0m / 0.25m		Burnt deposits?	Bull 2006a, 7-10
Whitehill Road 40130 (outer ring ditch; 4)	RD: circular; continuous	15.60m 1.40m / 0.80m	Grave 42?: 1620-1440 cal BC	Inhumation grave; amber necklace	Bull 2006a, 7-10
Cobham Golf Course RD 230	RD: circular; penannular	22.00m 1.40m / 0.70m			Davis 2006, 7-9
Northumberland Bottom	No ditch; mound?	10.00m? N/A	Beaker graves 2120-1780 cal BC 2280-1980 cal BC	Inhumation graves 1203, 1070, 1069	Askew 2006, 11-12
Tutt Hill RD 81	RD: subcircular; segmented (?)	13.00-15.00m 0.30m / 0.16m			Brady 2006b, 10-11
Tutt Hill RD 89	RD: circular (?); continuous (?)	22.00m 1.30m / 0.55m	Charcoal, on primary fill (re-deposited?) 1750-1530 cal BC	Burnt deposits on primary fill	Brady 2006a, 10
Tutt Hill RD 90	RD: circular; continuous (?)	22.00m 2.00m / 0.90m			Brady 2006b, 10
Tutt Hill RD 156	RD: subcircular; continuous	22.00-26.00m 2.00m / 0.80m	Charcoal, primary fill (re-deposited?) 2340-2040 cal BC	Burnt deposits?	Brady 2006b, 9-10
Beechbrook RD 851	RD: circular; continuous	6.30m 2.00m / 0.80m	Charred hazelnut shells, middle fill 2310-2030 cal BC	Redeposited burnt bone, upper fills	Brady 2006a, 13
Beechbrook Wood Grp 1021	C-shaped (?); segmented (?)	9.50m No record		Redeposited burnt bone, lower fills	Brady 2006a, 13
Beechbrook Wood RD 1007	RD: circular; segmented (3)	18.00m 0.70m / 0.35m			Brady 2006a, 14
Beechbrook Wood RD 1682	RD: circular; continuous	4.20m 0.75m / 0.20m	Fill cut by Beaker pit 1716	2e pit containing Beaker pot	Brady 2006a, 15
Beechbrook Wood RD 2025	RD: circular; continuous	14.00m. 1.10m / no info			Brady 2006a, 16
Saltwood Tunnel C10020	RD: circular; continuous	12.00m 0.95m / 0.35m			Riddler & Trevarthen 2006
Saltwood Tunnel C4507	No ditch; mound?	No info. N/A	Grave: 2290-1970 cal BC	Inhumation grave	Riddler & Trevarthen 2006
Saltwood Tunnel C10082	RD: circular; continuous	35.00m 4.00m / 1.00m	Central FV grave: 2200-1940 cal BC	Central inhumation grave Pit 3896: 2e deposit, FV sherds	Riddler & Trevarthen 2006, 10-11
Saltwood Tunnel C10055	RD: circular; continuous	24.00m 3.20m / 1.20m		2e deposit Urn sherds in ditch fill	Riddler & Trevarthen 2006, 10-11
Saltwood Tunnel W201	RD: subcircular; continuous	21.00-23.00m 2.00m / 0.65m			Riddler & Trevarthen 2006
Saltwood Tunnel W33	RD: circular; continuous (?)	36.00m 4.00m / 1.35m			Riddler & Trevarthen 2006

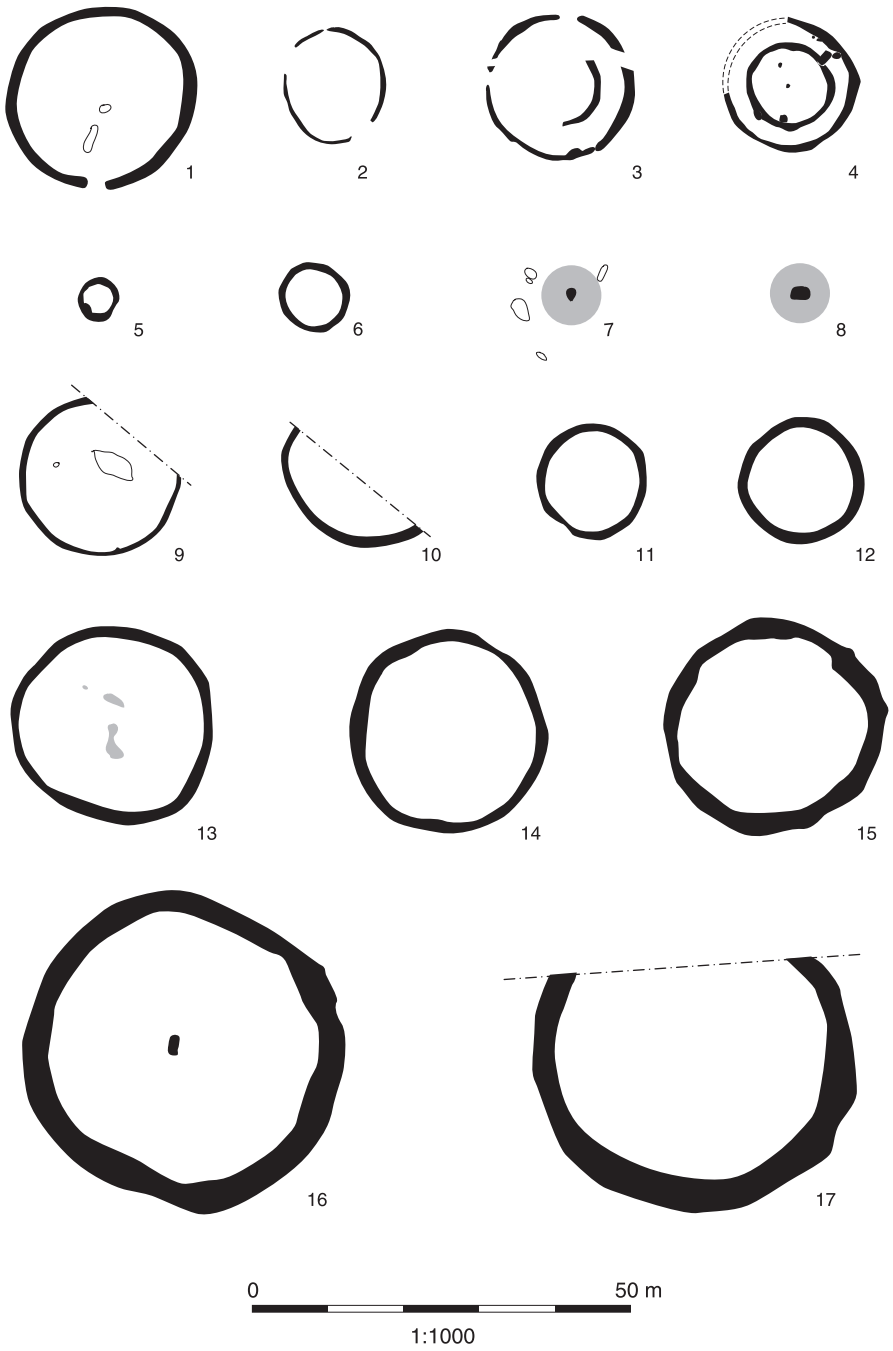


Figure 3.49 Ring-ditches and related Chalcolithic/Early Bronze Age burial sites excavated on the HS1 route. 1. Cobham Golf Course RD 230; 2. Tutt Hill RD 81; 3. Beechbrook Wood 1021/1007; 4. Whitehill Road; 5. Beechbrook Wood RD 1682; 6. Beechbrook Wood RD 851; 7. Northumberland Bottom; 8. Saltwood Tunnel C4507; 9. Tutt Hill RD 90; 10. Tutt Hill RD 89; 11. Saltwood Tunnel C10020; 12. Beechbrook Wood RD 2025; 13. Tutt Hill RD 156; 14. Saltwood Tunnel W201; 15. Saltwood Tunnel C10056; 16. Saltwood Tunnel C10082; 17. Saltwood Tunnel W33. See Table 3.3 for details of form, dimensions, associated burials and dating evidence.

Only in two cases is there clear evidence for monument elaboration and long-term use or re-use, in the form of concentric ditches suggestive of a multi-phase process of enlargement. At Whitehill Road, the insubstantial shallow inner ditch was the focus for several pit-digging events around the north-east side, some of which were later cut by the outer ditch (Bull 2006a, 9). Although it is possible that Grave 42, which cut the inner ditch fills on the south-west side, belongs to this second mound-building phase, it is more likely that the burial was a later insertion into the mound edge. Unlike the second ditch, which was carefully constructed so that it was concentric with the inner ditch (and presumably the upstanding mound), the grave pit is orientated tangentially to the edges of both ditches, suggesting a quite different spatial relationship. The radiocarbon date from the inhumation burial of 1620–1440 cal BC thus provides a terminus ante quem for the second phase monument, consistent with the wider range of evidence for mound enlargement practices involving concentric ditch construction mainly in the

period 2150–1800 cal BC (Garwood 2007a). The monument sequence at Beechbrook Wood Ring Ditches 851, 1021, and 1007 is more complicated and more ambiguous. Here, an insubstantial heavily truncated ring ditch or C-shaped enclosure (1021), located just to the south-west of a small annular ring ditch with a central mound (851), was surrounded by a larger concentric segmented ring ditch (1007), which cut the ditch fills and mound of the neighbouring monument, 851, but was designed so that one of the causeways allowed access between the mound of 851 and the interior of 1021/1007. This suggests a deliberate attempt to co-relate the meanings and roles of these monuments in such a way that they formed an articulated 'whole' and possibly a complex ceremonial 'stage' with several distinct 'nested' spaces for ritual performances.

Although the purpose and significance of Chalcolithic and Early Bronze Age ring ditches are open to a range of diverse interpretations, they are usually associated with funerary practices. In this light, the great rarity of burials at the HS1 Section 1 sites is particularly striking (Tables 3.3, 3.4; discussed further below). Only one ring ditch has a surviving burial in a central context (Saltwood Tunnel Ring Ditch C10082), and there is only one example of a burial in a secondary peripheral position (Whitehill Road Grave 42). In contrast, 13 of the ring ditch sites have no evidence for mortuary deposition of any kind, which could indicate that some at least were never used for burial at all but were instead arenas for ceremonial activities, shrine sites or 'empty barrows' intended for non-funerary memorialisation or use as cenotaphs (as Brady suggests for some of the Tutt Hill and Beechbrook Wood sites: 2006b, 11–12; 2006a, 14–16). Whilst there is no doubt that some Chalcolithic and Early Bronze Age monuments were not used primarily for burial (cf. Garwood 2007a, 34–6; Healy and Harding 2007, 57–66), the evidence from most of the HS1 ring ditches is too limited and ambiguous to make a strong case either way. There are several other factors that may have led to the absence of burials: plough-truncation; original deposition of burials in surface or mound contexts that have since been destroyed; biotic or chemical degradation of human remains (eg in sandy soils at Tutt Hill and Beechbrook Wood); limited deposition of incomplete bodies; and rare burial events resulting in limited evidence for mortuary practices in the first place. More widely, the absence of burials at ring ditch sites is not unusual, and even extensive investigations of groups of plough-truncated ring ditch sites often produce little in the way of funerary evidence. At Monkton, Thanet, for example, burials were present at only two of the 10 ring ditches excavated (Bennett *et al.* 2008, 21–46), and burials were entirely absent from the ring ditches excavated at Lodge Farm, St. Osyth, Essex (four sites: Germany 2007, 33–8), and Biddenham Loop, Bedfordshire (six sites: Luke 2008, 24–8).

Other kinds of deposits occur more widely but still rarely amongst the HS1 ring ditches (see Table 3.3), including pottery fragments possibly eroded from a destroyed funerary deposit (Biconical Urn sherds in the secondary fill of Saltwood Tunnel Ring Ditch C10055), redeposited remnants of possible secondary burials (tiny amounts of burnt human bone in the ditch fills at Beechbrook Wood Ring Ditches 851 and 1021), and ambiguous 'burnt deposits' (in the inner ditch at Whitehill road, and in Tutt Hill Ring Ditches 89 and 156). None of these deposits appears to have been deliberately 'placed' except for the burnt deposits on top of the primary fills in Tutt Hill Ring Ditches 89 and 156 (Brady 2006b, 9–10; discussed below). Artefacts in two further pit contexts, in contrast, do seem to represent special depositional acts. Food Vessel sherds were placed in Saltwood Tunnel Pit 3896, which cut the fill of Ring Ditch C10082 at a point due east of the central burial (which contained a complete Food Vessel; Riddler and Trevarthen 2006, 10–11), and a complete Beaker was placed in Pit 1716 which cut the partly-filled Beechbrook Wood Ring Ditch 1682 (though it is also possible this was a secondary burial, the body having dissolved in the acidic soil conditions; Brady 2006a, 15).

In the light of the preceding discussion it is unsurprising that dating evidence for the HS1 ring ditch sites is extremely limited, derives from contexts that are not directly related to construction events, and are often ambiguous in terms of their dating value because of possible redeposition. In only two cases can monument construction be dated with any confidence. First, the inhumation burial associated with a Food Vessel at the centre of Saltwood Tunnel Ring Ditch C10082 has been radiocarbon dated to 2290–1940 cal BC (Riddler and Trevarthen 2006, 10–11): it is probable but not definite that this was contemporary with mound construction. Second, a short-life charcoal sample derived from twigs and small branches, recovered from one of the two localised dumps of burnt material on top of the primary fill of Tutt Hill Ring Ditch 89, provided a radiocarbon date of 1750–1530 cal BC (NZA-21140; Brady 2006b, 10). The contextual evidence suggests these were not deposits of residual charcoal that had eroded into the ditch from the old land surface, but rather the result of deliberate depositional acts not far removed in time from the ditch-digging event.

Although the presence of built monuments is far less certain in the case of the Northumberland Bottom and Saltwood Tunnel C4507 'flat grave' inhumation burials, there is nonetheless good reason to believe that both had low earth or turf mounds (discussed further below). The two adult burials at Northumberland Bottom provided radiocarbon dates of 2280–1980 cal BC (NZA-22736) and 2120–1780 cal BC (NZA-22735), while the burial in Saltwood Tunnel grave C4507 produced a date of 2290–1970 cal BC (NZA-19886).

The three remaining radiocarbon dates from HS1 ring ditch sites are difficult to interpret. A small amount of charcoal from the primary fill of Tutt Hill Ring Ditch 156, dated to 2340–2040 cal BC (NZA-21141), could have been deposited soon after monument construction, but the presence of Peterborough Ware and Beaker pottery also suggests a mixed deposit derived from residual occupation material on the old land surface (Brady 2006b, 9). The same observation applies in the case of a charred hazelnut

shell, radiocarbon dated to 2310–2030 cal BC (NZA-20027), recovered from the middle fill of Beechbrook Wood Ring Ditch 851 which also contained redeposited Early and Middle Neolithic artefacts (ibid, 13–14). These two radiocarbon dates only provide *termini post quos* for the ring ditch fills above the sample source contexts, and cannot be used to date either monument construction events or periods of use. The latter date is useful, however, in providing a *terminus post quem* for construction of Beechbrook Wood Ring Ditch 1007, one segment of which cuts the upper fill of 851. Finally, at Whitehill Road barrow, the uncertain relationship of the radiocarbon-dated inhumation burial in Grave 42 to the monument construction sequence has already been discussed: it probably only provides a *terminus ante quem* of 1620–1440 cal BC for the final mound building episode.

It is conceivable, of course, that some of the HS1 ring ditches could be Middle or Late Bronze Age in date. Small annular and penannular ditched funerary monuments of the mid- to late 2nd millennium BC are relatively common in southern Britain, including several examples in south-east England (Champion 2007c, 109–11; Garwood 2003, 52), notably Ring Ditches VI, VII, VIII and X at Monkton, Kent (Bennett *et al.* 2008, 35–46), Barrow 2 at Bridge (Site 9), Kent (Macpherson-Grant 1980a), and Itford Hill, East Sussex (Holden 1972). These are usually associated with cremation burials, both un-urned and urned, often in secondary contexts within and around mounds and ring ditches, although there are also many sites belonging to this period which lack evidence for burials altogether (eg most of the ring ditches at the later Bronze Age Ardleigh-style 'cemetery' at St. Osyth, Essex: Germany 2007, 38–43). Where ceramic vessels are present at all, these consist mostly of Deverel-Rimbury or later regional urn styles.

It is striking, in this context, that there is no evidence at all for construction of any of the HS1 ring ditches during the Middle or Late Bronze Age, and indeed very little sign of funerary or other kinds of deposition at these sites after *c* 1600 BC (see Champion, Chapter 4). At Saltwood Tunnel, for example, Middle Bronze Age funerary activity occurred some distance from the ring ditch sites, which produced no evidence for re-use or later activity until the Anglo-Saxon period (Riddler and Trevarthen 2006). Only at Tutt Hill is there evidence for Middle Bronze Age activity close to the earlier monuments, with a cremation burial in a Bucket Urn placed in a small pit located between Ring Ditches 81, 89 and 156, a deposit of pyre debris with small amounts of cremated bone in a pit close to Ring Ditch 90, and two sherds of pottery in the upper ditch fills of Ring Ditch 156 (Brady 2006b, 9, 15–16). The absence of Middle Bronze Age material from primary ditch fills, and the general low level of activity represented, however, suggests these depositional events took place at least two or three centuries after the ring ditch monuments were built. The wider absence of Middle Bronze Age ceramics and cremated human bone from upper ditch fills, except for tiny amounts at Beechbrook Wood ring ditches 851 and 1021, certainly indicates that there was no significant re-use of HS1 round barrow sites as cremation cemeteries during the later 2nd millennium BC. The forms and sizes of truncated ring ditch sites offer no reliable guide to their date. Annular ring ditches of many different sizes, for example, were built at various stages throughout the late 4th, 3rd and 2nd millennia BC. Although it is possible to recognise some distinctive constructional features, these are not exclusive to particular periods (at least at the level of classificatory discrimination currently applied). For example, penannular ditches are associated both with Beaker graves of the late 3rd millennium BC (eg Pyecombe, Sussex: C Butler 1991) and with later Bronze Age urn cemeteries of the late 2nd millennium BC (eg at Simons Ground, Dorset; White 1982). Similar observations can be made with reference to ovate, segmented and rectilinear ditch forms. It is possible that a typo-chronology of ring ditches will emerge in the future, but at present there is not enough reliable, unambiguous dating evidence, or sufficient comparative analysis of ring ditch morphologies and constructional attributes to propose such a scheme even at a regional scale. It is possible, however, to find a few parallels for some of the HS1 ring ditch sites among the wider range of excavated sites in south-east England. The double concentric ditch form of the Whitehill Barrow, for example, is similar to West Heath III, West Sussex (Drewett 1976), and Monkton Ring Ditch 3, Kent (Bennett *et al.* 2008), both of which probably date to the period 2100–1800 BC, and the Thanet Earth double ring ditch associated with a central Beaker burial dating to *c* 2100 BC (Robert Masefield, pers. comm.). Monument elaboration/enlargement episodes at other multi-phase sites in Kent with three or more ring ditch circuits and/or complex sequences of monument redesign, notably Lord of the Manor 1 (Macpherson-Grant 1977), the Eythorne barrow (Parfitt 2004c) and White Caps Barrow, Eastry (Parfitt *et al.* 1997), all belong to the same period (cf. Garwood 2007a, 32–4). In this light, the preferred interpretation of the Whitehill Road barrow construction sequence would also place this within the period 2100–1800 BC.

There are fewer parallels for the unusually large penannular ring ditch at Cobham Golf Course, which has an internal diameter of 22m, more than twice the width of nearly all other sites of this kind excavated in the region. The only exceptions are the outer ditch at Eythorne, *c* 17–18m across internally (Parfitt 2004c), and Lord of the Manor Site 2D, Kent, with an internal diameter of 15m (Perkins and Macpherson-Grant 1981). Unlike the Cobham site, both of these had wide ditches, which at Lord of the Manor Site 2D was dug as a series of linked pits (ibid.). The most comparable site in terms of its relatively narrow U-profile ditch is Enclosure 30369 at Westhampnett Area 3, West Sussex (Fitzpatrick *et al.* 2008, 117–28), but this was only 11m across with an off-centre cremation burial beneath an inverted urn, associated with oak charcoal dated to 1870–1520 cal BC. At Wouldham, Kent, a similarly small ring-ditch, with a wide gap on the north-west side, had a central cremation burial beneath an inverted Biconical Urn (Cruse and Harrison 1983). The elongated pear-shaped ring ditch with a central Beaker burial at Pyecombe, Sussex (C

Butler 1991), is also unlike the Cobham site, while the small ring ditch associated with several inhumation burials at St Stephen's College, North Foreland, Thanet (Barrow 3; Boast *et al.* in prep.) has squared-off ditch terminals and a flat base. Finally, the two penannular ring ditch sites at Monkton, Thanet (VI and VII; Bennett *et al.* 2008, 35–7), are much smaller than the Cobham example and are associated with Deverel-Rimbury ceramics and external cremation burials that probably date to the 15th–13th centuries BC. In the absence of direct chronological evidence or clear parallels it is impossible to date the Cobham ring ditch with any certainty. The presence of redeposited Collared Urn and Food Vessel sherds in the upper ditch fills, possibly from ploughed-out deposits around the mound (Davis 2006, 8), only demonstrates Early Bronze Age activity in the immediate area of the monument.

The most distinctive of the other HS1 ring ditches are the segmented or 'causewayed' sites at Tutt Hill and Beechbrook Wood. The discontinuous circuit of Tutt Hill Ring Ditch 81 may, however, owe more to truncation than design (Brady 2006b, 10). In contrast, the plan of Beechbrook Wood Ring Ditch 1007 (Brady 2006a, fig. 15), suggests a more formal and coherent layout, comprising three ditch segments of unequal length defining a circle 18m in diameter. This has no parallels in south-east England and very few elsewhere (Ashbee 1975/1976, App.1), although a number of possible causewayed ring ditches have been recorded recently in southern Britain in the course of geophysical and air photographic surveys (eg L242 and L269 at Biddenham Loop, Bedfordshire; Luke 2008, fig. 6.2). Unlike Beechbrook Wood 1007, the closest comparable excavated sites in this region, have central inhumation burials of either Late Neolithic (eg Stanton Harcourt XXI.1, Oxfordshire; Barclay *et al.* 1995, 99) or Chalcolithic date (eg Amesbury 51, Wiltshire; Ashbee 1975/1976). The latter is probably the closest parallel in terms of ring ditch size, proportions and lay-out: this consisted of five ditch segments forming a 20m diameter circular enclosure, at the centre of which was a large pit containing a wooden chamber and a series of Beaker inhumation burials covered by an earthen chalk-capped mound. The chronology of monument construction and mortuary deposition at Amesbury 51 falls within the period *c* 2450–2100 BC, which is not inconsistent with the suggested post-2200 BC construction date for Beechbrook Wood 1007. More widely, it is possible to find other examples of segmented ring ditches that are also devoid of mortuary evidence, such as Hengiforms 155 and 161 at Ferrybridge, South Yorkshire (Wheelhouse 2005). Unfortunately, these sites, like the HS1 ring ditches, are heavily plough-truncated, of uncertain purpose, and again lack dating evidence.

The only other HS1 site with features that invite comparative analysis is Saltwood Tunnel C10082, a large single phase ring ditch surrounding a central burial. Although monuments of this kind occur throughout the period 2400–1600 BC, large single-phase round barrows with internal ditch diameters of more than *c* 30m are rare before 1900 BC, and indeed uncommon in some parts of Britain throughout the Chalcolithic and Early Bronze Age (Garwood 2007a, 36–7; 2007b, 147). In this context, the likely construction date of 2200–1940 cal BC for Saltwood Tunnel C10082, provided by the central burial associated with a Food Vessel, suggests this is an unusually early example of such a monument not only in south-east England but in southern Britain as a whole. In regional terms, the large, un-ditched, 20m-diameter earth mound at Black Burgh, East Sussex, with a central 'rich grave' probably dating to *c* 2000–1900 BC (Lane Fox 1877; Garwood 2003, 52–3), is the most similar in architectural scale, although probably later in date and more complex in funerary terms. The Great Barrow at Bishop's Waltham, Hampshire, with an ovate ditch 45 x 50m in internal diameter, and an off-centre mound 30m across covering a complex burial deposit in a wooden coffin (Ashbee 1957), probably also dates to the period 2000–1900 BC, based on relative dating of the associated grave goods. The only other comparable radiocarbon-dated site in southern Britain is Radley Barrow 3, Oxfordshire, with a 25m diameter single-phase ring ditch and central dagger-associated inhumation burial dated to 2360–2130 cal BC (at 57% probability; Garwood 1999a, 290–3). Examples of similar monuments recorded by early excavators are rare and usually poorly dated, although Mortimer's Barrow 23 on Calais Wold, North Yorkshire, is similar to Saltwood Tunnel C10082 in having a 30m diameter ring ditch and a single central Food Vessel-associated inhumation burial (surrounded by stake circles and sealed beneath a large mound: Mortimer 1905, 153–56) .

The HS1 ring ditch sites thus provide some new structural and chronological information relevant to regional interpretations of Chalcolithic/Early Bronze Age monumental architecture, although the lack of evidence for mound superstructures and the rare survival of funerary deposits (discussed below) severely limit the potential for more detailed study. As already discussed, this is not an unusual outcome for an extensive programme of ring ditch investigation, and in fact further highlights the particular vulnerability of round barrow architecture to erosion and plough truncation. More revealing, perhaps, are the ways in which individual monuments were co-related or inter-referenced spatially, both at the local scale of round barrow group 'cemeteries' or 'ceremonial complexes', and in terms of their role in the large-scale structuring of the wider cultural landscape.

The spatial organisation and landscape settings of the funerary monuments

The locations of Chalcolithic and Early Bronze Age graves and monuments were plainly significant for those who chose them, whether in terms of claims to territory, rights of access, political statements about identity, affinity and history, or with reference to cosmological principles and concepts of sacred space (Barrett 1990; Garwood 1991; Woodward 2000). At a local scale, however, it is often

difficult to identity particular rationales for decisions about the spatial positioning of the dead or their memorials. The only exception to this is the formation of linear round barrow groups and the ways in which these sometimes respected or referenced earlier monuments, natural features or celestial phenomena (discussed further below). Wider locational and distributional patterns are also elusive, although the concentration of round barrows in topographically-distinctive or highly- monumentalised landscape areas is widely recognised (eg Fleming 1971; Field 1998; Tilley 1998, 177–238; Woodward and Woodward 1996).

In terms of local positioning with respect to landscape topography, it is evident that the HS1 sites share almost no locational characteristics in common. Even in those cases where the geological and terrain contexts are similar, like the sites on the Lower Greensand ridge, there is nothing to suggest that a consistent set of locational criteria were being drawn upon. The Tutt Hill ring ditches were situated on a north-east facing slope overlooking a tributary of the Stour. The ring ditches at Beechbrook Wood, in contrast, were located on the south-west facing side of the same low ridge as the Tutt Hill group. At Saltwood Tunnel, the line of ring ditches traversed the broad top of a spur (the Saltwood plateau), between two dry valleys running from north to south, with a general south facing aspect but with extensive views to the west and east at the respective ends of the linear barrow group. Elsewhere, the Whitehill Road barrow was situated on a gentle north-east facing chalk slope *c* 150m from the northern edge of a dry valley, the Northumberland Bottom Beaker grave was cut into the east facing slope of a chalkland hill again overlooking a dry valley, while at Cobham the penannular ring ditch was cut into the Thanet beds on the broadly north-facing undulating dip slope of the downs. The only feature clearly shared by all these sites is their relative elevation, allowing fairly extensive fields of view over distant parts of the wider landscape, though again these views appear to have varied according to local/group interests specific to each landscape setting, with no suggestion that they conformed to the same cosmosgraphic principles.

The spatial organisations of the three round barrow groups investigated along the HS1 corridor are also diverse. In two cases, Tutt Hill and Beechbrook Wood (Fig. 3.50), these appear to consist of small nucleated clusters of monuments that lack any obvious spatial order. At Tutt Hill, however, the four ring ditches were distributed across the area of the excavation and may perhaps represent only part of a more extensive funerary monument complex of unknown scale and structure. At Beechbrook Wood, too, it is conceivable that the ring ditches at the north-west end of the excavation could have been part of a larger group extending to the north, although as with Tutt Hill there is no evidence for this. Nucleated clusters of Early Bronze Age round barrows and ring ditches, of diverse scale and monument composition, are widely known throughout Britain (Woodward 2000, 76–8), although very few have been excavated extensively in recent times. The only example in south-east England is the West Heath barrow group in West Sussex (Drewett 1976; 1985), which like the HS1 examples was located in an elevated Greensand ridge position. This 'barrow cemetery' consisted of at least nine round barrows dating to the period 2100–1600 BC. The limited dating evidence from these sites leaves the sequences and tempos of monument construction uncertain, although they do suggest an aggregational—perhaps episodic—process of development that lacked consistent rules for determining spatial ordering and positioning.

The barrow group excavated at Saltwood Tunnel is altogether different in character (Fig. 3.51). This consisted of a linear arrangement of five ring ditches (from west to east: C10020, C10082, C10056, W201, W33) and a 'flat grave' (C4507) situated about half-way between the two westernmost monuments (C10020, C10082). The

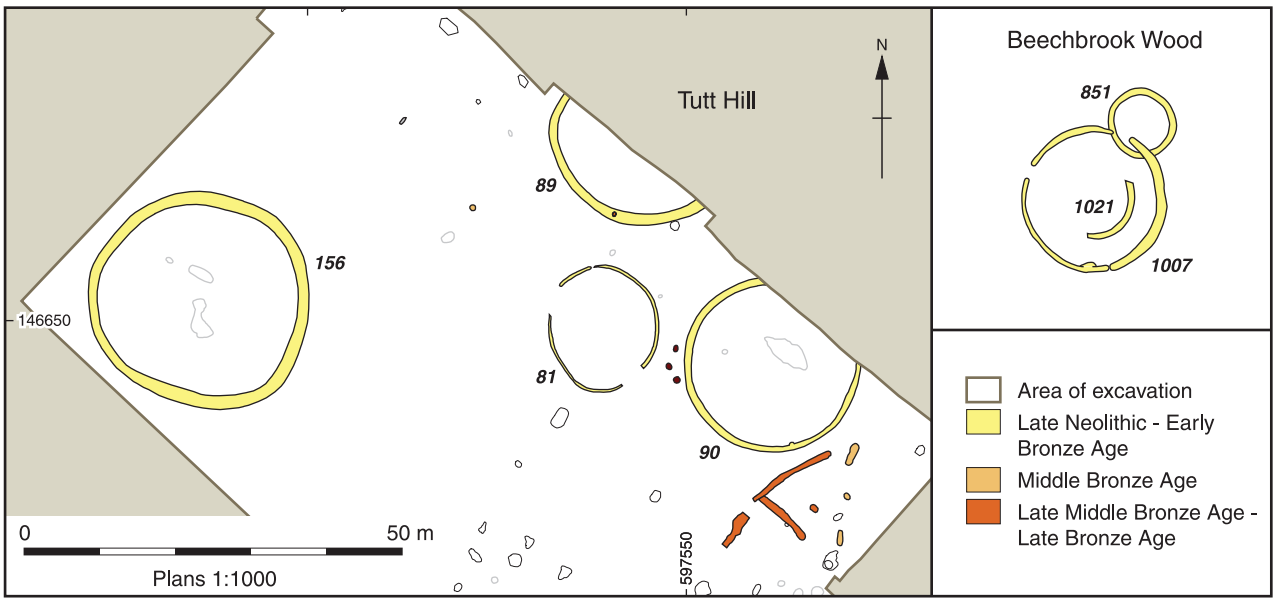


Figure 3.50 Plans of the Tutt Hill and Beechbrook Wood ring ditch groups

possibility that flat grave C4507 was marked by a low mound is strengthened by the wider spatial organisation of the round barrows and graves. The spacing between each pair of monument centres/graves suggests consistent principles in the marking out of appropriate distances between mounds and/or funerary events. At both ends of the alignment these are spaced between 78m and 92m apart: C10055–C4507 (92m); C4507–C10082 (80m); W201–W33 (78m). The distances between those in the central part of the alignment, in contrast, are roughly double the former range: C10082–C10055 (174m); C10055–W201 (168m). This is similar to the widely-spaced alignment of Beaker graves and monuments, *c* 74–121 m apart, at Radley, Oxfordshire (Garwood 1999c, 304, fig. 9.7). Even more striking is the overall layout of the Saltwood Tunnel monuments. At first sight they appear to form a broadly linear but slightly straggling group of monuments. On closer inspection, however, it is evident that the southern outer edges of each of the three eastern ring ditches, irrespective of their very different overall diameters, fall on a single line, while the northern outer edge of C10020 and the northern side of grave C4507 are positioned on a parallel line just 4m to the south. Only ring ditch C10082 is slightly offset from this southern line, *c* 3–4m further to the south, although this 'gap' could be explained by the former presence of an external bank.

It appears, therefore, that the Saltwood Tunnel round barrows were carefully positioned at regular intervals on either side of a dead-straight 'corridor' approximately 4m wide, oriented on an exact east-west alignment in relation to true north (Fig. 3.51). The form and purpose of this corridor is unknown, but some kind of routeway seems by far the most likely explanation. Whilst it is possible that the east-west orientation of the Saltwood Tunnel barrow group is coincidental (1:180 probability), the apparent alignment of other linear round barrow groups on celestial phenomena (Garwood 2003, 60) and wider recognition of the cosmographic structuring of monumental architecture during the later Neolithic and Early Bronze Age with reference to cardinal points (Darvill 1997a), suggests that this may have had particular sacred or cosmological significance. This spatial arrangement may thus have been a deliberate attempt to reify a cosmological scheme in a highly visual and physically-imposing manner—a 'way of the dead', perhaps, linked to sunrise and sunset at the equinoxes. At the same time, other kinds of symbolic referencing could well have been invoked through the relative positioning of the dead and their memorials in lineal sequence, perhaps appreciated most forcibly during ceremonial processions that 'travelled' along the route. In the course of such encounters with the significant dead, it would have been possible to assert particular relationships

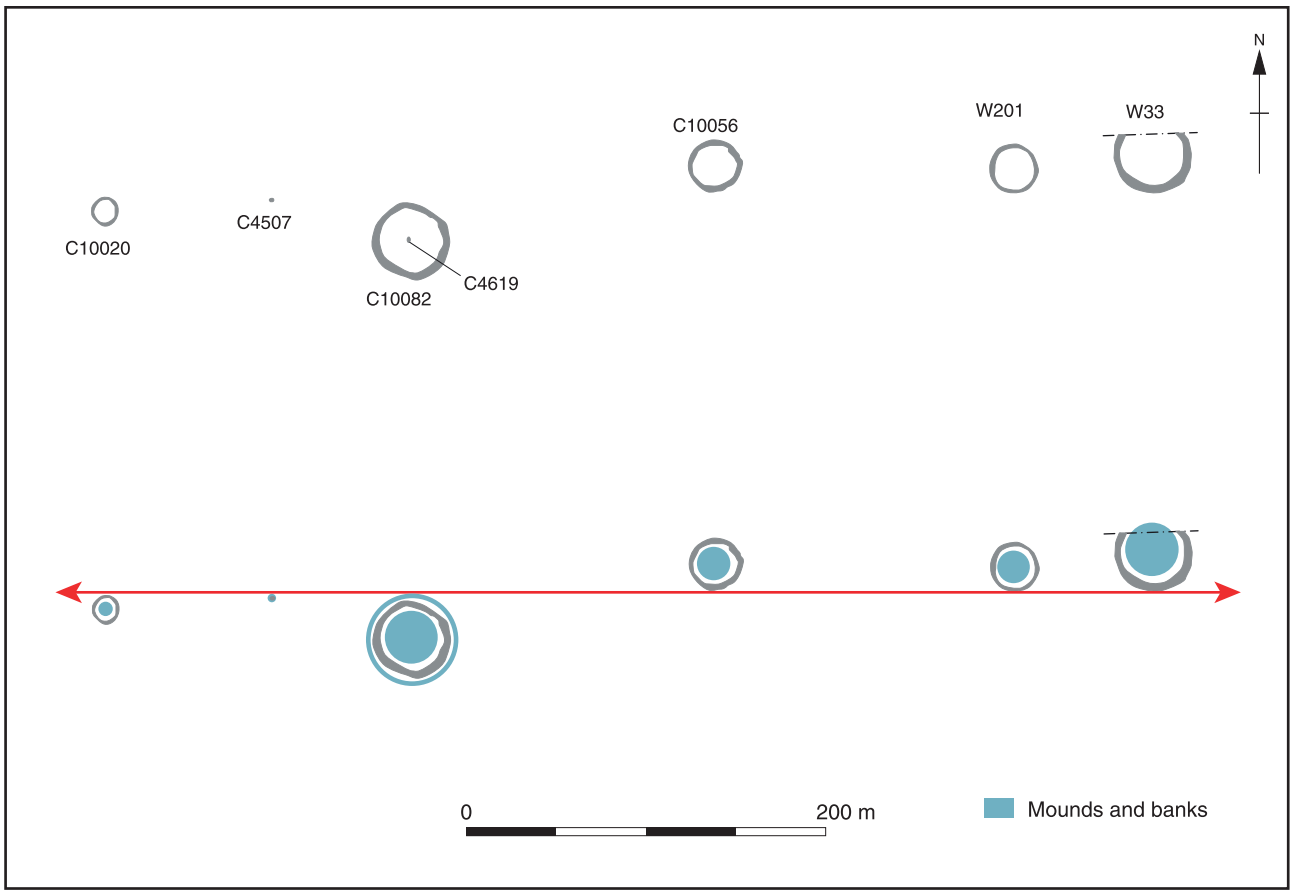


Figure 3.51 The Saltwood Tunnel linear round barrow group. Upper: plan of the five ring ditches and two inhumation burials (C4507; C14619). Lower: interpretative plan showing the linear structuring of the monument complex, consisting of two short alignments of monuments and burials offset on either side of a dead-straight path or boundary

between the past, ancestral figures, mythological heroes and present individuals and groups. More generally, such monument complexes would have been ideal media for articulating narratives of dynastic succession and political success (Barrett 1994, 112; Garwood 1999c; 2007a, 37–42).

There are very few parallels for the Saltwood Tunnel round barrow group in south-east England. Three linear 'cemeteries' with surviving mounds are known in West Sussex, though none has been subject to recent investigation (Garwood 2003, 51), and there are a few possible examples in Kent (Parfitt 2006b, 49) including several clusters of ring ditches recorded on air photographs in areas such as the Stour Valley (Small 2008) and Thanet (see Bennett 2008, fig. 1.2). The only group investigated in recent times, however, is at Monkton, Thanet, where the excavated ring ditches in Area 9 could be part of a more extended alignment of monuments running SW-NE (ibid., fig. 1.3). It is unfortunate that the dating of the development of the Saltwood Tunnel barrow group is uncertain. Although the inhumation burial in grave C4507, and the Food Vessel-associated inhumation burial at the centre of Ring Ditch C10082, were radiocarbon dated to 2290–1970 and 2200–1940 cal BC (NZA-19886; NZA-19641) respectively (discussed below), there is no dating evidence for construction of any of the other monuments.

Elsewhere in southern Britain the formation of large linear barrow groups consisting of close-set arrays of substantial mounds appears to take place in the period 1900–1600 BC, while the earlier, more widely-spaced alignment of smaller Beaker-associated monuments at Radley can be dated to the period 2400–1900 BC (Garwood 1999c, 304; 2007a; forthcoming). It is very tempting, on the basis of the evidence available, to situate the Saltwood Tunnel monument group between these two forms of linear funerary monumentalism (morphologically, chronologically, and with reference to the long-recognised 'sequence' of funerary traditions), and even to see it as a 'transitional' type with characteristics of both earlier and later forms (eg wide spacing but with large monuments). This may indeed have some validity, but it is equally possible that the two dated sites with inhumation burials at Saltwood Tunnel represent an early 'paired' arrangement of burial events/monuments (quite common in the period 2150–1850 BC: eg Trelystan; Britnell 1982), while the remaining mounds—which lack inhumation burials in pit contexts—were all added at a later date sometime after 1900 BC when burials in shallow pits and on old land surfaces, as well as cremation practices, became increasingly common.

The HS1 evidence also contributes to our understanding of the wider spatial distribution of round barrows in Kent in the late 3rd and earlier 2nd millennia

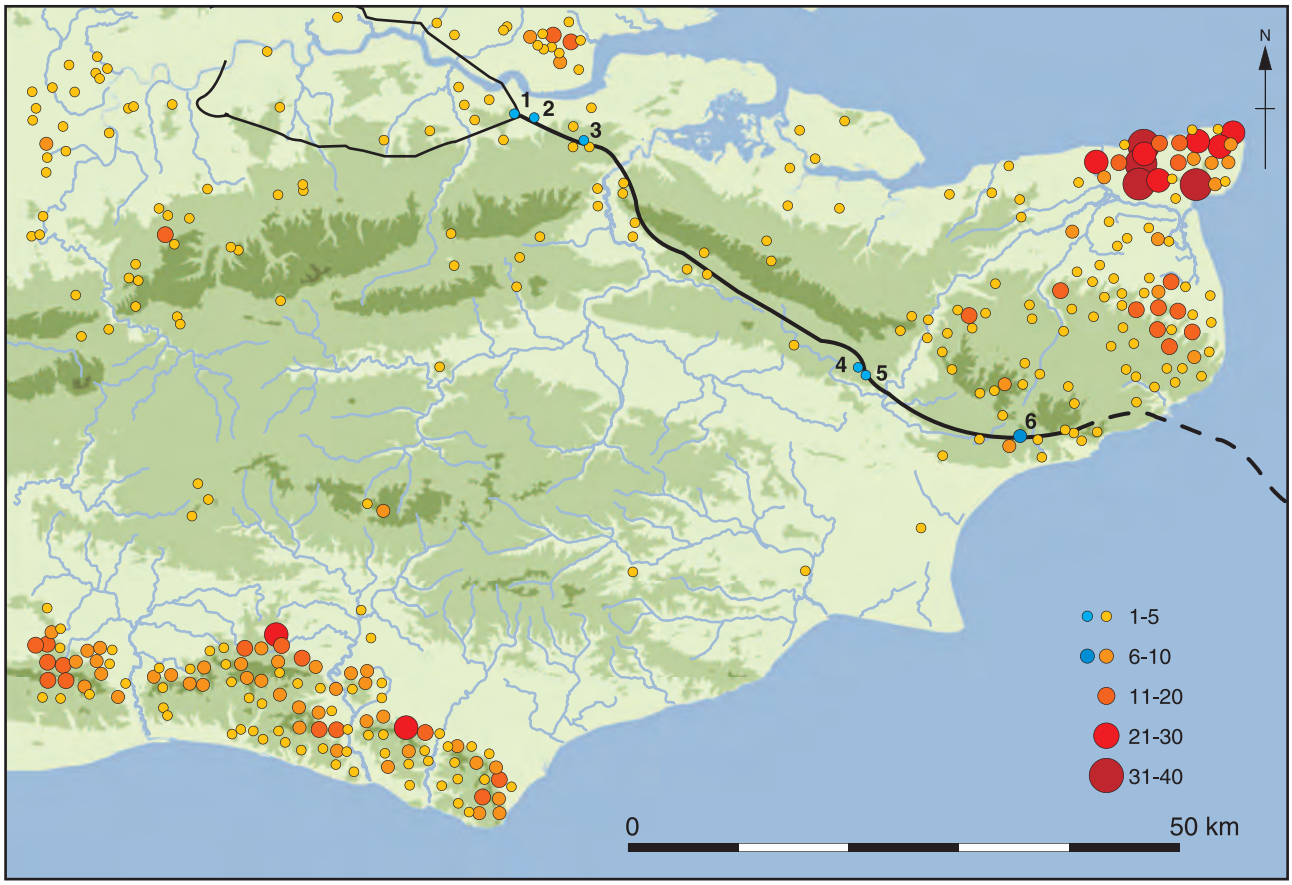


Figure 3.52 The distribution of ring ditches and round barrows in south-east England in relation to the HS1 route. HS1 sites with ring ditches and/or Early Bronze Age burials are numbered: 1. Whitehill Road; 2. Northumberland Bottom; 3. Cobham Golf Course; 4. Tutt Hill; 5. Beeechbrook Wood; 6. Saltwood Tunnel

BC (Fig. 3.52), notably the presence of barrow clusters *c* 1.5km apart along the Greensand ridge (such as Tutt Hill and Beechbrook Wood). This distribution of monument groups is paralleled by the barrow cemeteries situated at intervals of 1.5 to 5km along the Greensand ridge in West Sussex and east Hampshire (Garwood 2003). These have been interpreted as evidence for settlement expansion from the densely occupied chalklands, especially after *c* 2000 BC, involving the development of local funerary/ceremonial complexes distinct from the 'linear ritual landscape' of round barrows along the South Downs (ibid.; Field 1998, 321). The expansion of areas of more sustained occupation, clearance and agrarian farming, achieved in part by the use of funerary monuments to express ideas of belonging and social solidarity, and perhaps even to lay claims to land, has been suggested in other parts of the country during the first half of the 2nd millennium BC such as the West Midlands (Garwood 2007b, 152–4). Whether this was the case in Kent remains uncertain because of the lack of dating evidence and the little understood wider landscape context, especially the apparent absence of round barrows across most parts of the North Downs to the west of the Stour, which contrasts with the dense concentrations of round barrows on the South Downs (Field 1998; Garwood 2003; in prep. b). Even so, the HS1 evidence shows for the first time that significant groups of Early Bronze Age monuments once existed to the south of the chalkland escarpment, offering us a tantalising glimpse of what may have been a much more extensive, large-scale structuring of a 'sacred landscape'.

The funerary evidence: Chalcolithic and Early Bronze Age burials

The absence of the dead from large geographical and temporal swathes of British prehistory is a striking but little understood feature of the archaeological record: there was plainly no simple translation of living societies into 'communities of the dead'. Although systematic biases in the recovery of evidence and uneven survival of human remains have obviously had an effect on the known distribution of human remains, only the highly destructive, disaggregative and dispersive nature of most kinds of mortuary treatment and depositional practices can fully account for the 'disappearance' of the prehistoric dead (eg through disarticulation, cremation, surface disposal, scattering of remains, river deposition, and so forth). The majority of people who died in the Chalcolithic and Bronze Age were clearly not interred beneath mounds or within built structures (tombs, etc), or even in subsurface contexts such as pits; indeed, for long periods in British prehistory burials of these kinds were rare events if they happened at all. Moreover, what are sometimes described as 'burials' on closer inspection are often partial body remnants derived from more complex multi-stage mortuary practices, or the outcomes of votive acts that involved fragments of dead people as symbolic, spiritual or moral resources (Brück 2004; Garwood 2007d).

In this light, attempts made by particular social groups in prehistory to sustain the physical integrity and 'completeness' of bodies, to contain, 'house' or deposit them formally in pre-prepared objects or graves, and to bury them within/under built structures, were all highly deliberate and carefully contrived social acts. Such practices were clearly exceptional in relation to the 'normative' range of mortuary treatment of the dead, which led in most cases to the effective dissolution of bodies and thus their non-presence in the archaeological record. Decisions to bury the dead in this way can only be understood in terms of particular religious and political imperatives discussed and agreed upon by those who undertook the difficult tasks of body management, burial and monument-building. The Chalcolithic and Early Bronze Age mortuary evidence from HS1, therefore, is not limited and poorly preserved only because of the high level of destruction of monuments and other contexts of funerary deposition, but also more importantly because the recorded burials represent rare surviving examples of what were already rare acts of formal deposition and even more unusual acts of monument construction. The HS1

Table 3.4 Chalcolithic and Early Bronze Age burials from HS1 Section 1

Burial	*Context*	*Type*	*Sex & age*	*Dating evidence and associations*	*Reference*
Whitehill Road barrow, Grave 42	Secondary pit grave; outer edge of inner ditch	Inhumation	Female, c.25 years	1620-1440 cal BC Amber necklace	Bull 2006a, 7-10
Northumberland Bottom, Pit 1071; Skeleton 1203	Pit grave; base of pit, beneath 1070	Primary inhumation	Female, 26-45 years	2120-1780 cal BC Beaker	Askew 2006, 11-14
Northumberland Bottom, Pit 1071; Skeleton 1070	Pit grave; base of pit, on top of 1203	Secondary inhumation	Male, 26-45 years	2280-1980 cal BC Beaker	Askew 2006, 11-14
Northumberland Bottom, Pit 1071; fill 1069	Pit grave; in upper fill of pit	Secondary inhumation	Child, 4-5 years	Undated	Askew 2006, 11-14
Northumberland Bottom, Pit 106	Isolated pit; burial inside inverted Collared Urn	Cremation	No details: bone badly decayed	Collared Urn	Askew 2006, 13
Saltwood Tunnel C4507	Pit grave, base of pit	Inhumation	Female, 25-35 years	2290-1970 cal BC	Riddler & Trevarthen 2006, 11
Saltwood Tunnel C10082, Grave 4619	Pit at centre of ring ditch	Inhumation	Male, >50 years	2200-1940 cal BC Food Vessel	Riddler & Trevarthen 2006, 10-11

burial evidence is summarised by site in Table 3.4, and discussed below in chronological order.

The Northumberland Bottom Beaker grave

Northumberland Bottom grave 40557 consisted of an irregular-shaped ovate pit (1071), 1.30m wide and 1.70m long, which contained two adult inhumations in crouched positions, one immediately above the other, each associated with a Beaker vessel (Figs 3.53–4). Preservation of the vertebrae, ribs, scapulae and pelvis of the skeletons was poor in both cases, but neither displayed any indications of disease or other pathology (Askew 2006, 11). In addition, the fragmentary remains of a child aged between 3 and 5 years old were found in the upper fill of the grave (1069). This had been disturbed, possibly by animals, and only 20% of the skeleton survived.

The lower adult burial (1203), probably a female 26–45 years old, placed on the pit floor on her right side with the head to the south, is dated to 2130–1820 cal BC (94.9% probability; NZA-22735). A complete Beaker vessel with faint 'barbed wire' decoration was found in an upright position just behind the body, halfway between shoulders and pelvis. This belongs to Clarke's East Anglian group (1970, 146–52, map 4) and Needham's Globular class of Beaker vessels (2005, 198–200). The upper tightly flexed adult skeleton (1070), possibly a male 26–45 years old, positioned on his left side with the head to the north, had been superimposed directly on top of the woman. Human bone produced a radiocarbon date of 2280–1980 cal BC (NZA-22736). Sherds representing about 30% of a Beaker vessel were found beside the head, probably placed in front of the face. This was also an East Anglian/Globular vessel, decorated with horizontal bands of comb-impressed lines and ladder motifs interspersed with

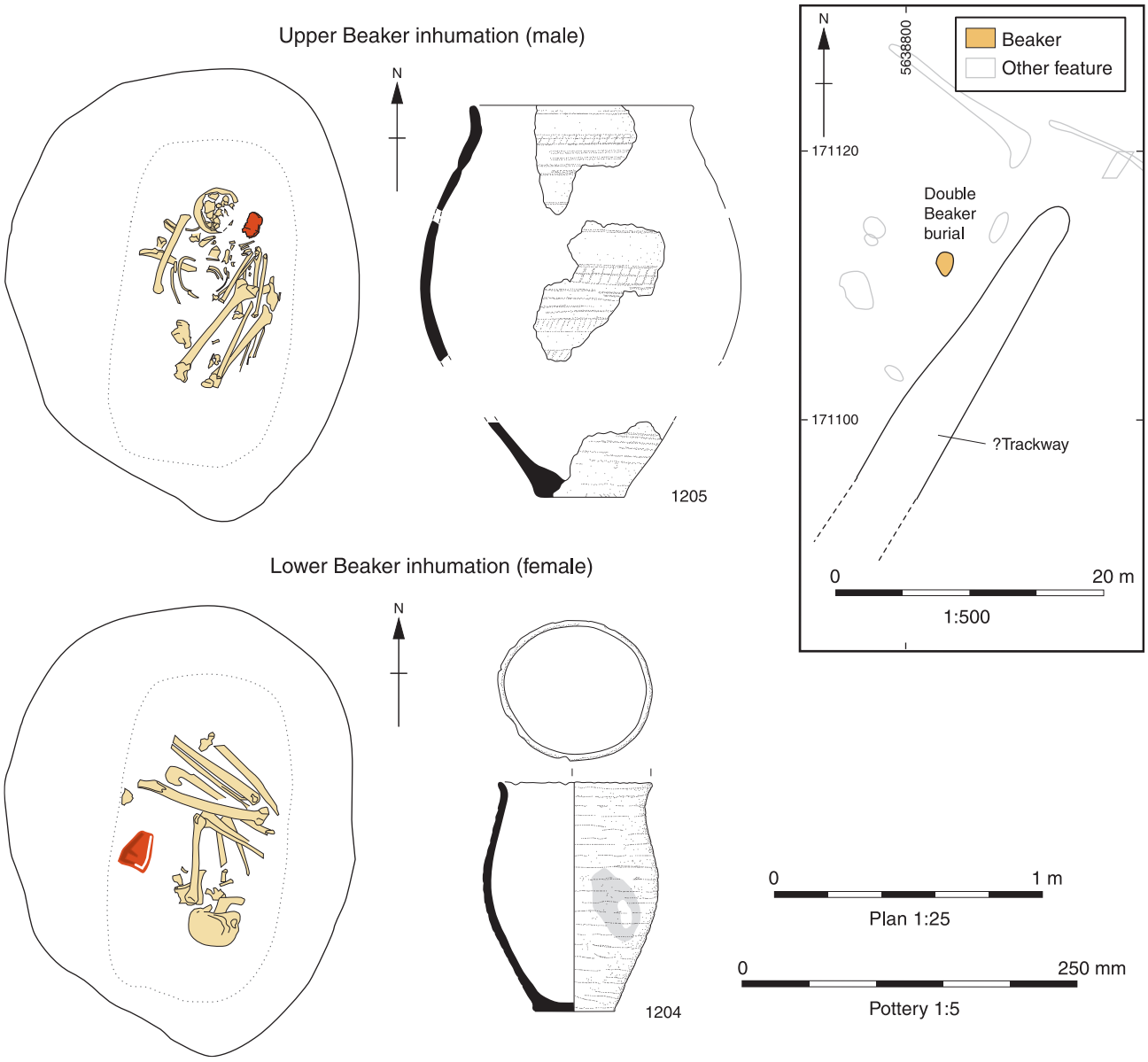


Figure 3.53 Northumberland Bottom Beaker grave: grave plans, Beaker vessels. Inset: site location of the Beaker grave

Lower burial

Upper burial and pots

Figure 3.54 The Northumberland Bottom Beaker burials, viewed from the north. Left: the lower female burial; the Beaker vessel placed at the back of this individual can be seen in the right-hand photograph. Right: the upper male burial with a broken partial Beaker vessel lying in front of the face; the skull of the lower burial can be seen at the far end of the grave, immediately beneath the feet of the upper burial

plain zones (Barclay and Edwards 2006, 17). The dating evidence for these burials places them firmly in the middle phase of Beaker funerary practices (*c* 2250–1950 BC), in common with virtually all other Beaker graves in south-east England. This corresponds with Needham's (2005) 'fission horizon' phase during which Beaker ceramic styles, grave assemblages and mortuary practices diversified. This was also a period in which multiple burial events and repeated material re-working of the past, including the dead, became especially prominent features of funerary and monument-building practices (Garwood 2007a).

The mode of body lay-out and orientation of the female burial at Northumberland Bottom, with the Beaker behind the back, has no exact parallels in south-east England and few well-dated comparanda elsewhere. There are no examples in Surrey, while the only burial with a Beaker in that position in Sussex, at Pyecombe, is that of an adult male lying on his left side with his head to the north-west, accompanied by a dagger and wristguard (C Butler 1991; Garwood 2003, fig. 5.5). In Kent, the only clear parallel is the burial of a slightly-built adult at Manston, Thanet, dated to 2190–1880 cal BC (Perkins and Gibson 1990), although the 'male' posture of the body on its left side with its head to the north contrasts with the Northumberland Bottom female. Moreover, the few examples of well-dated burials with Beakers in this position elsewhere in southern Britain, notably at the Gene Function Centre, Oxford (Grave 204, Boston *et al.* 2003), the secondary grave at Ravenstone, Buckinghamshire (D Allen 1981), Grave 2 at Risby, Suffolk (Vatcher and Vatcher 1976), and the primary burial at Gravelly Guy X6, Oxfordshire (Lambrick and Allen 2004, 51–61), all vary in terms of sex, orientation, left/right side posture, grave goods and date. The same lack of direct parallels applies to the upper male burial at Northumberland Bottom, the only radiocarbon-dated example being the articulated inhumation in Monkton grave 751, which lay on its right side with head to the south (discussed further below; Clark and Rady 2008), although there are several undated Beaker graves of this kind including two in Sussex at Heathy Brow and Shoreham (with heads to the north but lying on their right sides: Garwood 2003, fig. 5.5). The great diversity of Beaker graves may well disguise consistent strategies in the lay-out of bodies and artefacts relating to categorical distinctions based on gender, cultural identity, status and so forth, but these may have been expressed in such varied ways—regionally and over time—that significant patterns and meanings remain elusive.

Sequences of burials within single grave pits are a fairly common feature of Beaker mortuary practices in Britain as a whole (Gibson 2007, 59–61), especially during the period 2150–1800 BC (Garwood 2007a; 2007b, 147, fig 10.4). Examples in south-east England, however, are rare. There are no similar burials in Surrey or Sussex, and there are only three well-documented examples of Beaker burial sequences in Kent, two of which can be radiocarbon-dated to the same period as the Northumberland Bottom burials, while the third is probably also contemporary on the basis of artefact associations. The complex series of seven (mostly partial and/or disarticulated) burials in the central intercutting pit group at South Dumpton, Broadstairs, associated with a Food Vessel and Beaker, has a series of radiocarbon dates spanning the period 2140–1730 cal BC (Perkins 2004a, 77–9). At Monkton, Thanet, a pile of disarticulated skeletal material at one end of 'flat grave' 751, comprising the partial remains of at least three individuals dated to 2290–1920 cal BC, appears to have been 'cleared' to make way for the presumed secondary crouched burial of an adult male, dated to 2180–1890 cal BC, placed at the other end of the grave and associated with a low-bellied 'S'-profile Beaker (Clark and Rady 2008, 15, fig. 1.9). Adjacent to Monkton 751 was another 'flat grave', 6371, containing the undated, spatially-separated burials of an adolescent and child, the latter possibly but not definitely a secondary insertion in the grave pit and associated with a Short-necked Beaker and a bronze bracelet that probably also date to *c* 2200–1900 BC (ibid., 16–17).

These burials suggest deliberate attempts were made to 'revisit' the dead and in at least one case partially curate some of the earlier corporeal remains. These practices did not, however, involve the direct superimposition of 'whole' bodies as seen at Northumberland Bottom, a practice which is most closely paralleled by several Beaker graves in Wessex (Fig. 3.55). These include Shrewton 24, with two adult male burials, the lower one—exposed by the recut of the grave pit for the second burial—radiocarbon-dated to 2310–2020 cal BC (94% probability; BM-2516) (Green and Rollo-Smith 1984, 285–6), and Chilbolton, Hampshire, where the complete but partially disarticulated lower adult male burial was again revealed by the insertion of the second adult male burial, imprecisely dated to 2470–1980 cal BC (2340–2040 cal BC at one standard deviation) (Russel 1990).

The Northumberland Bottom burials are especially intriguing in this wider context because they may reveal complex kinds of mortuary treatment and signification, involving not just the assertion of genealogical relationships but also the referencing and physical 'presencing' of the long-dead in ways that may have foregrounded mythic narratives or used ancient corporeal substances, including bodies, as iconic media. It is evident that the radiocarbon dates from the two burials not only contradict the expected temporal sequence, with the upper burial having the earlier date, but are also separated chronologically (with age ranges not overlapping at all at one standard deviation: 2210–2040 cal BC/2020–1900 cal BC). There seems no reason to doubt the reliability of the determinations (Askew 2006, 11), although additional confirmatory dates would resolve any uncertainty. It is possible, therefore, that the upper male body had been preserved/stored in some way or buried for a lengthy period before being exhumed, either from a grave elsewhere or from an original position at the base of the Northumberland Bottom grave pit, and then 're-buried' on top of the lower female body. This is supported by the lack of evidence for a re-cut of the grave pit to receive the second burial, which may indicate that this was placed in the grave at the same time as the lower body. It is also apparent that the upper burial was in a more 'disturbed' and partially disarticulated condition in comparison with the lower burial, and that it was accompanied by only parts of a broken Beaker in contrast with the complete vessel placed with the female body. The female-male burial sequence is unusual, as males usually (although not exclusively) have primary positions in Beaker graves (Mizoguchi 1993); the reversed 'sequence' in this case may in fact have been a particular consequence of mortuary practices that involved the manipulation and redeposition of an ancient body and an associated—partly fragmented—pottery vessel.

There is certainly no question that things of the past, including the remains of dead people, figure prominently in Beaker graves of the period 2150–1800 BC (cf. Garwood 2007a; Healy and Harding 2004; Woodward 2002a). Whether 'heirlooms' with significant histories or biographies, relics (like those in medieval saints' shrines) or powerful ancestral substances, ancient objects are recognised increasingly in funerary deposits of the late 3rd and early 2nd millennia BC. The presence of disarticulated human bones alongside articulated bodies in Beaker graves thus appears to have been far more significant than a matter of simple displacement of skeletal remains. For example, at Raunds Barrow 6, Northamptonshire, the disarticulated remains of parts of two individuals, radiocarbon-dated to 3360–3030 cal BC, were placed beneath the richly-equipped central male Beaker burial dating to 2130–1820 cal BC (Harding and Healy 2007, 96–7). In this case, ancient human remains appear to have been retrieved deliberately in order to re-inter them in association with the newly dead.

The discovery of mummified bodies at the Bronze Age Hebridean settlement at Cladh Hallan, South Uist, Scotland, including individuals who died in the 17th to 15th centuries BC but were finally buried in the period 1300–1000 BC (in one case forming a composite 'body' comprised of parts of three different people; Parker Pearson *et al.* 2005), has prompted speculation about the possibility of body preservation more widely in the British Bronze Age, especially in the case of tightly-flexed corpses that must have been bound and probably wrapped to maintain their constricted postures (ibid., 543–4). The process of mummification at Cladh Hallan is uncertain, although both air-drying and bog immersion, allied with probable evisceration to reduce rapid decomposition, have been proposed. Whether the

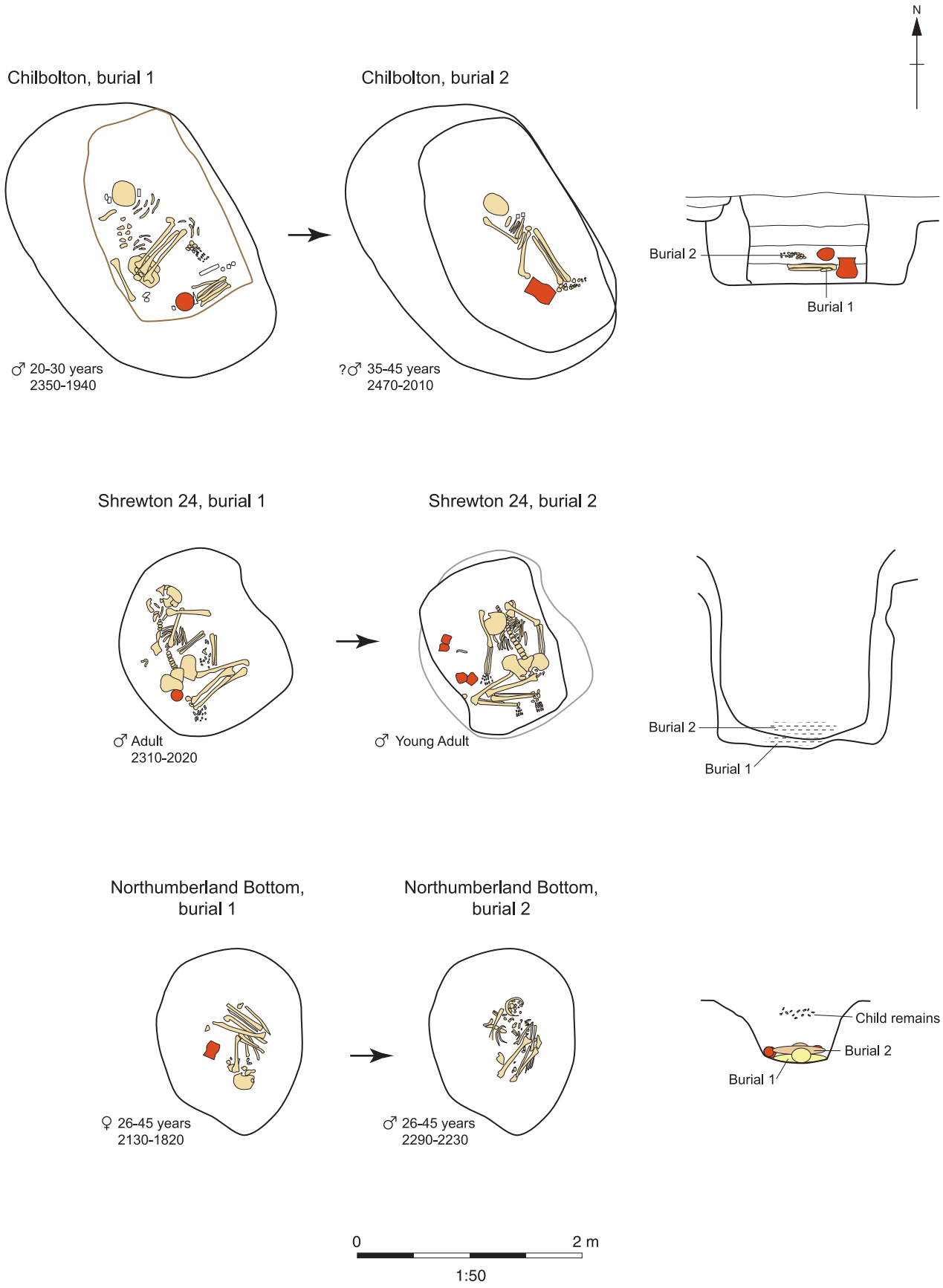


Figure 3.55 Comparative burial sequences (shown in plan and section) of superimposed burials in Beaker graves in southern Britain. Top: Chilbolton, Hampshire (Russel 1990, fig. 2): Middle: Shrewton 24, Wiltshire (Green and Rollo-Smith 1984, fig. 16). Bottom: Northumberland Bottom, Kent (Askew 2005, figs.4, 5; the section is a schematic reconstruction based on the site record)

upper male body at Northumberland Bottom was originally buried within the grave pit or not, it is possible that it had undergone a similar process of preservation and tight-bound wrapping, in such a way that it was possible to move and redeposit the corpse in a more or less complete form onto the body beneath, effectively coating or even 'adorning' the dead woman (as a kind of emblematic or amuletic 'grave good' perhaps). If so, this may have served to evoke memories or make statements about personal or genealogical relationships, identities and origins, or provided a source of ancestral guardianship, while also conveying impressions of moral qualities and values concerned with themes such as vitality, protection and sanctification.

The partial child skeleton in the upper fill of the Beaker grave is also difficult to account for in terms of conventional expectations about 'burial' practices. There was no evidence for a recut for the insertion of the body, and the possible 'disturbance' surmised to account for the incompleteness of the skeleton was not recognised before excavation (Askew 2006). It is more likely, in fact, that the child's body or body parts were deliberately incorporated in the grave as it was backfilled. The presence of child remains in the fills of adult graves is a common feature of funerary practices in this period, when child 'burials' and deposits of partial bodies proliferated in a wide range of mortuary contexts, in contrast with the much rarer occurrence of child burials in earlier and later periods (Garwood 2007d, fig. 7.4). The Northumberland Bottom example is thus consistent with wider patterns in the mortuary treatment of juveniles at this time. Although the burials of children, like those of adults, may well have been occasions for expressions of intense grief as well as anxiety over losses of reproductive potential, it is also possible that they had other kinds of symbolic significance. The ways in which younger children, in particular, were incorporated in graves were very similar to modes of artefact deposition, often being placed beside adults like grave goods or within grave fills (Garwood 2007b, fig. 10.4; Garwood 2007d). This contrasts significantly with the burials of older children who were treated more like adults. Indeed it is possible that young children, who had not yet achieved 'grown-up' identities or fulfilled productive social roles, and were thus embodiments of unrealised potentiality, were transformed in the course of mortuary rituals into sources of vitality or fertility, especially where life itself was perceived to be a 'limited resource' that had to be recycled (ibid.; cf. Bloch and Parry 1982). The presence of the child's bones in the Northumberland Bottom grave may not, therefore, have been the result of an act of burial as such, but rather the votive or sacrificial investment of powerful corporeal substances as part of a more complex ritual performance intended perhaps to propitiate or 'feed' supernatural forces, ancestors or deities on whom human life depended.

The Saltwood Tunnel inhumation burials

The two radiocarbon-dated inhumation graves at Saltwood Tunnel, both from the 22nd–21st centuries BC and thus broadly contemporary with the Northumberland Bottom burials, provide a useful reminder that Beaker graves after *c* 2200 BC cannot be treated in isolation, as if they were somehow disengaged from the other traditions of funerary practice that appeared throughout Britain from this time. Although the cultural significance and socio-political rationales underlying these diverse modes of funerary deposition remain little-understood, it is clear that those performing burial rituals made strategic choices about body treatment and the provision of grave goods in ways that must have realised or conveyed specific meanings to those participating in funerals.

Grave C4507, located halfway between Ring Ditches C10020 and C10082, was a large sub-oval pit aligned east-west, 2.15m long and 1.15m wide. This contained

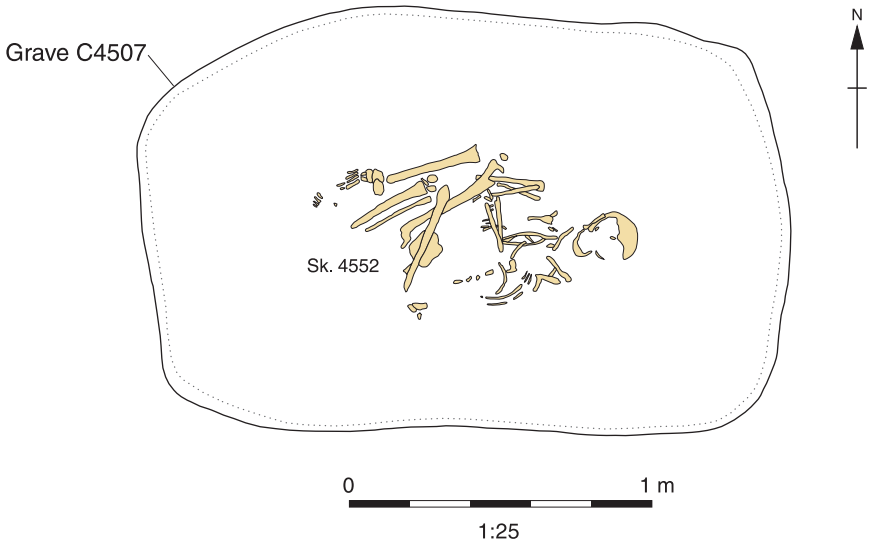


Figure 3.56 Saltwood Tunnel Grave C4507: plan of the grave

the burial of an adult, probably a female about 25–35 years old, crouched on her right side with the head to the east (Fig. 3.56). The relatively well-preserved skeleton (*c* 30% surviving) was radiocarbon-dated to 2290–1970 cal BC (NZA-19886), which makes it broadly contemporary with the central Food Vessel grave of barrow C10082 to the east (discussed below). The spatial position of Grave C4507, discussed in the previous section, suggests it was a significant funerary event at a location that referenced and/or was referenced by the impressive round barrows nearby. Unaccompanied inhumation burials appear to have been common throughout the period *c* 2500-1800 BC, although it is important to note that there has been no sustained comparative analysis of the precise chronology, funerary contexts or spatial patterning of burial acts of this kind, and it is quite possible that their frequency and cultural and political significance varied over time. The spatially isolated person-focused single-event burial in the substantial grave pit at Saltwood Tunnel, for example, can be contrasted with far more common unaccompanied inhumations in later secondary contexts at round barrow sites (especially in the period 2100–1800 BC; Garwood 2007d), where the meaning of the burial may have been more bound up with the collective significance of the monument rather than the persona of the dead individual.

Grave C4619, at the centre of Ring Ditch C10082, 78m to the east of Grave C4507, is very different in terms of the funerary artefact association and the large-scale act of monumentalisation that followed the burial event, both of which are extremely unusual in this period in south-east England. The grave itself consisted of a large sub-rectangular vertical-sided pit, aligned almost north-south, containing the skeleton of an adult male aged over 50 years old, radioacarbon dated to 2200–1940 cal BC (NZA-19641). He lay within a wooden coffin or wood-framed bier, on his left side with his head to the north, facing east, accompanied by a Food Vessel placed on its side just above and behind the head (Fig. 3.57). This individual had a healed break of his right fibula, but otherwise showed no sign of disease or injury (McKinley 2006b). The substantial grave pit, 2.7m long, 1.30m wide and 0.85m deep, and the very large encircling ring ditch which presumably provided material for a large mound superstructure, suggest considerable social effort and a conscious attempt to affirm the long-term significance of the dead person and the group to which he belonged.

The Food Vessel is a bipartite vase with a slightly carinated shoulder or low cordon around the upper-middle part of the vessel body, above which a near-vertical 'neck' is decorated with an incised triple-line diamond pattern. The internally beveled rim is finely decorated with an outer line of pinched finger-tip impressions, and a line of angled finger-tip impressions along its pronounced inner lip which viewed from above has the appearance of twisted cord. The lower part of the vessel

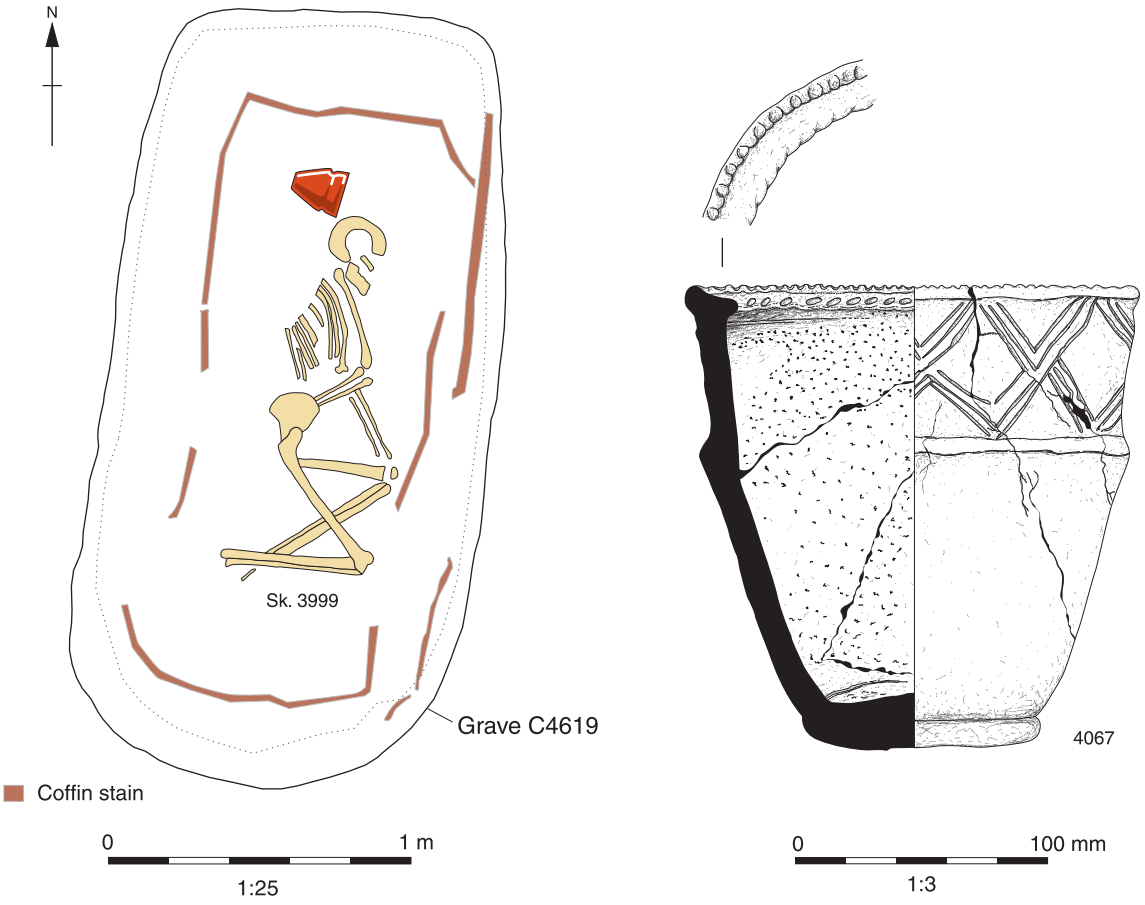


Figure 3.57 Saltwood Tunnel Grave C4619: grave plan and Food Vessel

is undecorated, tapering towards a rounded and slightly protruding foot at the base. Whilst bipartite Food Vessel vases are common, most have biconical or shouldered forms and are richly decorated, usually with impressed rather than incised decoration, unlike the Saltwood Tunnel example. Indeed, a survey of the existing corpus (the only one at a national scale still being Abercromby 1912), museum catalogues (eg Annable and Simpson 1964; Kinnes and Longworth 1985), and major regional studies of Food Vessels and their funerary contexts in Ireland (Brindley 2007; Ó Ríordáin and Waddell 1993; Waddell 1990), Scotland (Sheridan 2004), northern

Figure 3.58 Food Vessel and Beaker comparanda for the Saltwood Tunnel Food Vessel and its incised lozenge decorative motif: 1. Saltwood Tunnel Grave C4619, Kent (Riddler and Trevarthen 2006, fig.11); 2. Cossington Barrow 2, Leicesterhire John Thomas 2008, fig.32.6); 3. Hodgeton Farm, Inverkeilor, Angus (Coutts 1963-64, fig.2); 4. Skateraw Farm, Innerwick, East Lothian (Cowe 1983, no. 23); 5. Redden, Kelso, Scottish Borders (Cowe 1983, no. 67); 6. Huggate & Warterwold 264, Yorkshire (Clarke 1970, illus.1017); 7. Sidmouth, Devon (Clarke 1970, illus.1015); 8. Linlathen, Angus (Clarke 1970, illus.1018); 9. Lilburn Hill, Northumberland (Clarke 1970, illus. 990); 10. Tara burial 35, Co. Meath (Brindley 2007, fig.106.5); 11. Wilsford 62, Wiltshire (Clarke 1970, illus.1036); 12. Worth Matravers, Dorset (Clarke 1970, illus.1034)

Britain (Cowie 1978), north-east England (Gibson 1978), the Peak District (Manby 1957), Yorkshire (Mortimer 1905; Pierpoint 1980; M Smith 1994), as well as particular categories such as handled pots (Manby 2004), reveals no direct parallels for this vessel anywhere (Fig. 3.58). What it does share, however, with a number of Food Vessel vases and, notably, several Beakers, are elements of similar decorative motifs and design schemes, and some features of vessel form and moulding, which provide a broad context for the making and significance of this (currently) unique object.

The most similar vessels in terms of body shape, although smaller, are a number of handled bipartite Food Vessels with pronounced body carinations, incised zigzag decoration and often bevelled rims, which are found mainly in eastern England, including examples from Caythorpe, Lincolnshire, and Great Chesterford, Essex (Manby 2004, figs 75.5–6, 9). Also similar in form are several wider/shorter bipartite Food Vessels with straight-sided upper bodies or necks, either undecorated or with finger-nail or cord impressions (especially around the rims and mid-upper body cordons/carinations), some of which also have incised decoration. These occur mainly in Scotland (Burgess 1980, fig. 3.1.3), Yorkshire (M Smith 1994, figs 17.4, 25.3–4, 44.1) and the Peak District (Manby 1957, figs 5.A7; 6.A35), together with a few examples in southern England including several at Radley, Oxfordshire (Barclay 1999a, 101, 122–7; figs 4.54, 4.63, 4.64). One of these was found with a child burial (Grave 605) dated to 2300–1870 cal BC (93.6% probability), while a taller undecorated vessel was associated with an adult female (Grave 4970) dated to 1950–1690 cal BC. The only other Food Vessel from a radiocarbon-dated inhumation burial with features reminiscent of the Saltwood Tunnel example was found at Hodgeton Farm, Inverkeilor, Angus (Coutts 1963–64, 159): this is similar in size and profile and has rather crude double and triple incised chevrons on the lower part of the vessel which in places form rough diamond motifs. This burial is radiocarbon dated to 2040–1870 cal BC (93.7% probability; SUERC-16324: Neil Wilkin pers. comm.). All of these pots, however, only partly resemble the Saltwood Tunnel vessel while differing markedly in other respects. The same observation applies in the case of the small number of Irish Food Vessel vases that have relatively tall bipartite forms with near-vertical upper sides (eg Ó Ríordáin and Waddell 1993, cat. 588, 610), none of which is associated with an inhumation burial (cf. Waddell 1990, 10).

More significant, perhaps, is the occurrence of the Saltwood Tunnel vessel's distinctive incised large diamond motif (see Fig. 3.58) on a number of Beakers (Clarke 1970, nos 159.1 (illus.1015), 687 (990), 1034 (218), 1177 (1036), 1520 (1018), 1637 (1017)), a handled Food Vessel (Huggate and Warterwold 264; Clarke 1970, illus. 1087), a Food Vessel associated with an urn and cremation in Tara burial 35, Co. Meath (Brindley 2007, 89), and possibly one of the Food Vessels from Ardnave, Islay (Sheridan 2004, fig. 87). Several more Beakers and Food Vessels have similar multi-line incised open chevrons and triangles (without in-filling decoration) arranged in otherwise undecorated horizontal panels (Clarke 1970, nos 1654 (illus.1013), and 1655 (1014)), and there are a few vessels with incised single line diamond motifs, such as the Food Vessel from Cossington Barrow 2, Leicestershire (John Thomas 2008, fig. 28). None of these pots is well-dated, although associations with Milston and Butterwick flat riveted daggers suggest a date range in the period *c* 2200–1900 BC (Gerloff 1975, 42–63; Needham 1996, 130), which is consistent with the radiocarbon date from the Saltwood Tunnel burial. Also broadly contemporary is a secondary cremation burial at Gallibury Down, Isle of Wight, radiocarbon-dated to 2140–1910 cal BC (Brindley 2007, 368), associated with an Armorican single-handled vase à anse with opposed multi-line incised chevrons comparable to those on British Beakers and Food Vessels (Tomalin 1988, 208–9).

The majority of the vessels with these kinds of incised decoration are found in coastal and near-coastal areas around Scotland, eastern England and along the Channel, but are far rarer inland (eg there are no examples in west-central England or the Peak District) and there is none in western Britain. It is possible, therefore, that this decoration expressed a certain kind of identity or origin, a shared aesthetic that transcended local cultural repertoires, and/or participation in extensive networks of exchange that were articulated mainly through eastern maritime interactions. Communities in east Kent in the late 3rd millennium BC were well-situated geographically to take full advantage of a sea route that followed the North Sea and Channel coastlines. Indeed, it may be no coincidence that the Saltwood Tunnel grave was positioned on a ridge below the chalk escarpment with commanding views over the sea just 3km to the south. This interpretation accords with evidence for the coastal exchange of artefacts, specific aesthetic/design features and materials at this time, notably Whitby jet which occurs widely in the form of conical buttons and rarer pulley rings and disc bead necklaces in Beaker, Food Vessel and dagger graves from Scotland to Wessex (Baker *et al.* 2003, 102–3; Sheridan 1999, 55–7). In Kent, the Beaker grave at Manston, Thanet (with a conical V-bored jet button, dating to 2140–1820 cal BC: Perkins and Gibson 1990), and—a few kilometres further west—the undated Monkton Grave 3033, containing a necklace of 217 tiny annular jet beads (Bennett *et al.* 2008, 19–21, fig. 1.11), both in locations with views of the sea, are good examples of this pattern of long-distance cultural and material transmission. Although this may well have been a period of 'relative cultural insularity' preceding the emergence of a Channel/southern North Sea 'maritory' (a sphere of 'high-flux' maritime interaction; Needham 2009) in the Bronze Age, the maritime movements of people, objects and ideas in the preceding two centuries appears to have been considerable and probably as significant locally for constructing social identities as those later in the Early Bronze Age.

The Saltwood Tunnel burial is also important in relation to the wider presence and character of Food

Vessel ceramics and graves regionally across southern Britain. It certainly represents a major addition to the known record of such graves in south-east England. There are only two other Food Vessel burials in Kent, both in Thanet, at South Dumpton (Burial 5: not fully published; Perkins 2004a, 77–9), and Lord of the Manor I Grave 6 (Macpherson-Grant 1977, 18), while definite examples of Food Vessel graves are lacking altogether in both Sussex or Surrey (although a small number of pots have been found without burials: Musson 1954, cat. 200; Grinsell 1987, 5–6; Needham 1987, 103). Farther west, two complex male graves with near-identical biconical Food Vessels associated with flat riveted daggers, in both cases covered by substantial mounds, are known in Wessex at Bishop's Waltham, Hampshire (Ashbee 1957), and Sutton Veny, Wiltshire (D Johnston 1977/78). Neither of the Food Vessels, however, is like the Saltwood Tunnel example and the body postures, grave lay-outs and wooden containers or biers differ in each case.

These seem to be more general features of primary Food Vessel inhumation burials in southern Britain: not only are they exceptionally rare and diverse, but where they do occur they tend to be unusually well-equipped, and associated with relatively complex grave forms and impressive monumental architecture, such as the Saltwood Tunnel, Bishop's Waltham and Sutton Veny examples, and the child burial at the centre of Cossington Barrow 2, Leicestershire (John Thomas 2008, 23–5). In contrast, the majority of Food Vessel-associated inhumation and cremation burials in Wessex and other parts of central and eastern England are secondary interments at multi-phase round barrows, consisting mostly of children and occasional adult females but only very rarely males (eg in Dorset, at sites such as Frampton 2, Kingston Russell 6g, Long Crichel 5, and Down Farm pond barrow). Where dating evidence is available these probably all date to the period *c* 2000–1700 BC.

The position of the pottery vessel above and behind the head of the Saltwood Tunnel burial is also revealing. Although detailed studies of body posture and artefact placement remains rare, it is evident that this specific spatial arrangement is unknown in Food Vessel graves in Ireland (Waddell 1990), very rare in southern England and the Peak District, and is only relatively common in east Yorkshire (Tuckwell 1975, 108–9, fig. 8b) and eastern Scotland (eg in Fife: Wilkin 2009). Perhaps even more striking, given the wider ceramic associations of incised multi-line diamond motifs, is the prevalence of the behind-head vessel position among the Beaker graves of the same eastern regions of Britain (ibid.; Tuckwell 1975, fig. 8a). It is also notable that the arrangement of the Saltwood Tunnel body on its left side, whilst exceptionally rare among male Food Vessel burials, is the most common form of male body posture in Beaker graves in eastern Britain (ibid., figs 3, 4). This seems to emphasise again not only the eastern connections of the Saltwood Tunnel burial, but also its close affinities to contemporary Beaker funerary practice and aesthetics. This point is perhaps reinforced still further by the broadly north-south orientation and left-side postures of most of the adult male Beaker burials in Kent, including the Manston example (Perkins and Gibson 1990) and an earlier grave at Margate, where the Beaker was also placed at the back of the man's head (Hart and Moody 2008, 169, fig. 2).

Grave C4619 thus provides important insights into the form and character of very rare Food Vessel burials in southern Britain, and into the way that early burials of this kind—both in this region and more widely—may have owed as much to Beaker precedents as to an emergent mode of burial treatment involving a novel ceramic style. Food Vessels and their funerary placement are often believed to represent an 'indigenous' cultural response opposed to Beaker-related practices, but the Saltwood Tunnel evidence suggests far more complex kinds of social agency and signification. In some areas, at least, Food Vessels appear to have been presenced in burial acts that emulated those in earlier/contemporary Beaker graves, with ceramic objects that embodied decorative motifs that were either inspired by Beaker referents, or transcended Beaker/Food Vessel 'oppositions' as part of a more extensive cultural repertoire of ceramic and funerary aesthetics shared by communities that emphasised maritime interactions and perhaps syncretic modes of cultural representation rather than exclusive identities. The prehistory of Beaker/Food Vessel cultural relationships is yet to be written—and our understanding of the 'place' of Food Vessel graves in the funerary landscapes of southern Britain is especially obscure—but the important evidence from Saltwood Tunnel suggests that this relationship may be pivotal for understanding the particular temporalities and significance of change in funerary representation at the end of the 3rd millennium BC.

The Northumberland Bottom Collared Urn burial

The only definite Early Bronze Age cremation burial from HS1 was found beneath an inverted Collared Urn at Northumberland Bottom (Pit 106), in a low-lying area on the side of a dry valley to the north of Hazells Road Farm, 1.65km to the north-west of the Beaker grave. The cremated remains were highly fragmented and decayed, and it was impossible to determine the number, sex or age of the individual(s) represented (Askew 2006, 13). The original landscape context of deposition is uncertain, although the burial appears to have been isolated with no indication of monuments or contemporary occupation in the vicinity. The upper part of the vessel was probably straight-sided but only part of the collar and a fragment of the neck of the urn survived, decorated with cord-impressed filled triangles and horizontal lines, a type of decoration not previously recorded in Kent (Barclay and Edwards 2006, 17). These features are consistent with Longworth's Secondary Series South Eastern style (1984), though this typology does not provide a guide to dating (for a recent review of Collared Urn typochronology, see Law 2008). Collared Urns are still rare in Kent (Champion 1982, 32–4; 2007, 93; Longworth

1984, 216–17), and Surrey (ibid., 274; cf. Needham 1987), while more common in Sussex (ibid., 195–7, 275–7; Garwood 2003). Whether this geographical variation reflects cultural differences or uneven fieldwork is uncertain. The Northumberland Bottom example, therefore, is a noteworthy if rather uninformative addition to the regional corpus.

The Whitehill Road inhumation burial

The discovery of an inhumation burial with an amber necklace in Grave 42 at Whitehill Road round barrow (in a secondary context; Bull 2006a, 7–10) is of considerable significance nationally as well as more widely in north-west Europe. The associated radiocarbon date of 1620–1440 cal BC (NZA-22740; from human bone fragments) places the burial in the late Early Bronze Age or Middle Bronze Age, when inhumation burial practices and the provision of grave goods were both rare, not only in Britain but also in most maritime continental regions (with the notable exception of Denmark). The small sub-rectangular grave, 1.3m long and 0.75m wide, oriented north-west to south-east, contained the skeleton of a gracile individual, probably female, about 25 years old (Fig. 3.59). The body lay in a flexed position on its right side, with the head to the north-west, accompanied by at least 21 amber beads (17 complete and four fragmentary) in the area around the neck and shoulders, almost certainly buried originally as a complete stringed necklace around the woman's neck.

The necklace (Fig. 3.60) includes one large ovate discoidal bead, 26 x 23.5mm in diameter, with a central perforation (redrilled off-centre), together with 20 circular/

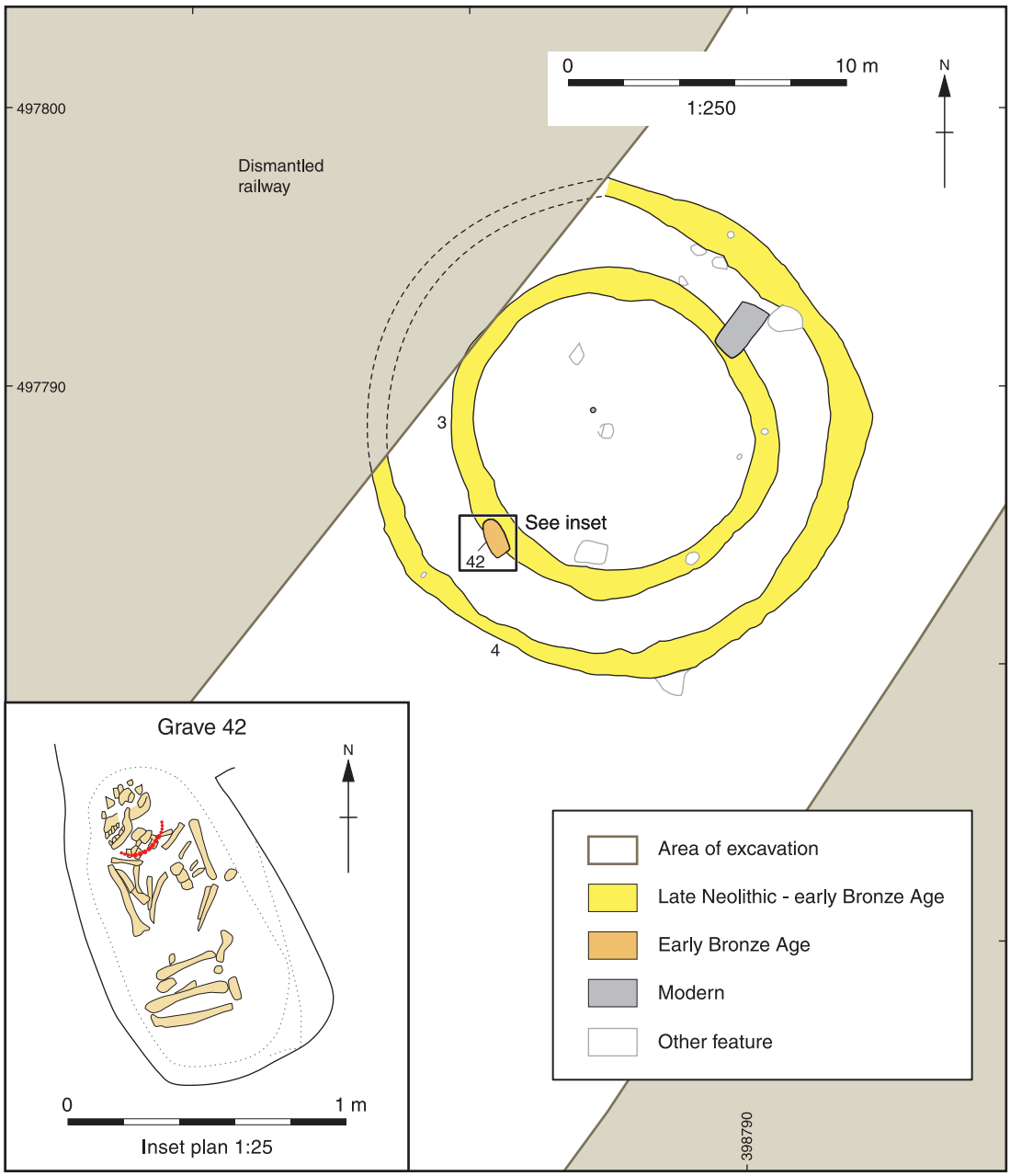


Figure 3.59 Whitehill Road round barrow: plans of the double ring ditch and Grave 42

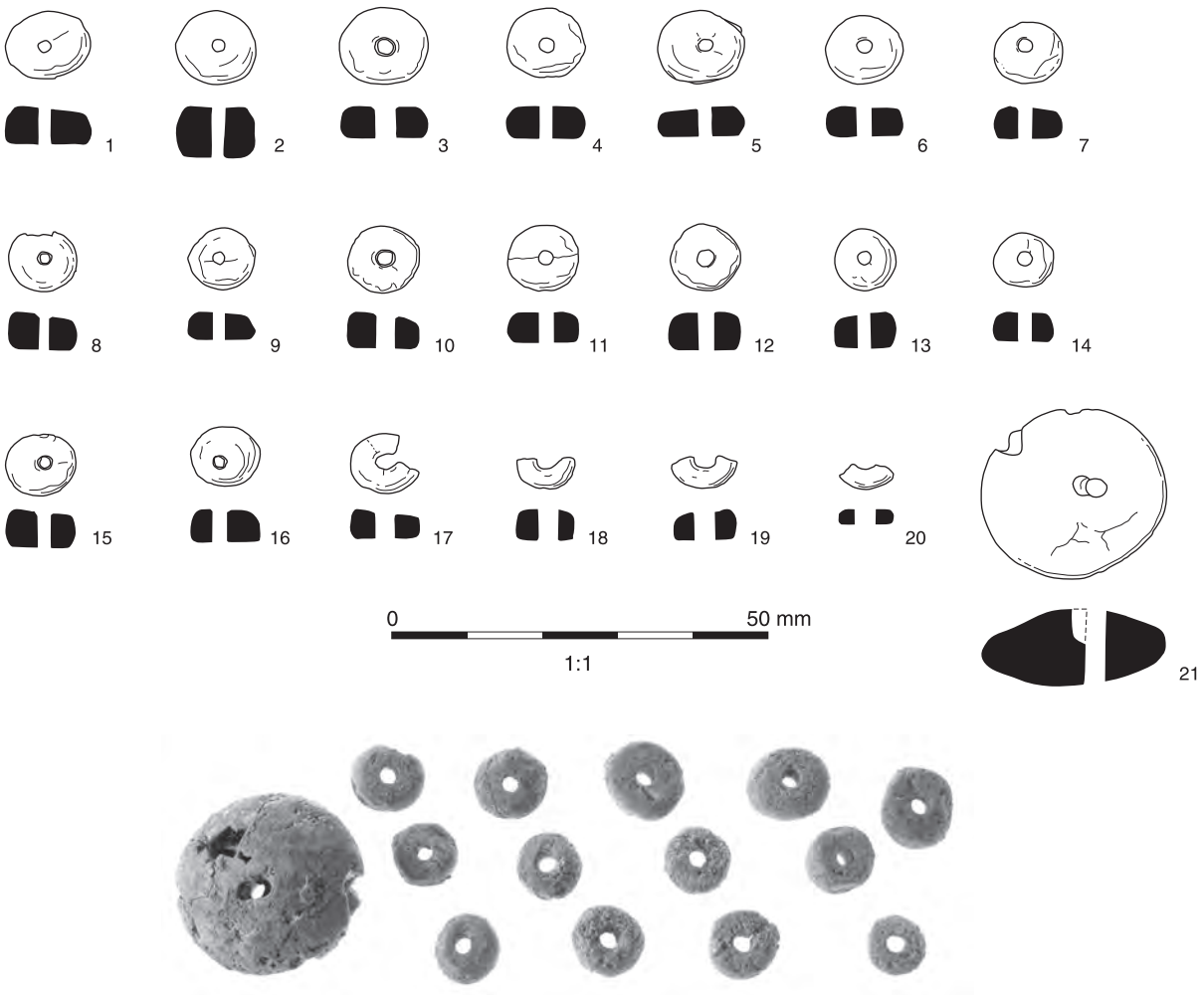


Figure 3.60 The amber beads from Whitehill Road Grave 42

ovate disc beads (in Beck and Shennan's typology, all of type 1B except for one borderline type 7B: 1991, 53, 60, fig. 4.1, tbl. 4.1). It is likely that these were arranged in graduated sequences with decreasing bead sizes on either side of the central large pendant bead. The beads show signs of wear and may have been in use for some time before deposition. The amber is probably ultimately of Baltic origin (Keily 2006b), though whether it reached Britain in an unmodified form through exchange or by marine erosion and transportation processes, or as one or more sets of worked beads either as 'trade' items or as personal possessions worn or carried by a traveller, craftworker or raider, is unknown.

There is no direct parallel for this necklace in any British Chalcolithic or Bronze Age funerary context (Beck and Shennan 1991). Most Early Bronze Age necklaces with amber beads fall into three broad categories: (i) single-strand full amber necklaces consisting of spherical, oblate, quoit-shaped and/or 'pestle-shaped' beads, sometimes with pendant rings; (ii) multi-strand full amber crescentic necklaces with spacer-plates; and (iii) single-strand composite necklaces comprising beads made from a multiplicity of materials, including amber, jet, lignite, shale, faience, stone and bone. Categories (i) and (ii) belong broadly to the period *c* 1900–1750 BC and are often associated with 'Wessex 1' burials, while category (iii) necklaces generally appear to be later, belonging mainly to the period *c* 1800–1600 BC and often associated with 'Wessex 2' style burials. In nearly all cases these necklaces have been recovered, unburnt, from beneath, within or beside cremated human bone deposits. It is apparent that the Whitehill Road necklace is thus different in every respect from Early Bronze Age examples (*contra* Keily 2006b, 6). Moreover, finds of amber in contexts dating to the 16th–13th centuries BC are exceptionally rare, with only five instances noted by Beck and Shennan (1991, 99–101), none of which includes more than three beads. The conclusion drawn, however, that amber 'played scarcely any role in the Middle Bronze Age', seems over-stated: amber beads may well have been in widespread use as personal/dress ornaments but simply not normally deposited in funerary or hoard contexts.

The closest parallel for the Whitehill Road find in Britain is the 16-bead amber necklace from a Late Bronze Age hoard found in a stream bank at Llangwyllog, Anglesey (Beck and Shennan 1991, 101–3, 193, fig. 11.23.2), associated with jet beads, jet and stone rings and bronze objects including tweezers, a bracelet and harness fittings. This assemblage can be fairly reliably

dated to the 8th–7th centuries BC on the basis of the metalwork associations. The Llangwllog necklace, like that from Whitehill Barrow, has a large central rounded annular bead bordered by small, more angular, annular beads that were probably arranged originally in a size-graded sequence. It is possible, given that amber objects could have been curated as ancestral heirlooms or insignia of rank or identity over long periods of time, or even recovered from ancient deposits and re-used, that the Llangwllog beads were originally made and assembled as a set during the Middle Bronze Age.

It is also difficult to find parallels for the Whitehill Road grave in terms of body treatment, necklace association and site context. The closest, at least chronologically, is the recently discovered Middle Bronze Age inhumation (*c* 1530–1430 cal BC) of a 14–15 year old adolescent, possibly male, found with an amber necklace of over 90 beads in a shallow grave pit at Boscombe, Wiltshire (Barclay 2010). Isotopic evidence suggests this individual grew up in a warmer environment far from the Wessex chaklands, possibly in far south-west Britain but more likely in southern Europe. Other examples of secondary inhumation burials at round barrow sites with composite necklaces that include amber beads are also all from Wiltshire, including Inhumation 2 at Collingbourne Ducis 5 (Snail Down XXII; N Thomas 2005, 124–5), and Interment 3 at Shrewton 5j (Green and Rollo-Smith 1984, 273–5; cf. Woodward *et al.* 2005, 49–50). Neither of these burials is radiocarbon dated but the composite forms of the necklaces are similar to those found with cremation burials of the 18th and 17th centuries BC. The only other example of an amber necklace associated with a Bronze Age inhumation was found in a later flat grave (3058) at Easton Lane, Hampshire, radiocarbon-dated to 1300–750 cal BC (Beck and Shennan 1991, 155, fig. 11.4.5; Fasham *et al.* 1989, 28). This had 27 type 1A/1B amber beads similar to the smaller examples from Whitehill Road.

There are no parallels at all for the Whitehill Road burial and its accompanying necklace in south-east England, while funerary practices in the region more generally during the Early-Middle Bronze Age 'transition' are little understood. Although concentrations of Chalcolithic and Early Bronze Age 'rich' burials containing exotic and/or rare objects and materials (including gold, jet, amber and faience) have been recognised in east and north Kent and Sussex (Champion 2005; Garwood 2003), these bear only remote comparison to the far more dense clusters of such burials in Wessex. Moreover, the relatively rare, diverse and spatially scattered 'rich graves' of south-east England were products of several distinct kinds of funerary representation over a period of at least 800 years, suggesting only occasional and mostly disconnected burial events rather than sustained traditions of practice.

Only three other sites in the region have produced Early or Middle Bronze Age amber finds, of which only one is definitely funerary in character. Fragments from a dagger pommel and a pendant were found in disturbed contexts in the Early Bronze Age mound at Ringlemere, Kent (Needham 2006a), and a small fragment of an spacer plate from an Early Bronze Age necklace was found in a secondary context at Kingsborough Farm, Sheppey (Alistair Barclay pers. comm.). Only the famous amber cup from Hove in West Sussex, found in a tree-trunk coffin, formed part of a funerary assemblage (Garwood 2003, 53). The character and date of the Hove Barrow burial, however, are open to alternative interpretations: it is unclear whether this was an inhumed body or a cremated bone deposit, while suggested dates—ranging from 1750–1550 BC (Needham: 2006c, 60–1), to the late 16th or early 15th century BC (supported by a radiocarbon date of 1610–1380 cal BC from the coffin)—remain equally possible. Other inhumation graves in the region that can be dated to the mid-2nd millennium BC are extremely rare, although these include the burial of a woman with a Snowshill dagger at Chanctonbury, West Sussex (Ratcliffe-Densham 1968), dating to *c* 1700–1500 BC (cf. Needham 1996, 132–3). Cremation burials contemporary with the Whitehill Road grave also appear to be rare, the only well-dated example nearby being the burial of a woman beneath an inverted Wessex Biconical Urn at Wouldham, Kent, radiocarbon dated to 1870–1620 BC (Cruse and Harrison 1983; Cruse 2007).

More widely, however, it is evident that amber beads of diverse kinds occur in Middle Bronze Age contexts in many parts of central Europe, most notably in female graves in Tumulus Culture cemeteries in areas such as southern and eastern Germany, Bohemia and western Poland (Gimbutas 1965, 284–90; Kristiansen and Larsson 2005, 234). These finds include single-strand necklaces with graduated bead sizes not unlike the Whitehill Road example, though most of the beads tend to be smaller with more angular edges: eg in Grave 2 at Ebingen in Schwabia (Pirling *et al.* 1980), and in Mound 4 Interment 3 at Hohen Feld, Stade, in Lower Saxony (Wegner (ed) 1996, 295). Amber beads are surprisingly far rarer in northern Europe, especially in regions such as Denmark and the Baltic littoral where most Bronze Age amber is assumed to have originated (for example, there are very few examples from Danish oak coffin graves of the 16th and 15th centuries BC: Randsborg 2006, 27). Indeed, it is possible that the 'value' of Baltic amber for funerary display in the Middle Bronze Age increased significantly the further away it was from its source areas.

In this context, it is striking that the closest parallels for the Whitehill Road grave occur in Drenthe in the northern Netherlands (Fig. 3.61), where there are several examples of amber necklaces in secondary inhumation graves at round barrow sites, notably Emmerdennen Tumulus 11, Kamperesche Tumulus 2, Weerdinge Tumulus 2 (de Paaschberg), and Hijken Tumulus 9 (J Butler 1990). These burials belong to the MBA 'B' phase in the Dutch Bronze Age sequence, traditionally dated to *c* 1500–1100 BC (ibid; van den Broeke *et al.* 2005, 29–31, fig. 1.10), although a recent reassessment of the radiocarbon chronology suggests that mounds with post circles—a feature of many MBA 'B' barrows—were mainly built in the period *c* 1650–1300 BC (Lanting and

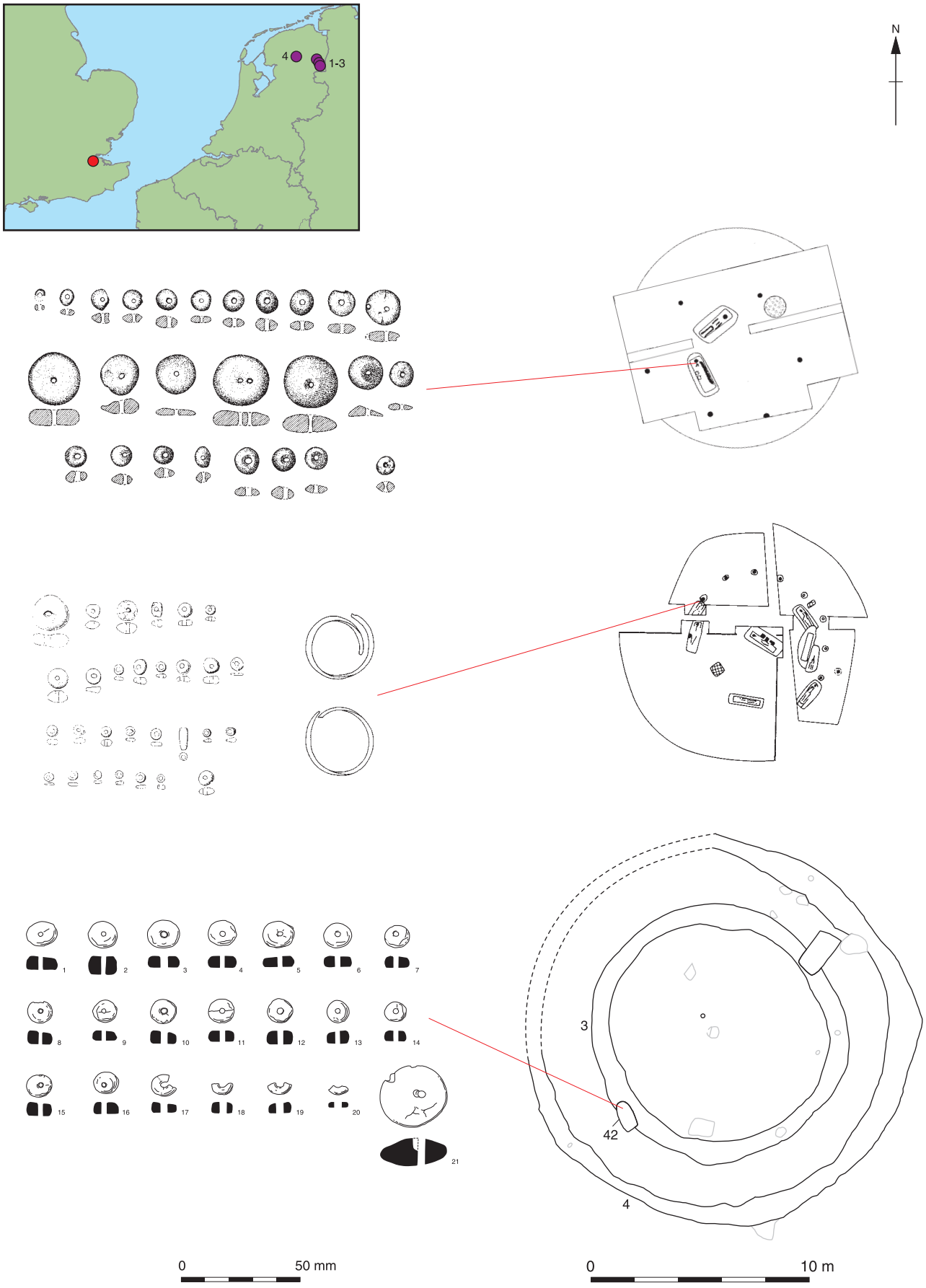


Figure 3.61 Secondary female 'rich graves' with amber necklaces in the Netherlands in comparison to Whitehill Road Grave 42. Top: Emmerdennen tumulus 11, Drenthe (J Butler 1990, fig.5). Middle: Weerdinge Tumulus 2 'de Paaschberg', Drenthe (J Butler 1990, fig.8). Bottom: Whitehill Road, Kent (Bull 2006b, figs.4, 5). Inset: distribution map of the Dutch sites mentioned in the text in relation to Whitehill Road: 1.Emmerdennen tumulus II; Kamperesche Tumulus 2; 3. Weerdinge Tumulus 2 (de Paaschberg); 4. Hijken Tumulus 9

van der Plicht 2001/2, 189-98). None of the graves with amber necklaces has been directly dated, but the evidence from Dutch Middle Bronze Age cemetery barrows indicates short sequences of secondary burials over a few generations after initial construction. It is likely, therefore, that the burials with amber necklaces in the Netherlands date broadly to the same period as the Whitehill Road grave. Although the Dutch necklaces vary in their bead forms, sizes and likely arrangements, they mainly comprise combinations of small annular beads with a small number of larger annular or disc-shaped beads. The example from Weerdinge Tumulus 2, in particular, is very similar to the Whitehill Road necklace, with a single large bead 30mm in diameter, a single cylindrical bead, and 27 smaller beads ranging from 7–17mm in diameter, again suggesting a size-graded sequence (J Butler 1990, 61–3, fig. 8). Given the close artefactual similarities, contextual parallels in terms of funerary deposition, and the feasibility of direct or coastal maritime travel between the north Kent coast and the Rhine-Maas delta, or the Frisian Coast (which in this period was *c* 50km from the Drenthe barrow sites), it is possible that these burial events and the shared presence of amber necklaces point to social or cultural connections and possibly the movement of people across the southern North Sea.

The specific social significance of the Whitehill Road burial is difficult to interpret, however, because of its unusual character and the lack of a clear regional or local context for understanding the contexts and meanings of funerary practices in the mid-2nd millennium BC. It is apparent, however, that formal mortuary deposition was very rare throughout Britain during this period and that all burial events were 'special' in some way, involving strategic decisions about body treatment and placement that did not conform to the more general 'normative' rules for dealing with the dead amongst the wider population. The selection of an ancient funerary monument as the place of burial was also clearly not an arbitrary decision, but rather suggests a deliberate attempt to evoke the past and to situate the significant dead with reference to an existing landscape of monuments—as an act of identification, conformity or perhaps assimilation or domination. At the same time, the presence of finely-worked amber objects, almost certainly directly or indirectly from a distant source around the shores of the Baltic, and perhaps more immediately from the Netherlands (though the movement of such objects could, of course, have occurred in the other direction), suggests that the burial event was attended by prominent material display, with the 'conspicuous consumption' of valued materials/objects that recalled far-off places, exotic origins and particular cultural affiliations.

There has been considerable recent debate concerning long-distance movement of objects and substances, especially amber, during the European Bronze Age (eg A Harding 1990; Kristiansen and Larsson 2007; Needham 2000, 2006b, 2009; Van de Noort 2006; cf. Helms 1988), as well as the movement of people that took place alongside or as 'material' transfers through practices such as marriage exchanges (ie Sørensen 1997) and warrior recruitment (Kristiansen and Larsson 2007, 231–40). Many recent accounts of Bronze Age interactions and cultural transmission draw particular attention to a range of non-mercantile cultural rationales underpinning many aspects of journeying and exchange practices in the 2nd millennium BC, as well as the changing social significance and organisation of 'trade' in all its forms. Above all, it is possible to recognise a profound shift of emphasis—in the centuries on either side of 1500 BC—from 'cosmological acquisition' as the main driver for chief-led foreign expeditions to procure materials valued for their 'elite' connotations and their sacred or magical qualities (Needham 2000), to bulk commodity and prestige goods exchange and the accumulation of material resources for chiefly display and wider redistribution and consumption, including votive deposition (Van de Noort 2006).

Like the builders and sailors of the Dover Boat (Clark 2004), the woman buried at Whitehill Road thus lived at a time of major change in the conditions of social and economic life (as perceived at a scale of centuries), although the extent to which this would have been discernible during her lifetime or even in the context of multi-generational 'family' recollection is arguable. However, our limited knowledge of the social strategies and cultural contexts of funerary acts both in south-east England, and more widely in the mid-2nd millennium BC, prevents any conclusive interpretation of the significance of the burial event or the persona of the individual represented. Whilst it is possible, for example, that she and her necklace had travelled together from afar as part of a marriage alliance exchange at some point during the 16th and 15th centuries, it is equally likely that she was a member of an elite local family who had secured the amber necklace during a chiefly expedition to obtain 'sacred' substances in 1550 BC, or as part of commodity trade transaction to accumulate items for elite display and redistribution in 1450 BC. There are many possible interpretative permutations along these lines, all of which are more or less credible given the evidence available. The 'Dutch connection' may well have been significant, of course, and it is very tempting to imagine maritime interactions involving aristocratic or royal alliances, but equally we may be seeing evidence for a singular episode of movement or exchange that was not repeated as part of an established social and political network .

In many respects the Whitehill Road burial epitomises the Chalcolithic and earlier Bronze Age burial evidence from HS1 Section 1. Overall, that evidence is limited in quantity, and relevant only to a small part of the wider range of mortuary practices and funerary material culture repertoires of these periods, yet at the same time most of the burials are exceptionally important, with considerable research significance at both national and international scales. Considered together, they emphasise how it is impossible to appreciate the 'meaning' and relevance of funerary events of the late 3rd and early to mid-2nd millennia BC without looking beyond the individual site or its local context, important though these are for understanding the 'place' of the dead in the

cultural landscape. Funerary events of this time were occasions for affirming particular social or sacred identities and allegiances that in many cases owed their power over people's minds to their exotic origins or continued cultural 'connectivity' over long distances. Just as striking is the way that new discoveries of the kind made along the HS1 route can—even in a field as intensely studied as Chalcolithic and earlier Bronze Age funerary archaeology—still provide unexpected new insights that have the potential to reconfigure our wider understanding of social life during these periods.

Earlier prehistoric worlds and the changing landscapes of the mid-2nd millenium BC

The date '1500 BC' has come to have an almost totemic presence in British prehistoric studies, marking the great divide between an 'earlier prehistoric' world of mobile communities, ephemeral settlement, monument-building, small-scale social groups, minimal hierarchisation, and low intensity subsistence and production practices, and the 'later prehistoric' world of sedentary communities, field systems and hillforts, large-scale polities with complex social hierarchies, and increasingly intensive agricultural and craft production (Bradley 1991; 2007, 178–202). It is fully recognised, of course, that ideal-type dichotomies of this kind must inevitably over-generalise and simplify the evidence, and that locally and regionally there will be a good deal of variation in the character and tempo of this transformation, yet the idea of radical cultural change in the middle of the 2nd millennium BC continues to be a key structuring device in our narrative frameworks for British prehistory. In southern Britain, this process has become closely associated if not exemplified by the creation of the earliest co-axial and aggregational field systems (Yates 2007) and the appearance of durable house architecture and relatively long-lived inhabitation of fixed settlements (Barrett 1994, 146–53), all of which suggest completely different relationships between people and the land, and different compositions and organisations of social groups in comparison with those that underpinned earlier patterns of social life. In parallel with these changes, the demise of most Early Bronze Age burial practices and associated material culture repertoires, alongside the rapid decline in the frequency of monument-building in the period 1600–1400 BC, suggest profound changes in the ways that relationships between the present and past, living and dead, and community and place were conceptualised and realised through funerary and architectural media.

The pivotal significance of the Early–Middle Bronze Age transition thus seems undeniable for understanding social changes not only in the 2nd millennium BC but also at much larger temporal and cultural scales. Our understanding of the 'causes' and process of this transition, however, remains extraordinarily vague, despite some major new discoveries and reassessments of the changing nature of social life in this period (eg Brück 2000; Yates 2007). To some extent, these new insights have blurred the 'before/after 1500 BC' chronological boundary, yet at the same time have largely reinforced overall perceptions of far-reaching transformation at this time. For example, despite evidence for more widespread and sustained clearance and the growing importance of cereal cultivation from the early 2nd millennium BC (Richmond 1999, 80), and occasionally small clusters of bounded fields (eg Martin *et al.* forthcoming), these developments did not lead swiftly or widely to the construction of large-scale field systems, for which there is no strong evidence before the mid-2nd millennium BC (Johnston 2001; 2008). Similarly, although recent discoveries of Early and Early/Middle Bronze Age houses (eg Garner 2007; Hey 2001; cf. Brück 1999b) have revealed the presence of more complex and lasting modes of occupation during these periods than once imagined, nonetheless it is clear that widespread commitment to fixed, durable settlement and the kinds of social existence this entailed occurred only after 1500 BC (Barrett 1994, 146–53).

The HS1 evidence at first sight contributes little to these general questions or our understanding of social change in the mid-2nd millennium BC in south-east England. This is not in any sense a failing but rather a reflection of the nature of the evidence and perhaps a condition of the particular route of the HS1 corridor. As Tim Champion shows in the following chapter, the Middle Bronze Age evidence is considerable and diverse, yet at the same time surprisingly thin at a local level, with little suggestion of rapid or intensive modification of the settled landscape in the centuries immediately after 1500 BC. Indeed, the overall impression is of gradual change, with a high degree of continuity in the basic modes of inhabitation and landscape use from the earlier Bronze Age, along with some local moves towards more sedentary occupation and agrarian farming in what appear to be small-scale field systems at Sandway Road and Tutt Hill (around the earlier barrows), and possible buildings and ditches at White Horse Stone. It is striking, in this context, that the earliest evidence for substantial extensive field systems in Kent has been found along the northern coastal plain, associated with Deverel-Rimbury ceramics (*c* 1500–1200 BC: Champion 2007c, 101), whereas large field systems to the south of the chalk escarpment at Brisley Farm, Westhawk Farm and Saltwood Tunnel appear to develop during the Late Bronze Age, after 1200 BC (see Champion, Chapter 4). The Early–Middle Bronze Age transition in the area traversed by the HS1 corridor thus seems to have been locally distinctive. There were significant changes in the way that earlier monuments went out of use, or at least changed from being places primarily for funerary events to places of remembrance and foci for land division and settlement, while accelerating woodland clearance points to the creation of more extensive farmed and grazed landscapes. At the same time, however, the basic patterns of life may have changed only gradually until overtaken by major changes in the Late Bronze Age, when the socio-economic and perhaps political systems that had developed to the north of the chalklands were deliberately extended to the river valleys and Greensand ridges to the south.

Reflections on the earlier prehistoric archaeology of the High Speed 1 route

The HS1 project has provided us with exceptional insights into the nature of earlier prehistoric landscapes across a swathe of south-east England. As the preceding descriptions of the evidence and interpretative discussions have shown, the project has made a major and sometimes unique contribution to our knowledge and understanding of several key dimensions of the earlier prehistory of southern Britain, often with wider relevance or significance at national and international scales. Each one of the ten major excavations that revealed early prehistoric material in *in situ* contexts warrant wider recognition in their own right, although White Horse Stone/Pilgrim's Way clearly stands out because of the outstanding evidence uncovered of both Early Neolithic timber buildings and Late Neolithic settlement. In inter-site terms, the linear spatial articulation of both settlement structures/activities and monumental architecture (at White Horse Stone/Pilgrim's Way and Saltwood Tunnel respectively), Late Mesolithic occupation episodes in the vicinity of tree-throw holes, and the presence of several earlier Bronze Age funerary monument clusters below the chalk downland escarpment, point to patterns of social action and organisation that formerly were either unsuspected, rarely encountered and/or only vaguely appreciated in the wider region.

Of course, the arbitrary path of the HS1 corridor in relation to the diverse and changing spaces of prehistoric social life—in a sense, slicing through past cultural worlds without any regard to their possible original forms or parameters—has its weaknesses in trying to understand these worlds, especially as any narrow landscape transect must inevitably encounter only tiny disconnected fragments of past social activities. From this perspective, we must be careful not to imagine any intrinsic connectedness among HS1 sites simply by virtue of the fact that they occurred along a single linear 'exposure'. Our encounters with the particular pasts revealed by these sites were thus always a matter of chance and we should not be surprised by their lack of cultural coherence or relatedness. This condition of the evidence is especially highlighted in earlier prehistoric studies because of the unevenness and extraordinary diversity of the evidence in space/time and in terms of the modes of social agency and expression represented. In this regard, to have described the HS1's earlier prehistoric evidence thematically would have been a pointless exercise: whilst it is possible, for example, to discuss 'occupation sites' in the Late Neolithic, and possibly the Late Mesolithic, it is not possible to do so in relation to the Early Bronze Age evidence. Similarly, direct evidence for agricultural practices and production technologies (such as pottery manufacture) is either absent or so incidental that it is impossible to draw general conclusions, while the few examples of mortuary deposits were almost entirely restricted to Chalcolithic and Early Bronze Age contexts. Instead of a broad multi-period thematic approach, which would have become bogged down in unproductive reflections on the 'evidence that wasn't there', it has been far more fruitful to explore those aspects of early prehistoric cultural worlds that the HS1 evidence really does reveal, often to striking effect, and to situate that evidence in its wider period-specific cultural context at several social and spatial scales of enquiry.

Viewed in this way, the strengths of the results of the HS1 project far outweigh their limitations. Besides revealing significant aspects of individual sites, the huge evidential and analytical returns that follow from investment in large-scale excavation more than vindicate the costs involved, both at a site level and in relation to overall programmes of archaeological intervention. To be able to 'see' past human activity in a spatially extensive manner and thereby contextualise the particular (such as the 'moment' of a depositional act in a pit) in relation to a wider, spatially-structured, meaningful pattern of behaviour, makes possible a level of understanding that trenching and 'key-hole' investigation cannot remotely hope to achieve. This is especially important in relation to early prehistoric activity, the particular social forms and qualities of which in most everyday contexts appear to have been relatively fluid and extensive, with very little continuous long-term inhabitation or use of particular places.

It is also plain that a critical requirement for understanding early prehistoric evidence is to ensure that it is situated with reference to inter-regional and wider comparative frameworks of interpretation. Knowledge of the 'big picture' is absolutely essential for understanding the local and particular. The nature of the White Horse Stone/Pilgrim's Way Early Neolithic timber structures, for example, cannot be understood if disconnected from the wider north-west European context of timber architecture in the early 4th millennium BC. Similarly, the significance of Late Neolithic activity at the same site cannot be evaluated without an appreciation of the rarity of settlement evidence in Britain and near parts of continental Europe at this time. The graves excavated at Northumberland Bottom, Saltwood Tunnel and Whitehill Road, which could all-too-easily be disregarded as 'just' additional examples of Chalcolithic and Early Bronze Age buruals, are revealed to be exceptionally unusual and distinctive funerary events once their significance beyond their local south-east English settings is fully appreciated. Most important of all, perhaps, are the exceptional insights that such a complex engagement with events, cultural landscapes, and wider structures of social life and meaning produces for appreciating the 'otherness' of early prehistoric worlds. In 'doing things differently', and thinking things differently, people in these pasts lived cultural lives in many respects alien to ours. In this light, one of the greatest strengths of the HS1 project is the way it provides so many different 'windows' through which these 'other' lives and worlds can be glimpsed.

Chapter 4

Later prehistory

by Timothy Champion

Introduction

This chapter will discuss the High Speed 1 (HS1) project's contribution to our understanding of later prehistory, the period of approximately 1500 to 100 BC (Fig. 4.1). Any decision about how to divide up the continuity of the human past into sections invites questions about the validity of the preferred scheme and the particular changes in the past that it prioritises. The original research agenda for the HS1 project was based on an assumption, derived from the limited evidence for the prehistory of Kent then available, that there would be a marked change in the nature of the archaeological record in the middle of the 2nd millennium BC, from a landscape dominated by the barrows of the Early Bronze Age to a landscape of fields and settlements typical of the Middle and Late Bronze Age; and, at the other end, a further assumption that the emergence of central places, some of which became towns in the Roman period, marked a similar major shift in the nature of the settlement record and of social organisation.

As it happened, and as will be clear from this and the following chapter, the assumptions about the nature of the archaeological record encountered in the HS1 project were correct. There is plenty of evidence for extensive woodland clearance and the ordering and division of the landscape in the centuries after 1500 BC, and also for a widespread reorganisation of settlement at the start of the Late Iron Age. The general approach adopted in the original research design is therefore retained in the discussion of the results in this volume. Thus, this chapter avoids the more traditional division of the past into Bronze Age, Iron Age and Roman periods, in favour of one based on a period from the Middle Bronze Age to the Middle Iron Age, followed by a period combining the Late Iron Age and Roman. This framework has been

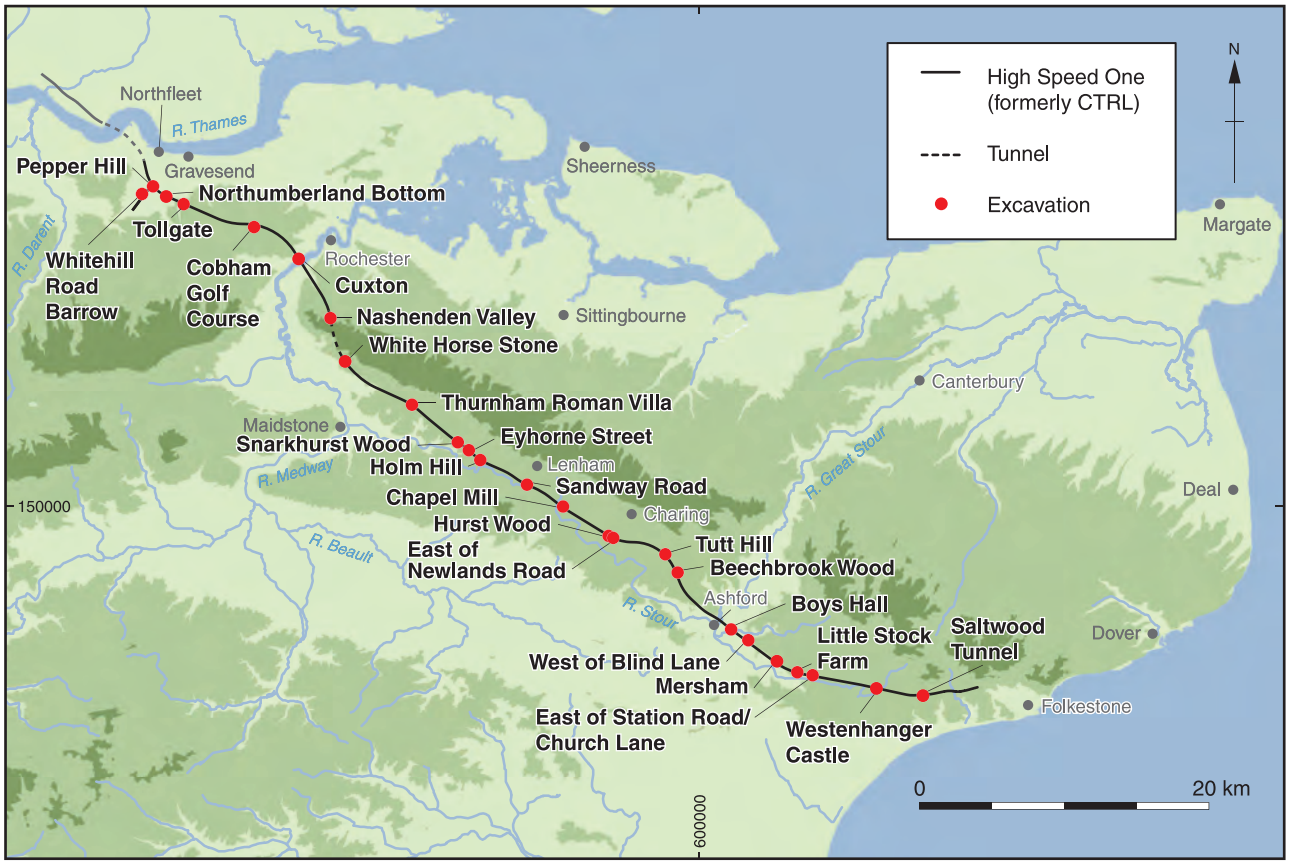


Figure 4.1 Map of HS1 route showing later prehistoric sites

used by some other recent accounts of later prehistory in Britain, though not by all; in the specific case of Kent, for example, Ashbee (2005) has followed a more traditional Three Age System structure, while the sub-division of prehistory in Williams (2007) has adopted breaks in the middle of the Bronze Age and at the start of the Late Iron Age, without completely linking that period with the Roman. Though the periodisation adopted here reflects real changes in the nature of the archaeological record, in particular the types of sites that regularly recur, it should not be assumed that the transitions that mark the beginning and end of this period necessarily correspond to major changes in the nature of society. The sites and monuments constructed and used by past societies need to be interpreted in terms of the organisation of those communities, and changes in the nature of the record set against other evidence for the changing nature of social organisation.

In fact, when seen in this rather broader light, the transitions at the beginning and end of the period that is the subject of this chapter show two rather different patterns. Within the HS1 project the transition to the Late Iron Age is marked in the archaeological record by an almost total non-continuity of settlement occupation and a new phase of settlement foundation characterised by land division and enclosure (see the following chapter); this coincides very generally with other phenomena such as the beginning of the oppida, the adoption of formal cremation burial, the proliferation of brooches and distinctive new pottery types. The introduction of coinage may have been somewhat earlier, but these wide-ranging and broadly contemporary changes show a fundamental restructuring of society in terms of personal identity and political power as well as settlement and economy. It may be justifiable, therefore, whatever the arguments about the validity of the concept of an Iron Age as a technological stage, to have doubts about its coherence in terms of social organisation and to accept that the Late Iron Age represents something fundamentally different and more akin to what follows.

At the start of the period, the transition from the Early Bronze Age is rather different. The archaeological record certainly shows a major shift from burial monuments and largely invisible settlement to a landscape of fields and settlements, but this takes place during the continued currency of bronze as a material with high symbolic value. The concept of a Bronze Age makes sense as much as a period of social attitudes to the metal as it does as a technological stage. The periodisation used here therefore has its problems. The transition to a cleared, ordered and settled landscape, which marks the beginning of this chapter's focus, and the implied continuity throughout the rest of the Bronze Age and the Early and Middle Iron Age, do not correspond with the period during which bronze circulated as a valued material. The end of this period at around 800 BC (Needham 2007b) marks what must have been a significant disruption to established social values and practices, and we might reasonably expect that this would have been reflected in other areas of the contemporary archaeological record.

The final section of this chapter will provide the opportunity for further discussion of these themes among others and of the contribution of the HS1 project to the development of our understanding of them. The significance of that contribution can only be properly appreciated in the light of the slow growth of our knowledge of the later prehistory of Kent as revealed by previous treatments of the subject. In contrast to certain other periods, especially the Lower Palaeolithic, the Roman and the Early Anglo-Saxon (though specialists in those periods would not necessarily agree), understanding of the later prehistory of the county has been slow to develop. In the first general survey, contained in the archaeological contributions to the Victoria County History, the prehistoric section was written by George Clinch (1908), and seems especially limited by modern standards; he could do little more than list some of the better known finds of metalwork, especially the bronze and gold hoards; for the Iron Age he presented an important discussion and plans of some earthworks, but could assign very little else to this period except the recently published Late Iron Age finds from Aylesford (Evans 1890). A quarter of a century later, Ronald Jessup's (1930) chapters on the Bronze Age and the Iron Age showed how little progress had been made: the former could include a larger number of bronze hoards, and the latter some possible Iron Age settlements, but there had been few major excavations of any type of monument. Even after another half century, further progress had been disappointing: the contributors of both the Bronze Age (Champion 1982) and the Iron Age (Cunliffe 1982) chapters to a survey of Kent archaeology bemoaned the lack of high-quality modern evidence.

The position changed dramatically in the 1980s as the pace of development increased and the significance of archaeological remains was recognised by PPG16 (Champion 2007a). Quite apart from the HS1 and the growth it stimulated, Kent saw some of the largest and most numerous development and regeneration proposals in southern England, with a consequent explosion of fieldwork activity and eventually of archaeological knowledge. Not all periods have necessarily benefited to the same extent; the archaeological benefits have arguably been greatest for the later prehistoric period, for reasons perhaps as much to do with the lack of previous knowledge as with the economically driven non-random quirks of the development industry. Some idea of the progress that has been made in this period can be gained from a comparison of successive treatments of later prehistory, which have drawn heavily on the unpublished grey literature as well as published sources; for a vivid demonstration of this rapid growth in knowledge, compare the maps of known Bronze Age evidence for fields and settlement in Kent in 1990 and in 2002 published by Yates (2007, fig. 3.2), which clearly demonstrate the quantitative growth in knowledge, but also how it was geographically constrained by the location of development proposals. A paper discussing the distribution of settlement in Kent from 1500 to 300 BC (Champion 2007b) was originally written for a

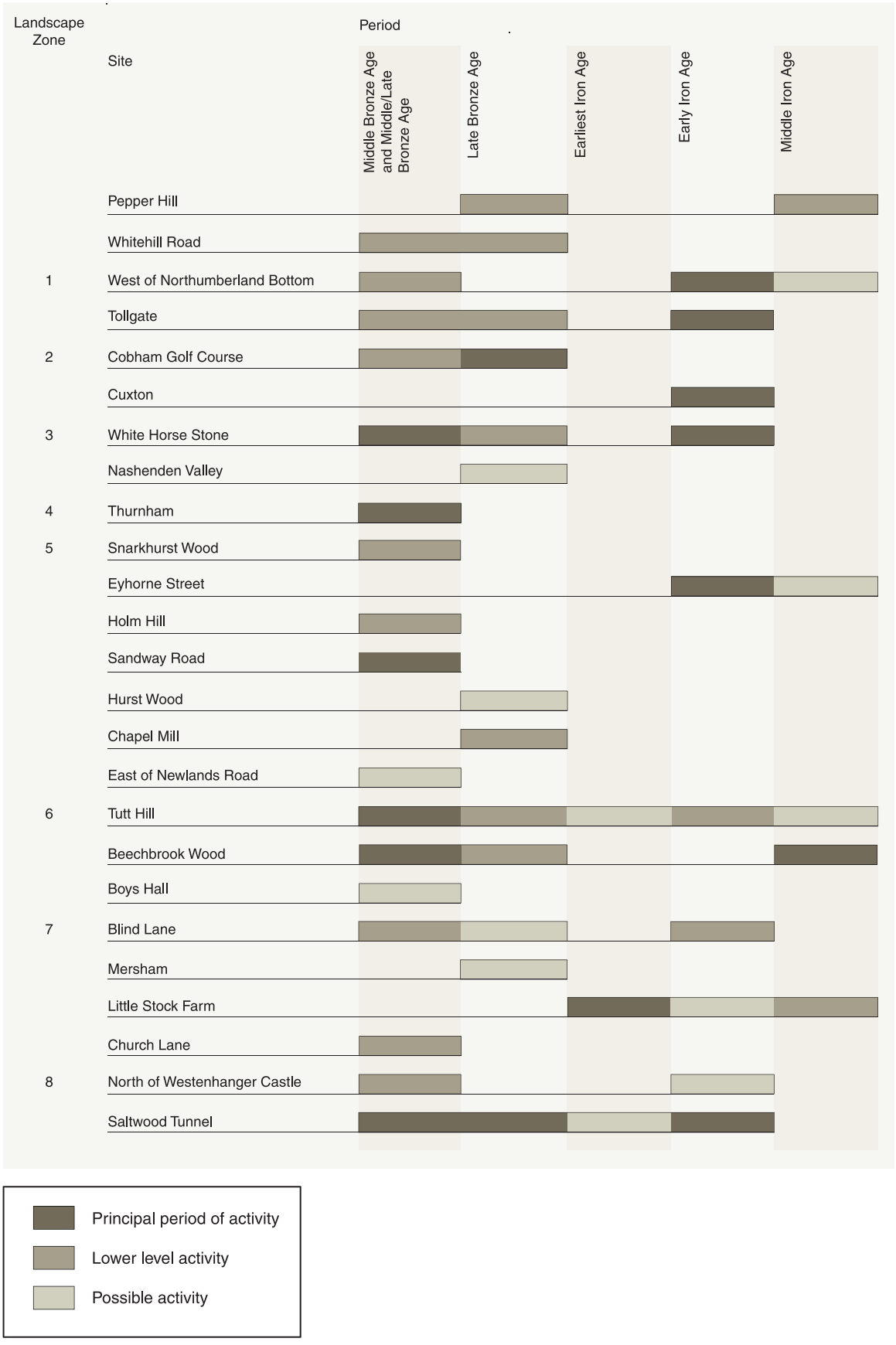


Figure 4.2 Later prehistoric activity along the HS1 route by site and period

Figure 4.3 Beechbrook Wood Railhead under construction

conference in 2001 and subsequently revised; it drew on the grey literature at a time when few of the major sites had been published and knowledge of the HS1 excavations was still at an early stage, before most of the assessments had been completed. A more general account of the prehistory of Kent (Champion 2007c) was completed in 2005, using the same range of sources but with new sites discovered and knowledge of older sites updated. Many of the themes covered in these earlier works are dealt with in the rest of this chapter, and comparison of what is written here with what was written earlier is instructive about the growth of our understanding even in a period of five years. Comparison of the two accounts of the distribution of settlement in the landscape in this chapter and in the earlier paper (Champion 2007b) is particularly revealing, as many of the questions originally posed can now be answered or at least refined.

Few published reports were available at the time of writing the earlier papers (Champion 2007b; c); the publications of Coldharbour Road, Gravesend (Mudd 1994) and Monkton Court Farm, Thanet (Perkins *et al.* 1994) stand out. That has now changed as the major sites work their way through to publication. The publication of the HS1 sites and this overall summary can now be added to reports on Bronze Age sites such as Shrubsoles, Isle of Sheppey (Coles *et al.* 2003), Iwade (Bishop and Bagwell 2005), Kemsley Fields (Diack 2006), the critically important Late Bronze Age and Early Iron Age site at Highstead, near Chislet (Bennett *et al.* 2007), the major Bronze Age and Roman sites on the Monkton – Mount Pleasant road scheme (Bennett *et al.* 2008), and the Neolithic, Late Bronze Age and Iron Age sites at Kingsborough, Isle of Sheppey (Allen *et al.* 2008), with others too in preparation. All of these sites lie on the north Kent plain, the chalklands east of Canterbury or the offshore islands of Sheppey and Thanet, parts of Kent not traversed by the HS1 route. For the north Kent region west of the Medway and more particularly for the Greensand vale to the south of the Downs, the HS1 route represents a linear transect through landscapes that have not seen the same intensity of development and archaeological activity as other parts of the county, with the possible exception of the area immediately around Ashford.

For the areas that it crosses, the HS1 therefore gives us a uniquely important body of high-quality modern data (see Fig. 4.1). As well as the scheme-wide evidence for the distribution of settlement, there is information on the nature of settlement of all periods (Fig. 4.2). There is fragmentary evidence for low-density activity of all periods throughout most of the route, but more substantial evidence for the Middle Bronze Age from White Horse Stone, Sandway Road, and Beechbrook Wood; for the Late Bronze Age at Cobham Golf Course and especially Saltwood Tunnel; and for the Iron Age the probably total excavations of two settlements at White Horse Stone and Beechbrook Wood (Fig. 4.3), as well as other important Iron Age settlement data at West of Northumberland Bottom, Tollgate, Cuxton, Eyhorne Street and Little Stock Farm. The excavations have also

cast new light on Middle Bronze Age bronzeworking at Beechbrook Wood, early iron-working at White Horse Stone and on the salt industry at several sites, including Cobham Golf Course and Tollgate. The many large pottery assemblages recovered have also allowed a ceramic chronology to be established with greater confidence, as well as shedding light on resource utilisation, production and distribution. There was also a very varied pattern of clearly selective and structured deposits from all periods.

A chronology for later prehistoric Kent

One of the most important aims of a regional research strategy is to establish, and then to refine, a reliable chronology. The process of establishing such a chronology is, of course, only a means to an end, but it is an essential foundation for the proper interpretation of the excavated record, especially for the understanding of the sequence of events and the duration of individual episodes and for comparison with other regions. Although the application of scientific dating methods, and radiocarbon in particular, has become much more common in recent years, it still seems likely that for many excavations, especially the smaller ones, dating will rely on the traditional methods for establishing a regional sequence of structures and artefacts. For the period from the Middle Bronze Age to the Roman conquest, the archaeological record for southern and eastern England is dominated by evidence from settlements. The structural features, whether fields, enclosures or buildings, cannot yet be dated themselves, so chronology depends very largely on the artefacts contained in the fills. For this period of later prehistory in this region, pottery is the only item that occurs with any regularity and that is potentially datable. There is, therefore, little alternative to the traditional approach of using pottery as the basis for the chronology, and it remains a major aim of later prehistoric research in Kent to establish a regional sequence that will prove a robust basis for the interpretation of the later prehistoric evidence.

The evidence needed for such a project (Willis 2002) includes, most fundamentally, a series of large assemblages of pottery, excavated, analysed and reported to a standard methodology. A ceramic sequence based on the formal variation in such assemblages will then need to be confirmed by a range of other evidence, including comparison with other regional assemblages, stratigraphic sequences, associations with other classes of artefact whose chronology is better established, most notably some types of metalwork, and secured by an increasing number of dates from absolute methods, especially radiocarbon.

The restricted knowledge of the prehistory of Kent into the 1980s has been described above. Until the intensification of archaeological investigation in Kent in the 1990s, the basic evidence for such a ceramic chronology project, large and well excavated pottery assemblages, did not exist. Consequently, there was only the vaguest outline of the chronological sequence of later prehistory, and even a lack of an agreed terminology to refer to different assemblages; this was both a symptom of the lack of relevant research and a hindrance to further progress. Champion (2007b, 296–297) summarised the picture twenty years later. Some progress had been made, though the first detailed results of the HS1 work and other major excavations were only just becoming available. Few detailed pottery reports had been published: the reports on Farningham Hill (Couldrey in Philp 1984) and Monkton Court Farm (Perkins *et al.* 1994) stand out. Other major excavations remained unpublished. One of the most important of these was at Highstead, north of Canterbury, where a sequence of settlements from the Late Bronze Age to the Late Roman period had been excavated in the 1970s; though only published thirty years later (Bennett *et al.* 2007), the site's importance did not go completely unrecognised. It was well known to archaeologists in Kent and Peter Couldrey's work on the prehistoric pottery attracted particular attention. The significance of the ceramic assemblages from the middle centuries of the 1st millennium BC was widely known among specialists, and informed other pottery reports, not least the work done on the later prehistoric assemblages from the HS1 project. The importance of this pottery was also recognised at a national scale, when the fourth edition of Cunliffe's standard text book on the Iron Age in Britain added two new ceramic style zones: the 'Highstead 2 group' and the 'Highstead-Dolland's Moor group' were adopted to fill in gaps in the scheme for Kent (Cunliffe 2005, 94 and 103).

The HS1 project was part of the explosion of archaeological activity in Kent in the 1990s, as part of which a significant number of important later prehistoric sites was excavated. These, when fully published, will provide a new basis for the understanding of prehistoric Kent, and in particular will provide the basic evidence of large pottery assemblages for a regional chronology. In addition to Highstead, important assemblages have been published from Shrubsoles Hill (Raymond in Coles *et al.* 2003), Iwade (Hamilton and Seager Thomas in Bishop and Bagwell 2005) and Kemsley (Macnee in Diack 2006), three sites from North Kent with Middle and Late Bronze Age occupation. The HS1 project can now add key assemblages from Cobham Golf Course, White Horse Stone, Sandway Road, Beechbrook Wood and Saltwood Tunnel for the Middle Bronze Age and Saltwood Tunnel for the Late Bronze Age. Evidence for the middle and later parts of the 1st millennium BC has been rarer, so the assemblages from West of Northumberland Bottom, Tollgate, Cuxton, White Horse Stone, Eyhorne Street, Beechbrook Wood and Little Stock Farm are of critical importance.

As well as large assemblages, the HS1 sites have also yielded some of the further evidence needed for fixing a secure chronology. Given the nature of most later prehistoric settlement sites, stratigraphic sequences are always likely to be rare, and the HS1 sites are no exception. There are some important associations with metalwork, most notably the two La Tène I brooches from West of

Northumberland Bottom and Tollgate (see Fig. 4.37); these are the first La Tène I brooches in the county securely stratified with pottery. It should be noted, however, that such associations with metalwork are not always easy to interpret, as the discussion of deposition practices below will show. The HS1 project has also provided an important suite of radiocarbon dates. Although there are well over 100 radiocarbon dates available for the post-glacial prehistory of Kent, excluding the HS1 project, surprisingly few of these are relevant to large pottery assemblages; radiocarbon dates had often been used to date individual events within the history of a site's occupation, which ironically meant that features with pottery were seldom dated. As part of the research strategy for the HS1, a scheme-wide series of dates was commissioned to refine the chronology of the more detailed ceramic sequence that was emerging from the study of the individual site assemblages. As shown below, the radiocarbon chronology is now beginning to emerge, especially for the Middle and Late Bronze Age, but, given the still comparatively small number of dates, the varying degrees of reliability of association of date and pottery and the problems of calibration in the middle of the 1st millennium BC, no detailed statistical modeling of the results has been attempted here.

In the following parts of this section, the emerging regional ceramic chronology for Kent will be presented (Table 4.1); other aspects of the pottery, especially production, use and deposition, will be discussed in later sections of this chapter. It is not yet possible to construct a chronology as precise as that in use for Wessex, but it is possible to set out the current strengths and weaknesses in our knowledge, as has been done for the East Midlands (Knight 2002). The Kent evidence can also be compared with the radiocarbon dates for Sussex (Hamilton 2003, 83–4), though they have not been linked so explicitly to a ceramic sequence. The discussion will draw on other recent prehistoric research in the region, but the key role played by the HS1 excavations will be evident. The production and usage of pottery was a continuous, common and widespread social process from the Middle Bronze Age onwards, and dividing such a continuum into separate phases is problematic. There were no abrupt breaks where one ceramic tradition was replaced by another, so more or less smooth transitions and overlaps are inevitable. The temptation to propose transitional phases has been resisted in most cases, with one exception where the transition seems particularly lengthy. In other cases it is likely that there will be variation within the ceramic assemblages assigned to a particular phase, and that some of this will be due to temporal change; it may be possible to identify earlier and later pottery within a phase. The approach adopted here has been to propose phases that are distinctive and repeatedly recognisable at sites in the region, in a scheme that can be used more widely elsewhere in the furtherance of regional research. As will be clear, there is still much room for improving the scheme, especially the dating and the intra-regional variability. There may also be debate about the appropriate names for each of the phases; that, however, is a minor point compared to establishing the phases of a practicable scheme of ceramic chronology for the region.

In the following discussion radiocarbon dates from the HS1 sites have been quoted using the calibrated date and laboratory results number (see Allen 2006). The full set of radiocarbon dates from HS1 Section 1 is presented in Appendix 3. Dates from other sites are quoted with the original result, calibrated according to OxCal 4.1 and quoted in the same rounded form as for the HS1 dates.

Deverel-Rimbury (Middle Bronze Age)

Pottery of the Deverel-Rimbury phase has been known in Kent since the 19th century, though the quantities have been small and almost all of it has come from burials (Champion 1982, 34–7). Recent work has now added important assemblages from occupation sites at Shrubsoles Hill (Raymond in Coles *et al.* 2003), Iwade (Hamilton and Seager Thomas in Bishop and Bagwell 2005) and especially Kemsley (Mcnee in Diack 2006); publication of the enclosure at Westwood Cross (Gollop 2005) on the Isle of Thanet will add further to this growing list. Among the HS1 excavations the most significant assemblages have come from Cobham Golf Course, White Horse Stone, Beechbrook Wood and Saltwood Tunnel.

It is now possible to begin to define the characteristics of Deverel-Rimbury pottery in Kent (Morris in Booth 2006a, 56–61). The assemblages are dominated by jar forms, especially bucket-shaped, in flint-gritted fabrics, with a small percentage of finer wares and of other forms such as globular urns (Fig. 4.4).

There are a few metalwork associations with Deverel-Rimbury pottery in the region. The two most important are old finds, but are securely associated and

Table 4.1 Chronological periods for later prehistory used in this chapter

Period	*Dates*	*Pottery*	*Metalwork*
MBA	BC 1600-1250	Deverel-Rimbury	Acton Park/Taunton
M/LBA	BC 1350-1000	Late Deverel-Rimbury	Penard/Wilburton
LBA	BC 1100-800	Post-Deverel-Rimbury plainware	Wilburton/Blackmoor/Ewart Park
Earliest IA	BC 800-500 ??	Post-Deverel-Rimbury decorated	Llyn Fawr/HaC
Early IA	BC 550-300	EIA	HaD/LTI
MIA	BC 300-100	MIA	LTI/II
LIA	BC 100- AD 43	LIA	LTIII

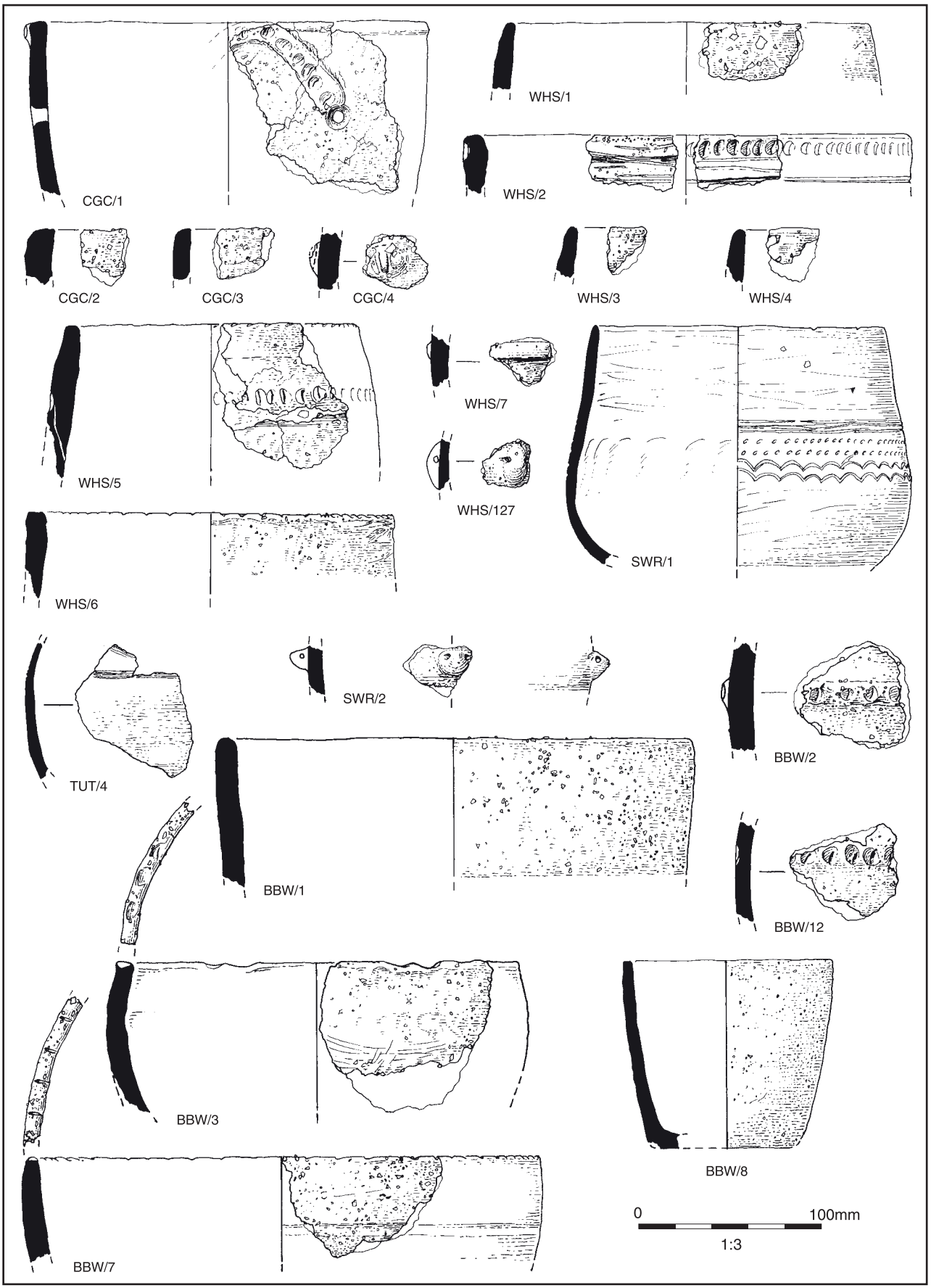


Figure 4.4 Middle Bronze Age pottery from Cobham Golf Course (CGC), White Horse Stone (WHS), Sandway Road (SWR), Tutt Hill (TUT) and Beechbrook Wood (BBW)

Table 4.2 Radiocarbon dates for Middle Bronze Age sites with pottery in Kent

Site	*Context*	*Result No.*	*Result BP*	*Cal BC*	*Reference*
Princes Road, Dartford	Base of occupation layer 11/10	Beta 114525	3240±60	1670-1400	Hutchings 2003
Cobham Golf Course	Ditch 197	NZA-23006	3191±40	1530-1390	Allen 2006
White Horse Stone	Context 4016	NZA-21326	3151±35	1520-1310	Allen 2006
Princes Road, Dartford	Top of occupation layer 11/10	Beta 114527	3150±60	1610-1260	Hutchings 2003
Saltwood Tunnel	Pit 5366	NZA-22879	3146±35	1520-1310	Allen 2006
Beechbrook Wood	Pit 1220	NZA-22878	3112±30	1430-1260	Allen 2006
Coldharbour Rd, Gravesend	Lower fill of ditch	OxA-4718	3085±75	1510-1120	Mudd 1994
Pilgrim's Way	Context 572	NZA-21840	3079±30	1430-1260	Allen 2006

reliable. At St Laurence's College, Ramsgate, three bronze pins were found in a typical Deverel-Rimbury bucket urn in a pit (Hawkes 1942); the pins, so-called Picardy pins, have North French affinities, but are difficult to date with precision (Rowlands 1976, 84–5), but hoard associations in France suggest that they are best assigned to the Taunton phase or O'Connor's MBA2 (1980, 76, 79). Secondly, a hoard of 14 bronze palstaves was found at Birchington in a decorated globular bowl (Powell-Cotton and Crawford 1924); twelve of the palstaves are of Rowlands' Class 3 Birchington type (1976, 246), also best dated to the Taunton phase (O'Connor 1980, 53). An early speculation that such bowls with ring-stamped decoration would eventually be recognised as a key component of the local Deverel-Rimbury tradition (Champion 1982, 34) has proved true, with finds from Westwood Cross in Kent (Gollop 2005) and other examples from Essex, such as North Shoebury (Wymer and Brown 1995, 78), among others. These associations link the Deverel-Rimbury ceramic phase to the Taunton phase of the bronze chronology, with a radiocarbon-based date range of perhaps 1400–1275 BC (Needham *et al.* 1998). Other associations are less secure. The bronze roll-headed pins from Princes Road, Dartford (Needham and Rigby in Hutchings 2003, 63–4) are of a type that lasted on the continent from the Tumulus period to the Late Bronze Age; they were not directly associated with the Deverel-Rimbury pottery, but they attest to a history of occupation and deposition there, and they would be compatible with the dating suggested here. Similarly, the deposition of a hoard of bronze palstaves in a pit cut into a ditch containing Deverel-Rimbury pottery at South Dumpton Down (Perkins 1995, 468–70; Barber 2003, 60 and figs 12–13) provides a *terminus ante quem* for the pottery; the palstaves may have been deposited at the end of the occupation of the site, and thus be broadly contemporary with the pottery, but there could equally have been a longer interval between these episodes.

There is now a significant number of radiocarbon determinations available for Deverel-Rimbury pottery in Kent (Table 4.2). These are all derived from recent excavations and secure associations. They give a consistent pattern of dates that would calibrate to a range of about 1600 to 1250 BC. This regional picture is in full agreement with the chronology proposed by Needham for the Deverel-Rimbury period as a whole (1996); he suggested a range of 1600 (or possibly as early as 1700) to 1150 BC, with a possible late phase continuing to 1050 or even 950 BC. It is therefore possible to reject a recent suggestion that 'Kent Deverel-Rimbury pottery belongs to the later part of the wider Deverel-Rimbury tradition' (Hamilton and Seager Thomas in Bishop and Bagwell 2005, 26); that conclusion, though tentatively expressed, seems to have relied on a rather late date assigned to the Birchington palstaves and on two radiocarbon dates in the early 1st millennium BC from burials in a barrow at Bridge (Macpherson-Grant 1980a), which were unurned cremations not associated with any other pottery and therefore not relevant to this issue. On the contrary, the assemblages from the HS1, coupled with other recent sites, suggest that it is now possible to distinguish a later phase in which Deverel-Rimbury pottery is associated with new forms and fabrics more representative of the following Late Bronze Age phase, and that this transition may have begun well before 1300 BC, confirming the early dates for the 'classic' Deverel-Rimbury assemblages.

Middle/Late Bronze Age transition

Detailed analysis of the assemblages from several HS1 sites, especially Tutt Hill and Beechbrook Wood (Morris in Booth 2006a, 59–61), shows that it is now possible to identify a phase where the ceramics include groups which are characterised by the association of traditional Deverel-Rimbury vessels with new forms, including ovoid jars, and new fabrics, including grog-tempered and sandier fabrics, which would later be much more widespread in the succeeding Late Bronze Age phase when the classsic Deverel-Rimbury forms and fabrics had disappeared completely (Fig. 4.5). The association of Deverel-Rimbury and Late Bronze Age types is only to be expected: the Deverel-Rimbury sherds could be residual from earlier occupation, but there could also be a phase when the two ceramic traditions were in use at the same time. The number of such assemblages identified at Tutt Hill, Beechbrook Wood and Saltwood Tunnel on the HS1 and elsewhere as at Coldharbour Lane, Gravesend (Mudd 1994) demonstrates that this was a widespread phenomenon. Though reports on other sites have not explicitly

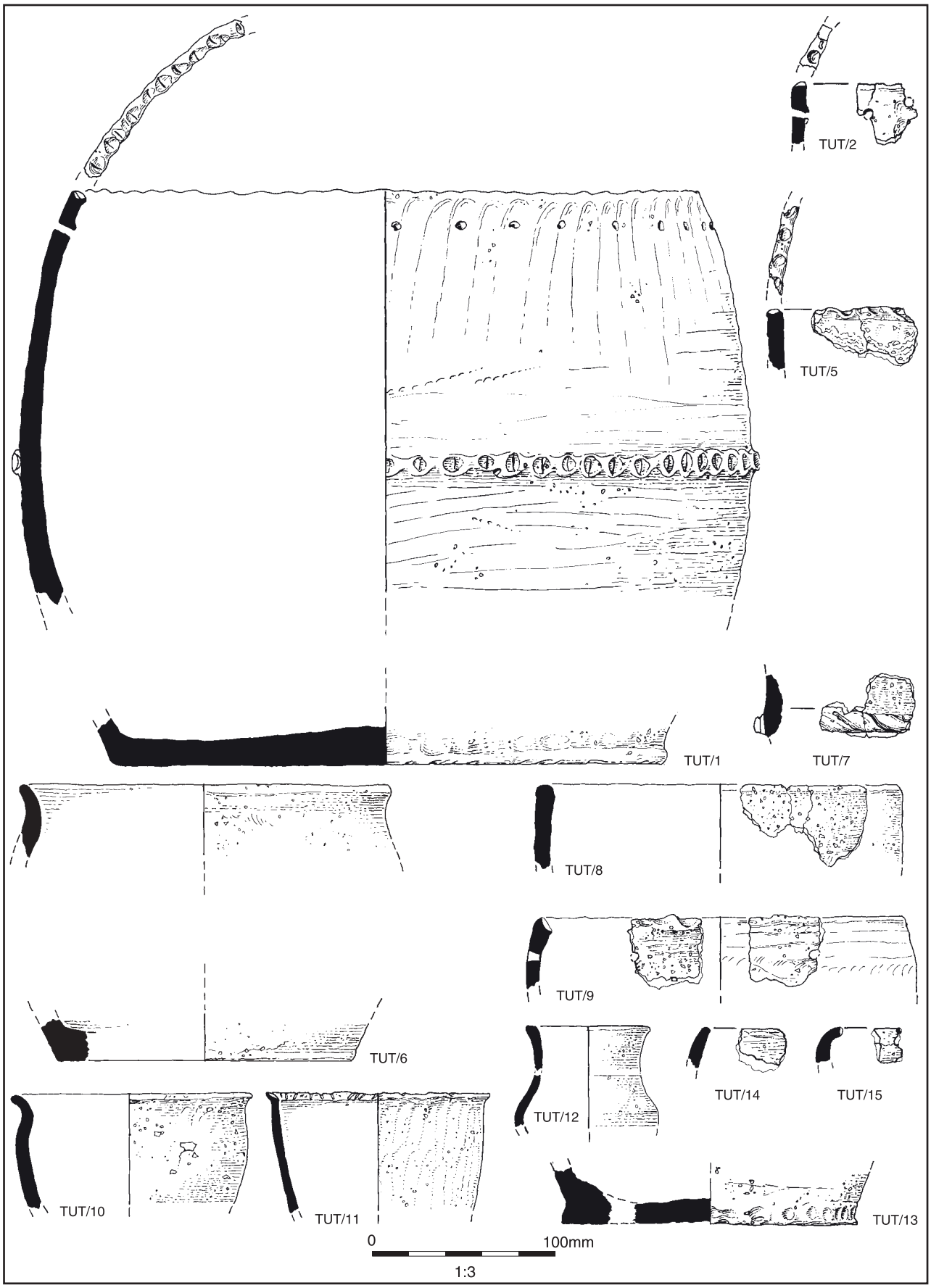


Figure 4.5 Middle/Late Bronze Age pottery from Tutt Hill

Table 4.3 Radiocarbon dates for Middle/Late Bronze Age sites with pottery in Kent

Site	Context	Result No.	Result BP	Cal BC	Reference
Beechbrook Wood	Context 1201	NZA-22878	3112±30	1430-1260	Allen 2006
Beechbrook Wood	Pit 245, context 244	NZA-22877	3081±30	1410-1260	Allen 2006
Shrubsoles Hill	Residue on pot in cremation burial 908	KIA-11045	3052±39	1420-1210	Coles et al. 2003, 91
Gravesend, Coldharbour Rd	Middle fill of ditch	OxA-4717	2895±70	1305-905	Mudd 1994
Gravesend, Coldharbour Rd	Residue on pot in middle fill of ditch	OxA-4719	2880±65	1270-900	Mudd 1994
Gravesend, Coldharbour Rd	Middle fill of ditch	Q-3255	2835±45	1130-850	Mudd 1994

identified such a separate phase, a similar transitional process was clearly happening: at Kemsley, a difficult site to interpret and with little stratigraphic evidence, 'it is doubtful whether particular styles of potting tradition ended abruptly. It is feasible that there is co-existence of pottery styles from periods which archaeologists have labelled Middle and Late Bronze Age' (Mcnee in Diack 2006, 42); similarly, at Iwade, it was noted that 'one of the Deverel-Rimbury vessels (P8) occurs in Fabric 10 that is otherwise associated with the post-Deverel-Rimbury assemblage' (Hamilton and Seager Thomas in Bishop and Bagwell 2005, 23). The associated radiocarbon dates for this phase suggest that it may have been a lengthy one. It is therefore worth distinguishing this phase as a separately identifiable element in the ceramic sequence rather than the period of overlap that would be expected. It could be called 'Late Deverel-Rimbury' or 'Deverel-Rimbury 2', but the term preferred here is 'Middle/Late Bronze Age Transition', to ensure better compatibility with the terminology proposed for later phases.

There are no metalwork associations for this phase, but there are several relevant radiocarbon dates (Table 4.3). It is curious that the HS1 dating programme produced no determinations for settlement or ceramics with central points between about 3050 and 2850 BP, or about 1250 and 1050 cal BC. This gap is slightly narrowed by dates from Coldharbour Lane, Gravesend, but there are currently no radiocarbon dates in Kent for pottery between 3050 and 2900 BP, or for about 150 years after 1250 cal BC. This gap is presumably no more than a random product of the limited number of dates available, and when it is eventually filled there will be much better evidence for the lengthy period of ceramic tradition suggested above and confirmed by the few dates so far obtained. As it is, the dates suggest that this phase covers a period from approximately 1350 to 1000 BC.

Post-Deverel-Rimbury Plain Ware (Late Bronze Age Pottery)

The characteristic pottery tradition of the early 1st millennium BC was initially recognised by Barrett (1980), and subsequently elaborated through the excavation of sites such as Mucking North Rings (Bond 1988), Runnymede (Needham 1991), and Reading Business Park (Moore and Jennings 1992; Brossler *et al.* 2004). This Late Bronze Age pottery phase in Kent is characterised by assemblages containing jars and bowls in a variety of forms (Morris in Booth 2006a, 61–3). Jar forms include simple ovoid jars, sharply shouldered jars, and jars with rounded shoulders and upright rims. Bowls include rounded-bodied forms, bowls with simple shoulders, and bowls with more developed necks. Many of the fabrics are significantly finer than those of the preceding phases. Decoration is rare and limited mostly to simple finger-tip ornamentation of the rim (Fig. 4.6).

In the early 1980s it was difficult to recognise the occurrence of such pottery in Kent (Champion 1982, 38) and even a decade later sites of this period were still rare (Macpherson-Grant 1992). Subsequent work has added enormously to our knowledge of the period, with key sites including Coldharbour Road, Gravesend (Mudd 1994), Shrubsoles Hill Phase 3b (Coles *et al.* 2003), Iwade (Bishop and Bagwell 2005), Kemsley (Diack 2006) and Willow Farm, Broomfield (Mcnee pers comm). To these can now be added the major assemblages from HS1 sites at Cobham Golf Course, White Horse Stone and Saltwood Tunnel (Morris in Booth 2006a, 61–3).

There are a few associations of pottery of this phase with metalwork, though not perhaps as many as we might expect given the quantity of Late Bronze Age metal in Kent, and all present difficulties of interpretation. Two of the most important and most securely recorded associations are especially problematic. At Shrubsoles Hill, Ditch 135, forming part of the main Enclosure A, contained a bronze side-looped spearhead associated with a ceramic assemblage that was predominantly of Late Bronze Age plain-ware type, though some sherds could be assigned more appropriately to the following 'decorated' phase (Coles *et al.* 2003, 15, 30–1). The spearhead is a type normally assigned to the Middle Bronze Age, with hoard associations limited to the Taunton phase (Taylor in Coles *et al.* 2003, 42); as we have seen above, this would now be dated to 1400–1275 BC (Needham *et al.* 1998, 82). A sample of wood obtained from the socket of the Shrubsoles spearhead gave a radiocarbon date of 1010–821 cal BC (2758±41 BP: KIA-11047), spanning the early part of the 1st millennium BC. This date would be perfectly compatible with other radiocarbon dates for the plainware pottery, but is rather later than the suggested dates for the Taunton phase. The terminal date of 1275 BC for this phase was proposed as an estimated 'focal date' for the transition, which may well have been a much longer

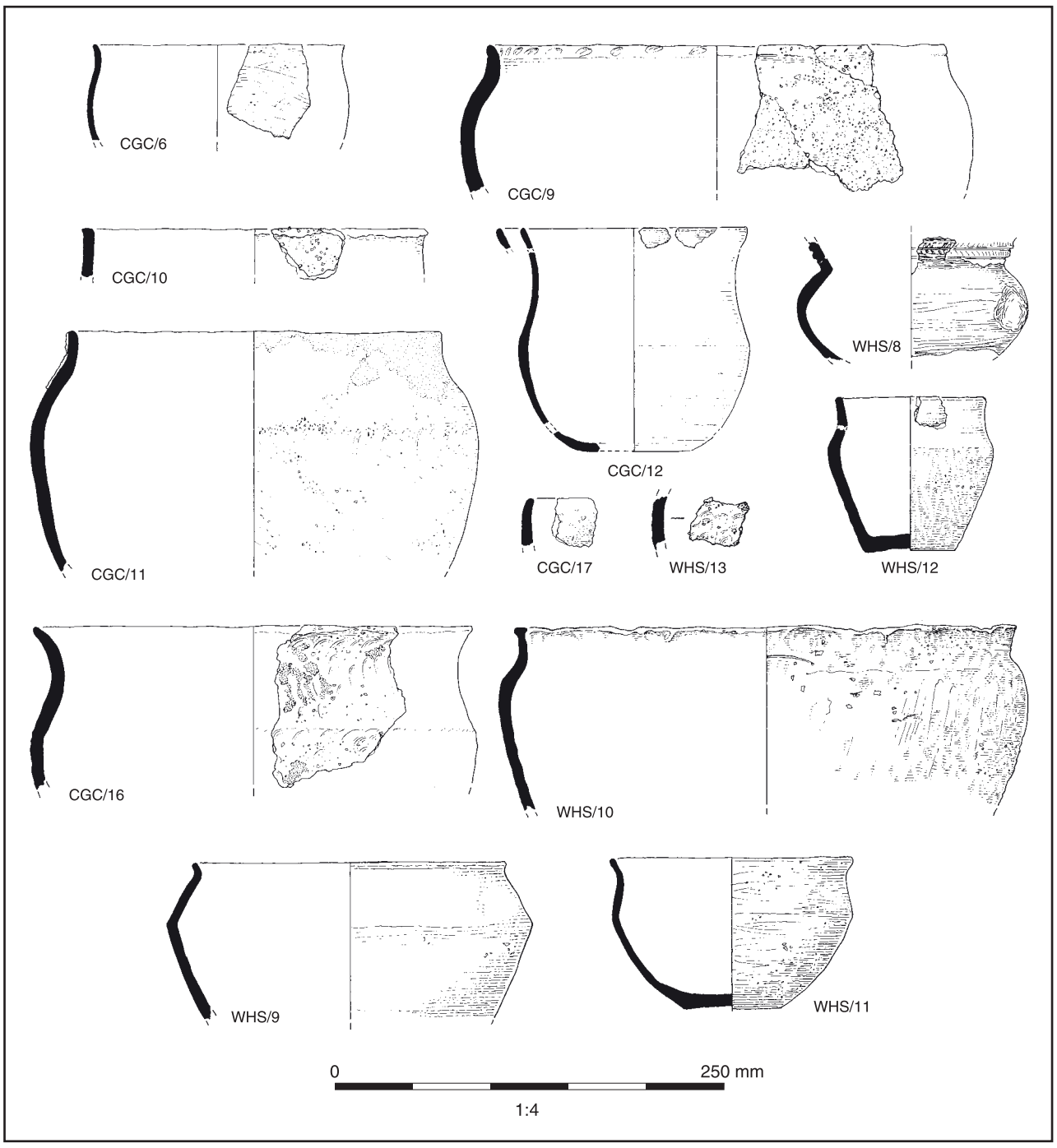


Figure 4.6 Late Bronze Age pottery from Cobham Golf Course (CGC) and White Horse Stone (WHS)

process, and it is possible that Taunton types continued in use for a lengthy period thereafter. Even so, the Shrubsoles date is substantially later than the latest date for Taunton metalwork used by Needham *et al.* (1998, illus. 4); further dates with good associations may help to refine this chronology. It can only be concluded that, if the hoard associations give the correct date for the production and circulation of this type of spearhead, at least this individual object remained in circulation for perhaps four hundred years before being reshafted; alternatively, the type continued to be produced for a lengthy period into the 1st millennium BC. In either case, the spearhead deposited in the ditch was a recognisably old object or of a recognisably old type. The accepted typological and hoard-based date for this object is therefore irrelevant to the dating of the associated pottery. The radiocarbon date is better evidence, though the recognition that a distinctively old object was deposited in this way raises the possibility that the spear remained in circulation long after the new shaft was fitted, thus making the radiocarbon date less relevant for the chronology of the associated pottery.

Similar problems beset the finding of a bronze palstave at Iwade, in a ditch containing pottery of the Late Bronze Age plain ware phase (Bishop and Bagwell 2005, 15 and fig. 22). The palstave belongs to Rowlands'

Table 4.4 Radiocarbon dates for Late Bronze Age sites with pottery in Kent

Site	Context	Result No.	Result BP	Cal BC	Reference
Saltwood Tunnel	Pit 5235, context 5250	NZA-19637	2847±35	1130-900	Allen 2006
White Horse Stone	Pit 5421, context 5449	NZA-22006	2804±40	1130-890	Allen 2006
Saltwood Tunnel	Pit 6658, context 6662	NZA-22727	2769±30	990-820	Allen 2006
Shrubsoles Hill	Wood in socket of bronze spearhead, Ditch 135	KIA-11047	2758±41	1005-820	Coles *et al.* 2003, 51
Cobham Golf Course	Pit 137, context 136	NZA-21143	2741±30	980-820	Allen 2006
Guston	Wood in pit	Beta 179754	2700±40	920-800	Allison 2005, 60

Class 3 Birchington type, and is most probably to be assigned to the Taunton phase of 1400–1275 BC, though a slightly earlier date is possible (Barber in Bishop and Bagwell 2005, 44–6). Though it is possibly a residual survival from earlier occupation at the site, it seems likely that, as at Shrubsoles Hill, an old object was selected for deposition in the ditch fills; in any case, the date normally assigned to such an object from the metalwork chronology cannot be relevant to the pottery chronology. The significance of this recognition of the antiquity of some objects at the time of their deposition will be discussed further below.

At Mill Hill, Deal (Stebbing 1934), a bronze pin, a fragment of a blade and a mould for a bronze ring were found in a ditch with pottery, some of which has been illustrated (Champion 1980, figs 5-6) and is of this phase; other sherds may be better assigned to the following phase. The metalwork is not especially diagnostic, but it would all fit in the Ewart Park phase. Again the association is compatible with a date in the range 950 to 800 BC.

The radiocarbon dates (Table 4.4) form a consistent pattern, with central points falling between 2850 and 2700 BP. When calibrated, this would range from approximately 1100 to 800 cal BC.

Earliest Iron Age

The following phase is equivalent to the post-Deverel-Rimbury Decorated Phase in Barrett's terminology (1980) and to the Highstead 2 style zone in Cunliffe's scheme (2005, 94). The name 'Earliest Iron Age' is proposed here partly in conformity to the other names for phases used here and partly to match the terminology already in use for the Wessex region. The pottery of this phase is characterised by assemblages containing shouldered jars and tripartite bowls. Decoration is significantly more common than before, including especially a wide variety of finger-tip ornamentation and neck cordons. Pottery of this phase is best represented in Kent by assemblages from Highstead period 2 (Couldrey in Bennett *et al.* 2007, 118-121), Monkton Court Farm (Perkins *et al.* 1994) and Ramsgate Harbour Approach Road (Mcnee, pers comm). It is not common among the HS1 sites, with only one significant assemblage, at Little Stock Farm, although other vessels possibly attributable to this phase were found at Tutt Hill and Saltwood Tunnel (Morris in Booth 2006a, 63–4) (Fig. 4.7).

The dating of this phase cannot be established with any degree of certainty, because of a comparative lack of informative associations and an absence of radiocarbon dates. There is an important association with metalwork in a layer in the filling of the ditch of what was probably some form of Early Bronze Age funerary monument at East Northdown, Margate (Smith 1987). This layer contained a rich collection of pottery, flint, bone and clay objects; it may have been domestic debris from an occupation site somewhere nearby, but the wealth of the material and in particular the peculiar location of this material suggest some form of ritual deposition. Though some of the pottery fits well into the Late Bronze Age plainware phase, there is a high percentage of sherds with decoration: *c* 24% of the individually recognisable jars had rim decoration. There are no radiocarbon dates associated directly with the pottery, but it was stratified above a chalky silt layer, charcoal from which gave a radiocarbon date of 1440-1020 cal BC (3020±80 BP: HAR-7010), which would calibrate to a date of 1440–1020 BC. The pottery is associated with three bronze objects. One is a pair of tweezers, a type found fairly commonly in the later part of the Bronze Age. The second is a thin cone of bronze with a perforation at the apex. The third, and possibly the most chronologically diagnostic, is a thin blade, possibly a razor, the nearest parallel to which is in the western European Hallstatt C series, suggesting a date in the 8th century BC (Needham 2007b).

Another secure, but rather uninformative, association with metalwork is at Highstead, where a bronze blade was found in a ditch terminal of enclosure A24 with pottery of this phase, though the blade is highly corroded and undiagnostic (Bennett *et al.* 2007, 27 and 270). Also at Highstead, Pit B80 contained pottery of this phase (Bennett *et al.* 2007, 24 and fig. 80, 255–63) and a collection of clay mould fragments for pins and other objects, probably best dated to the end of the Late Bronze Age (Needham in Bennett *et al.* 2007, 258–65) At Monkton Court Farm, a large assemblage of this phase was recovered; the site also produced three small disturbed Late Bronze Age hoards, but the exact association is not clear (Perkins *et al.* 1994). The possible association of pottery from this phase with the bronze objects and a mould found at Mill Hill, Deal, has already been noted above.

These associations suggest that the pottery of this phase overlapped with the final stages of the production and use of Late Bronze Age metalwork. A start in the 8th century

BC, or possibly a little earlier, therefore seems probable. How long it lasted is also difficult to determine with any precision. On the evidence from Highstead (Couldrey in Bennett *et al.* 2007, 121), there seems to be a smooth transition to the following phase, the Early Iron Age. As discussed below, however, the start date for this phase is still uncertain. For the moment, it is suggested that a date of 500 BC is the best approximation that can be given.

Brudenell (2008) has recently reviewed the evidence for the pottery of this phase in eastern England and questioned the validity of a simple chronological succession from plain to decorated. In view of the comparative rarity of such assemblages of decorated pottery, and the distinctive nature of the sites on which they are found, he has suggested that assemblages with a significant percentage of highly decorated pottery are exceptional.

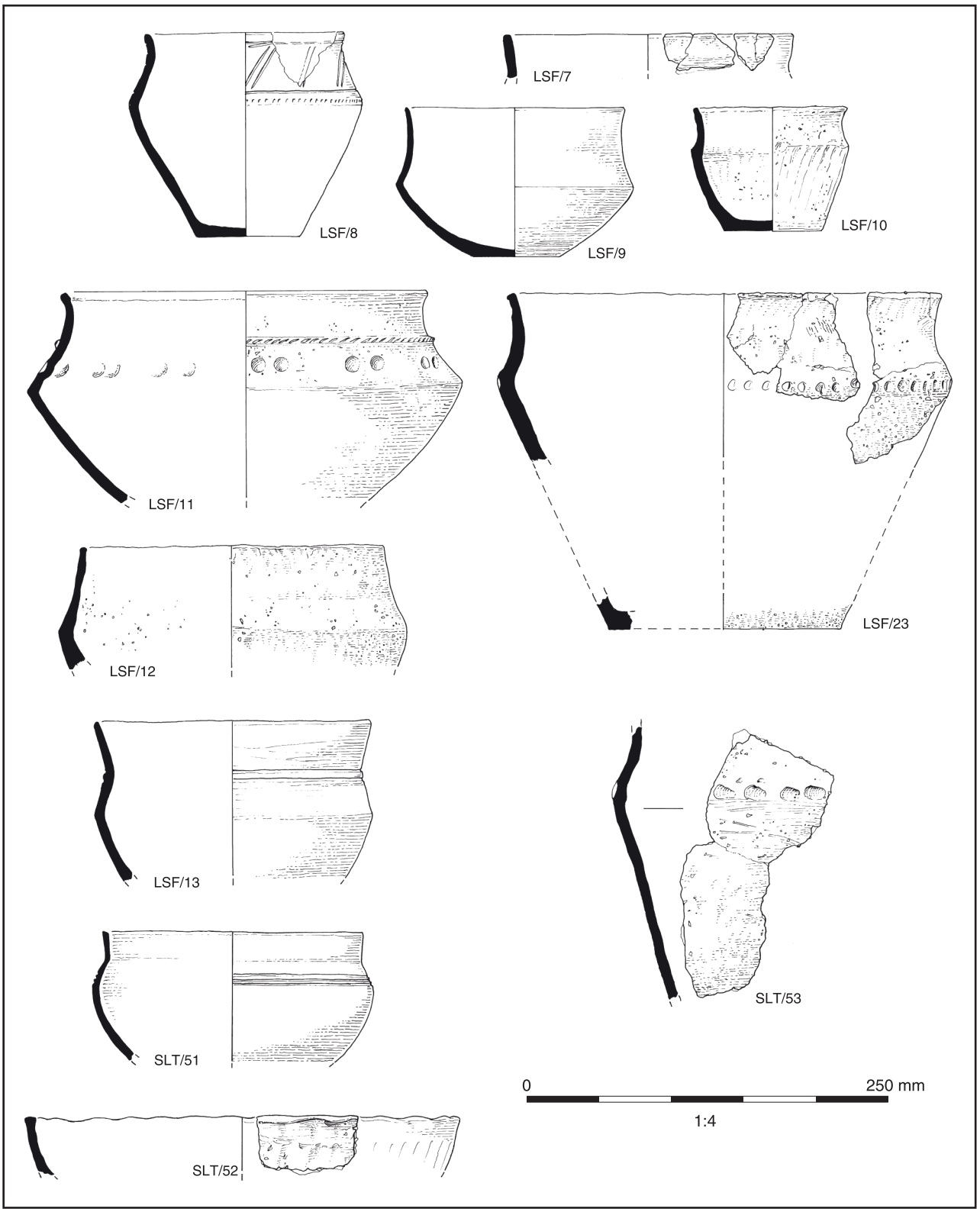


Figure 4.7 Earliest Iron Age pottery from Little Stock Farm (LSF) and Saltwood Tunnel (SLT)

They should not be regarded as constituting a separate chronological phase, but rather a series of special deposits, or deposits associated with special sites, which would have existed chronologically alongside a continuing tradition of plainer wares throughout the Late Bronze Age and the Early Iron Age.

Such a suggestion has a certain attraction for the understanding of the ceramic sequence in Kent. The HS1 project produced assemblages clearly attributable to this 'phase' from only one site, Little Stock Farm, though individual vessels of comparable form and decoration were found elsewhere, as at Tutt Hill and Saltwood Tunnel (Morris in Booth 2006a, 63–4). At Little Stock Farm (see Fig. 4.22), two pits contained placed deposits consisting of large parts of several decorated vessels, together with others less diagnostic. This was clearly an abnormal deposit at a site where there was other evidence for special depositional practices. Other sites producing comparable assemblages mentioned above, such as the circular enclosure at Mill Hill, Deal, and the oval enclosures at Highstead enclosure A24 and Ramsgate Harbour Approach Road, could also be regarded as special or distinctive types of settlement.

Nevertheless, it is perhaps prudent to reserve judgement. There are still very few well excavated and reported assemblages for this period (though that would be an argument in favour of Brudenell's hypothesis). There are as yet no radiocarbon dates for these assemblages; no samples were submitted from the HS1 sites, as there were no suitable materials in good association. In any case, Brudenell's suggestion does not exclude the possibility that the highly decorated pottery appeared comparatively late in the Late Bronze Age/Early Iron Age ceramic continuum, so that late dates would be compatible with either explanation. Perhaps more significant is the lack of any late dates for the hypothetical continuation of the Late Bronze Age plainware phase beyond about 800 BC; if these assemblages continued alongside the special deposits of decorated pottery, then we might expect that some radiocarbon dates would reflect this survival, but as yet they do not. There are in fact few radiocarbon dates for pottery in Kent between 2700 and 2550 BP; it may be that archaeologists have been put off using radiocarbon because of the problem of interpreting the results in view of the plateau in the calibration curve, but this only becomes an issue with dates after 2550 BP. There is clearly a good case to be made for many more dates from reliable contexts containing such assemblages.

Unlike the area of East Anglia from which Brudenell draws the evidence for his argument, and where he cannot define a clear Iron Age ceramic tradition until after about 400 BC, for Kent it is possible to show an Early Iron Age ceramic phase, as will be seen below, though the date of its inception remains very uncertain. There are certainly questions to be asked about the significance of a horizon of highly decorated pottery towards the end of the first half of the 1st millennium BC, and about its possible association with elite sites and its occurrence in specially placed deposits. At the moment, however, we do not have the evidence to decide how long the Late Bronze Age pottery lasted or how early the Early Iron Age pottery started, or whether the decorated pottery assemblages overlap in date with either or neither or both.

Early Iron Age

This phase is characterised by the appearance of jars and bowls with rounded shoulder profiles, low pedestal bases and other new base forms, and the earliest saucepan pots (Fig. 4.8). Surface finishes include various forms of rustication, continued use of red slip coating, and the end of the tradition of finger-tip ornament on rims and shoulders. It corresponds to the Highstead-Dolland's Moor style zone in Cunliffe's scheme (2005, 103) and includes what Macpherson-Grant has called the 'East Kent Rusticated Tradition' (1989; 1991).

An earlier assessment of the chronology of this phase (Champion 2007b, 296–7) commented that it was difficult to date, since there were no properly published assemblages and no associations with metalwork or radiocarbon dates; the chronology was fixed largely, and somewhat loosely, by comparison with pottery traditions in northern France. The HS1 project has now partly rectified those gaps and the chronology can be established more firmly, even if not yet with the precision that is desirable.

There are now two important metalwork associations, at Tollgate and at Northumberland Bottom, both with La Tène I brooches (see Fig. 4.36). The brooch from West of Northumberland Bottom is of Hull and Hawkes's (1987) Type 1A (Keily and Richardson 2006a, 8) and that from Tollgate is of Type 1C (Keily 2006a, 11) and both should date to between the late 5th and the mid 3rd century BC. The Tollgate brooch was found in Pit 374, with a small assemblage of pottery. Burnt residue from the interior of one pot gave a radiocarbon date of 850–760 cal BC (NZA-22880). This is clearly incompatible with the known date of the brooch, so it is possible that an earlier sherd has been incorporated residually in the pit fill, though this problem is considered further in the discussion of deposition practices below.

Other radiocarbon determinations are more helpful (Table 4.5), though at this point in the radiocarbon curve particular care is needed in interpreting the results. There is an especially important series of dates from White Horse Stone; detailed modelling of the dates for this phase suggest that, although occupation began earlier, much of the activity in the northern area of the site was limited to a single episode of about one hundred years, covering the 5th century BC (Allen 2006, 14). The date from Pit 387 at Tollgate is compatible with this suggested date for White Horse Stone, but the single date from West of Northumberland Bottom, which calibrates to 800–420 BC but with a 93% probability that the calendar date lies between 800 and 510 BC, might suggest an earlier start for this phase, as would the earlier dates from the activity at the southern end of the White Horse Stone site.

Among the later dates there are two that are particularly problematic, and exemplify the difficulties of

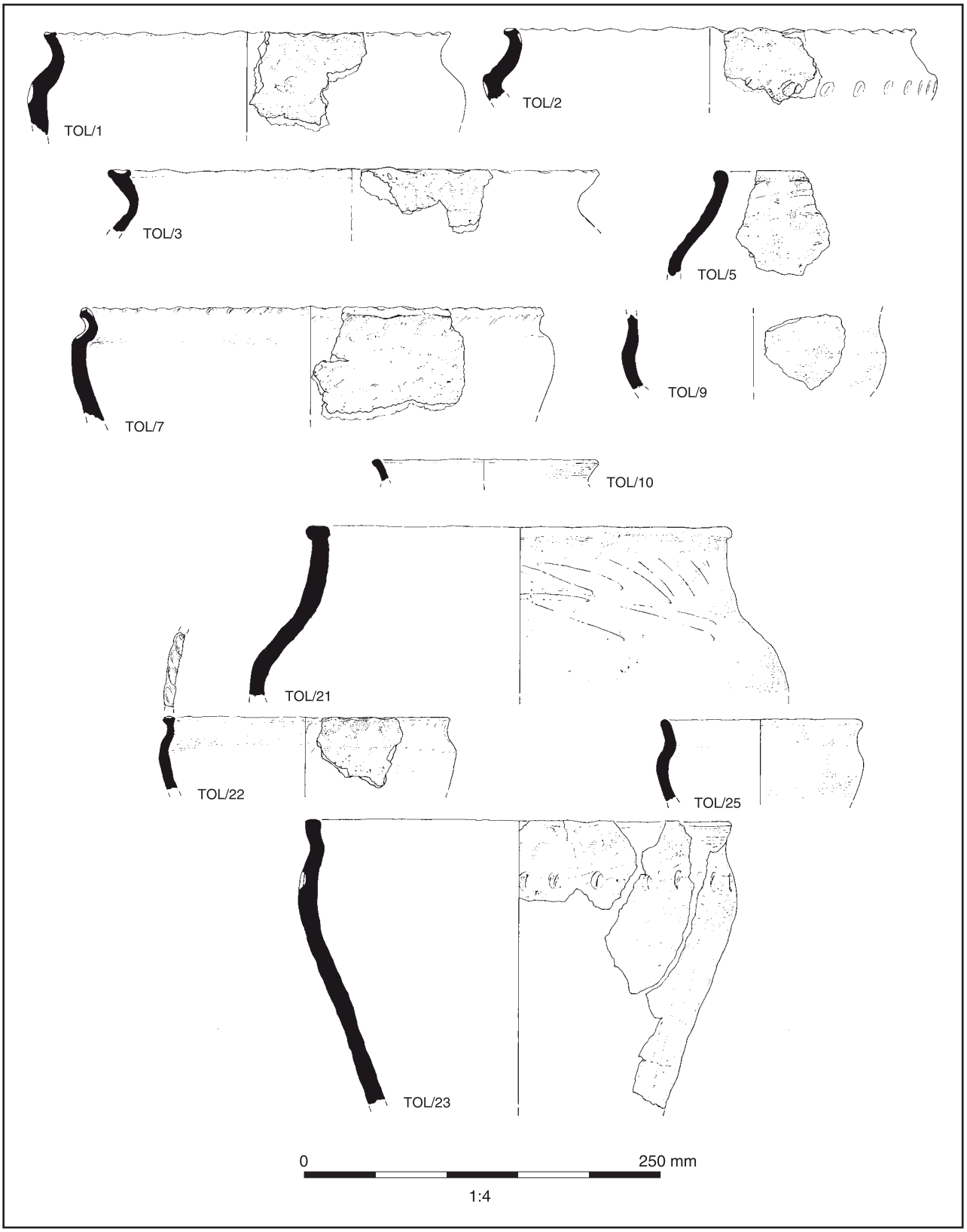


Figure 4.8 Early Iron Age pottery from Tollgate

interpreting radiocarbon dates at this point on the curve. The results from Eyhorne Street and Cuxton are virtually identical; both give similar calibrated ranges, 410–210 cal BC and 400–200 cal BC respectively. Both are bimodal, and suggest ranges of 410–350 cal BC (64%) or 300–230 cal BC (30%) at Eyhorne Street and 400–350 cal BC (41%) and 320–200 cal BC (51%) at Cuxton. In both cases the earlier range would fit well with the dates of the brooches, but each of the assemblages also contains an early version of forms that will become common in the succeeding phase, a saucepan pot at Cuxton and a S-profile jar at Eyhorne Street, so the later

date range would also be acceptable. The dates are shown in Table 4.5, but should be treated with caution until further research has resolved the position.

Another line of dating evidence can be found by comparison with the continent. The ceramics of this phase show a marked similarity in forms in decoration and in surface treatment with those from northern France (Leman-Delerive 1984; Hurtrelle *et al.* 1990; Blancquaert and Bostyn 1998), where they are dated, by further comparison to the cemeteries of the Aisne region, to La Tène I, or approximately 450–250 BC. A very specific comparison can be found in a distinctive type of bowl with festooned rim (*coupe à bord festonné*), quite widely distributed in northern France, with a unique example now known from White Horse Stone (Morris in Booth 2006a, fig. 3.7f, WHS/147); in France this form is dated to the 6th to 4th centuries BC (Lambot 1988; Milcent 2005, 90 and fig. 4).

It can therefore be shown with some confidence that this phase covers the 5th and 4th centuries BC, but it is more difficult to determine either the start date or the end date with any certainty. The start could be during the 6th century BC, or perhaps even the 7th; equally the end could be well after 300 BC. For the sake of the present scheme, and until further research clarifies the position, a start date of 550 cal BC is proposed, with an end date of 300 cal BC.

Middle Iron Age

This phase is characterised by S-profile jars, jars with bead-rims and convex shapes, and saucepan pots, as well as continued use of earlier forms such as round bodied bowls and jars (Fig. 4.9). Some vessels are decorated with curvilinear ornament in what Brown (1991) has termed the Mucking-Oldbury style. This phase is best represented in Kent by the earlier assemblages from Farningham Hill (Couldrey in Philp 1984, 38–70) and by smaller groups from Bigberry (Thompson 1983, 263 and figs 11–12, nos 57–105), Oldbury (Thompson 1986, 283 and fig. 7, 16–24) and Kingsborough, Sheppey (Allen *et al.* 2008, 288). The HS1 project has added an important assemblage from Beechbrook Wood (Morris in Booth 2006a, 68–74).

There is only one useful association with datable metalwork. At Farningham Hill, a La Tène II involuted brooch was found in the upper fill of the north-west ditch, stratified above fills containing pottery of this phase; if the association is taken at face value, despite the note of caution previously sounded about the relationship of metalwork and pottery in ditches, then the pottery sequence ought not to date later than about 100 BC.

The available radiocarbon dates (Table 4.6) have central points between 2210 and 2060 BP, which

Table 4.5 Radiocarbon dates for Early Iron Age sites with pottery in Kent

Site	*Context*	*Result No.*	*Result BP*	*Cal BC*	*Reference*
Tollgate	Pit 374	NZA-22880	2624±35	850-760	Allen 2006
White Horse Stone	Pit 8037	NZA-22043	2527±40	800-510	Allen 2006
West of Northumberland Bottom	Pit 156	NZA-22728	2509±35	800-420	Allen 2006
White Horse Stone	Pit 2130	NZA-22040	2507±50	800-410	Allen 2006
White Horse Stone	Pit 4561	NZA-22044	2469±40	770-400	Allen 2006
White Horse Stone	Pit 7090	NZA-21958	2438±30	760-390	Allen 2006
White Horse Stone	Pit 4067	NZA-22045	2429±55	770-390	Allen 2006
White Horse Stone	Pit 2119	NZA-22042	2397±50	770-380	Allen 2006
Tollgate	Pit 387	NZA-22886	2384±35	760-380	Allen 2006
White Horse Stone	Pit 2155	NZA-22038	2377±45	760-370	Allen 2006
White Horse Stone	Pit 2130	NZA-22041	2367±40	760-370	Allen 2006
White Horse Stone	Pit 2155	NZA-22039	2337±40	800-200	Allen 2006
Eyhorne	Pit 226	NZA-22594	2295±30	400-260	Allen 2006
White Horse Stone	Pit 6132	GU-9088	2270±60	460-160	Allen 2006
Cuxton	Pit 343	NZA-22593	2267±30	400-200	Allen 2006
West of Northumberland Bottom	Pit 147	NZA-22748	2222±30	370-190	Allen 2006

Table 4.6 Radiocarbon dates for Middle Iron Age sites with pottery in Kent

Site	*Context*	*Result No.*	*Result BP*	*Cal BC*	*Reference*
Oldbury	Hearth in association with gully	BM-2292R	2210±40	390-180	Clark and Thompson 1989
Beechbrook Wood	Enclosure ditch 3072	NZA-20052	2207±40	390-170	Allen 2006
Kingsborough	Structure 2263	NZA-22282	2207±35	380-170	Allen *et al.* 2008
Little Stock Farm	Grave 2037	NZA-19987	2203±35	380-170	Allen 2006
Kingsborough	Structure 2265	NZA-22283	2183±40	380-110	Allen *et al.* 2008
Bigberry	Ash layer in waterhole	BM-1530	2080±45	340-20	Clark and Thompson 1989
Bigberry	Ash layer in waterhole	BM-1768N	2060±50	200-50	Clark and Thompson 1989

would calibrate to a range of approximately 390 to 50 cal BC. As with the two previous phases, it is difficult to be precise about the dates of this phase, but a range of approximately 300 to 100 cal BC might be a reasonable approximation.

From Middle Iron Age to Late Iron Age

It is not proposed here to continue the chronological scheme into the Late Iron Age in any detail, not least because the HS1 project has been able to add very little

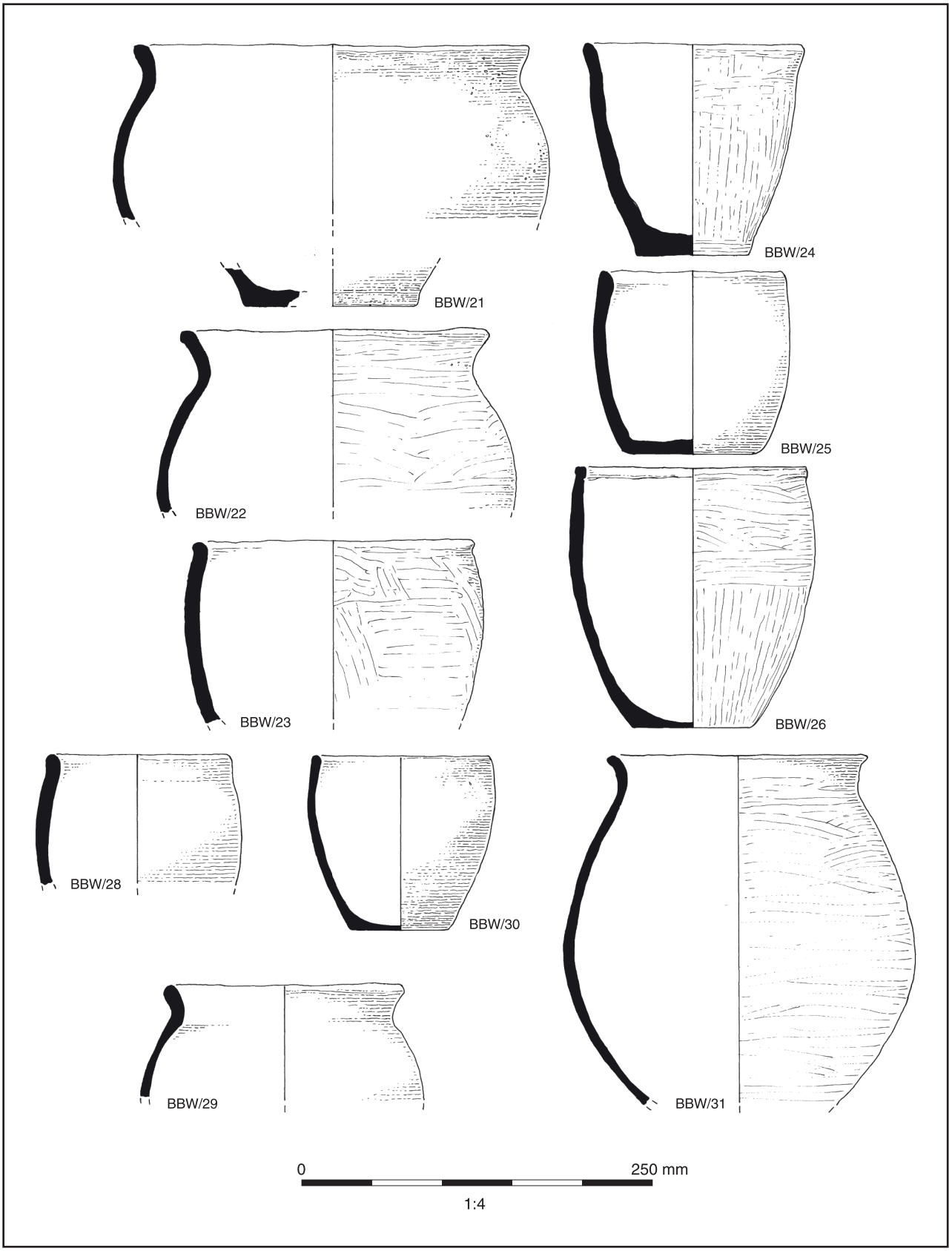


Figure 4.9 Middle Iron Age pottery from Beechbrook Wood

to this debate, but some discussion is needed in order to clarify the end date for the preceding Middle Iron Age. The transition to the Late Iron Age in the south-east of England, and especially in Kent, has long been seen as a critical point in the prehistory of the region, and there has been considerable argument over its nature, chronology and causation. There has also been considerable discussion over the appropriate terminology for the period and its material culture, and the term 'Belgic' has been widely used, in particular for the pottery (eg Thompson 1982, 4–5). The use of that term has, however, been avoided in this discussion, since it is felt to be, at best, unhelpful and, at worst, positively misleading. It carries with it the baggage of meanings derived from its original association with immigrants or invaders from Belgium as the explanation of the changes involved in the transition to the Late Iron Age, an explanation now widely discredited. Even if used without any such historical or explanatory intent, as a name for a type of pottery, it is often ill-defined, or, as defined in Thompson's sense, refers to a subset of the ceramic production, whether this be the wheel-thrown or the grog-tempered pottery, thus creating an artificial and unhelpful division in the history of ceramic technology. A neutral term such as 'Late Iron Age' is greatly preferable, and in line with the terminology used here for the earlier periods of the Iron Age. Evolving ceramic production can then be discussed in terms of technology, fabrics and forms in the usual way.

The construction of a precise ceramic chronology is difficult, because of a lack of large assemblages, of associated objects and of radiocarbon dates. Though the Late Iron Age pottery of Kent has been known since the publication of the cemeteries at Aylesford (Evans 1890) and Swarling (Bushe-Fox 1925), most of what is known has come from burials, and it is now clear that the pots selected for inclusion in the graves were not a representative sample of the ceramic repertoire. Thompson's survey and gazetteer (1982) show just how few settlement sites of the Late Iron Age had been excavated in Kent. With no large or well excavated assemblages to build on, establishing a detailed chronology was difficult. Since then a few other 1st century BC assemblages have been published; the largest is from Marlow Theatre Car Park, Canterbury (Blockley *et al.* 1995), with smaller, but important, finds at Iwade (Lyne in Bishop and Bagwell 2005) and Highstead (Couldrey and Thompson in Bennett *et al.* 2007, 176–214). None of these, with the possible exception of Highstead, shows continuous occupation from the Middle Iron Age; the only other site where that continuity can be seen is Farningham Hill (Philp 1984). Even now, therefore, there are few such

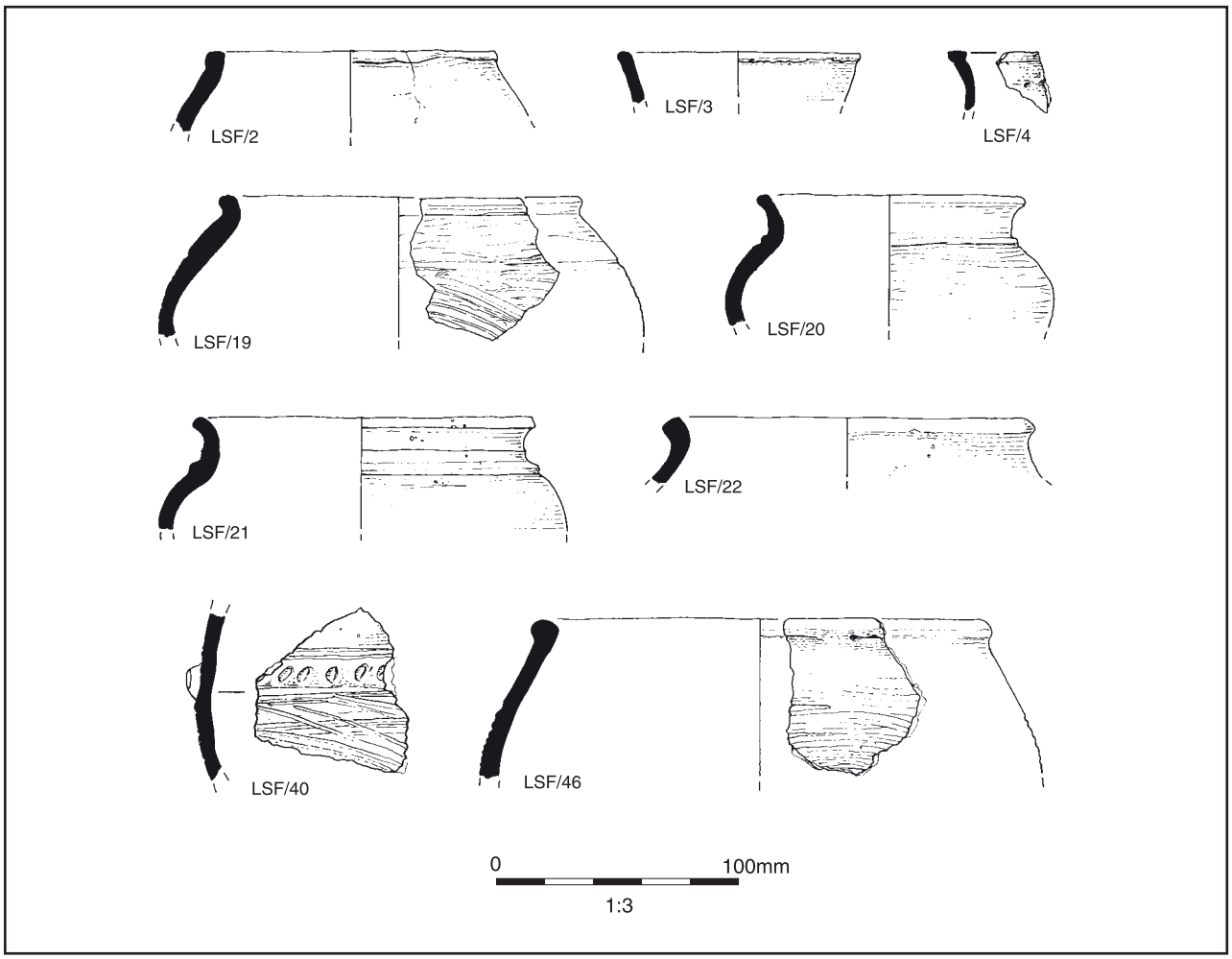


Figure 4.10 Middle/Late Iron Age pottery from Little Stock Farm

published assemblages for the earlier and middle part of the 1st century BC. Among the HS1 sites, those with evidence for Late Iron Age occupation were almost all founded in the half century or so before the conquest; this has important implications for the history of settlement and land use, but it does not help with fixing a ceramic chronology. The only exception is Little Stock Farm, where occupation continued from the Middle Iron Age before ending somewhere in the mid 1st century BC (Fig. 4.10).

With few published assemblages relevant to the earlier 1st century BC, it is not surprising that there are few stratigraphic sequences or useful associations with datable objects. For the Late Iron Age the known typological evolution of brooch forms is the most precisely diagnostic measure, but in Kent as elsewhere in England (Haselgrove 1997), brooches are not commonly found in settlement contexts until the appearance of Colchester, Langton Down, rosette and other forms at the end of the 1st century BC. There are, however, some known associations of brooches of La Tène D1 and La Tène D2a forms in Kent, though unfortunately very few with usefully large published ceramic assemblages.

The earliest possible example is at Farningham Hill, where the pin of a brooch was stratified in the upper fills of the south-west ditch; it may belong to a filiform brooch of LTD1 date, but, unfortunately, the rest of the brooch is missing and the identification is uncertain. It falls at a point in the seriated sequence of pottery at the site somewhat after the iron involuted brooch discussed above in the context of the Middle Iron Age, at a time when the new forms and fabrics were beginning to be introduced. If the identification is correct, then the date of 120–80 BC for this type should indicate the start of the Late Iron Age ceramic tradition.

The only other associations are with the characteristic 'boss-on-bow' type of brooch, identified by Stead (1976) as the earliest brooch form found with the Aylesford cremation burials; though he preferred a post-Caesarian date, it is now clear that these brooches are characteristic of La Tène D2a and could date as early as 80 BC (Haselgrove 1997, 56–7). Many more of this form have now been recognised, but most of them are from burials, accompanied by small and selected ceramic groups. There are a few settlement finds, however. There is a small group of such brooches from the Marlow Theatre Car Park site at Canterbury (Mackreth in Blockley *et al.* 1995, 964–71); they were, however, mostly found redeposited in later soil horizons and pits, and there are few useful associations with Late Iron Age pottery. Outside Canterbury these brooches are rare settlement finds; examples are known from Bridge Hill (Watson 1963; Thompson 1982, 666–7), Radfield (Baxter and Mills 1978; Thompson 1982, 821) and Quarry Wood Camp, Loose (Kelly 1971; Thompson 1982, 773–5). A further example of a La Tène D2a brooch with pottery is from Birchington, Shaft 11 (Thompson 1982, 620).

The evidence is not yet conclusive, and further well published assemblages are needed to firm up the ceramic sequence, but there is enough to suggest that the new traditions were already fully developed by the time of the currency of the La Tène D2a brooches in the middle decades of the 1st century BC, a conclusion that would fit well with the suggested identification of the brooch from Farningham Hill. For the purposes of the broadly based scheme of ceramic phases being proposed here, a start date for the Late Iron Age phase of 100 BC may not be very far wrong, and fits well with the evidence for the preceding Middle Iron Age phase, whose chronology shows little sign of continuing beyond that date. If further research and better evidence do in fact show this to be the case, then it would follow that the generally accepted dates for much of our Late Iron Age pottery are too late; more specifically, it might suggest that the apparent gap in the settlement history of the HS1 sites in the first half of the 1st century BC is illusory rather than real.

The environment in later prehistory

Work along the HS1 route produced little direct evidence for the state of the natural environment and the landscape in the later prehistoric period, though there are a number of important lines of evidence, which, taken together, provide a coherent picture that is broadly in agreement with the established interpretation, and help to refine it in certain details (Giorgi and Stafford 2006). In particular, the evidence for a significant increase in the exploitation of domesticated plants and animals and for the division of the land into fields, sometimes on an extensive scale, agrees well with the other environmental evidence in suggesting that woodland clearance for extensive agriculture was primarily a phenomenon of the Middle and Late Bronze Age.

Many of the environmental sequences in Kent, although comparatively informative for the Late Glacial and Early Holocene, are subsequently truncated or poorly dated, with the consequence that we know much less about environmental change in later prehistory. In addition, or possibly as a consequence, there has been much more emphasis on Late Glacial environmental history than there has been on subsequent land-use history in Kent; there have, for instance, been no studies of the colluvial fills of dry chalk valleys comparable to the work of Bell (1983) or Wilkinson (2003) in Sussex.

Much of the available evidence comes from the zone at the foot of the North Downs scarp, especially between Ashford and Folkestone, relevant to Zones 7 and 8 of the HS1 and to the area further east, now occupied by the Channel Tunnel Terminal. The important sequence from Holywell Coombe, explored in advance of the construction of the Terminal, lacks evidence for later prehistory (Preece and Bridgland 1998; 1999). Sites immediately to the east at Castle Hill and slightly further east still at Dover Hill (Kerney *et al.* 1980) showed evidence for later colluvial deposits, probably the result of late prehistoric and early historic agriculture, but they are not well dated. There is somewhat better dating evidence from further west, at the Devil's Kneadingtrough, near Brook, a site north-east of Ashford at the mouth of the gap through

the Downs formed by the Stour Valley (Kerney *et al.* 1964; Burleigh and Kerney 1982). The sequence there showed evidence for some clearance in the Neolithic, followed by regeneration before a major episode of renewed clearance; dating evidence is not plentiful, but two sherds found in the lower levels of the colluvium and attributed to the Early Iron Age suggest that renewed clearance and agriculture on the slopes of the scarp may not have begun until the early 1st millennium BC.

A similar picture is given by the profile at Frogholt, near Newington (Godwin 1962), where a layer rich in pollen and macrofossil remains was deposited in a period of about 500 years spanning the first half of the 1st millennium BC. There was evidence for some clearance and agricultural activity throughout the profile, and the base of the peat was dated to 1500-820 cal BC (2980±130 BP: Q-354). Higher up there was a significant change in the profile, showing extensive deforestation and accompanying evidence for pastoral and arable activity; this began a little below a level that yielded a radiocarbon date of 1030-410 cal BC (2640±110 BP: Q-349). As the quantity of arboreal pollen decreased, so a larger proportion was made up of pine and birch, suggesting the greater influence of species typical of the Weald to the south as local woodlands declined in extent. The Frogholt site is only about 2km east of the HS1 excavation at Saltwood Tunnel, where, after the construction of five Early Bronze Age ring ditches and some sporadic Middle Bronze Age activity, an extensive rectilinear field system was laid out somewhere around 1000 BC (see Fig. 4.13). There is thus good agreement between the environmental and the archaeological evidence for major clearance around the early 1st millennium BC in Zone 8.

The HS1 project produced new evidence for the state of the prehistoric environment in various forms, including the analysis of molluscan assemblages, the identification of charcoal and wild animal bones, and the observation of colluvial deposits, though in most cases the number of sites that produced such evidence is limited (Giorgi and Stafford 2006).

Charcoal was the most abundant source of evidence. Oak was the dominant species, suggesting a ready supply of such wood. At West of Northumberland Bottom, for example, all the prehistoric assemblages were dominated by oak, used for both cremations and domestic functions, presumably structures, artefacts and fuel. Oak was the main wood used in the Early Iron Age metalworking at White Horse Stone, since its charcoal is ideal for smelting and smithing, and also the main wood found in cremation burials at Saltwood Tunnel and at White Horse Stone. Other woods found in cremation burials include ash, alder, hazel, hawthorn and blackthorn, as well as occasional finds of willow/poplar and birch. Large amounts of blackthorn were found in Early Iron Age pits at White Horse Stone; it is an effective hedging plant and its presence may suggest an organised division of an open landscape around the occupied area. The range of species identified suggests a variety of habitats in the landscape, and the existence of considerable areas of woodland. In particular, the regular dominance of oak suggests that there was no strong pressure on the availability of woodland resources.

Confirmation of the continued existence of extensive woodland is found in the presence of evidence for red deer, roe deer and wild boar. There is a marked contrast between the eastern and western parts of the HS1 route, with the evidence for these wild animals noticeably concentrated in Zones 1–3. Red deer and roe deer antler and small quantities of bones are found at White Horse Stone and Tollgate, perhaps suggesting that antler collection was more important than deer hunting. Deer bones were found in much greater numbers at the West of Northumberland Bottom sites; at Zone 330 Area B red deer was the second largest component of the animal bone assemblage after cattle. Wild boar and pine marten were also found at West of Northumberland Bottom. The fact that the bones of some of these wild species were sometimes found in conspicuously structured deposits, such as Pit 147 (see Fig. 4.38 and the discussion of deposition practices below), may raise questions about prehistoric attitudes to such animals and the role of hunting in those societies, but the fact that they were present at all shows that there was still sufficient woodland surviving to provide them with a habitat. In Kent, especially west of the Medway where this evidence is concentrated, this woodland may well have been on the upper slopes of the North Downs. Various campaigns of survey and excavation in West Kent have produced remarkably little evidence for Iron Age occupation above the lowest slopes of the North Downs and the lower land of the Darent Valley (Philp 1973; 1984; 2002), and it was not until the 1st century AD that that area seems to have been densely occupied (Philp 1963; 1973, 53–118, Sites 6–20).

Molluscan evidence was analysed at two sites. Despite poor preservation conditions in the sandy soils at Saltwood Tunnel, a small quantity of molluscan remains was recovered; these comprised species typical of open-country, grassland or arable conditions, suggesting large-scale clearance at least by the Late Bronze Age, and thus confirming the evidence from a field system and occupation of that date (see Fig. 4.13). At White Horse Stone, samples from the valley bottom show a transition from woodland to heavily grazed grassland perhaps sometime during the Bronze Age and certainly by the Early Iron Age. A short distance away, however, at the site North of the Pilgrim's Way trackway, there is evidence for a strong shade-demanding component in the assemblages into the Bronze Age. By the time of the Early Iron Age settlement and buried soil, however, open-country species comprised up to 80% of some assemblages, indicating extensive areas of open ground with large tracts of grassland and arable, in an environment almost totally free of shade.

In Zone 1, there is some evidence for colluvial deposits that can potentially be related to datable archaeological features. In the area south of Springhead Roman town, in a dry valley at the head of the Ebbsfleet Valley, a series of pits, possibly of Neolithic or Early Bronze Age date, were sealed by a layer of colluvium up to 2 or 3m

Table 4.7 Major evidence of animal bones and charred plant remains for later prehistoric agriculture

Site	MBA and M/LBA		LBA		Earliest and Early IA		MIA	
	Animals	*Plants*	*Animals*	*Plants*	*Animals*	*Plants*	*Animals*	*Plants*
West of Northumberland Bottom					Cattle, sheep/goat, horse, pig	Emmer, spelt, barley		
Tollgate					Sheep/goat, cattle, pig, horse	Emmer, spelt?		
Cobham Golf Course				Spelt, emmer?, barley, beans				
Cuxton					Sheep/goat, cattle, pig, horse, dog	Emmer, spelt		
White Horse Stone	Sheep/goat, cattle	Barley			Cattle, sheep/goat, pig, horse, fowl	Emmer, spelt, bread wheat, barley, flax, brassica		
Eyhorne Street					Cattle, horse	Spelt, emmer, barley, brassica		
Beechbrook Wood		Emmer, spelt, barley, flax						Emmer spelt, beans
Little Stock Farm			Sheep/goat		Sheep/goat, cattle, pig			
Saltwood Tunnel		Emmer, barley	Cattle, horse, sheep/goat	Emmer, spelt, barley, peas, beans, flax		Spelt	Cattle, sheep/goat	

deep, which was in turn cut by pits containing Late Bronze Age pottery. In a neighbouring evaluation, the remains of a barrow underlay colluvium which was itself dated to the Late Bronze Age or Early Iron Age. These relationships would suggest that clearance and agriculture began to have a significant impact in the environment possibly from the Middle Bronze Age and certainly by the Late Bronze Age.

The HS1 evidence therefore confirms the existing idea of the later prehistoric environment, with extensive clearances for agriculture in the Middle and Late Bronze Age, but also adds significant new detail. For the route east of White Horse Stone, the evidence is very limited. The archaeological evidence for Middle Bronze Age occupation at several sites between Maidstone and Ashford and the establishment of a field system at Sandway Road in the Middle Bronze Age conforms generally to the picture of Bronze Age clearances, while, east of Ashford, the Late Bronze Age field system at Saltwood Tunnel agrees more closely with the environmental evidence for major woodland clearance in the early 1st millennium BC from nearby Frogholt. Further west, there is a greater quantity of new evidence, which is in good agreement with results further up the Thames in the London region, where there is a consistent pattern of woodland clearance in the 2nd millennium BC (Scaife in Sidell *et al.* 2000, 111–7). The colluvial deposits at West of Northumberland Bottom show some measure of clearance starting perhaps as early as the Middle Bronze Age, while the molluscan sequence at White Horse Stone suggests significant clearance and establishment of open-country conditions as late as the Early Iron Age. Nevertheless, throughout the route there is no sign of stress on woodland resources, and especially west of the Medway there is evidence for the survival of extensive woodland at least into the Early Iron Age.

Agriculture and the food supply

Evidence for the development of prehistoric agriculture and the changing nature of the food supply was widespread throughout the route (Table 4.7). As for other periods, survival of animal bone was poor, despite plentiful contexts such as pits and ditches where conditions might have been expected to be more favourable. Charred plant remains made up the greater part of the available evidence. The reports on the HS1 sites are the first systematic contribution to the study of later prehistoric agriculture in Kent: Scaife's review (1987) of environmental archaeology in south-eastern England was able to collate only a very few sites with relevant plant remains, while Hambleton's studies of Iron Age (1999) and later prehistoric (2008) animal bone assemblages could identify only one relevant site report from Kent, that from Farningham Hill (Philp 1984). The charred plant remains from the HS1 sites cover all periods of later prehistory, but the animal bones are mostly limited to the Iron Age. There is therefore some important evidence for the exploration of changing

agricultural and food production strategies through time, though the patterns emerging here will need to be augmented by information from other sites in the region.

Crop husbandry and processing

Charred plant remains were recovered from ten sites, from all zones except Zone 4 (Giorgi and Stafford 2006, 23–6). These assemblages were dominated by cereal remains, although the absolute quantity of the evidence, the density of remains and the quality of preservation varied greatly; there were especially large and informative assemblages from Late Bronze Age deposits at Saltwood Tunnel and Early Iron Age contexts at White Horse Stone and Eyhorne Street. The main cereals were the hulled wheats, emmer and spelt, and hulled barley.

Emmer and spelt were found on sites of all periods from Middle Bronze Age to Middle Iron Age, but the frequently very small quantities recovered make it difficult to judge their relative importance or how that may have changed through time. Emmer is well represented in Middle Bronze Age contexts at Beechbrook Wood and Saltwood Tunnel, but was also found in later contexts and was the dominant cereal in an Early Iron Age sample from Tollgate and in some contexts at White Horse Stone. Spelt was present from the Middle Bronze Age, and was the dominant type at Early Iron Age Eyhorne Street. Late Bronze Age assemblages at Saltwood Tunnel and Early Iron Age assemblages at White Horse Stone show both wheats well represented.

Other cereals recorded include traces of free-threshing wheat grain from two sites, including possible hexaploid bread wheat (*Triticum aestivum*) at White Horse Stone. Barley was found at several sites, including Beechbrook Wood and Saltwood Tunnel, and was more common in the Bronze Age assemblages than in those of the Iron Age. Oat (*Avena* sp.) grains were recovered in small numbers from several sites, although it is impossible to be certain that any were from cultivated species; at some sites, such as White Horse Stone and Eyhorne Street, wild oat florets were present, suggesting that oats were a cereal weed, though possibly exploited as fodder.

Apart from cereals, there was also evidence for pulses, in the form of beans (*Vicia faba*) and peas (*Pisum sativum*). Most of the evidence came from Late Bronze Age deposits at Saltwood Tunnel, but beans were also found in a Late Bronze Age context at Cobham Golf Course and in a Middle Iron Age deposit at Beechbroook Wood. At Saltwood Tunnnel there were large numbers of beans in Late Bronze Age contexts, including one deposit of several thousand, some of which showed weevil infestation.

Other cultivated species included flax (*Linum usitatissimum*), represented on three sites, with large amounts of flax capsules (whole and fragments) but no seeds coming from several Late Bronze Age pit samples from Saltwood Tunnel, and smaller quantities from Middle Bronze Age deposits at Beechbrook Wood and in an Early Iron Age sample from White Horse Stone. Other potential cultivars may be represented by *Brassica* seeds from Early Iron Age contexts: large numbers of mineralised seeds were found in four samples from White Horse Stone, which may represent consumed foodstuffs from cultivated species, while charred seeds were also found there and at Eyhorne Street. At the latter site, gold of pleasure (*Camelina sativa*) may have been cultivated for its edible seeds or for their medicinal use, although they may simply be from weeds.

Among the charred plant remains were weed seeds, with particularly good assemblages from Saltwood Tunnel and White Horse Stone. Many of these arable weeds have distinct preferences for particular soil types and these weed seed assemblages suggest the possible cultivation of several soils types but with a tendency towards the use of sandy loam soils, which would have been dominant in much of Zones 4–8. The catchment area exploited from each site may have been extensive and included different soil types, or cereals may have been imported from other settlements; at Cuxton, for example, on the chalk of the North Downs, the presence of corn gromwell and corn spurrey suggest cultivation of a relatively acidic, and therefore probably non-local, soil. The weeds may also have seasonal preferences: seeds of corn spurrey, knotgrass, black bindweed and fat hen may indicate the presence of spring-sown crops, while corn gromwell is often associated with winter-sown cereals.

These various assemblages seem to derive from different activities in the later stages of the processing and preparation of the grain for consumption. Some are the waste discarded from crop cleaning, for example the weed-rich deposits at Little Stock Farm or Pit 6110 at White Horse Stone, or the chaff-rich assemblages that dominate the Late Bronze Age record at Saltwood Tunnel. Others clearly comprise grain that has been almost completely cleaned and is near the point of storage or preparation as food. Such deposits occur as early as the Middle Bronze Age, as in Pit 238 at Beechbrook Wood, which has a low density of plant remains of which 83% are grain, but are particularly characteristic of the Early Iron Age, as in many of the deposits at Eyhorne Street, which are typically >70% grain. Assemblages with a similar composition are also found at White Horse Stone in Type 1 and Type 2 pits, and also at Tollgate, where the assemblage associated with a hearth or oven was 95% grain. Such grain-rich assemblages dating to the Iron Age have been the subject of considerable debate. They were originally interpreted as a feature of grain production sites (Jones 1985), but more recent arguments have suggested that they should be seen as indicators of storage and consumption (van der Veen and Jones 2006; 2007). The question of grain production and storage will be considered further in the section below on pits and their functions.

In general, the HS1 sites have produced a low density of charred plant remains, and many of the smaller assemblages may have been incorporated into the fills through normal processes of discard and waste disposal. At White Horse Stone, a series of pits whose contents included iron-working debris also contained high

densities of burnt chaff; this may result from the use of chaff as a fuel, but we should not discount the possibility that it derives from some other process and was deliberately deposited with the remains of metalworking. Other assemblages of charred plant remains, however, seem to be the result of clear selection for deliberate deposition, either because of the volume of material, such as a dump of several thousand beans near the base of Pit 207 at Saltwood Tunnel (Riddler and Trevarthen 2006, 13), or because of repeated patterns of location and association or non-association in features. The question of the deliberate structuring of deposits of charred plant remains will be considered further in the more general discussion of deposition below.

Animal husbandry

Animal bones from this phase were recovered from seven sites covering Zones 1, 2, 3, 5, 7 and 8 (Giorgi and Stafford 2006, 26–7). The assemblages are not large, except at White Horse Stone and West of Northumberland Bottom; sites with smaller, but still useful, assemblages include Tollgate, Cuxton, Eyhorne Street, Little Stock Farm and Saltwood Tunnel. Most of these assemblages belong predominantly to the Iron Age, and we have little evidence for domesticated animals in the Middle and Late Bronze Age; it is unfortunate, therefore, that we know so little about the development of animal management strategies at this critical stage.

In addition to the generally low numbers of bones recovered, there are two other problems affecting their interpretation. Preservation was especially poor in the more acidic soil conditions of the Greensand belt covering Zones 4–8, and this may have differentially affected the various species, leading to an over-representation of the larger species, in particular cattle and horse. This was particularly the case at Eyhorne Street.

On some sites too, especially at West of Northumberland Bottom, there are good reasons for thinking that the animal bones had been deliberately deposited in a way that makes them probably unrepresentative of normal husbandry and consumption practices. For example, as much as 80% of the bone from West of Northumberland Bottom came from one sub-site, Zone 330 Area B, and of this the vast majority came from one feature, Pit 147 (see Fig. 4.38). This contained little pottery, but a large collection of animal bone, both domestic and wild, including cattle, red deer, wild boar and pine marten; it also contained an assemblage of struck flint, including Neolithic and Early Bronze Age tools. The contents of this pit are so unusual, in quantity and in type, as well as in spatial organisation, that it seems unlikely to be a representative sample of the full site economy and more likely represents a single, and possibly very uncommon, event. Of the other 20% of the later prehistoric bone from West of Northumberland Bottom, comprising the finds from the Army Camp area, a large proportion came from a single feature, ditch 271; this assemblage was dominated by pig, but comprised the partial skeletons of four animals, probably from a single deposition event. These obviously structured deposits and large dumps of animal bone are themselves an important feature of these sites, and will be discussed further below in the more general discussion of deposition practices, but they make it very difficult to rely on the observed proportions as representative of the general economy.

The main domesticated species recorded were cattle, sheep/goat and to a lesser extent pig, with horse and dog also present. Despite the difficulty discussed above of estimating the importance of species through calculating the percentages of the surviving bones, it may nevertheless be possible to suggest some tentative conclusions about the relative importance of the different species and the management strategies being practised at some sites. Cattle were the most abundant species at West of Northumberland Bottom Zone 330 Area B, even allowing for the special assemblage in Pit 147, though absolute numbers were small. At Eyhorne Street the high proportion of cattle may be due at least in part to poor preservation and differential survival rates, reducing the representation of the smaller mammals. Similarly at Saltwood Tunnel, the only large assemblage of animal bones dating to the Late Bronze Age was dominated by cattle, horse and sheep/goat; numbers were small, however, and preservation not good. Cattle and sheep/goat were present in approximately equal proportions at White Horse Stone and Little Stock Farm, while sheep/goat was dominant at Tollgate and Cuxton. Pig was not abundant at any of the sites except in Early to Middle Iron Age deposits from West of Northumberland Bottom Army Camp, though distorted by one large dump; in the discussion of the state of the environment above, it was suggested that the area around West of Northumberland Bottom retained significant quantities of woodland, perhaps more so than areas further east along the route, and this may have provided the woodland pasture suitable for pig rearing.

There was limited ageing data from the bone remains at these sites. For cattle, the results from the Early Iron Age sites at West of Northumberland Bottom and Tollgate show a number of mature animals, suggesting that they were reared for traction and milk as well as meat, while at White Horse Stone and Cuxton the emphasis was on traction and dairying rather than meat. In the case of sheep, they were bred for wool, milk and meat at West of Northumberland Bottom, Tollgate and White Horse Stone and for meat at Cuxton, with evidence for lambing on site or close by at West of Northumberland Bottom and White Horse Stone. For pig, the data conform to the expected pattern, showing that they were primarily bred for meat. At White Horse Stone, it is clear that a few were retained for breeding.

Other species were represented in smaller numbers. As elsewhere in the Iron Age, horse and dog were present at several sites. Horses were presumably intended primarily for traction, but there is no convincing evidence from the prehistoric period that horses were bred domestically rather than tamed from feral herds. Dogs had been domesticated since the Mesolithic, and may well have

been working animals as well as pets and scavengers. Occasional bones of domestic fowl (*Gallus gallus*) were found at White Horse Stone in an Early Iron Age context. The domestic fowl only became widespread in southern Britain during the Middle to Late Iron Age, and these examples are perhaps the earliest so far recorded in secure Early Iron Age contexts (Hambleton 2008, 30).

Despite the low numbers and mostly poor to moderate preservation, there were some indications of butchery. The major species all showed cut marks indicative of disarticulation and the removal of meat. It was also clear that horses had been subject to the same process of meat removal.

Wild resources

Bones of red deer and roe deer at sites in Zones 1–3 suggest that deer were important as a source of meat as well as for antler (Giorgi and Stafford 2006, 27). Quantities are not large at White Horse Stone and Tollgate, but are more significant at West of Northumberland Bottom, where red deer were the second most frequent species after cattle. Here again, however, there are problems in interpreting the raw percentages since the figures are so heavily biased by the unusual deposit in Pit 147. Nevertheless, the presence of red deer and roe deer, and also wild boar, demonstrates that these animals were part of the meat supply, even if we cannot be sure of their relative importance in terms of proportion to other species, or about the social role of hunting and eating them. Other wild species, such as the cat and the pine marten found at West of Northumberland Bottom, seem more likely to have been exploited for their skins than as food.

One of the most striking features of bone assemblages from later prehistoric Britain is the almost total absence of fish and shellfish, freshwater or marine (Jay and Richards 2006; Dobney and Ervynck 2007); despite improvements in the methods of recovery, fish and shellfish remain almost totally absent. This seems to be true of sites in watery environments with plentiful freshwater resources, as well as for coastal sites with ready access to marine resources. At Wardy Hill in the Fenlands, there was some evidence for the catching of pike, but even here the quantity was very small (Evans 2003, 137). Even in Kent, with its long coastline, there is a long gap between the Middle Bronze Age and the Late Iron Age. There is evidence for the exploitation of marine resources, especially shellfish, in the Middle Bronze Age: at Westwood Cross, Broadstairs, in the Isle of Thanet, a variety of species from different habitats were exploited, including oysters, mussels and cockles, but consumption was already declining by the later phases of the occupation (Allison 2005). Oysters reappear in the record in the Late Iron Age, as shown at Faversham (Gidlow 1969) and sites in Thanet at Dumpton Gap (Hurd 1909) and King Edward Avenue, Broadstairs (Hurd 1914), while marine fish were a regular part of the diet in the Roman period, as evidence from HS1 sites such as Pepper Hill and Thurnham shows.

It is all the more surprising, therefore, to find a herring (*Culpea harengus*) bone reported from the site at West of Northumberland Bottom. It and other unidentified fish bone come from unphased features, however, and despite the evidence for intensive Iron Age occupation, it seems more likely that these bones result from later phases of occupation. The only other bit of evidence for fish from a secure Iron Age context is a tooth of a predatory fish, not identified to species, from Pit 175 at Eyhorne Street (see Fig. 4.25); the contents of this pit are a very unusual collection of items, discussed further in the section on deposition practices below, and it seems best to regard it as an exotic oddity rather than the product of catching and eating fish.

There was also evidence for the continued use of wild plant resources in this period at four sites, White Horse Stone/Pilgrim's Way, Eyhorne Street, Tutt Hill and Saltwood Tunnel, though in much smaller quantities than in the previous period. Charred hazelnut shell was present at all four sites, while remains of sloe/blackthorn, crab apple and blackberry/ raspberry (*Rubus fruticosus/ idaeus*) (including a few mineralised seeds) were found at White Horse Stone/Pilgrim's Way, and elder (*Sambucus nigra*) seeds and sloe/blackthorn stones were recovered from Saltwood Tunnel.

Discussion

The decreased proportion of wild resources, both plants and animals, represents a clear change in the nature of the food supply from the Middle Bronze Age onwards, with the demonstrable rise in the importance of domesticated plants and systematic agriculture on a larger scale. It also represents a decline in the physical extent of the wild landscape and its varied resources, as the managed and domesticated landscape of agriculture encroached irrevocably.

The general pattern of agricultural activity corresponds well to what is known of later prehistoric practice in southern Britain. The evidence for the species of animals reared, their relative importance and the purposes for which the herds were managed all place the HS1 sites within the regional husbandry strategy described for Eastern England and East Anglia by Hambleton (1999, 89–90). In contrast to the Wessex and Upper Thames regions, cattle are the dominant species, managed for a variety of purposes, including milk, meat and traction. Though the HS1 assemblages are small, they add significant new evidence to the emerging picture and reinforce the argument for linking Kent more closely with eastern England north of the Thames than with southern England.

The cereal crops also show this distinctive regional tradition. Emmer and spelt were present throughout the period. Spelt was recorded tentatively at Beechbrook Wood as early as the Middle Bronze Age, matching the date at Princes Road, Dartford (Pelling in Hutchings 2003) and Westwood Cross, Broadstairs (Allison 2005); these are some of the earliest records of spelt in Britain.

Thereafter, the two cereal crops were grown, possibly as a maslin crop. The HS1 sites show emmer and spelt in varying proportions throughout the later prehistoric period; though one species may dominate a particular assemblage from a single context, or the assemblages from one site, at the regional level the two appear to be of roughly equal importance. This is paralleled by the plant remains recovered from other prehistoric sites in Kent: at Princes Road, Dartford, both spelt and emmer were present in the Middle Bronze Age (Pelling in Hutchings 2003); at Guston, near Dover, emmer was dominant (Allison 2005); and at Whitfield, north of Dover, both emmer and spelt were again present in the Early Iron Age (Allison 1997). Even as late as the Late Iron Age, emmer and spelt were still being cultivated together, as a site at Wilmington demonstrates (Hillman 1982). It was not until the Roman period that emmer was finally replaced by spelt in Kent.

There were clearly marked regional variations in the development of arable agriculture in later prehistoric Britain. In some regions, especially in Wessex, emmer was almost entirely replaced by spelt by the beginning of the Iron Age (Campbell in Cunliffe 2000, Vol. 1, 45–6). In the north-east of England, van der Veen (1992) has identified two contemporary regional economies in the Iron Age and early Roman period, one dominated by emmer, the other by spelt. Elsewhere in eastern England the pattern seems closer to that identified in Kent. Emmer continued to be a major part of the crop economy alongside spelt, as seen, for instance in sites such as Asheldham Camp, Essex (Bedwin 1991), Wardy Hill, Cambridgeshire (Murphy in Evans 2003, 108) and even at the end of the Iron Age at the Hutchinson's Site, Addenbrooke's, near Cambridge (Roberts in Evans *et al.* 2008, 111).

The reasons for these varied patterns of change are as yet little understood. Though they may have been responses to environmental or climatic change, or to social pressures for increased productivity, they are part of a more complex and longer-term move from the glume wheats to the free-threshing bread wheats more common in the Roman period; indeed this change may have begun earlier than can be currently shown because of the probable under-representation of bread wheats in the record of charred plant remains. We should not forget the importance of cultural preference. Spelt and emmer were not interchangeable parts of the diet, since spelt has a higher gluten content and is therefore more suitable for bread-making. Just as the cultivation of the free-threshing wheats, rich in gluten, allowed bread to become the staple carbohydrate component of the diet, so a switch from emmer to spelt would have had significant consequences for the form in which wheat was consumed. Spelt would have been more suitable for the production of something like bread, while emmer would have been eaten in a form more like porridge. The transition from one to the other would have had a significant impact on food consumption and on the everyday life of the household, possibly in ways that are reflected in the material culture of food preparation and serving. It may not be a coincidence, for example, that the best evidence for the development of the oven in the Iron Age is seen in Wessex (Poole in Cunliffe and Poole 1991a, 145–51), precisely where spelt had replaced emmer and so created the possibility of baking bread.

Settlement in the landscape

The HS1 route through Kent provides us with a slice through the archaeological record of almost the whole length of the county. It has produced high-quality data, systematically collected, for the nature and distribution of human settlement, but the evidence produced, however abundant, is only a sample and it is necessary to consider how reliable that sample is and what inferences can be drawn for the wider pattern of settlement beyond the narrow trace of the rail route itself. The first point, an obvious one but still one worth making, is that the HS1 evidence is only relevant to certain regions of Kent. The county is marked by a strong east-west grain to the geology and topography, typified by the coastal plain, the North Downs, the Greensand vale and ridge, and the Weald to the south. West of the Medway, the HS1 route in Zones 1 and 2 traverses the coastal plain and the dip slope of the North Downs; east of the river it runs in Zones 4–7 along the Greensand vale, with shorter sections of the North Downs in Zone 3 and the south coastal plain in Zone 8. These are regions that have, on the whole, seen less archaeological intervention in recent years than the area of the north coastal plain east of the Medway, the Isles of Sheppey and Thanet and the east coast. The HS1 route therefore provides evidence for some regions that have been less intensively researched, but the results cannot necessarily be extended beyond those regions.

For the regions cut through by the HS1, the archaeological investigations have provided a sample of the prehistoric occupation, and the problem is once again to decide how reliable we think that sample might be for those limited regions. The original pattern of human occupation in later prehistory is unknown, so we cannot compare the sample with the total population. Nor do we have any reliable figures for the density of prehistoric sites derived from elsewhere that might be relevant, so unlike the discussion below of the distribution of Roman settlement, we cannot compare the actual sample with hypothetical predictions. Almost all archaeological interventions in recent years in Britain have been in response to proposed development, whether single-site projects or linear projects with multiple sites such as pipeline, road or rail schemes; their location has therefore been determined by economic and social considerations relevant to the development. They therefore do not constitute a truly random sample, though they may be a judgement sample in as much as prior archaeological knowledge is a factor in determining the need for an intervention. It has nevertheless been argued that we can, with some reservations, treat the results as a reliable basis for inference (Champion 2007b).

These arguments are still valid, but they need further discussion and refinement. The suggestion that the results of development-led archaeology may approximate to a random sample depends crucially on the definition of the area to which the sample is relevant and for which it is a reliable basis for inference. In the ideal fantasy world of pure research archaeology, an appropriate sampling strategy would be to divide the research region into distinct zones, or strata, and devise a separate strategy for each stratum. In the real world of development-led archaeology, the number and location of the samples are determined by non-archaeological factors, and the problem therefore is to devise the strata for which the actual evidence may approximate to a random sample. Previous discussion (Champion 2007b) adopted an approach that in retrospect was too simple and accepted too coarse a set of strata, and the areas about which it has informed us need more careful definition.

It could also be argued that it is possible to estimate the confidence to be placed in such samples by comparing the results with those from samples selected for totally different reasons. In terms of archaeological sampling strategy, single development projects can be regarded as quadrat samples and linear infrastructure projects as transect samples. Comparison of the results of linear projects such as the HS1 with other single interventions could be a useful way of understanding the significance of the results.

These problems can best be illustrated by discussion of the two major regions of the HS1 route—north Kent west of the Medway and the Greensand vale between Maidstone and Folkestone. West of the Medway, most archaeological work has been related to urban regeneration or suburban expansion, and has been very largely confined to the narrow strip of the coastal plain and the coastal zone of the Hoo peninsula. The HS1 route, on the other hand, has avoided the built-up areas to take a more southerly line further inland, across the dip-slope of the North Downs. It is therefore important to distinguish carefully between the coastal plain and the dip-slope of the Downs as different regions with their own distinctive archaeological samples. The evidence from one region will not necessarily be relevant to the settlement history of the other. For the HS1 route across the dip-slope of the Downs there is little other evidence available for comparison. Modern development has seldom extended south of the line of the A2 road. The one major development project further south was the construction of the M20 motorway, which led to the discovery and excavation of the Middle Iron Age enclosure on the chalk at Farningham Hill (Philp 1984).

In the case of the vale south of the scarp slope of the downs east of Maidstone, the region is a much narrower one and the HS1 may offer a reliable sample. Even so, the HS1 route cannot be regarded as random, since it has avoided the location of the present-day villages such as Charing, Lenham and Harrietsham; though the origins of these villages may be post-Roman, their siting may be the result of preferences that were equally valid in the prehistoric period. There has, however, been comparatively little suburban or industrial development, with the exception of the area around Ashford, and there is correspondingly little comparative evidence. Some archaeological investigations have been undertaken in advance of mineral extraction, for example at Charing (Keller 1990) and Lenham (Holmes and Bennett 2003), which, like the HS1 route, have avoided major settlements. The HS1 route might be compared with the results of another linear transect, the M20, even though archaeological observation when this was built was not systematic. For long stretches, however, the HS1 and M20 run parallel and immediately adjacent, and it would be a surprise if they did not encounter very much the same archaeology; indeed, one HS1 site, at Snarkhurst Wood (Diez 2006c, 6), seems to represent part of a site excavated in advance of the construction of a motorway service area (Scott 1997). Such a comparison would therefore be of limited value, and any differences in results could be a product of the varied intensity and quality of fieldwork as much as actual variations in the archaeological record.

In the light of these discussions, the rest of this section will examine the evidence from HS1 for the distribution of human activity in later prehistory, and then go on to consider its implications for the nature of the regional patterning of human settlement and for continuity and disruption within the period.

Regional distribution

The ceramic chronology described earlier, together with the available suite of radiocarbon dates, allows many of the features discovered in evaluations and excavation to be dated with some confidence. There are, however, some that remain undated or that can be dated with only minimal confidence. The problem can arise from several different reasons: either because of the limited number of finds in a feature, or even total lack of them, or because of uncertainty about the possibility of residuality, or sometimes because ceramic identifications were done at a time before the detailed study of the later prehistoric assemblages allowed a more precise chronology to be established. This is particularly true of some features found in assessments, where the small scale of the intervention, and its timing, frequently at an early stage of the project, inevitably left some questions unresolved. Nevertheless, it is possible to review the evidence for the changing pattern of human occupation of the landscape and to have a reasonably high level of confidence in the dates attached to most features (see Table 4.8). The emphasis in this section is on the distribution of human activity; the detailed nature of that activity will be the subject of the next section.

In Zone 1, there is probable evidence for activity in the Middle Bronze Age, but it is fragmentary and poorly dated. At West of Northumberland Bottom, some cremation burials and residual finds of pottery and cylindrical loomweights from later features may belong to this period or may be later (Askew 2006, 15–6). Similarly at Tollgate, Middle Bronze Age activity is documented

Table 4.8 Major types of later prehistoric evidence by zones

Zone	MBA and M/LBA	LBA	EarliestIA	EIA	MIA
1	Dispersed settlement evidence, much of it residual	Scattered, low-density settlement		Scattered clusters of pits and postholes	Inhumation burials
2	Isolated settlement with ditches and pits	Isolated settlement with ditches and pits		Isolated settlement with pits, enclosure	
3	Dispersed settlement evidence	Isolated pit, cremation burials		Major settlement with pits, structures, granaries, ironworking	
4	Isolated cluster of ditches, pits and waterhole				
5	Widespread evidence of ditches and trackways	Possible evidence of ditches		Isolated settlement with pits	
6	Widespread evidence of ditches, settlement clusters	Widespread evidence of ditches, settlement clusters, field system		Scattered, low-density settlement	Large enclosure, occasional pits
7	Widespread evidence of ditches, settlement clusters	Possible evidence of ditches	Fenced enclosure, droveway	Scattered, low-density settlement	Site with enclosure, trackways
8	Isolated pit, residual material	Field system		Field system, trackways, burials	

only by a small number of residual sherds (Bull 2006b, 11). At South of Temple Precinct, some pits may belong to this period, but Middle Bronze Age activity is more clearly marked by the accumulation of a colluvial deposit resulting from agricultural disturbance, dated by the Late Bronze Age pits cut into it (Bull 2006a, 10). Late Bronze Age activity is equally slight; apart from the pits just mentioned and the poorly-dated features at West of Northumberland Bottom, there is one pit (537) at Tollgate (Bull 2006b, 11); the excavation of the Roman cemetery at Pepper Hill also produced a small collection of abraded sherds possibly of this date, while the radiocarbon date of 920–800 cal BC (KIA-23932) from pyre material in Grave 10314 suggests Late Bronze Age activity of some sort (Biddulph 2006a, 8). The Earliest Iron Age was not identified, while Early Iron Age activity was documented at West of Northumberland Bottom (Askew 2006, 17–25) and Tollgate (Bull 2006b, 11–16). The only evidence for possible Middle Iron Age activity was in the form of two inhumation burials from the Pepper Hill cemetery (Biddulph 2006a, 9): Grave 10404 has a radiocarbon date of 350–40 cal BC (KIA-23946), while Grave 10961 is dated to 350–50 cal BC (KIA-23945).

In Zone 2, Middle Bronze Age activity is firmly dated by pottery and radiocarbon at Cobham Golf Course, in the form of a ditch and other settlement features (Davies 2006, 9–15). Occupation there continues into the Late Bronze Age, but there was no evidence for subsequent occupation in the later prehistoric period. At Cuxton (Mackinder 2006, 9–11) occupation was limited to the Early Iron Age (see Fig. 4.23). On the other side of the Medway in the Nashenden Valley (Barclay 2000, 2), Holocene colluvium could be approximately dated by the discovery of Late Bronze Age pottery in the lower layers; a TL date of 790±350 BC from the base of the colluvium would be consistent with a date between the Middle Bronze Age and the start of the Early Iron Age. Otherwise there was no evidence for occupation before the Late Iron Age.

In Zone 3, across the scarp slope of the North Downs, the White Horse Stone site (Hayden 2006a, 98–125) produced well-dated evidence for occupation in the Middle Bronze Age in the form of a ditch, pits and possible structures (see Figs 4.16–19). Activity continued in the Late Bronze Age, with cremation burials and a pit. After an apparent gap in the Earliest Iron Age, a large Early Iron Age settlement developed (see Fig. 4.24) (ibid., 126–72). Thereafter, however, there was no further evidence until the Roman period.

In Zone 4, the only evidence for activity before the Late Iron Age was at Thurnham Roman Villa, where a ditch, pits and unurned cremations, as well as a waterhole (see Fig. 4.39), are probably best assigned to the Middle Bronze Age (Lawrence 2006, 14–17).

In Zone 5, Middle Bronze Age occupation is well dated at Sandway Road, with evidence for a field system (Trevarthen 2006, 13–15). At Snarkhurst Wood (Diez 2006c, 6), a few sherds of Middle Bronze Age pottery may represent part of the site excavated in advance of the construction of a motorway service station, and dated then to the Late Bronze Age (Scott 1997). At Holm Hill, ditch construction may date to the Middle Bronze Age, or possibly even earlier, since one ditch contained sherds identified as late Beaker. Late Bronze Age activity is seen at Chapel Mill in the form of a single pit and other sherds in topsoil (Hayden 2000b, 5); a similar date may also apply to parallel ditches at Holm Hill (Wessex Archaeology 2001, 3). Evidence for later activity is restricted to the site at Eyhorne Street, where a settlement of the Early Iron Age was found (see Fig. 4.25) (Hayden 2006b, 19–27).

In Zone 6, the sites at Tutt Hill and Beechbrook Wood (Fig. 4.11) both had long sequences of later prehistoric occupation, though not necessarily unbroken. At Tutt

Hill (Brady 2006b), ditches, pits and cremation burials of the Middle Bronze Age were followed by a similar range of evidence dating to the Late Bronze Age. After a gap in the Earliest Iron Age, occupation in the Early Iron Age was less intense, while just a single pit was assigned to the Middle Iron Age. At Beechbrook Wood (Brady 2006a), two areas of occupation and burials could be dated to the Middle Bronze Age (see Figs 4.20–1), followed by a Late Bronze Age field system (see Fig. 4.12). Occupation resumed in the Middle Iron Age with a ditched enclosure (see Fig. 4.15) and continued into the Late Iron Age.

In Zone 7, Middle Bronze Age ditches are well dated at Church Lane (Hayden 2000c, 13) and by a single sherd at Boys Hall (Hayden 2000a, 5); other ditches and a possible trackway at Blind Lane are of Middle or Late Bronze Age date (Hayden 2001, 5–7), while Middle Bronze Age activity is also documented at North of Westenhanger Castle (Gollop 2006, 5). Later activity is limited to a site of the earliest Iron Age at Little Stock Farm (Ritchie 2006, 5–9), where occupation may have continued on through the Middle Iron Age and into the Late Iron Age (see Fig. 4.22); otherwise, there is only a single posthole at Blind Lane containing a placed deposit of a La Tène I brooch (Hayden 2001, 8).

In Zone 8, the site at Saltwood Tunnel (Riddler and Trevarthen 2006, 12–17) provided evidence for Middle Bronze Age activity in the form of a single pit and residual sherds in later features, followed by a field system of Late Bronze Age date (see Fig. 4.13). In the Early Iron Age, the area was occupied by a field system with trackways (see Fig. 4.14) and was also used for burial.

Chronology: development and continuity

After the almost total absence of occupation evidence in the Late Neolithic and Early Bronze Age, the change in the nature of the archaeological record of the Middle

Figure 4.11 Beechbrook Wood: excavated features of later prehistoric date

Bronze Age is very striking. Activity of this period is represented in all eight of the HS1 landscape zones, and the Middle Bronze Age is by some margin the most frequently identified period. It is difficult to calculate reliable statistics because of the uncertainty of the dating of some of the sites and also because of the problem of defining a site. For example, it would seem reasonable to count the Middle Bronze Age activity at Beechbrook Wood, where settlement features were grouped into two clusters separated by 1km, as constituting two individual sites, but such a decision is less clear in the case of contemporary activity at White Horse Stone, where three clusters of features were located within 150m of each other. Nevertheless, it does seem as though there was a higher density of Middle Bronze Age occupation in the Greensand vale than on the chalk. In Zones 5–8 there is a fairly consistent pattern of one site for approximately 4km of the route: in the 13km length of Zone 5 there were two or possibly three sites, in the 8.5km of Zone 6 there were two sites, in the 12km of Zone 7 there were three or possibly four sites, while in the 3.5km of Zone 8 there was one site at Saltwood Tunnel. Further west, the density was much lower: in the combined 20.5km of Zones 2–4 there were only three Middle Bronze Age sites. In Zone 1 the density may have been higher and more like that on the Greensand, but the occupation is very fragmentary and poorly dated.

Though there is some scattered evidence for occupation in the Late Neolithic and Early Bronze Age, there is nothing to suggest any particular influence on the emerging pattern of Middle Bronze Age activity. Only at Holm Hill, where a ditch contained pottery identified as late Beaker, is it possible that this phase of settlement may have started slightly earlier. In all the other cases, it looks as though the Middle Bronze Age marked a dramatic and possibly quite sudden episode of human impact on the landscape. In general terms, this agrees well with what we know about the environmental history of Kent (discussed above), with evidence for major clearance in the Bronze Age, but it demonstrates a very different type of settlement activity, with humans leaving a much greater physical mark on the landscape.

In the Late Bronze Age, where there are again similar problems of precise chronological attribution, there are fewer sites, but they are again more or less evenly distributed along the route. There is only one landscape zone, Zone 4, where there is no evidence, certain or possible, for Late Bronze Age activity, and only Zone 1 has more than two possible Late Bronze Age sites. In most cases, the sites with Late Bronze Age activity are ones that had already seen some form of Middle Bronze Age usage; only at Chapel Mill does it seem as though Late Bronze Age activity, comprising a single pit, was not preceded by Middle Bronze Age features. The reduced number of sites occupied in the Late Bronze Age means, of course, that a significant proportion of the Middle Bronze Age sites went out of use. The field systems at Sandway Road, Church Lane and Boys Hall did not continue into the Late Bronze Age, while occupation areas at Thurnham, Snarkhurst Wood and North of Westenhanger Castle were similarly abandoned. Where occupation did continue into the Late Bronze Age, the nature of the continued usage varied considerably. At Cobham Golf Course the Late Bronze Age occupation appears to have respected land divisions marked out in the Middle Bronze Age; at Tutt Hill, though the evidence was much truncated, a new pattern of ditches in the Late Bronze Age may represent the replacement of one field system by another; at Beechbrook Wood (see Fig. 4.12) and Saltwood Tunnel (see Fig. 4.13), areas of occupation marked by Middle Bronze Age pits and burials were overlain by field systems in the Late Bronze Age. At South of Temple Precinct and Tollgate the low density of Middle Bronze Age activity was followed by a similar level in the Late Bronze Age, while at White Horse Stone more extensive activity in the Middle Bronze Age was followed by a single pit indicating human occupation in the Late Bronze Age.

This evidence for Late Bronze Age sites seems to suggest a phase of consolidation in the settlement history of the region. As will be seen below, the two best defined examples of extensive co-axial field systems, at Beechbrook Wood and Saltwood Tunnel, both date to the Late Bronze Age rather than the Middle Bronze Age, while the smaller number of sites suggests a phase of nucleation of settlement locations after the widespread occupation of the Middle Bronze Age. Unfortunately, we do not yet have sufficient data about the number of sites or their size to examine this suggestion more closely.

The problems associated with the concept of a 'decorated phase of post-Deverel-Rimbury' pottery, and with the identification of any chronological phase of pottery production between the Late Bronze Age and the Early Iron Age, whatever it may be called, have been discussed above in the section on chronology. The typological and classificatory problems are further compounded by the sheer rarity of assemblages on the HS1 that may be assigned to the hypothetical phase of the Earliest Iron Age. Such pottery is found in only a very few assemblages at very few sites: most prominently at Little Stock Farm (see Fig. 4.10), where there were two deposits of pottery that were characterised by the presence of abnormally large sherds and included vessels with neck cordons and decoration. Elsewhere, comparable assemblages have only been identified in single features at Tutt Hill and Saltwood Tunnel. The rarity of these assemblages, and the limited number of decorated sherds in them, together with the unusual nature of the Little Stock Farm assemblages, together add further weight to the doubts expressed earlier about the validity of these types of pottery as distinctive chronological markers. If we do accept this as a genuine chronological phase, validly characterised by the types of vessels and decoration used in the ceramic reports on the HS1 sites, then it is the period with the least substantial evidence for human occupation anywhere along the route. Until the chronological issues are resolved, it is difficult to say anything more about the settlement of this hypothetical phase.

Evidence for Early Iron Age activity existed at nine HS1 sites. As for the Late Bronze Age, they were distrib-

uted more or less evenly throughout the route; Zone 4 was again the only zone without any evidence for this period, and no zone contained more than two Early Iron Age sites. The density and distribution of Early Iron Age settlement were therefore very similar to those of the Late Bronze Age. The problem of the Earliest Iron Age makes it very difficult to discuss continuity of settlement through the middle of the 1st millennium BC, but there is a certain congruity of Late Bronze Age and Early Iron Age activity. Five of the nine sites with certain evidence of Early Iron Age occupation were also certainly or probably occupied in the Late Bronze Age: West of Northumberland Bottom and Tollgate in the west, White Horse Stone, Tutt Hill, and Saltwood Tunnel in the east, while Little Stock Farm was occupied in the Earliest Iron Age. Only at Cuxton and Eyhorne Street was Early Iron Age occupation located where there had been no Late Bronze Age, or even Middle Bronze Age, activity. It is more difficult to interpret the question of continuity at Blind Lane, since the ditches of a probable field system are dated only to the Middle or Late Bronze Age without greater precision and in any case the evidence for Early Iron Age occupation takes the form of a single posthole.

The following period, the Middle Iron Age, is also problematic, but in a different way, since it is the period with the smallest number of sites producing evidence for human occupation. Despite the vastly improved knowledge of Middle Iron Age ceramics provided by the HS1 project, certain occupation of this period, as defined in the discussion of Iron Age ceramic chronology above, was only identified at the double-ditched enclosure site at Beechbrook Wood, though on the basis of finds from a single pit at each site, occupation at Tutt Hill and Eyhorne Street may have continued into this period. Occupation at Little Stock Farm may also have begun late in this phase, though the majority of its use falls into the Late Iron Age.

With so few Middle Iron Age sites, in sharp contrast to the proliferation of occupation evidence in the Late Iron Age described in the next chapter, it is hardly surprising that there is little evidence for continuity at individual sites. Occupation continued at Beechbrook Wood and at Little Stock Farm, but elsewhere the Late Iron Age sites are new foundations. In some cases the sites are located where earlier prehistoric occupation had taken place: at Thurnham, Snarkhurst Wood, Boys Hall Balancing Pond and Church Lane/East of Station Road Late Iron Age sites were located on or immediately adjacent to Middle Bronze Age occupation of more than a millennium earlier with no evidence of intermediate activity; similarly, the Late Iron Age occupation at Chapel Mill was in the same location as probable Late Bronze Age activity.

Implications

It is now possible to consider the wider implications of the HS1 findings for our knowledge of the settlement history of Kent in later prehistory, and the extent to which they can be used for sound inferences about wider occupation of the landscape.

There are few other sources of evidence to use for comparison with the picture presented above of widespread activity in the Middle Bronze Age, either within the zones traversed by the HS1 or more widely in Kent. There was a very limited number of sites with settlement or burial evidence known before the 1980s (Champion 1982, 35–7), and more recent development-funded excavation has been hampered by the small scale of investigation, the comparatively slight traces of human activity in this period, and the difficulty of secure dating. Nevertheless, some ideas of our knowledge of the distribution of sites of this period can be gained. One source of comparative data would be the distribution of known finds of Middle Bronze Age metalwork, since the processes leading to their discovery are at least partly separate from and independent of those affecting sites finds through development. The rise of metal-detecting activity has increased the number of known objects, but has so far only minimally affected the known geographical distribution. Compare the maps showing finds as known in the late 1970s (Champion 1982, fig. 13) with those known more than a decade later (Perkins *et al.* 1994, fig. 24). The distributions are dominated by finds from the lower Medway and the Isle of Thanet, with small clusters around Maidstone and Ashford. There are no metalwork finds to match the distribution of settlement activity now revealed by the HS1 sites.

Another comparison would be with discoveries made from other recent archaeological interventions, mainly in advance of development or mineral extraction. Yates's map (2007, fig. 3.3) of later Bronze Age fields and enclosures provides a picture of activity in this period, derived from developer-related investigations, though it lacks chronological precision. There is a marked concentration along the north coast of the county, largely determined by the nature of recent development activity. It is noticeable that in Zones 1–3 the HS1 finds are matched by similar discoveries from other interventions; east of the Medway, however, in Zones 4–8 the sites mapped by Yates are almost exclusively those discovered in HS1 work, with the exception of two sites near Ashford, at Brisley Farm and Westhawk Farm. Other investigations in the area between Maidstone and Ashford, for instance at Lenham (Holmes and Bennett 2003), Charing (Keller 1990) and Harrietsham (Jarman 2002), failed to identify Middle Bronze Age activity. The HS1 finds therefore represent a significant addition to our knowledge of the distribution of Middle Bronze Age sites, which could not have been predicted from prior evidence, but which could now serve as a reliable basis for future predictions. They have also demonstrated that maps of Middle Bronze Age metalwork should be treated as maps of deposition and discovery, not of Middle Bronze Age occupation.

In the Late Bronze Age also, one obvious comparison for the settlement site distribution is with the known pattern of metalwork finds, and again, the sequence of maps shows the growth in the number of finds

(Champion 1982, fig. 14; Perkins *et al.* 1994, fig. 24). The Late Bronze Age distribution is heavily skewed by the well-known concentrations of hoard finds around the mouth of the Stour and the Wantsum in north-east Kent and around Hoo and the lower Medway in the north, areas not touched by the HS1. Despite these clusters, there is still a marked concentration along the north coast and in the north-east of the county. There is, however, a scatter of finds in north-west Kent and in the area south of the Downs from Maidstone to Ashford, which would now be further augmented by metal-detector finds reported to the Portable Antiquities service, including hoards from Hollingbourne and Lenham (Barber 2003, 60; Andrew Richardson, pers comm). In that light, the discovery of Late Bronze Age activity in Zones 1–3 and in Zones 5–8 is not exactly surprising and documents a level of settlement activity that complements the metalwork evidence in a way that is not matched in the Middle Bronze Age.

Comparison with other archaeological interventions reveals much the same pattern for the Late Bronze Age as for the Middle Bronze Age. Though some evidence has been found in north Kent west of the Medway, the occupation of the Greensand zone south of the Downs had not been previously identified. The HS1 evidence therefore provides new evidence for the distribution of Late Bronze Age settlement.

The problems of the Earliest Iron Age as a distinct chronological phase, and the paucity of assemblages that can be attributed to it, have been discussed above. Elsewhere in Kent assemblages of this period are also difficult to identify with confidence; those at Highstead Period 2 (Bennett *et al.* 2007) and Monkton Court Farm (Perkins *et al.* 1994) stand out, but both present problems of interpretation and dating. In the circumstances, it seems prudent to await further clarification of the chronological issues before attempting to draw conclusions about the history of human settlement based on ceramic evidence in this period.

The distribution and density of sites of the Early Iron Age has been a particular problem in Kent (Champion 2007b, 299–302). An identifiable ceramic phase, the 'East Kent rusticated tradition', and the regular occurrence of sites of the Early Iron Age in developer-funded work provided a reasonable degree of certainty in north-east Kent, and subsequent finds have borne that out, with sites such as the Whitfield-Eastry Bypass (Parfitt *et al.* 1997) or Downlands, Walmer (Jarman 2010), as well as others in Thanet (Moody 2008, 116–32), including, for example, North Foreland (ibid., 118–24), Ellington School, Ramsgate (Boden 2007a) or Thanet Earth, Monkton (Rady 2009; 2010). Elsewhere in Kent, sites of the Early Iron Age were much more difficult to find. Several possible explanations for this 'missing' phase were suggested and discussed (Champion 2007b, 299–302), including the possibility that we had misconstrued the ceramic sequence and had already found the sites without correctly identifying them; or that the area really had been abandoned in that period; or that the area was occupied in a way that left little archaeological trace. The HS1 evidence can now clarify the situation to a great extent, allowing some suggestions to be discarded, others modified and new ones to be introduced. The first possibility, that we had misunderstood the ceramic sequence, can be discounted. The discovery of sizeable and well-dated assemblages of Early Iron Age pottery at West of Northumberland Bottom, Tollgate and Cuxton to the west of the Medway, and at White Horse Stone, Eyhorne Street and Tutt Hill further east, all that show that sites using such pottery did exist and can be recognised. By the same token, these sites demonstrate that the area was not totally abandoned, although the occupation may have been less intensive. A rather different situation seems to have existed at the far eastern end of the HS1 route, where the Greensand vale gives way to the south-eastern coastal plain. The Early Iron Age activity at Saltwood Tunnel consisted of fields, trackways and burials, but the presence of a large Early Iron Age site a short distance to the east at Dolland's Moor, excavated in the construction of the Channel Tunnel Terminal (Bennett 1988), might suggest a greater density of human activity in this zone than further west.

A more likely explanation for the previously 'missing' Early Iron Age can now be seen to lie in a combination of the nature of Early Iron Age occupation and the pattern of archaeological observation, and with no single explanation covering all regions of Kent equally. In the Greensand vale south of the Downs between Thurnham and Saltwood the HS1 evidence seems to confirm previous indications that human activity in the Early Iron Age was of low density and that individual settlements were few and of small size. The nature of the prehistoric features will be discussed in more detail in the following section, but here it is important to note that the Early Iron Age site at Eyhorne Street consisted of a low density of pits and gullies scattered over a distance of 200m, while at Tutt Hill it was a ditch and a pit, and at Blind Lane little more than a single pit. Such dispersed and insubstantial features are difficult to interpret in terms of the human activity that produced them; though they may not be fully representative of the intensity of human activity, much of which may not have involved features cut into the subsoil, they are far removed from the more common vision of Early Iron Age sites in southern Britain, with the emphasis on clearly defined concentrations of structures and other features and, frequently, actual enclosures. Given the nature of this occupation, it is perhaps understandable how the comparatively small number of previous interventions had failed to identify it, in just the same way that Middle and Late Bronze Age occupation had escaped attention.

In other sections of the HS1 route, Early Iron Age activity was more substantial, and the reason why similar sites had not previously been discovered may lie in their precise location and the factors influencing archaeological investigation. The site at White Horse Stone was located on the scarp slope of the chalk Downs, a topographical zone that has seen little recent development and no archaeological investigation. Similarly, the Early Iron Age sites at West of Northumberland Bottom and Tollgate are

the first clear evidence of Early Iron Age activity in Kent to the west of the Medway, but they have been found further south than most other archaeological investigations, in the foothills of the North Downs rather than on the coastal plain. Previous discussions of the problem (especially Champion 2007b) have discussed this region of north-west Kent in too broad and undifferentiated a way, failing to distinguish between two distinct zones, the coastal plain and the foothills of the Downs. In terms of sampling theory, these should represent two different strata, and the archaeological evidence from previous investigations has been limited to the coastal plain and is therefore relevant to predictions about that stratum alone. The HS1 data now provide evidence for occupation in the Early Iron Age being preferentially located not on the coastal plain but higher up and further south in the foothills of the Downs, where it had not previously been identified because of a lack of archaeological investigation. More solid verification of this suggestion will have to await further archaeological work in an appropriate location, though it is not clear how this might happen, since it is not an area subject to much development pressure. Subsequent work on the improvement of the A2 road (Allen and Donnelly 2009) has revealed more of the Early Iron Age activity seen at West of Northumberland Bottom and Tollgate, but, although it can document the extent of occupation at this period, it cannot really act as independent confirmation of the suggestion, since they are in fact just different parts of the same sites.

If this suggestion of a significant shift in the location of Early Iron Age settlement to a slightly higher location on the downs is correct, then it needs an explanation. One possibility is that it is in some way a response to changing sea-levels. Devoy's study (1978; 1980; 1982) of sea-levels in the Thames estuary has shown a series of oscillations in later prehistoric and early historic times, with episodes of marine transgression intercalated with episodes of retreat and lower levels relative to the land. The onset of one major transgression, Thames IV, is dated to around 2600 years BP, approximately contemporary with the start of the Early Iron Age. Despite some critical re-examination (Haggart in Bridgland *et al.* 1995, 329–38), Devoy's results have, at least for this period, been broadly confirmed by later work. Research further upstream the Thames, largely in the area of Southwark, has shown major changes in the estuarine regime, with a more westerly tidal head and higher water levels, by about 3200 BP (Sidell *et al.* 2000). Though due regard must be paid to the probably very high degree of regional variability within the Thames estuary, these results fit well with a more general model of changing estuarine conditions in south-eastern England (Long *et al.* 2000), which sees a phase of renewed or increased rise in relative sea-level from about 3200 BP.

It is possible, therefore, that rising sea-levels made the coastal plain less suitable or less safe for human habitation, and occupation retreated to the higher ground. The coastal plain may still have been exploited for activities such as seasonal grazing or salt making, but not as a prime centre of habitation. Again, testing of this suggestion will require further research on the archaeological and especially environmental evidence of the coastal plain, a project made more difficult by the extensive erosion and accumulation that has taken place on some areas of the north coast of Kent since later prehistory.

It is possible that the same explanation may also be valid for the north coastal region east of the Medway. Sites of the Early Iron Age have been difficult to locate there, and excavations at sites such as Iwade (Bishop and Bagwell 2005), Kemsley (Diack 2006) and Borden (Coles *et al.* 2003) have all failed to identify occupation of this period. Clarification of this issue will have to wait until opportunities for investigation arise in zones further south of the previous work. Further east again, between Seasalter and the Wantsum, Allen (2009, 202) has documented a similar decline in the number of Early Iron Age sites in the coastal region.

The problems associated with finding settlement sites of the Middle Iron Age have been discussed elsewhere (Champion 2007b, 303); they are especially acute in Kent east of the Medway, where the only previously known ceramic assemblage was from Bigberry hillfort (Thompson 1983). The very limited evidence for Middle Iron Age activity located on the HS1 is, therefore, hardly a surprise, but in some ways it has made the problem more complex. Not only has a major transect through the county failed to find significant quantities of evidence for occupation of this period, but the one convincing site, at Beechbrook Wood, is of a type unique in the county, as will be discussed in more detail below. There is an intriguing parallel with the problem of finding sites of the Earliest Iron Age: in both cases, there are well-defined ceramic assemblages which have been taken as markers of a chronological phase, but finds containing such pottery are rare or appear only on sites or in deposits that are in some way unusual or, at the least, not typical of what we assume occupation to have been like at that period. Only further and more careful characterisation of the ceramic chronology and the discovery of further well excavated and well-dated sites will clarify the problem.

The nature of later prehistoric settlement

The exploration of a long transect such as the HS1 provides an opportunity to examine not only the general distribution of human settlement in the region and its changes through time, but also the more detailed nature, form and density of such activity (Table 4.9). Unlike other forms of excavation which concentrate on known or suspected 'sites', and are therefore self-selecting in favour of areas with dense evidence of past activity or defined zones such as enclosed settlements, linear transects allow the varying density of settlement to be monitored. Where the width of the transect corridor is sufficient to enable the horizontal extent of activity to be discovered, as with a motorway rather than a pipeline, information about the nature of human activity is potentially available of a type that cannot be matched from other sources.

Table 4.9 Major types of evidence for human activity in the later prehistoric period

Site	MBA and M/LBA	LBA	Earliest IA	Early IA	MIA
Pepper Hill		Pyre debris			Burials
Whitehill Road		Pits, residual material			
West of Northumberland Bottom	Residual material			Scattered groups of pits, stakeholes	
Tollgate	Pit, residual material			Scattered groups of pits, post- and stakeholes	
Cobham Golf Course	Ditch and pits	Ditches, clusters of pits, postholes			
Cuxton				Fenced enclosure with ?house, pits, ditches	
White Horse Stone	Dispersed clusters of pits and postholes (?structures)	Pit, cremated human bone		Dense concentration of pits and postholes, structures including four-posters, iron working, burials	
Thurnham	Pits, gully, waterhole				
Snarkhurst Wood	Pits				
Eyhorne Street				Pits, ditches	
Holm Hill	Ditch	Ditches			
Sandway Road	Ditches				
Hurst Wood		Pits			
Chapel Mill	Pit				
East of Newlands Road	Cremation burial				
Tutt Hill	Cremation burials, pits, ditches			Pit, gulley	
Beechbrook Wood	Dispersed clusters of pits and postholes (?structures)	Field system		Ditch	Double-ditched enclosure, four-poster
Boys Hall	Ditches				
Blind Lane	Ditches, ?trackway			Highly dispersed pits and postholes	
Little Stock Farm			Fenced enclosure, pits, placed deposits	Enclosure, pits, ?house, droveway	
Church Lane	Ditches				
North of Westenhanger Castle	Pits			Redeposited material	
Saltwood Tunnel	Pit, cremation burial, residual material	Field system, trackways, pits		Trackways, burials	

Not that all of the features exposed in the HS1 operations can be fully understood. In many cases they extend outside the excavated area, or have been severely truncated by later activity, or cannot be reliably phased. Nevertheless, the HS1 sites do provide us with an unparalleled wealth of data about the nature of later prehistoric settlement in Kent, or at least in certain parts of Kent. In the following section, some of that wealth will be explored, with particular attention to the presence of fields, ditches and trackways, and of open and enclosed settlements, and to the details of the pits and other structures that comprise the settlements. It will also be possible, at least to some extent, to consider the clustering of activity evidence into 'sites', and whether that is a particularly helpful way of categorising the evidence.

Fields, ditches and trackways

The digging of ditches was predominantly an activity of the Middle and Late Bronze Age. Ditches have been phased by the material culture, primarily pottery, in their fills; in theory this dates their filling rather than their digging, but there is little or no evidence for recutting or clearing of ditches at any site, so the process of digging may not have been significantly earlier than the first filling. On this basis, most of the ditches that could be assigned to a phase were dug and filled in the Bronze Age. They were a far less frequent feature of Iron Age sites, though in a few cases they formed significant elements of the site plan.

The interpretation of the function of these ditches is problematic. Disturbance by later features, and even more so truncation by later agriculture, mean that we are often dealing with the poorly-preserved and fragmented remains of what may have been much more extensive ditch systems. The limited width of the excavated corridor makes it difficult to discern the extent or pattern of what may originally have been larger-scale systems of ditches. Where the evidence includes ditches with junctions or angles, or sets of ditches running in parallel, it may be easier to suggest the existence of fields or

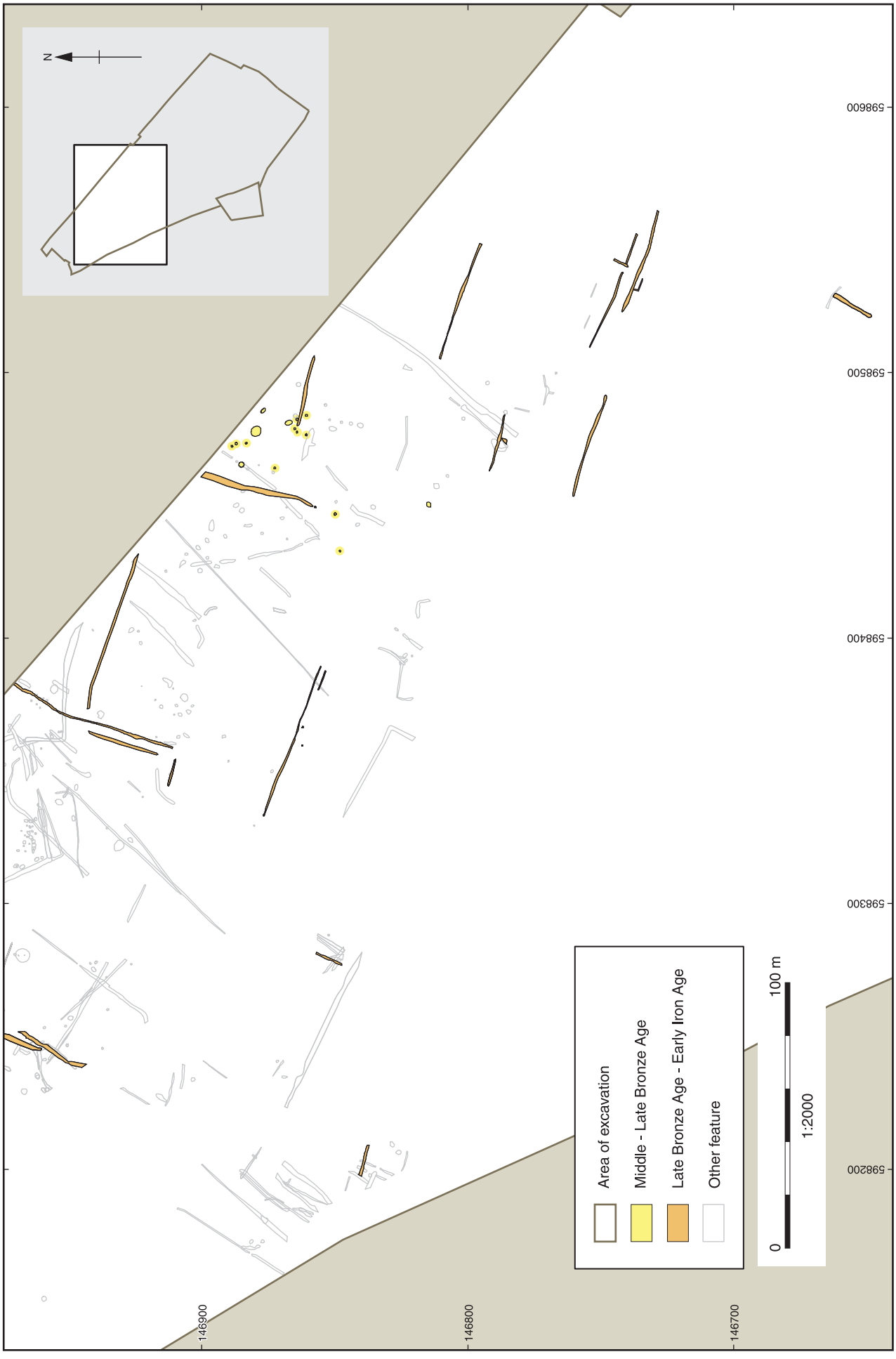


Figure 4.12 Beechbrook Wood: Late Bronze Age field system

trackways, but many other examples of single ditches will remain enigmatic. In purely functional terms, the ditches may have served as a means of dividing the landscape or of draining it, or both. In either case, it indicates a concern for the more active management and control of the land.

In the Middle Bronze Age, ditches were found at a number of sites, but they were mostly fragmentary or badly truncated, and could not be seen as parts of larger systems. In Zones 1 and 2 all physical remains of Middle Bronze Age activity were poorly preserved, though they may have been only slight to start with. Only at Cobham Golf Course (Davies 2006, 9–11) was a small section of badly truncated ditch excavated that was datable to this period. In Zones 3 and 4 the Middle Bronze Age evidence was of settlement in the form of pits and other small features, discussed below. At White Horse Stone (Hayden 2006a, 107–9) a substantial ditch (4025) was revealed some distance from other evidence for contemporary activity; though it was used as a location for the deposition of domestic waste, there was no evidence for its primary function. At Thurnham (Lawrence 2006, 15–17), a waterhole possibly of this period (see Fig. 4.39) did not appear to be related to a field system. Further east, in Zones 5–8 along the Greensand, the evidence for Middle Bronze Age fields becomes more substantial. At Sandway Road (Trevarthen 2006, 13–15) two sections of ditch of Middle Bronze Age date, parallel and closely spaced but of unequal size, may represent a trackway or the reworking of a field system, while two other parallel sections of ditch may be evidence of a similar trackway, unfortunately not securely dated. Further east again, fragments of ditch dating to the Middle Bronze Age were found at Tutt Hill (Brady 2006b, 17), Boys Hall Balancing Pond (Hayden 2000a, 5), Blind Lane (Hayden 2001, 5–7) and Church Lane (Hayden 2000c, 13), though at all of these sites it is impossible to see any larger pattern of which they may have formed part.

In the Late Bronze Age there is similar evidence for the digging and filling of ditches, though they differ greatly from those of the earlier period in their frequency and state of survival. In Zones 1 to 5 the only evidence is a short section of ditch at Cobham Golf Course in Zone 2 (Davies 2006, 11–12). Further east there are comparatively well-preserved field systems at Beechbrook Wood and Saltwood Tunnel. At Beechbrook Wood (Brady 2006a, 23–4) a section of a Late Bronze Age field system was explored which extended for approximately 400m by 250m. The plan was badly fragmented, with no clear evidence that the outer limits had been reached in any direction (Fig. 4.12). It was orientated approximately NW to SE, but although this was the dominant direction for the long ditch sections identified and for shorter sections at right angles to them, it was not clear that there was a regular pattern of rectangular fields laid out within the framework formed by the main ditches. Fragments of what appear to be trackways were incorporated into the plan, with separate sections running in each of the two main directions.

The excavations north of Saltwood Tunnel (Riddler and Trevarthen 2006, 12–14) produced some of the most important evidence for the later prehistoric landscape, and indeed for its long-term evolution (Fig. 4.13). The landscape was dominated by the presence of the earlier barrow cemetery; burial continued into the Middle Bronze Age (Grave 3602), alongside some small-scale evidence for domestic settlement (Pit 251). From the Late Bronze Age onwards, however, the area was subjected to a sequence of episodes of organisation and division; there was evidence for occupation in the Late Bronze Age, and burial activity continued in the form of small cemeteries in the Early Iron Age and the Late Iron Age, but the dominant usage seems to have been for agriculture. A badly preserved linear ditch, assigned to the Late Bronze Age, ran east-west from the south side of barrow W201 to the south side of barrow C10055; it is not clear what activities were being separated by this boundary, but the barrows were obviously still major features of the perceived landscape. At some point in the Late Bronze Age a field system was laid out on a different orientation; the axes now ran approximately NNE-SSW and WNW-ESE. The field system was traced over an area of approximately 350m by 100m. It appeared to show no obvious respect for the barrows. Where one of the barrows, W33, fell within the system, the ditch seems to stop after crossing the filled-in ditch and resume in a similar position on the other side; either the ditch did originally stop at the surviving barrow mound, or else it continued over the barrow and has now been ploughed away with the remains of the mound. At the eastern end a north-south ditch appeared to mark the limit of the field system; there was no clear delimitation on other sides, and on the north it continued into the area destroyed by the earlier construction of the M20. Where it was best preserved towards its western exposure, the divisions were marked by parallel ditches spaced about 24m to 29m apart, though they were less regular further east. The ditches contained only limited quantities of highly abraded pottery, but their relationship to other features, especially the settlement enclosure on a similar orientation associated with Pit Group 46025, which is certainly of Late Bronze Age date, makes their date almost certain.

The orientation established in the Late Bronze Age shaped the future development of the landscape. The Saltwood tunnel site produced some of the best evidence for the rare phenomenon of Iron Age landscape organisation (Riddler and Trevarthen 2006, 14–16). The landscape was dominated by a series of more or less parallel trackways, perhaps as many as four, running NNE-SSW (Fig. 4.14). It is difficult to demonstrate actual continuity from the Late Bronze Age in any single case, but the orientation is the same as that of the earlier field system. The clearest example is Trackway 226. This was particularly difficult to excavate since it runs under and along the modern trackway to Stone Farm, and was on the boundary of different phases of excavation as well as being severely affected by later and continuous usage. The boundary ditches marking this trackway date to the Iron Age, but they are on a similar alignment to the

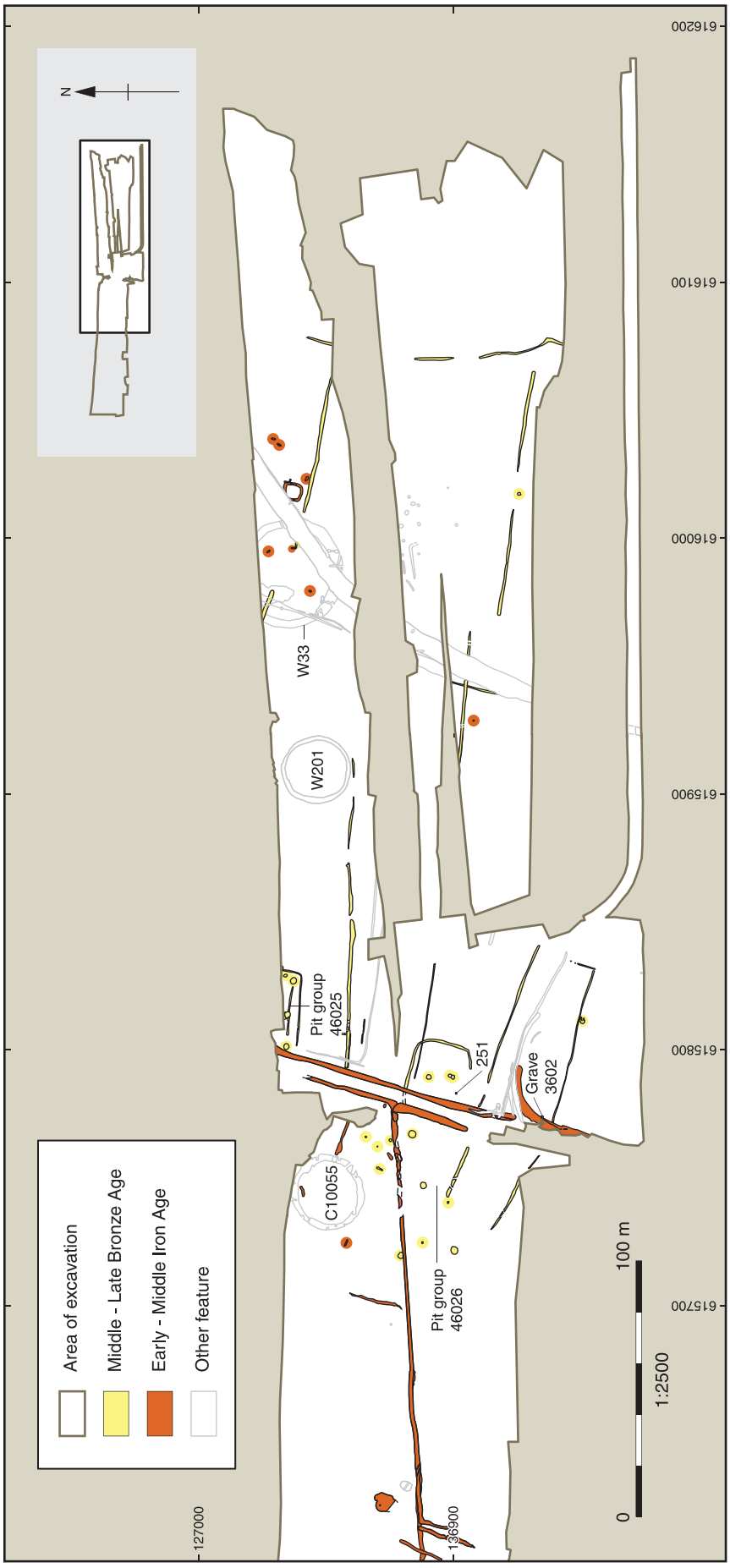


Figure 4.13 Saltwood Tunnel: Late Bronze Age field system

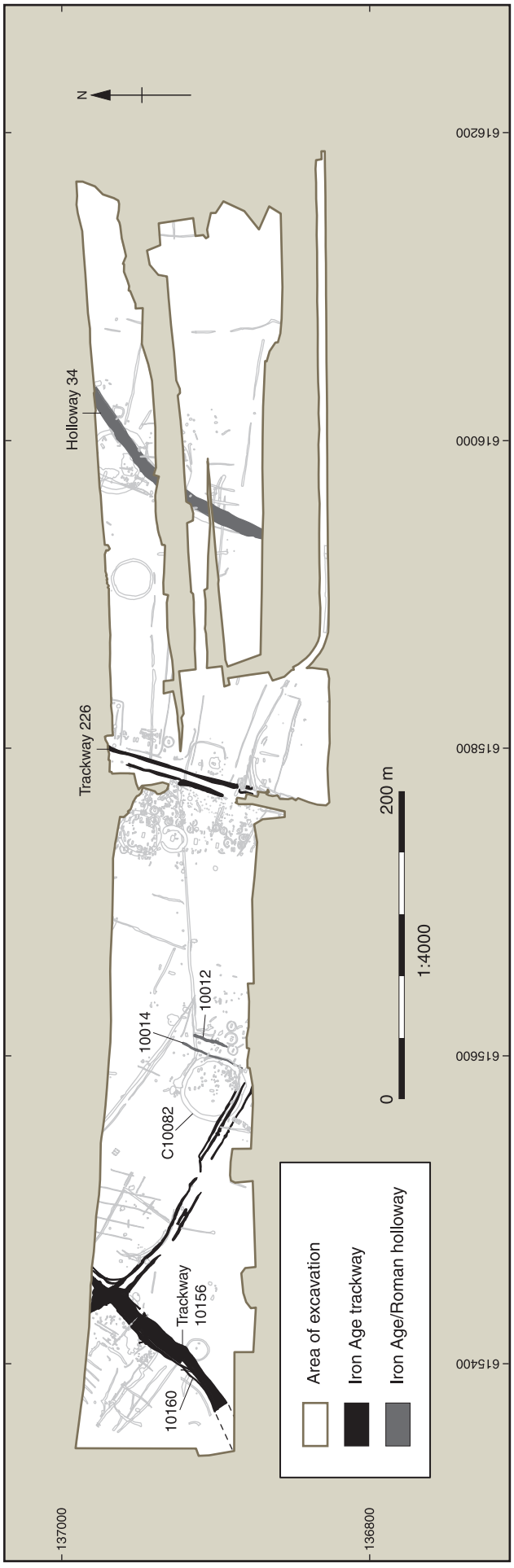


Figure 4.14 Saltwood Tunnel: Iron Age trackways

earlier Late Bronze Age field system and it is not impossible that they replicate an earlier trackway, now obliterated by later features, or at least were laid out to respect some prominent feature of the surviving field system. Further east, Holloway 34, which follows a roughly parallel line but curves away to the east at its northern end, was certainly in use in the Roman period, but sherds of Iron Age pottery in its fill, although possibly residual, may indicate an earlier origin. To the west of Trackway 226 two parallel ditches, 10012 and 10014, are certainly of Iron Age date, and may represent another trackway, although only preserved for a short distance. Further west again, Trackway 10156 became an important minor road in the Roman period, but its origins lie much earlier, as the Iron Age ditch 10160 indicates. In the Roman period a junction formed to the west of the Bronze Age barrow C10082, where a trackway led off at right angles from 10156 to the south side of the barrow; this too seems to have had possible Iron Age origins, since the trackway overlay earlier enclosure ditches of Iron Age date, though the details are somewhat obscure. The Iron Age landscape at Saltwood Tunnel, therefore, was marked by the formation of a series of parallel trackways. What they may have been linking, and what other elements of organisation there may have been around them, are not clear, but at least some of them survived into the Roman period and even into the modern landscape.

Elsewhere along the HS1 ditches dating to the Iron Age are far less common. Single ditches which are difficult to interpret occur at Tutt Hill (Brady 2006b, 20) and Beechbrook Wood (Brady 2006a, 25). Other ditches of a much smaller nature that seem to form part of small settlement enclosures were found at Cuxton (Mackinder 2006, 11; see Fig. 4.23) and Eyhorne Street (Hayden 2006b, 19–20; see Fig. 4.25), and will be discussed further below. The only other evidence for larger-scale division of the landscape in the Iron Age was at West of Northumberland Bottom (Askew 2006, 22). There the evidence for a bank, ditch and holloway, formed fairly late in the Iron Age, is similar to Saltwood Tunnel, though it did not lay the foundations for long-term landscape organisation.

The lack of evidence for the digging of features to divide the landscape in the earlier parts of the Iron Age is in sharp contrast to what happened in the Late Iron Age and early Roman period. As will be discussed in the next chapter, that period saw a renewed phase of ditch construction and landscape division throughout the length of the HS1.

Wells and waterholes

The more controlled use of the agricultural and pastoral landscape from the Middle Bronze Age onwards required the more carefully managed supply of water for livestock, especially cattle. Wells and waterholes are not uncommon features of these later prehistoric landscapes in other parts of southern and eastern England. At Thurnham a suspected waterhole was identified but not fully excavated (Lawrence 2006, 15–17); it may have been of Middle Bronze Age date, and will be discussed later because of the nature of the depositions in its final filling. Other features identified as possible waterholes were found at West of Northumberland Bottom (Askew 2006, 8) and Beechbrook Wood (Brady 2006a, 30).

Domestic settlement sites

Evidence for human occupation and settlement in later prehistory was widespread, but its nature and density were very surprising. The overwhelming impression left by this survey of the HS1 settlement evidence is of its low density and insubstantial nature. In a smaller-scale or less intensive investigation much of it may well have escaped notice altogether or, if noticed, dismissed as of little significance or as too slight to be interpretable. Only the large Iron Age settlement at White Horse Stone and the enclosure at Beechbrook Wood, and possibly the complex of ditches at Saltwood Tunnel, would have been recognised as 'sites'. At the other end of the scale, a surprising result of the project has been the recognition that human activity of all periods of later prehistory may be represented by as little as a single isolated pit. Of course, this needs to be qualified by provisos concerning the truncation of features, the narrowness of the excavated corridor and the difficulty of phasing some features. Nevertheless, it is clear from the examples of pits such as those of the Middle Bronze Age at Mersham, the Late Bronze Age at Tollgate, White Horse Stone and Chapel Mill, the Early Iron Age at Blind Lane and the Middle Iron Age at Tutt Hill, that a single pit, sometimes with a carefully selected and deposited set of artefacts, could be the only evidence of past activity.

In the light of this rarity of what we might expect to find by way of 'sites', it is perhaps understandable that it is difficult to talk in terms of different site types. The large, Early Iron Age agglomeration at White Horse Stone (see Fig. 4.24) and the Middle Iron Age enclosure at Beechbrook Wood (see Fig. 4.15) clearly conform to expected types of Iron Age site, but each is in its own way unique on the HS1 route. The Early Iron Age site at Cuxton (see Fig. 4.23) and the Early to Middle Iron Age site at Little Stock Farm (see Fig. 4.22) might be grouped together on the basis of the probable presence of a circular structure within a small fenced yard or enclosure, but otherwise the rest of the evidence might most reasonably be thought of as a group of sites of varying size and density, comprising postholes, pits and short sections of ditches, ranging from a single feature upwards, and very often characterised by an absence of clear evidence for structures

It is also difficult to talk in terms of the internal spatial organisation of the sites. At Beechbrook Wood, the nature of survival and excavation did not allow much of the occupation evidence within the enclosure to be recovered, and it was only at White Horse Stone that clear patterns, discussed below, were recognised.

In the following sections, the evidence will be discussed in terms of the open or enclosed nature of the occupation, and then with respect to the various elements that make up the individual sites, such as structures, hearths and pits. It will then be possible to consider the evidence for site function and to place the HS1 evidence in the wider context of Kent and south-eastern England.

Enclosures

Evidence for fences or ditches enclosing all or part of a settlement area was located at several sites, as discussed further below. Two occupation areas of the Late Bronze Age at Saltwood Tunnel were delimited by ditches (Riddler and Trevarthen 2006, 12–14). Animal pens were inferred as a feature of the Early Iron Age occupation at West of Northumberland Bottom (Askew 2006, 7) and Tollgate (Bull 2006b, 14). Rectangular fenced areas were found at Cuxton (Mackinder 2006, 11) and Little Stock Farm (Ritchie 2006, 8–9), again dating to the Iron Age.

These, however, were not enclosed occupation sites in the normal sense of the term. The only later prehistoric settlement enclosure located anywhere on the HS1 was at Beechbrook Wood (Brady 2006a, 25–31). There, after a period of very little activity in the Early Iron Age, a double-ditched enclosure was founded in the Middle Iron Age (Fig. 4.15); there was little sign of other features of this date elsewhere, and only one pit was securely dated to this phase. The enclosure measured approximately 90m by 95m overall, with the inner ditch enclosing an area of 50m by 54m. There was an entrance in the south-east side and the inner ditch was significantly larger near the entrance than at the back of the site. The entrance

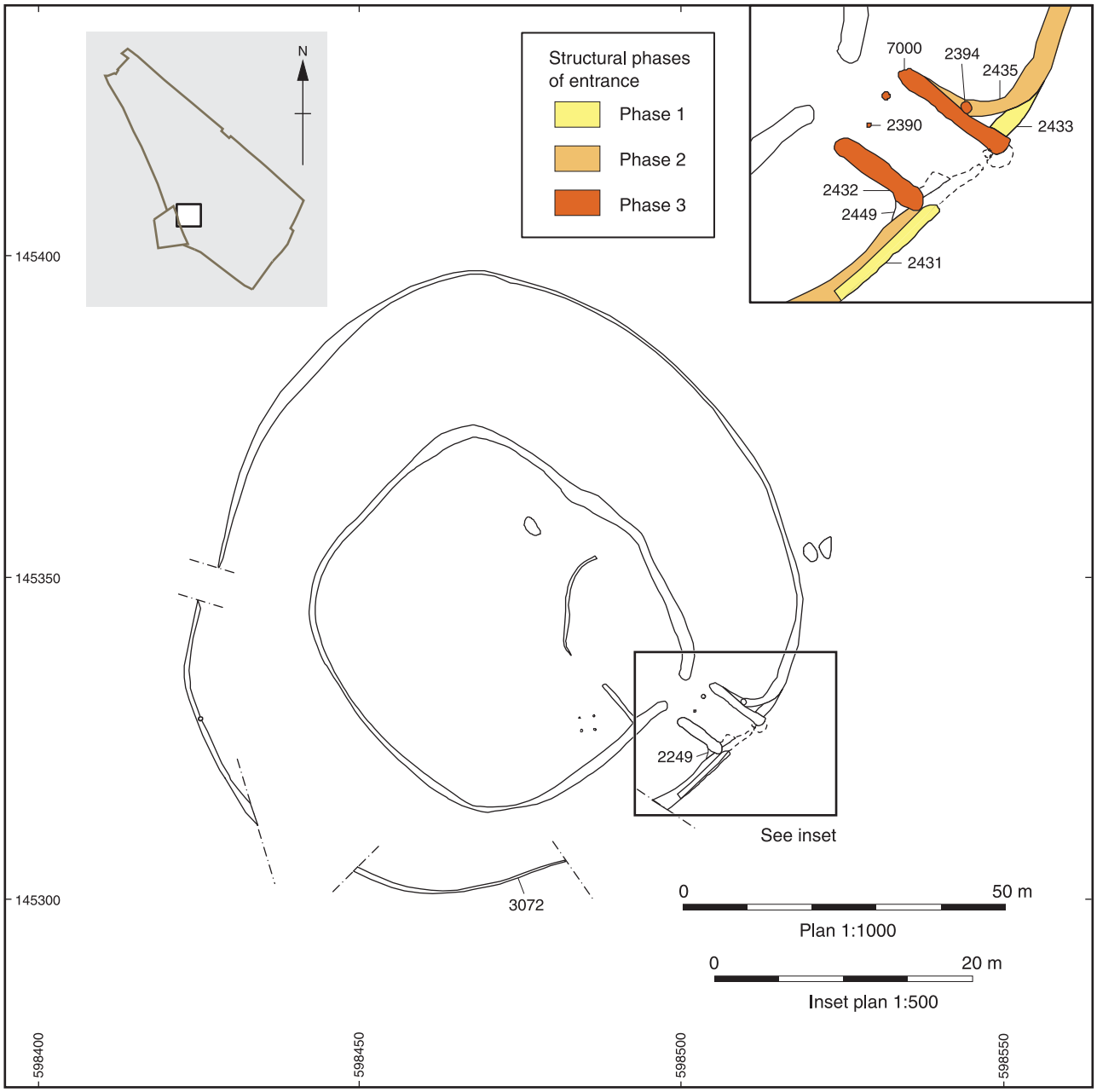


Figure 4.15 Beechbrook Wood: Middle Iron Age enclosure 3072

was remodelled and went through three structural phases, perhaps of increasing complexity and impressiveness. Unfortunately, the interior had suffered badly from truncation, especially by modern earthmoving, and few details of internal occupation survived. There were enough traces of pits and postholes to suggest that there had originally been internal occupation, perhaps quite extensive, though the only structure to be recognised was a probable four-post rectangular building just inside the entrance.

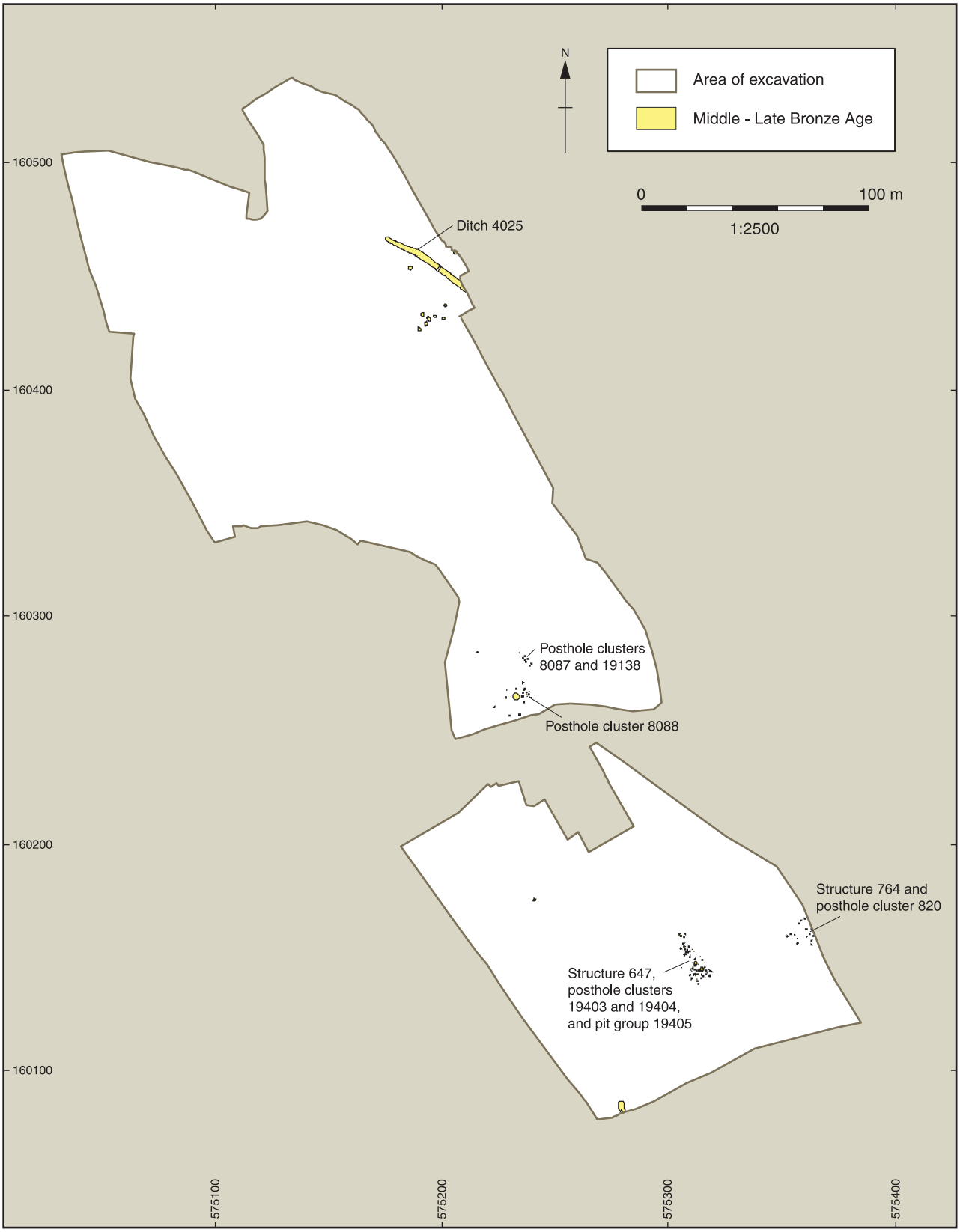


Figure 4.16 White Horse Stone: plan of Middle–Late Bronze Age features

Open settlements

The vast majority of the evidence for occupation was in the form of open settlements. In a few cases there was some sign of the settlement area being bounded by a ditch, but this did not constitute enclosure in its normal archaeological usage. In this section the physical evidence for settlement will be reviewed, in terms of features and structures other than the ditches and field systems discussed above. The lack of clear boundaries makes it difficult to estimate the size of individual settlements or the density of settlement features within the area. Nevertheless, some attempt will be made here to suggest some of these figures, to exploit the evidence provided by the HS1 route for less substantial settlement traces as well as the larger and more densely packed 'sites'.

Middle Bronze Age

In the Middle Bronze Age all traces of settlement were slight, and frequently in very small clusters. At West of Northumberland Bottom (Askew 2006, 15) and Tollgate (Bull 2006b, 11) all evidence for this period was in the form of residual artefacts in later features; no structural traces of Middle Bronze Age activity had survived and they may originally have been quite slight.

The largest concentration of Middle Bronze Age activity was at White Horse Stone (Hayden 2006a, 99–115). Even so, it was very dispersed within the area excavated (Fig. 4.16). At the south end of the site a clearly defined cluster of over 80 postholes (Groups 19403 and 19404) and two pits (Group 19405) extended for a length of nearly 30m, and a width of less than 10m (Fig. 4.17). It included postholes with flint packing that may have formed a structure (see below). About 40m to the east was a further cluster (Group 820), little more than 10m across, and including a possible circular structure (764; see below); these features contained no dating evidence but are assigned

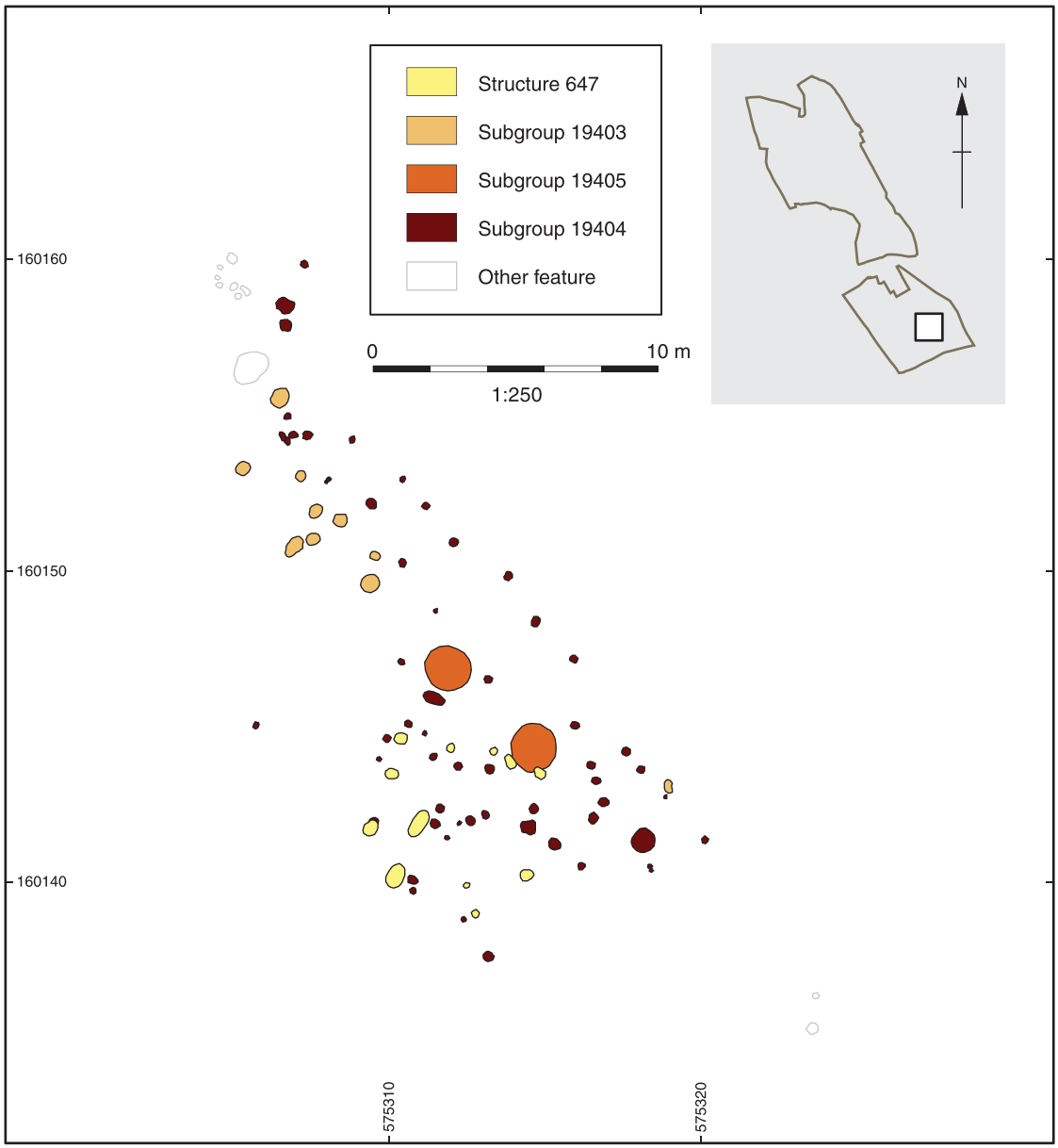


Figure 4.17 White Horse Stone: Middle Bronze Age structure 647, posthole groups 19403 and 19404, and pit group 19405

to the Middle Bronze Age because of the similarity of their form and filling, especially flint packing, to those of more securely-dated groups (Fig. 4.18). About 140m to the north was a further cluster of Middle Bronze Age features (Groups 8087 and 8088). These were thinly dispersed over areas about 15m across (Fig. 4.19), and 8087 included a possible rectangular structure (19138; see below). A further 150m north at the northern edge of the excavation another small group of pits containing pottery of the later Middle Bronze Age was found, about 20m across.

At Thurnham (Lawrence 2006, 14–15), a cluster of features, including the waterhole and some small pits with charcoal and burnt material, was found in an area of approximately 20m by 20m, though other possibly contemporary features, including a cremation burial and two ditches, extended more widely. At Snarkhurst Wood (Diez 2006c) the features included a small gully and two pits, spread out over a distance of less than 50m by 20m; if the features located in the construction of a motorway service station (Scott 1997) are related, the area of settlement would have been much larger, but the density even lower. At Tutt Hill (Brady 2006b, 16) three small pits, the fills of which contained charcoal and charred plant remains as well as Middle Bronze Age pottery, may be the evidence of settlement, but they were near earlier Bronze Age barrows and outlying cremation burials and so may rather be some form of ritual deposition.

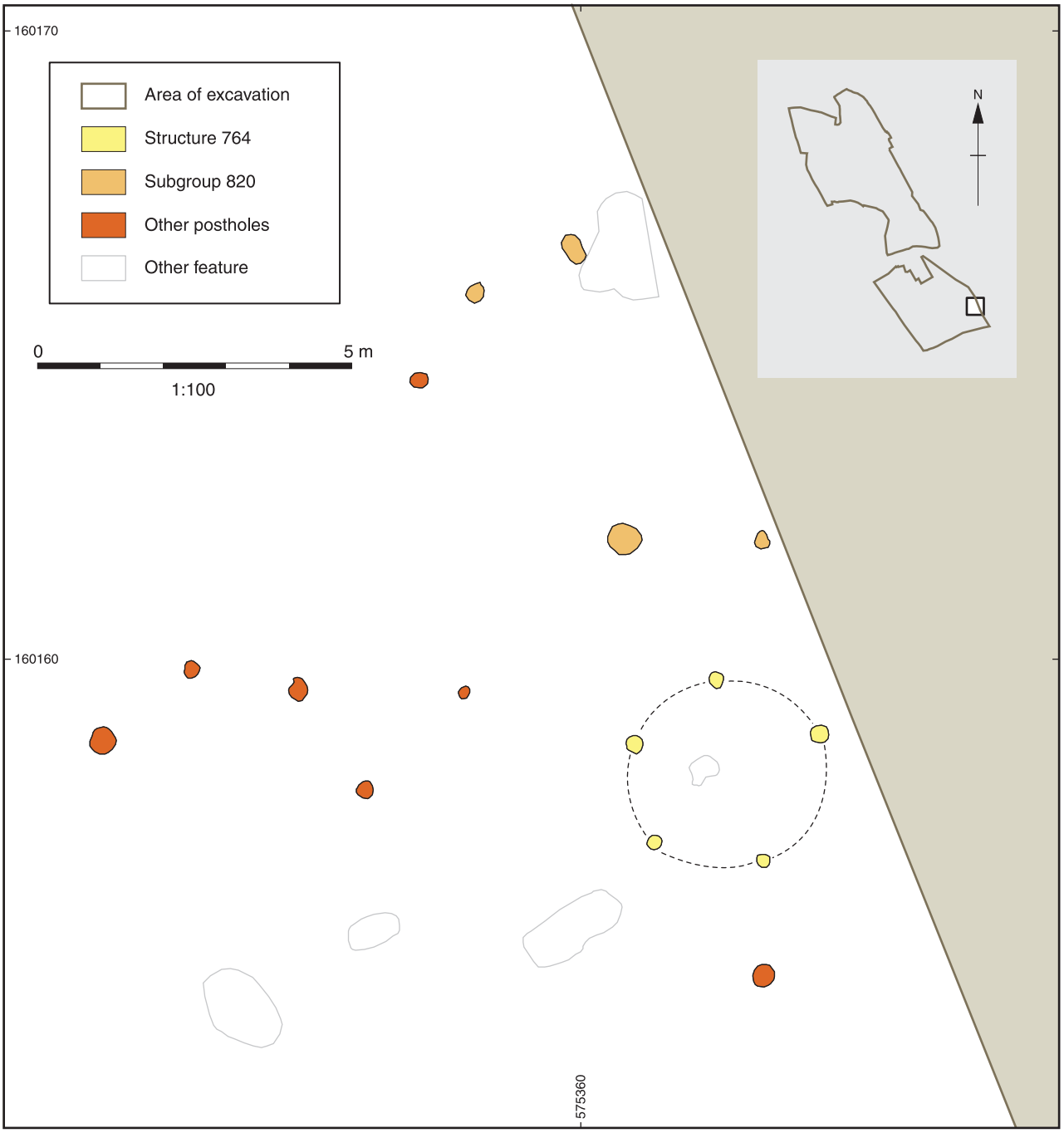


Figure 4.18 White Horse Stone: structure 764 and posthole group 820

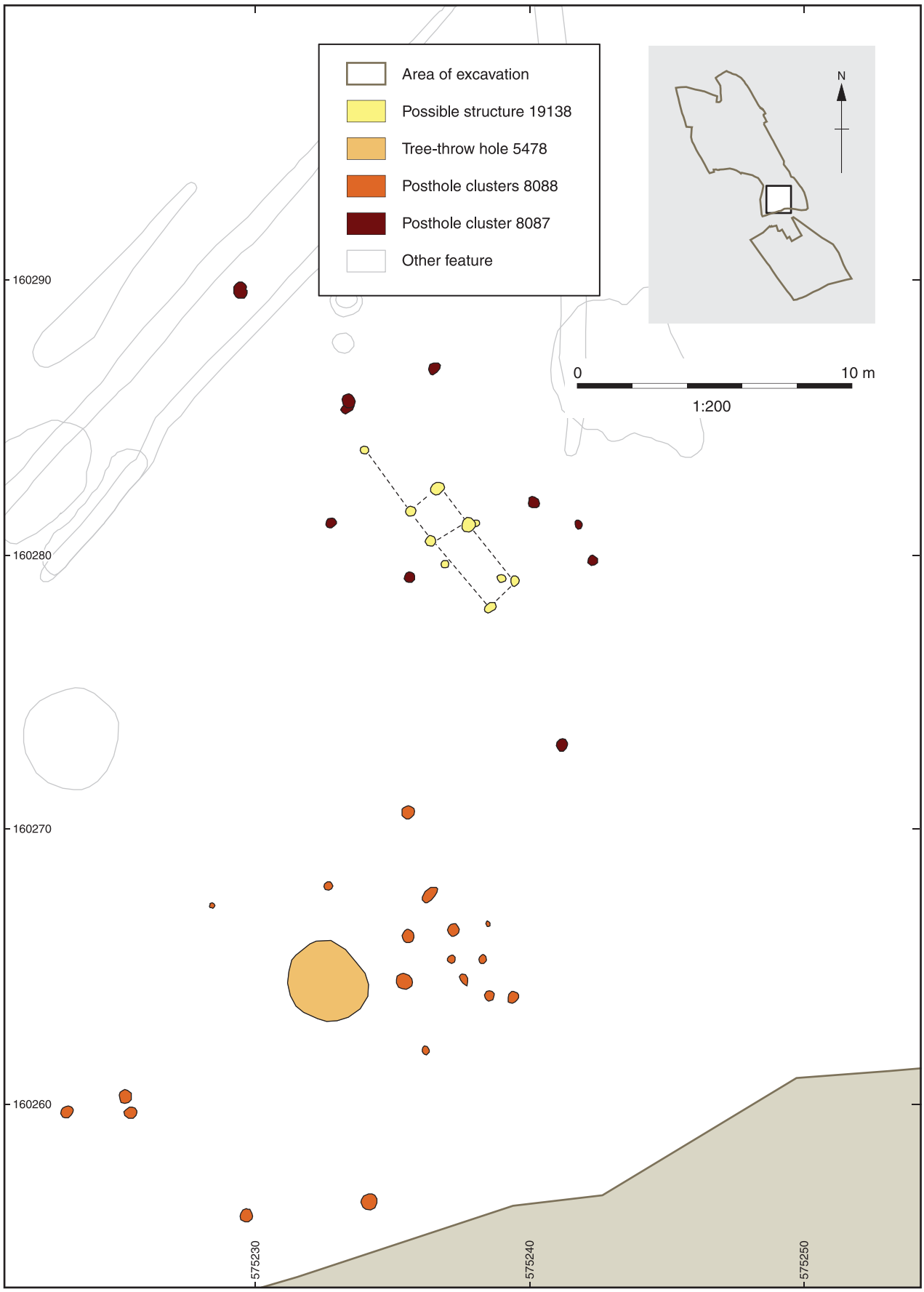


Figure 4.19 White Horse Stone: posthole clusters 8087 and 8088 with posthole structure 19138, tree-throw hole 5478 and posthole 5415

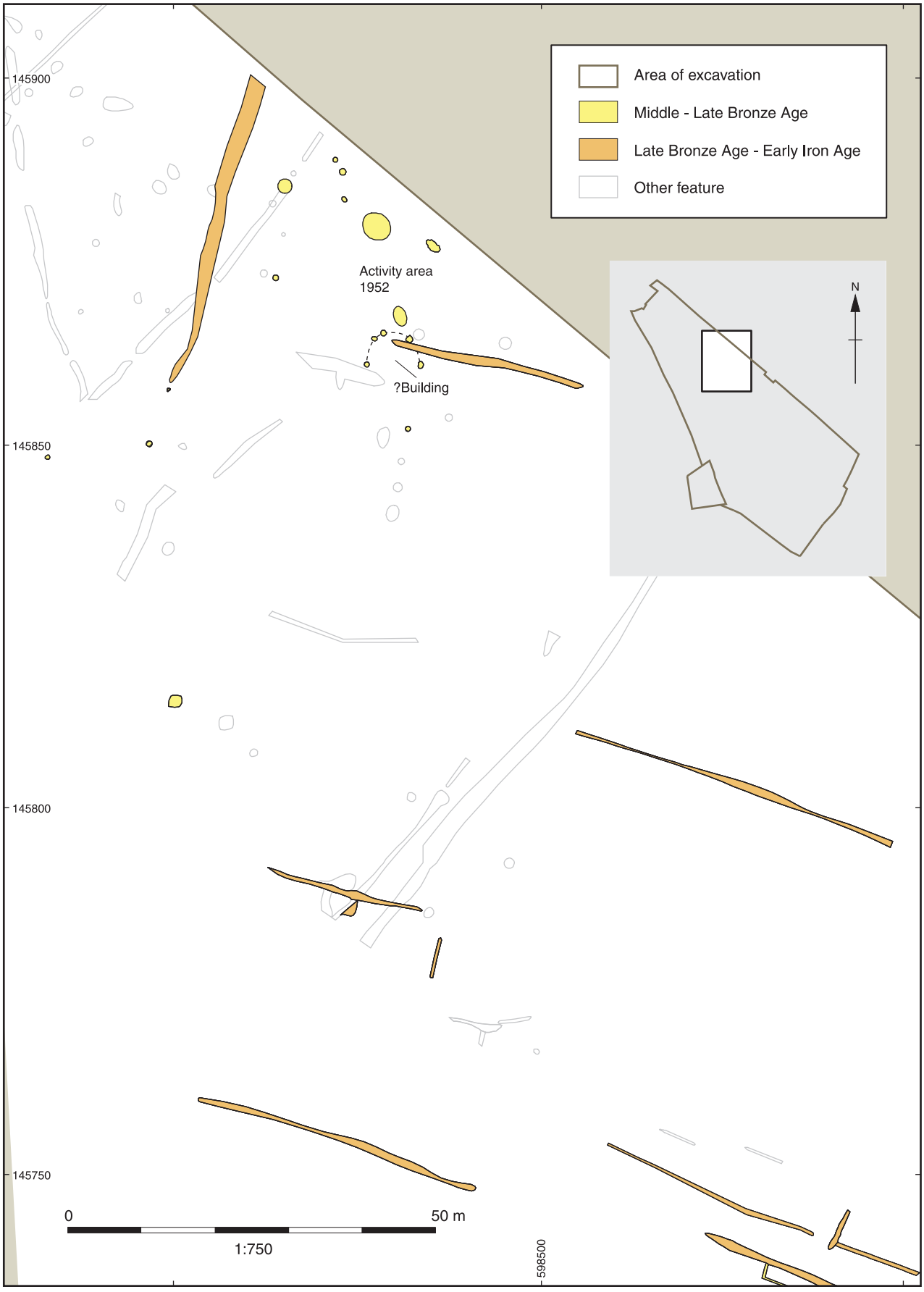


Figure 4.20 Beechbrook Wood: plan of Area 1952

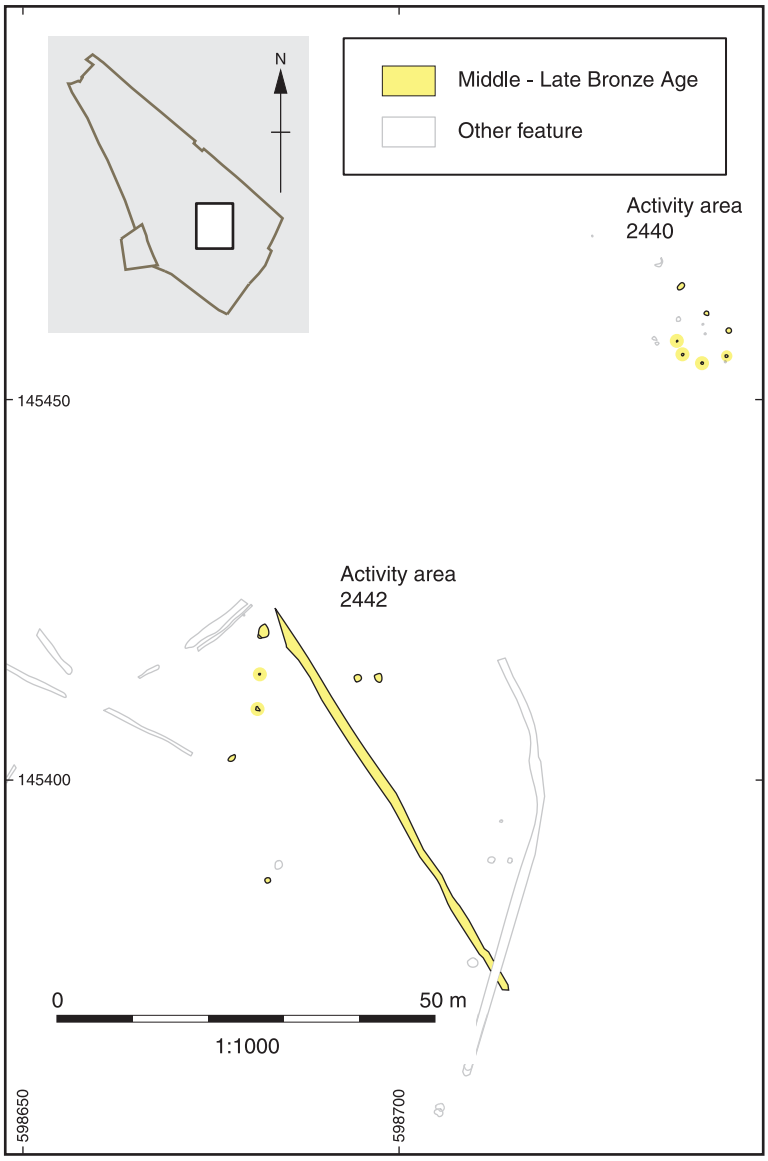


Figure 4.21 Beechbrook Wood: plan of activity areas 2440 and 2442

At Beechbrook Wood (Brady 2006a, 18–23), Middle Bronze Age settlement comprised dispersed features in an open landscape, with two main clusters as much as 500m apart (see Fig. 4.11). Activity area 1952 was about 50m by 50m (Fig. 4.20), and included shallow pits with pottery, fired clay possibly from hearths, charred plant remains, as well as a small quantity of cremated human bone. The group also included an arc of five postholes, possibly the remains of a building. To the west of this group other undated features represented possible structures and may have been of similar date. Another pit, certainly of Middle Bronze Age date but situated 50m to the south, may have been part of the same complex, or another unrelated focus of activity. Towards the southern end of the site lay activity area 2440, comprising groups of postholes that may have made up structures, as well as a small number of pits (Fig. 4.21). To the south-west of this group, about 70m distant, was activity area 2442, similarly comprising some pits, the postholes of a possible structure, and some fragments of ditches. These two groups of features, widely separated in the excavated area, both comprise pits and possible structures, with fired clay suggesting the presence of possible hearths. The activity areas, however, are defined by very sparse scatterings of features, each of which is quite small.

Further east, between Ashford and Folkestone, Middle Bronze Age activity was well documented, but settlement traces were minimal. At North of Westenhanger prehistoric settlement traces were present, but incoherent; they included at least one pit of Middle Bronze Age date (Gollop 2006, 5). At Saltwood Tunnel, Middle Bronze Age material mostly survived as residual finds in later fills: apart from an unurned cremation deposit, the only structural feature of this date was a single Middle Bronze Age pit (Riddler and Trevarthen 2006, 12).

Late Bronze Age

A similar pattern is seen in the evidence for Late Bronze Age settlement, though on fewer sites. At Tollgate (Bull

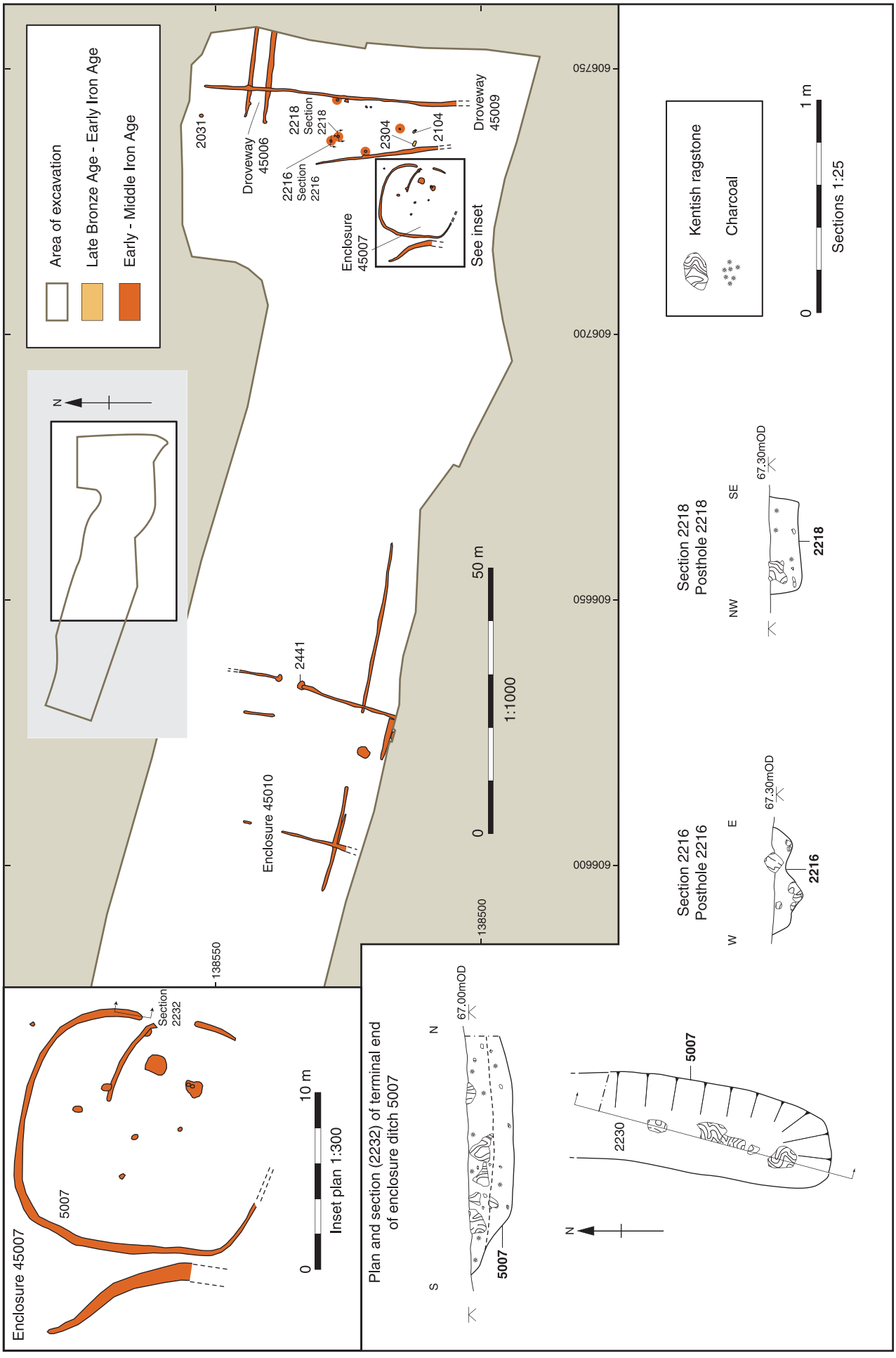


Figure 4.22 Little Stock Farm: Early–Middle Iron Age phase plan and selected sections

2006b, 11), Late Bronze Age settlement was represented by a single pit. At Cobham Golf Course (Davies 2006, 11–12) the evidence comprised a scatter of features in two groups on either side of a ditch, respectively about 20m and 40m across. The Late Bronze Age evidence at White Horse Stone also consisted of a single large pit (5421) containing a considerable quantity of pottery and flint (Hayden 2006a, 122–3). At Beechbrook Wood (Brady 2006a, 24) a few pits in the area of the field system may have been contemporary with its use, but otherwise there was no indication of domestic activity. At Chapel Mill too there was a single pit to indicate occupation in the Late Bronze Age (Hayden 2000b, 6).

Only at Saltwood Tunnel was the evidence rather more extensive (Riddler and Trevarthen 2006, 12–14). There the occupation evidence for this period lay within the area of the field system (see Fig. 4.13) and comprised two groups of pits, each spread fairly thinly over a large area. At the northern edge of the site, and extending beyond the limits of the excavation, was a zone of occupation features (Group 46025) delimited by a ditch; this was aligned on the axis of the field system and appears to be contemporary with it. It extended for a distance of about 30m. About 60m further south was another cluster of pits (Group 46026), which extended somewhat further, and also appears to have been bounded on its eastern edge by a ditch. This ditch intersected one of the field system ditches, and was therefore probably not contemporary with at least one phase of the use of the fields. Although both groups of features were dated to the Late Bronze Age, there is no indication of whether they were in contemporary use or alternatively represent a pattern of migration and relocation of settlement within a structured landscape.

Earliest Iron Age

The clearest evidence of occupation in this phase is at Little Stock Farm (Ritchie 2006, 5–6), where two shallow pits contained placed deposits of pottery (Fig. 4.22). These may have existed in isolation, or may have been contemporary with some of the other features, which were mostly difficult to date before the Late Iron Age occupation. A rectangular ditched enclosure (45010) with an eastern entrance may be of this period, on the basis of human skull fragments found in a placed deposit in a pit (2441) by the entrance; these were dated to 800–510 cal BC (NZA-19916), though the possibility that they were already very old by the time they were buried there must be considered, especially in view of other depositional activities at the site (see below). The enclosure appears to have been associated with a droveway leading up to it from the east, and may have been for stock management. Other features on the site are more likely to be associated with the phase of Late Iron Age activity, though that may have begun in the Middle Iron Age.

Early Iron Age

In the Early Iron Age the evidence is similar: though the features are again found mostly at a very low density, some of the occupation areas are more extensive and at White Horse Stone there is the only large site of dense prehistoric occupation along the HS1. At West of Northumberland Bottom (Askew 2006, 17–25) the Early Iron Age occupation was in the form of a low-density scatter of pits and stakeholes extending about 50m by 25m in the excavated area; no structures were visible except possible animal pens formed by some of the stakeholes. At Tollgate (Bull 2006b, 11–16) Early Iron Age occupation comprised two small clusters of pits separated by a distance of 300m, and a third cluster of pits and other features including hearths and stakeholes. This may have represented structures such as pens or fences, now severely truncated. The group spread over a length of about 80m, separated from the next nearest group of pits by 150m of space with no features.

At Cuxton (Mackinder 2006, 9–11) the occupation area had been cut through by a 19th-century railway line and a quarry; if all the evidence for Early Iron Age occupation is part of a single site, then it was made up of a scatter of features over an area roughly 100m by 40m, including pits and postholes and a possible circular structure (Fig. 4.23). Lines of postholes indicate a fenced enclosure to the east of the house, with double postholes marking an entrance. Short sections of ditch inside the enclosure demarcate an area between the entrance and the house devoid of other features. Other features, potentially contemporary, were located outside this small enclosure.

The Early Iron Age occupation evidence at White Horse Stone (Fig. 4.24) was strikingly different from that found at any other site, in size and density of the features and in their type and organisation (Hayden 2006a, 126–73). It extended across the whole of the northern end of the excavation and may well have continued beyond the limits of exploration on three sides; on the south side the occupation was bounded by a zone with few features and then a distinct lynchet. As found, it stretched for approximately 150m in each direction. The whole area was covered with pits and postholes at a much greater density than seen anywhere else, but with a clear zonal organisation. Radiocarbon dates suggest that the southern part of the site was occupied earliest and for the longest span of time, while activity in the northern part of the site started later and may have been confined to a period of about a century. At the heart of the site was a cluster of intercutting pits; about one third were excavated, totalling 61, suggesting that there may originally have been about 180 pits. Around this was a zone of postholes; many could not be associated with recognisable buildings, but others formed four-post structures. A small number of possible structures of other types was suggested. Beyond the structures were further clusters of pits, some with distinctive filling patterns. On the east side many of the pits contained iron slag from smelting and smithing. The structures and the pits will be discussed further below, and the pit fills in more detail in a later section.

Figure 4.23 Cuxton: plan of Early–Middle Iron Age settlement

Figure 4.24 White Horse Stone: plan of Iron Age settlement

Further east, Early Iron Age occupation was once again minimal. At Eyhorne Street (Hayden 2006b, 18–27) it was made up of a very low density of features including pits, hollows and small gullies, which may be the remnants of some form of enclosures, scattered along a distance of about 200m; occupation may well have extended either side of the excavated HS1 corridor (Fig. 4.25). At Tutt Hill (Brady 2006b, 20) there was only a short length of gully and a pit, about 80m apart, that could be assigned to this phase. In the whole of the large area observed at Beechbrook Wood only one feature, a short section of ditch, was found which could be dated to the Early Iron Age (Brady 2006a, 25), though other features were found nearby which could not be dated securely. Similarly, at Blind Lane, the only Early Iron Age feature was an isolated posthole or small pit with a placed deposit of a La Tène I brooch, though it is again possible that nearby features, not well dated, may also belong to this phase (Hayden 2001, 8).

Middle Iron Age

Evidence of occupation in the Middle Iron Age was very limited, apart from the double enclosure at Beechbrook Wood (Brady 2006a, 30) (see Fig. 4.15). At the same site there was a single pit that could be dated to this period. Otherwise, the evidence for Middle Iron Age activity was limited to one pit at Tutt Hill (Pit 33), where pottery with curvilinear decoration in glauconitic fabric could be dated to this phase (Brady 2006b, 20). Less certain is the dating of features at Little Stock Farm (Ritchie 2006, 6–8). The main phase of occupation definitely belonged to the Late Iron Age, but when it began is less clear (see Fig. 4.22). A sub-circular enclosure (45007) may date to the Middle Iron Age; it was about 15m in diameter, and possibly contained a post-built roundhouse, though the details are far from clear.

Structures

There were very few convincing features or groups of features that could be interpreted as structures of any period. In the Middle Bronze Age, the only possible examples identified were at White Horse Stone and Beechbrook Wood, while in the Late Bronze Age no possible structures were recognised.

At Beechbrook Wood, there were several possible structures of varying degrees of certainty (Brady 2006a, 18–23). In Activity Area 1952, a semicircle of postholes with a diameter of approximately 8m may have been the remains of a roundhouse, or alternatively a semicircular building; other nearby postholes may have been related (see Fig. 4.20). To the west of this were two possible structures, though neither was well dated. Similarly, further south, in activity areas 2440 and 2442, there were groups of features that might have been postholes, but, despite the presence of quantities of burnt clay, some with wattle marks, which might have demonstrated the nearby presence of structures, they did not convincingly indicate a ground plan (see Fig. 4.21). Thus, although there was plentiful evidence for human activity in two distinct areas at Beechbrook Wood, there were certainly no clear roundhouses or other structures; although the cut features and the remains of fired clay point to the original presence of structures, neither their plan nor their function is certain. It is possible that later truncation has removed shallower features; alternatively, substantial structures were built without leaving significant archaeological trace.

Other equally problematic traces of possible Middle Bronze Age structures were found at White Horse Stone (Hayden 2006a, 101–6). At the southern end of the site there was a large group of postholes and pits (see Fig. 4.16); some of the postholes had flint packing, suggesting use for structural timbers. One set of these (Fig. 4.26) formed a possible sub-rectangular or trapezoidal feature (Structure 647), though other similar postholes could not be fitted to a clear pattern (ibid., 102 and fig. 52). Some way to the east was another, more dispersed, cluster of pits and postholes (subgroup 820); the features were mostly undated, but the postholes were similar in form and packing to those of the other group. One set of five postholes formed an approximate circle or oval of about 3m diameter, probably indicating the basic plan of a structure (764) (ibid., 106 and fig. 57). A final group of postholes (8087) contained no finds and was undated, except by comparison of form and contiguity to the neighbouring cluster 8088, some or all of which almost certainly dated to the Middle Bronze Age. Among this group was a set of postholes that could be grouped to form a rectangular structure (19138) (ibid., 105 and fig. 56); it is not entirely convincing, and could equally represent a four-post granary plus some unrelated postholes, or a much more complex and diverse set of functions.

Evidence for possible structures of Early Iron Age date was found at three sites. At Cuxton (Mackinder 2006, 11) there was a possible circular structure: seven postholes in a subcircular pattern may have been the inner ring of posts for roof support (see Fig. 4.23). There was no trace of the outer wall line, but burnt daub, some showing an external surface treatment with a sandy limewash, shows its material nature. Lines of postholes marked a fenced enclosure to the east of the house, with double postholes indicating an entrance.

The most plentiful evidence for structures of the Early Iron Age comes from White Horse Stone, though even there the patterns are difficult to decipher and many postholes cannot be reliably grouped into meaningful structures (Hayden 2006a, 143–6). In addition to the large number of four-post granaries, discussed below, there was one set of four very large postholes with a further pair (Fig. 4.27), which it is suggested might represent the central roof supports and porch of a roundhouse (structure 19440) (ibid., 143 and fig. 82); the hypothetical porch, however, would indicate a doorway orientated north-westwards, the opposite of the most frequent direction seen in Iron Age roundhouses (Oswald 1997). There were also two groups of postholes interpreted as open-sided rectangular or trapezoidal

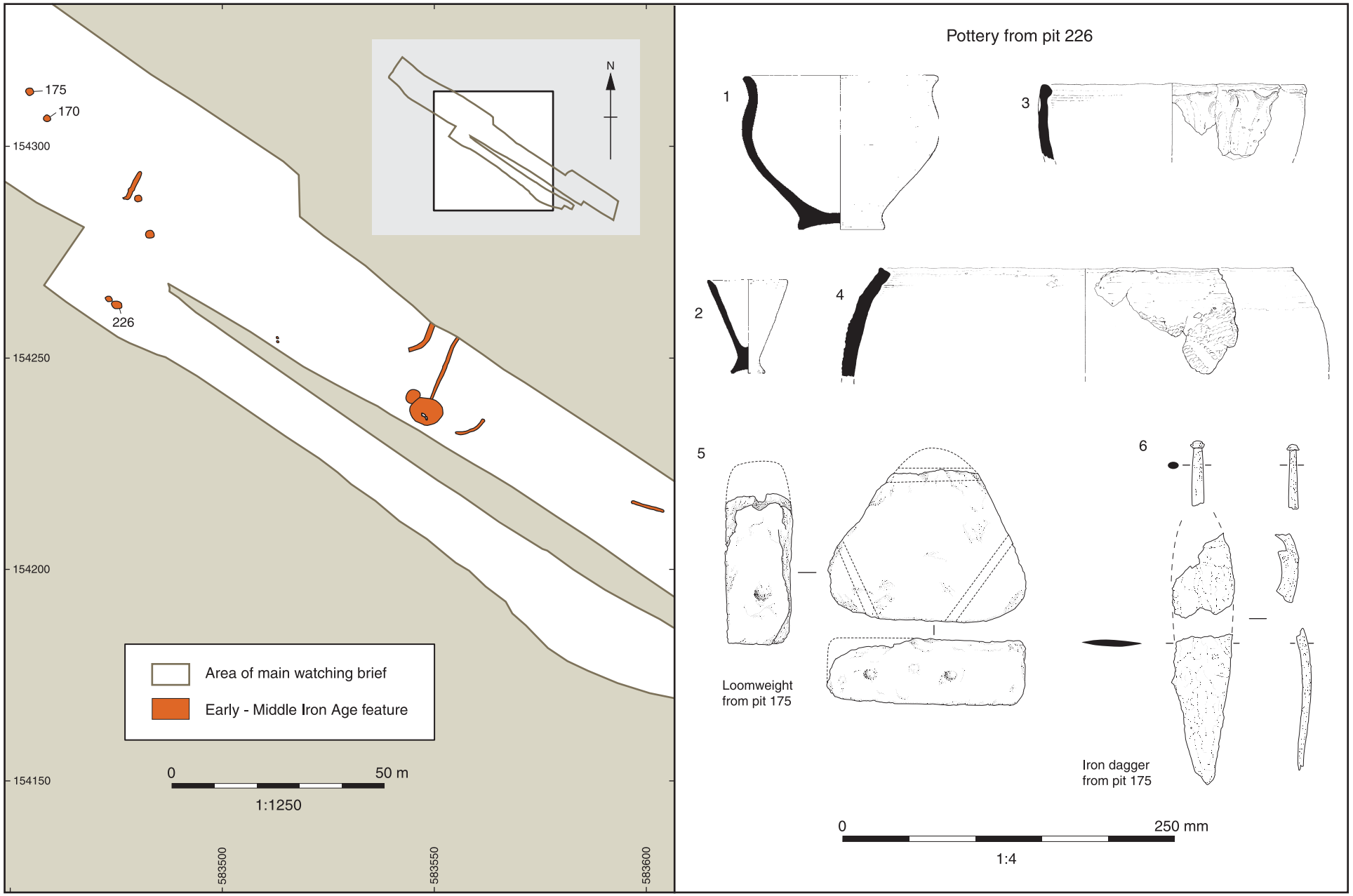


Figure 4.25 Eyhorne Street: plan of Iron Age features and associated finds

structures. Structure 19098 (Fig. 4.28) seems like a screen or shelter constructed around pit 4561, though it is not clear why this pit should have required such a feature (Hayden 2006a, 145 and fig. 79), while structure 2597 (Fig. 4.29) was a more like an open shed (ibid., 145 and fig. 77).

Despite lengthy analysis of the recorded postholes, only two possible fragments of circular patterns could be recognised, in the form of two intersecting arcs (subgroup 2584, structures 2584a and 2584b; Fig. 4.29), which may have represented structures, though not contemporary, with diameters of approximately 8.5m and 9.5m (Hayden 2006a, 145 and fig. 77). If roundhouses had originally existed at the site, then they were either unrecognisable among the mass of unassigned postholes, or had been truncated by later activity, or had been built in a way that left no significant archaeological trace.

At Little Stock Farm (see Fig. 4.22), a post-built roundhouse may have existed in the interior of the sub-circular enclosure described above (Ritchie 2006, 6).

Granaries

Rectangular four-post (and similar) structures of the type normally interpreted as granaries were found on only four sites, and their chronological distribution is quite striking. None was found that could be dated to the Middle or Late Bronze Age. At White Horse Stone a minimum of 55 such structures were found, all belonging to the Early Iron Age (Hayden 2006a, 136–43) (Figs

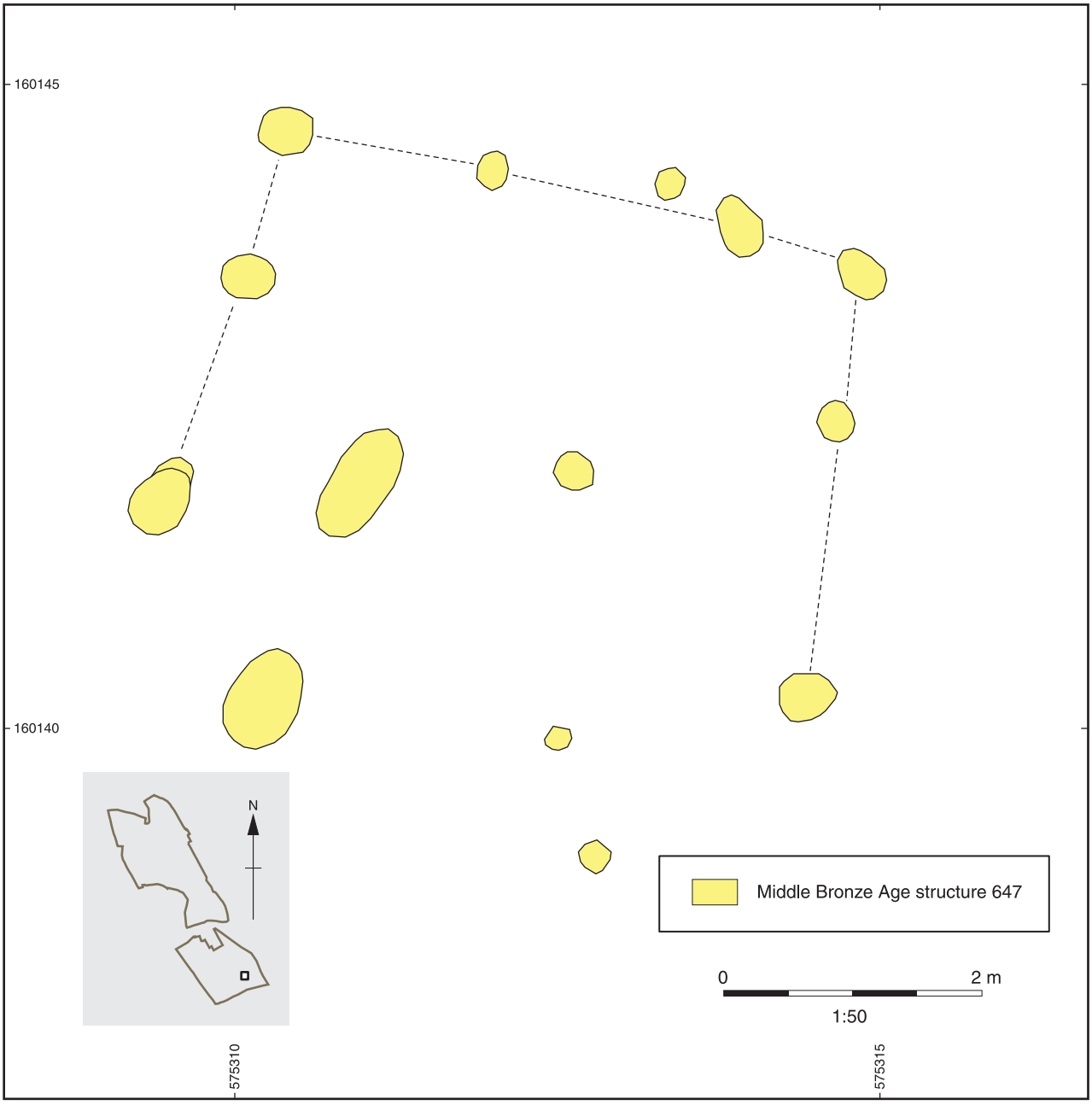


Figure 4.26 White Horse Stone: Middle Bronze Age structure 647

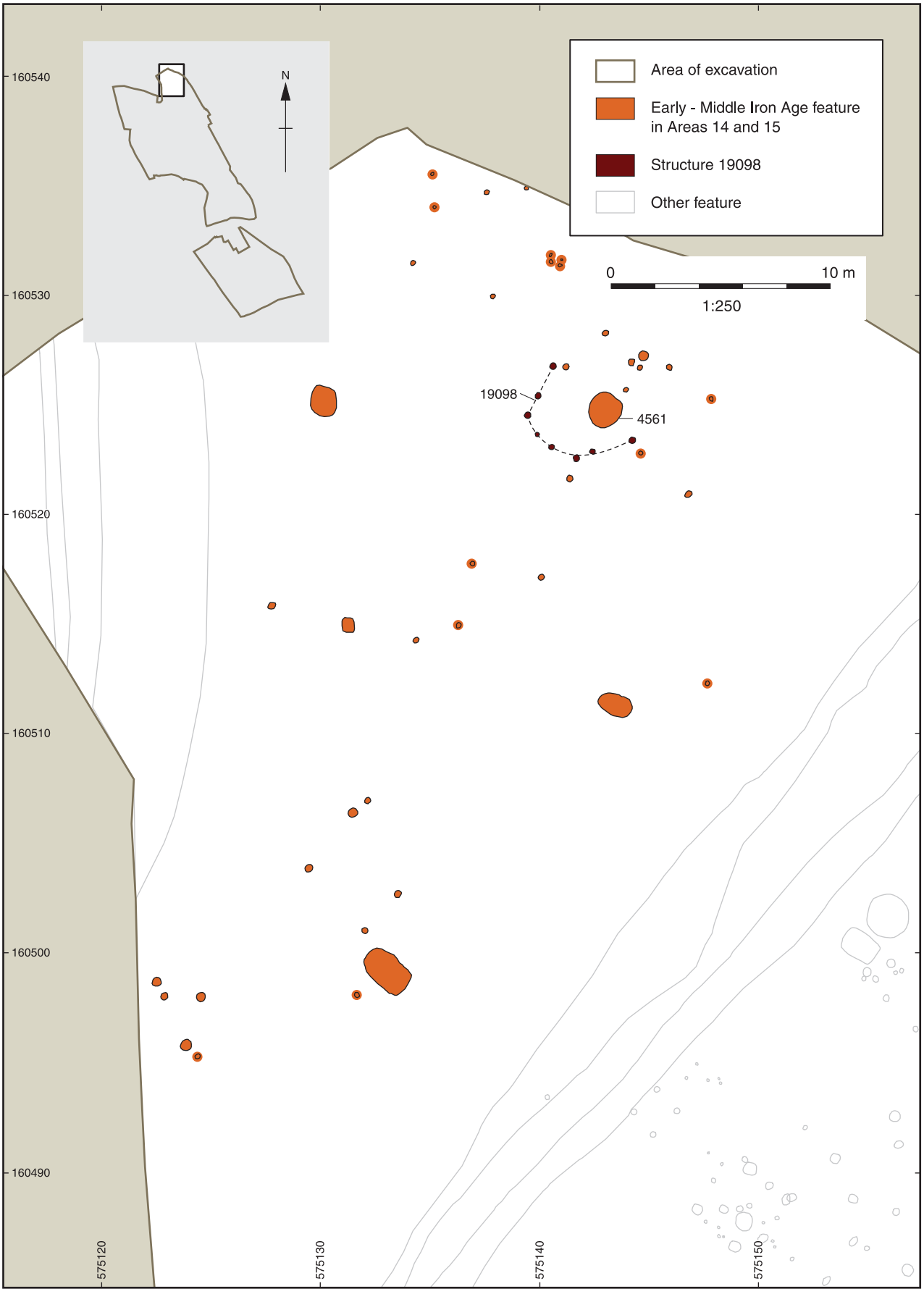


Figure 4.28 White Horse Stone: structure 19098

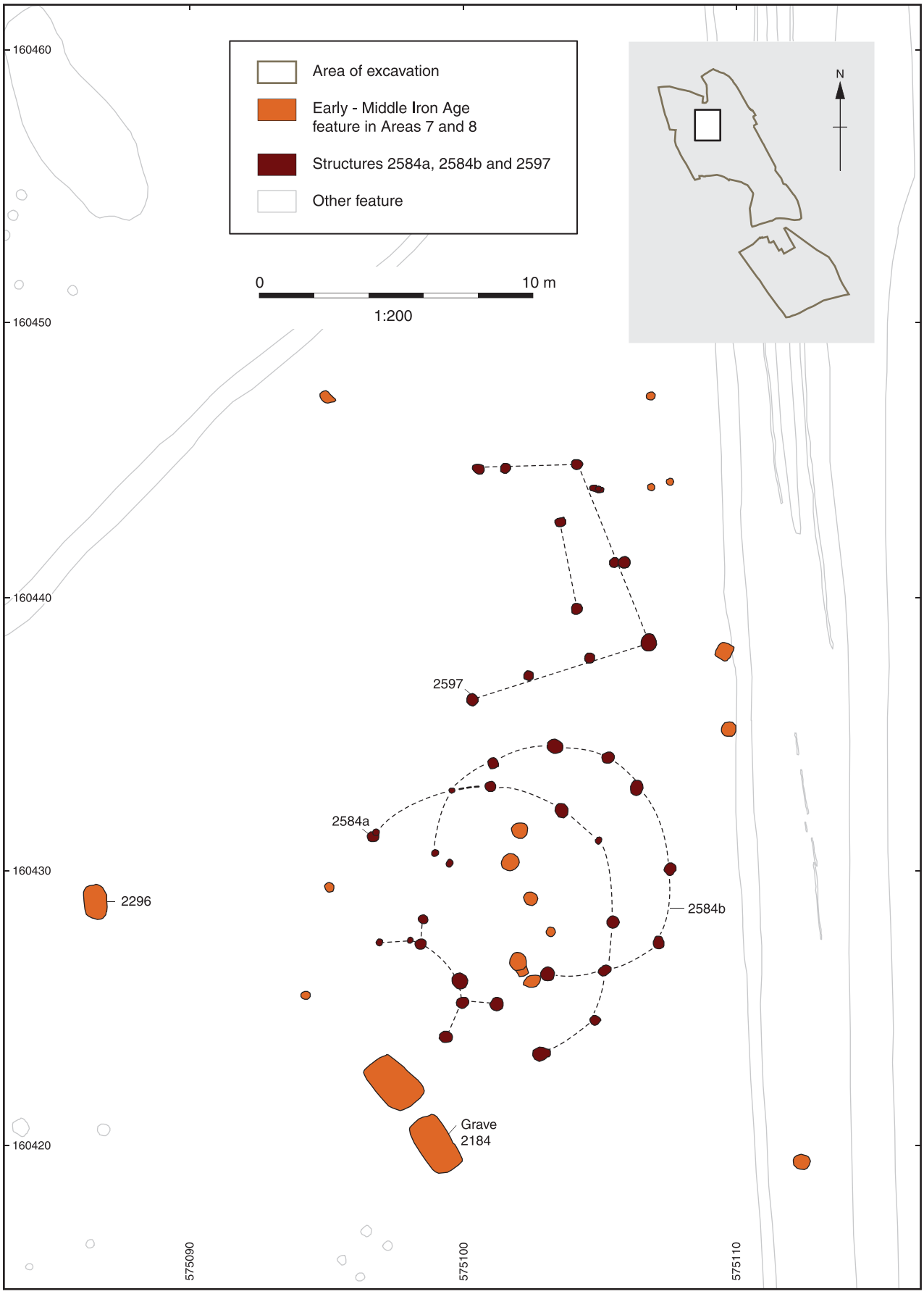


Figure 4.29 White Horse Stone: Iron Age settlement, including structures 2584 and 2597

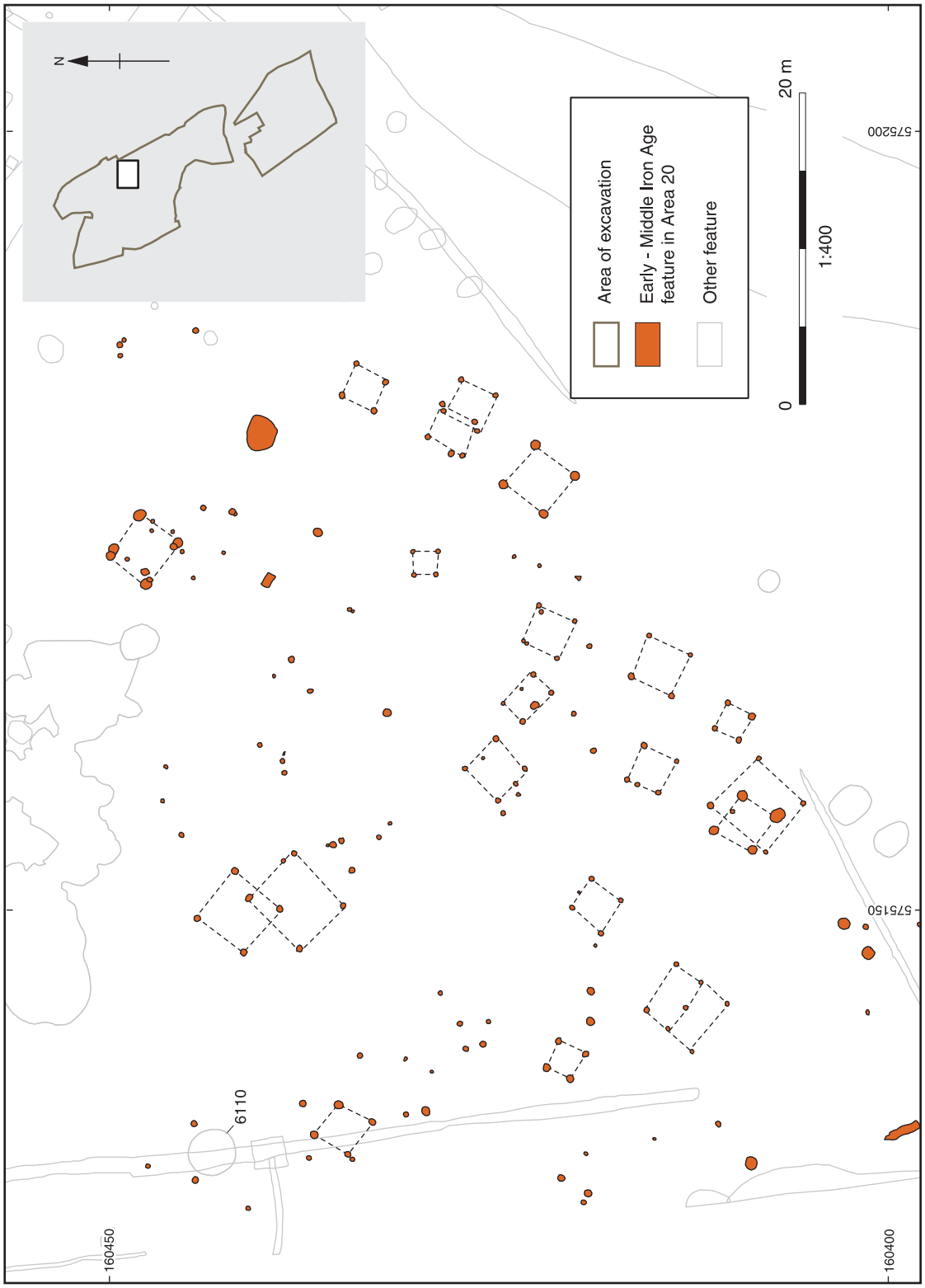


Figure 4.30 White Horse Stone: granaries in the Iron Age settlement, Area 20

Figure 4.31 White Horse Stone: photograph of granaries in the Iron Age settlement, Areas 1–6

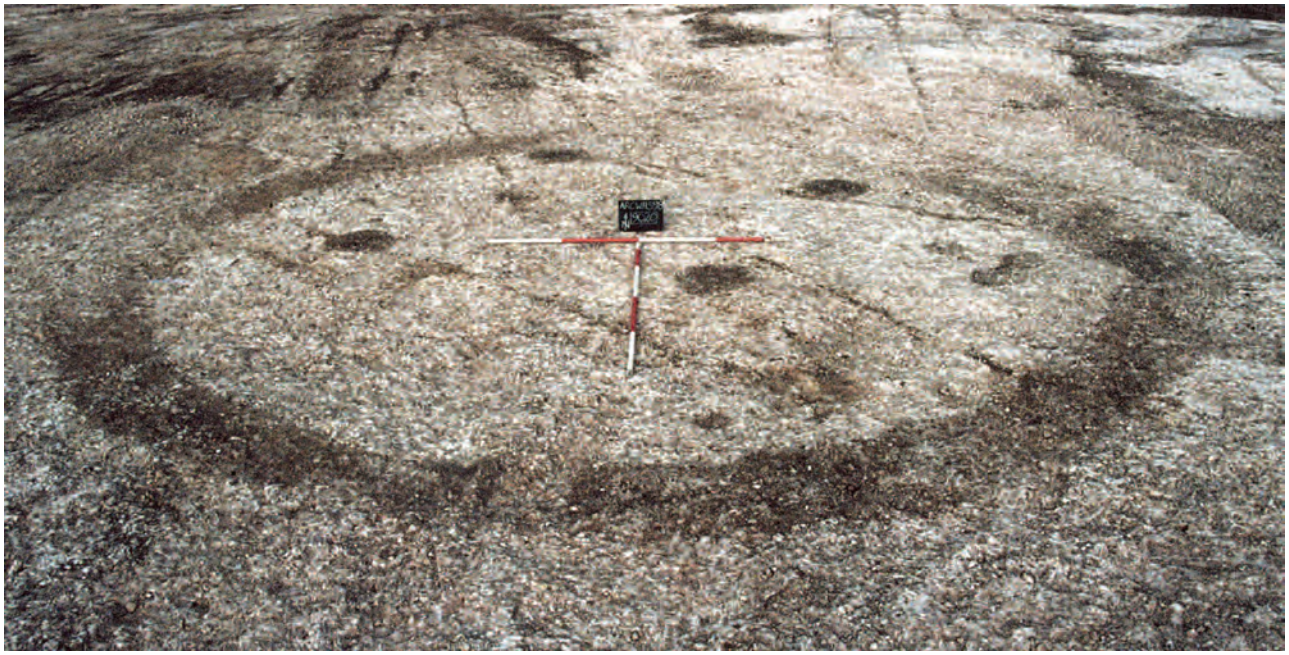


Figure 4.32 White Horse Stone: photograph of Iron Age granary 19061 and gully 19020

4.30–32). Elsewhere, they were all somewhat later. At Beechbrook Wood (see Fig. 4.15), one four-post granary was found inside the Middle Iron Age double-ditched enclosure (Brady 2006a, 30), though it is quite possible that others may have existed, now destroyed by modern disturbance; two more were found that dated to the Late Iron Age. At West of Northumberland Bottom two granaries were found associated with the episode of land division that was organised late in the Iron Age (Askew 2006, 23), while at Little Stock Farm the only granary found was also firmly dated to the Late Iron Age (Ritchie 2006, 10–11).

Hearths and furnaces

Evidence for features such as hearths and furnaces was found at several sites, though seldom *in situ* or with sufficient clarity to determine the original function in detail. At West of Northumberland Bottom a group of undated features located near a Middle Bronze Age cremation included a hearth and an area of scorched earth, suggesting fire-related activities, possibly cremation of human remains, but their function and date were not certain (Askew 2006, 16). At Tollgate an area containing small pits, hearths and a possible posthole structure suggests an area for some industrial activity; the majority of the burnt bone fragments from the site came from a pit near there, but the true function of the complex was not clear (Bull 2006b, 14). Elsewhere, a single hearth (503) among a cluster of Iron Age pits was associated with an assemblage of charred grains, mainly emmer with some barley; the low proportion of chaff suggests a late stage in the process of food preparation (Bull 2006b, 15).

At White Horse Stone two shallow bowl-shaped pits showed signs of intense burning (Hayden 2006a). Both contained debris from iron-working, which was also found in much greater quantities in other features in this area, and they may have been the bases for small furnaces or smithing hearths; vitrified clay fragments from other features suggest other such hearths may have existed (ibid., 148 and 163).

At Beechbrook Wood several pits dating to the Middle Bronze Age contained fragments, sometimes quite large, of fired clay, but none was found *in situ* (Brady 2006a, 20–1).

Pits

One of the commonest elements on all settlement sites were cut features termed pits. This term covers a very wide range of features, with different sizes, depths and profiles, and probably many different functions. Further study is needed to make clearer distinctions within this large group of features, but it is immediately possible to distinguish two types, though these do not necessarily include all of the excavated examples. One type is typically circular in plan, with a rounded or irregular profile in section and no clear base. The other is circular or sub-rectangular in plan, more or less vertical sided, and with a flat base. In terms of the definition offered by Rawlings for the analysis of the pits at Maiden Castle (in Sharples 1991, 89), where a pit is defined as having a distinct flat base which meets the sides at an angle between 60 and 120 degrees, only the latter type would be called a pit. This distinction is recognised at White Horse Stone, where the pits assigned to that site's types 1 and 2 have true bases, but those in type 4 are shallow scoops (Hayden 2006a, 146–8).

The scoop-like pits are found in settlement contexts of all periods. They are typically shallow, seldom being more than 0.5m deep. Their function is unclear, but in the Iron Age occupation site at White Horse Stone there was a considerable degree of spatial separation from the deeper vertical-sided pits, suggesting a difference in usage; two showed signs of burning, perhaps related to iron-working, but these features may well have been dug for a variety of functions, including simply the burial of things.

True pits, with vertical sides and flat bases, were only found in sites of the Early Iron Age, at West of Northumberland Bottom (Askew 2006, 18–22), Tollgate (Bull 2006b, 11–15), Cuxton (Mackinder 2006, 9–10), White Horse Stone (Hayden 2006a, 146–52) (Fig. 4.33) and Eyhorne Street (Hayden 2006b, 22–5). Though comparable in form to the well documented pits from Iron Age sites in Wessex, they were mostly rather shallower, seldom reaching a depth of even 1m. Most were straight-sided features with flat bases, conforming to the cylindrical type defined at Danebury (Whittle in Cunliffe 1984a, 130) and at Maiden Castle (Rawlings in Sharples 1991, 89). At White Horse Stone it was possible to distinguish between those with a roughly circular shape in plan (Type 1) and those with a sub-rectangular shape (Type 2), a difference also noted at Danebury and Maiden Castle. Only one pit, Pit 147 at West of Northumberland Bottom, was clearly described as 'bell-shaped' (Askew 2006, 19), thus falling into the beehive category at Danebury or the overhanging category at Maiden Castle; this pit had a remarkable filling, discussed in detail below. A distinctive and unique type of pit was found at White Horse Stone, defined there as Type 3; this comprised pits with a smaller pit cut into the base, of which there were three examples (Hayden 2006a, 148; Fig. 4.33).

Settlement function and settlement hierarchy

The HS1 evidence will be discussed in a wider context in the following section, but first it is possible to say something about the possible social and economic functions of the various sites.

In the Middle Bronze Age there seems little difference between the various sites investigated. Some were more clearly integrated into organised field systems than others, but in terms of the size, density and nature of the occupation clusters, there was little variation. The absence of structures makes social interpretation difficult, but these may represent small social groups, perhaps individual households, of equal status.

The evidence for the nature of occupation in the Late Bronze Age and the Earliest Iron Age is very limited and does not allow profitable discussion of this sort.

The pattern found in the Early Iron Age is in sharp contrast to that of the Middle Bronze Age, showing considerable difference between sites. The large site at White Horse Stone is unique the presence of large numbers of pits and granaries, the evidence for iron-working and other crafts (discussed below), and in the very distinctively diverse nature of its ceramic assemblage (also discussed below). It occupies a key place in the landscape, where the Medway cuts through the scarp of

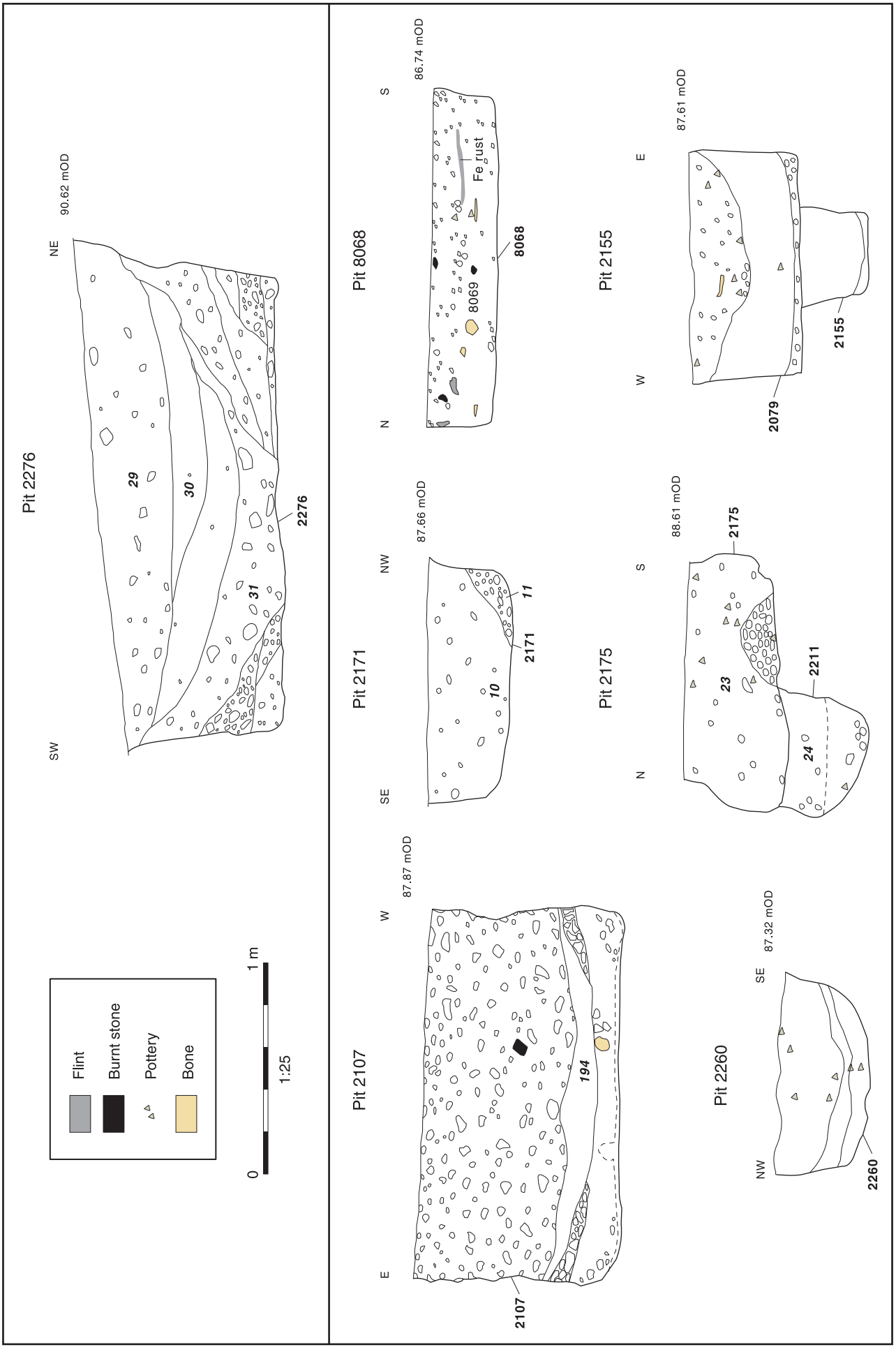


Figure 4.33 White Horse Stone: sections of selected Iron Age pits

the chalk downs, and may well have played a central role in the organisation of the agricultural and technological economy of the region; this role will be discussed further below, in a wider landscape context. By contrast, the other Early Iron Age sites are much smaller and simpler, again possibly representing the occupation of single households engaged in agricultural activity, though again the absence of clear structures makes interpretation problematic. There is, however, a marked difference between those sites at the western end of the route, on the chalk downs, and those lying east of White Horse Stone on the Greensand and clays. The latter are characterised by a much lower frequency of storage pits than those on the chalk. The Greensand zone may have been given over to predominantly pastoral activity, with a low level of dispersed population. There is clearly a need for more detailed economic evidence in the form of animal bones and plant remains, but the possibility of seasonal occupation for summer grazing cannot be excluded.

The evidence for the Middle Iron Age is limited almost entirely to the Beechbrook Wood enclosure. Its role will be discussed in a wider landscape context in the following section.

The later prehistoric settlement evidence in context

The evidence from the HS1 route can now be considered in the light of what is known from elsewhere in Kent and the south-east of England.

Middle-Late Bronze Age fields

Although the Middle Bronze Age was the period with the most plentiful evidence for human activity, the discussion above has shown that the physical traces of activity are very fragmentary. In particular, the ditches that may have made up field systems or other forms of land division are very difficult to interpret because of their poor survival. They may originally have been elements of coherent systems of fields and tracks, but it is not until the Late Bronze Age that we find clear indications of the true scale and nature of the organisation of the fields, as seen at Beechbrook Wood and Saltwood Tunnel.

Field systems of this sort dating to the later Bronze Age are now well known in Kent and more widely in southern and eastern England (Yates 2007). Some of the clearest evidence in Kent comes from large-scale excavation in the north of the county, the area that has seen the most development in recent years; Coldharbour Road, Gravesend (Mudd 1994), Kemsley Fields (Diack 2006) and Shrubsoles (Coles *et al.* 2003) are the more extensively explored. The HS1 sites now clearly demonstrate the existence of such field systems in the Greensand region south of the Downs. Some of the systems certainly began in the Middle Bronze Age, as at Coldharbour Road and Chestfield (Allen 2002), but the chronology of others is less certain.

The evidence from Beechbrook Wood and Saltwood has for the first time provided some indication of the extent of these systems; most of the known field systems in southern England, except those still surviving visibly in upland environments, have been discovered during excavation on development sites and are therefore known only in comparatively small interventions, revealing only a small part of the whole plan. At Beechbrook Wood the excavated traces extended for 400m by 250m, but the outer limits were not determined; at Saltwood, they measured 350m by 100m, but although the limits were reached on two sides, the whole system extended further. These were clearly not small openings in a wooded landscape, and there are some indications of even larger scale works. Two field systems excavated under much later occupation near Ashford, at Westhawk Farm (Booth *et al.* 2008, 25) and Brisley Farm (Williams 2003), were separated by a distance of about 500m, but the layout of the fields on approximately the same alignment at both sites hints at the possibility of wider planning of the landscape (Champion 2007c, 101 and fig. 4.21). Nevertheless, there is no evidence yet in Kent to match the scale of fields found for instance in Dartmoor (Fleming 2008) or parts of Wessex (McOmish *et al.* 2002). Much more research is needed in Kent and elsewhere to understand the variations in the extent of episodes of later Bronze Age landscape organisation and the social and environmental factors that lay behind them.

The HS1 sites have not produced much direct evidence for the usage of the fields. The presence of occasional features interpreted as waterholes is well matched at many other contemporary sites (Yates 2007, 137), but they may have served other purposes as well as livestock rearing. Environmental evidence from an excavated waterhole at Swalecliffe on the north coast of Kent (Masefield *et al.* 2003; 2004) showed that wheat and barley were also cultivated in the vicinity. Yates (2007, 120–2) has argued that the enclosing of fields may have been an important element in the control of both pastoral and arable production.

There is little evidence to suggest the continued use of the fields after the end of the Bronze Age, as in other areas of southern England with similar evidence for landscape organisation at this time (Bradley and Yates 2007, 96). The latest material in the ditches is certainly of Late Bronze Age date, showing that they had silted up by that date, but it is of course possible that the framework of the fields was maintained by other features such as trackways or hedges. A good argument for the presence of hedges demarcating the fields has been made at Perry Oaks (Framework Archaeology 2006, 102–4). Although the HS1 sites have not produced the same wealth of environmental evidence, the presence of large amounts of blackthorn at White Horse Stone has been interpreted as a possible indication of hedges in an otherwise open landscape there (Giorgi and Stafford 2006, 29). There is almost no evidence to demonstrate the subsequent use of the area covered by the Late Bronze Age field system at Beechbrook Wood, since the entire excavated area was remarkably devoid of any sign of activity between the Late Bronze Age and the Middle Iron Age. At Saltwood Tunnel, however, it has been

suggested above that the basic lines of the later prehistoric landscape may have originated in the orientation of the Late Bronze Age field system, with a set of Iron Age and later trackways following the orientation established then. The main focus of human settlement may have moved eastwards to the Dolland's Moor site, but the landscape was still used as an area for pasture and burial.

Middle Bronze Age

The evidence for Middle Bronze Age settlement, though found more frequently than that of any other period, is particularly slight. 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. This is clearly a very different settlement landscape from that described by Brück (1999c, 145), with 'round-houses, accompanied by a few pits, a pond, and perhaps one or two four-post structures', taken as typical of the Middle Bronze Age period, but derived from the limited sample then available, primarily from the chalklands of Wessex and Sussex. Sites of this general nature continue to be typical of the period on the chalklands of Sussex, as finds on the Brighton By-pass project demonstrate (Rudling 2002, 255–6). There are, in fact, few examples of any of the elements of this idealised Middle Bronze Age settlement type known anywhere in Kent. The evidence from the north-east of the county seems to suggest a distinctively different settlement history there: enclosures reminiscent of those in Wessex are found, such as at South Dumpton Down (Perkins 1995, 468–70) or Westwood Cross, Broadstairs (Gollop 2005), and there are occasional examples of well-defined roundhouses such as that at East Valley Farm near Dover (Parfitt and Corke 2003). The archaeological record of Middle Bronze Age southern Britain may be rather more varied, however: at Thorny Down, for instance, there are examples of rather slighter buildings of forms other than the classic roundhouse (Ellison 1987, 386 and fig. 1, structures III, X and XI), and these might be parallels for the possible oval or semi-circular structures identified at White Horse Stone and Beechbrook Wood.

Our understanding of the settlement pattern in north-west Kent, glimpsed somewhat fragmentarily at West of Northumberland Bottom and Tollgate, will be greatly enhanced with the publication of the more extensive discoveries in the subsequent A2 road works (Allen and Donnelly 2009). For the zone south of the Downs between the Medway and the Channel, however, the pattern of occupation is better documented, though still difficult to interpret. As discussed above, there is plenty of evidence for ditches and the division of the landscape, but nothing to suggest the large-scale field systems known from the Late Bronze Age. There is also evidence of human occupation at several sites, again discussed above, but in no case is it possible to integrate the occupation evidence into a landscape of fields. If the suggested interpretation of the ditches is correct, it seems likely that there was a pattern of dispersed and unenclosed settlement set within a divided landscape, even if we cannot now demonstrate it in detail. It is difficult to find exact parallels for such a system of occupation, and it is perhaps only in the largest-scale excavations that such a phenomenon could be revealed and understood, though even then there is the problem of precise dating. The evidence from the HS1 sites, especially White Horse Stone and Beechbrook Wood, can be compared in Kent with that from Kemsley, where small groups of pits and a possible roundhouse, located within a set of fields, could be dated to the Middle Bronze Age (Diack 2006, 9–15). Even less substantial were the traces of occupation at Hayes Common (Philp 1973, 30–51) or scattered in the field system at Iwade (Bishop and Bagwell 2005, 14). Further afield, the HS1 evidence could be compared to that found at Perry Oaks, near Heathrow in West London, where small settlement clusters were found amidst a large area of Middle Bronze Age land division (Framework Archaeology 2006, 114–33), or with the contemporary settlement evidence at North Shoebury in Essex, where 'small clusters of pits and postholes' were found scatted among the field boundaries (Wymer and Brown 1995, 20).

Evidence for Middle Bronze Age activity in the form of single, isolated pits, as at Mersham, is less easy to parallel elsewhere, though it is quite possible that such features are difficult to recognise in small-scale excavations and are under-represented in the published literature. A single pit with Middle Bronze Age pottery was found at Iwade in north Kent (Willson 2002), but the excavated area was limited. Further afield, two isolated Middle Bronze Age pits, one containing a placed deposit of two quern stones, are known in Hampshire at Winnall, near Winchester (Hawkes 1970). Other similar features could probably be found, and it now seems as though such isolated pits might be a regular part of the archaeological record for Middle Bronze Age settlement.

The HS1 sites do not contribute much to our detailed knowledge of the Middle Bronze Age settlement history of the chalk region in north-west Kent, but in the area south of the Downs the widespread but rather slight evidence for human activity seems to suggest an episode of large-scale clearance and colonisation of an area that had not been densely exploited before. Since most of our knowledge of the period is derived from other areas, especially the river gravels and chalk downlands, with very different long-term landscape histories, this evidence is an important reminder of the regional variability that we should expect, even within southern England.

Late Bronze Age

The settlement sites of the Late Bronze Age in the south of England are more varied than those of the preceding period (Brück 2007), but little of this variation shows in the HS1 evidence, which again shows a marked contrast to the rest of Kent. Distinctive sites such as the strongly enclosed, or even 'defended', ringworks are known in the county, such as Mill Hill, Deal (Stebbing 1934; Champion 1980, 233–7), Highstead B70 (Bennett *et al.* 2007, 16–25) and now Kingsborough (Allen *et al.* 2008); by the later stages of the period there is also

another distinctive type of oval enclosure, as at Highstead A24 (Bennett *et al.* 2007, 25–31) and Ramsgate Harbour Approach Road (Champion 2007c, 106 and fig. 4.25), as well as much larger enclosures such as at Eddington Farm, Herne Bay (Shand 2002). Extensive open sites are also beginning to be recorded, as at Holborough Quarry in the Medway Valley (Boden 2006; 2007b). At some sites, such as Kemsley (Diack 2006, 15–22), Shelford Quarry, Broad Oak, north of Canterbury (Boden 2004), or Willow Farm, Broomfield (Helm 2003), the occupation is scattered within the enclosures of a field system. Structural evidence includes roundhouses at Kemsley, Willow Farm, Shelford Quarry, and in the enclosures at Highstead A24 and Ramsgate, as well as four-post storage buildings at Holborough Quarry and Shelford Quarry.

The most substantial evidence for Late Bronze Age settlement on the HS1 sites, however, are the small clusters of occupation features in demarcated blocks within the co-axial field system at Saltwood Tunnel, a pattern best paralleled elsewhere in the Thames Valley at sites such as Cranford Lane, Hillingdon (Yates 2007, fig. 4.4). Parallels for the isolated Late Bronze Age pits, as at Tollgate, White Horse Stone and Chapel Mill, are probably greatly under-represented in the literature, but they can be matched elsewhere, for instance at Zionshill Farm, Chandlers Ford, Hampshire (Rawlings *et al.* 2003), where cylindrical loomweights and pottery were placed in a pit.

Again, as in the Middle Bronze Age, it seems as though there is a sharp distinction in the nature of settlement between the north and east of the county and the area south of the Downs. Although there are two extensive co-axial field systems, at Beechbrook Wood and Saltwood Tunnel, the occupation evidence is slight, with no traces of enclosures, houses or four-posters.

Earliest Iron Age

In view of the discussion above about the validity of the 'decorated' phase of pottery production as a valid chronological period, and the very small number of HS1 deposits that would fall into such a category, it is difficult to say much about occupation at this time. Brudenell (2008) has argued that such pottery is characteristic, not of a chronological phase, but of special places, perhaps associated with an elite. The one HS1 site with significant assemblages was Little Stock Farm, but apart from the deliberate deposits of pottery and the placing of a human skull fragment in a posthole by the entrance to the small enclosure, there was little to suggest a special or elite nature for this site. Elsewhere in Kent, characteristically decorated assemblages are not common; the pottery associated with the interrupted oval enclosures at Highstead A24 (Bennett *et al.* 2007, 25–31) and Ramsgate Harbour Approach Road (Champion 2007c, 106 and fig. 4.25) may be best assigned to this phase, and these distinctive enclosures with single central houses may be a form of elite residence. At Monkton Court Farm in Thanet (Perkins *et al.* 1994), however, which has produced the most distinctively decorated assemblage, the nature of the site is far from clear. Further research, and possibly new sites, are required to clarify this problem.

Early Iron Age

Despite extensive excavation in recent years, the nature of Early Iron Age settlement in Kent still remains unclear; this may be in part due to the fact that detailed publication has so far lagged behind that of sites of other periods, but it is also true that the information currently available suggests a considerable diversity of sites and structures. Much of the current evidence comes from sites on the chalklands of Thanet and east Kent; this is mostly due to the pressure of development in that area, but may also be partly a result of the easy visibility of Iron Age sites, typically characterised by pits, in this geology. Such sites are now known frequently in Thanet (Moody 2008, 116–32) and on the mainland of Kent at Downlands, Walmer (Jarman 2010), the Whitfield-Eastry By-pass (Parfitt *et al.* 1997) and elsewhere. Other sites, such as Highstead (Bennett *et al.* 2007) and Underdown Lane, Eddington (Jarman 2005), have fewer and smaller pits, a reflection of their location on gravel and clay subsoils.

The size and density of features in these sites are a remarkable contrast to the evidence of Early Iron Age sites on the central and eastern part of the HS1 route: east of the major site at White Horse Stone, the only evidence was at Eyhorne Street, Tutt Hill, Beechbrook Wood and Blind Lane, and at all of these sites, as discussed above, the physical remains of occupation were very slight. Other interventions in this Greensand zone have also failed to identify Early Iron Age occupation, and it seems as if the whole zone immediately south of the scarp of the North Downs was occupied in a way that has left little physical trace. The clays and sandy soils may not have lent themselves to the digging of pits in the same way as the chalk, but even so other traces are minimal. This does not preclude the possibility of extensive pastoral use and the cultivation of arable crops, but these activities must have taken place in the remnants of the organised landscape created in the Bronze Age, without major new episodes of land division, and with actual occupation sites making little impact on the subsoil. Comparatively non-intensive occupation of this sort has been seldom documented in the Iron Age of lowland England, in Kent or elsewhere, as research has tended to concentrate on identifiable sites rather than transects, and such evidence would have been easily missed or discounted.

From the Medway westwards there is considerably more and more substantial evidence for settlement in the Early Iron Age. The site at Cuxton may have been only the surviving fragment of a much larger area of occupation, partly destroyed in 19th-century railway construction. The features excavated at West of Northumberland Bottom and Tollgate can now be seen to be only peripheral parts of much larger areas of Iron Age occupation (Allen and Donnelly 2009). In all these cases it is difficult to reconstruct the full nature of the sites and to compare them with other sites elsewhere in Kent, but full publica-

tion of the subsequent excavation on the line of the A2 will clarify the picture.

The one major Early Iron Age site of the project was at White Horse Stone. Its key structural elements, consisting of pits, four-post granaries and other buildings, compare well with the known Iron Age sites of eastern Kent, and it would be tempting to think of it as a typical site of the more densely occupied regions of the county. There are, however, some features of the site that suggest a more complex function. Sited at the foot of the Downs, where the Medway crossed the Greensand vale, it occupied a place of great significance in the landscape (Champion 2004); the Neolithic structures and megalithic monuments have been discussed above, and it continued to be a place for the deposition of bronze and gold throughout the Bronze Age, while its importance in the Late Iron Age is indicated by the rich burials at Aylesford (Evans 1890).

Any Iron Age site in this vicinity, therefore, not only had the strategic advantage of location in terms of communication along the Medway route through the Downs, but was also invested with the memory of the long-term significance of the place. The importance of the place may also be indicated by the careful selection and placing of special deposits, including human remains, that mark the end of the Iron Age occupation, to be discussed in more detail below. The evidence for storage in the form of pits and granaries and the large-scale production of iron, as well as the slighter evidence for the working of shale and bronze, also discussed in more detail below, and in sharp contrast with the very limited evidence of such activities elsewhere, all suggest that the White Horse Stone site acted as a form of central place for the more scattered occupants of the region. The site is also marked by a wide variety of pottery fabrics, again discussed below, and Morris (in Booth 2006a, 43) has suggested that one explanation could be the extensive exchange relations manipulated from the site; alternatively, it may represent the presence at the site of a mixed community of people, with each group having its own local contacts and pottery supply. If that were the case, it is quite possible that the site was not occupied by a fixed group of people, but by a fluctuating mix of smaller groups from the surrounding area. However that may have been, the emphasis on production and storage, as well as the network of external relations and even the evidence of the zoning of activities within the site, all suggest that the White Horse Stone settlement had much in common with early hillforts, such as the broadly contemporary phase of early occupation at Danebury, with the obvious exception of the absence of the impressive defences that were built in other regions. Such a function has not been suggested for other non-defended Early Iron Age sites in the south-east, and it is an open question whether this might be a feature of the peripheral location of White Horse Stone on the southern margins of active settlement and occupation in Kent, or whether other sites elsewhere in the broader region may have had a similar function.

A recurring feature of the Early Iron Age sites in Kent is their comparative lack of clear structural evidence for roundhouses. Three sites have produced evidence in the form of ring grooves or gullies: Highstead (Bennett *et al.* 2007), Underdown Lane, Eddington (Jarman 2005) and the Isle of Grain (Philp 2002, 139 and fig. 33–2), but otherwise there has been little that could be clearly interpreted as a typical roundhouse. While it is possible that the degree of truncation and destruction through ploughing has been more severe in Kent than in other counties, it seems unlikely to have been so over the whole of such a large area. Alternative explanations, either that the roundhouses in this region were constructed in such a way as to leave little or no subsurface trace, or that structures other than roundhouses, but again with little below-ground remains, were the norm, need to be given proper consideration. Classic examples of roundhouses also seem to be difficult to locate elsewhere in the Lower Thames region; sites such as Caesar's Camp, Heathrow (Grimes and Close-Brooks 1993) and Uphall Camp, Ilford (Greenwood 1989) have certainly produced evidence for roundhouses, but they may be more correctly assigned to the Middle Iron Age. It may be that a widespread and long-lasting architectural tradition in the Early Iron Age in the region is characterised by their absence.

Middle Iron Age

The one major piece of evidence for Middle Iron Age occupation was the double-ditched enclosure at Beechbrook Wood (see Fig. 4.15). This is a distinctive site plan, without obvious parallel in Kent or anywhere else in the Lower Thames Valley. Though single-ditched enclosures of this approximate size have been well known since the work of Bersu at Little Woodbury, enclosures with a double ditch are rarer. It is unfortunate that the conditions of excavation did not allow better recovery of the details of the interior, but there is clear evidence for a strongly enclosed, or even defended, site with an impressive entrance. Comparison with other sites will therefore have to be on the basis of location, chronology and plan. Among the few obvious parallels are the site at Mingies Ditch, Oxfordshire (Allen and Robinson 1993) and that at Wardy Hill, Coveney, Cambridgeshire, in its 'ringwork' phase (Evans 2003). The sites, despite their similarities of size and plan, have rather different functions and histories. Mingies Ditch was a new site, interpreted as a 'pioneer pastoral settlement, bringing what had been underexploited land marginal to the gravel terrace settlements into more intensive use' (Allen and Robinson 1993, 143); the interior space was largely taken up with structures. Wardy Hill in its Phases 4–5 was a development of an earlier enclosed site, itself a successor to an open settlement. In its developed phase much of the interior was open, and it may have been a site of refuge or meeting. Whatever its function or occupants, the excavator preferred to see it as an 'expression of power' (Evans 2003, 260).

It is important to see the Beechbrook Wood enclosure in its local and wider setting, both topographically and archaeologically. It lies on an area of higher land that

forms a promontory overlooking valleys that lead down towards the Stour, thus dominating an area of lower land around the Stour Valley and the communication routes north-south along the river valley through the Downs and into the Weald, and east-west along the lower land at the foot of the Downs. As discussed above, this area had seen the organisation of complex field systems in the later Bronze Age, at Beechbrook Wood itself and at Brisley Farm and Westhawk Farm, and was also the locus for a concentration of deposits of Late Bronze Age metalwork. Thereafter, however, there was almost no evidence for Iron Age activity until the construction of the enclosure.

In the wider context, there is good evidence for contemporary activity along the northern fringes of the Weald. To the west of Beechbrook Wood, the Late Iron Age oppidum at Quarry Wood Camp, south of Maidstone (Kelly 1971), incorporated a small oval earthwork; though this is itself undated, it may have been the original core of the site's development, in the same way as Gatesbury was the early focus for later activity at Braughing, Hertfordshire (Partridge 1981, 27). Beyond that, the large hillfort of Oldbury (Ward Perkins 1944) was built on an outlier of the Greensand. Further west again, the small hillfort of Squerryes, at Westerham (Piercy Fox 1970), occupied a position similar to that of Beechbrook Wood, on the Greensand ridge overlooking the upper reaches of the Darent Valley. In Surrey, three hillforts, at Anstiebury, Holmbury and Hascombe (Thompson 1979), were similarly located on the Greensand ridge, overlooking the Weald to the south. At the same time, hillforts were also being built on sites deeper into the Weald, as at Dry Hill, Lingfield (Winbolt and Margary 1933), Castle Hill, Tonbridge (Money 1975; 1978), and High Rocks, Tunbridge Wells (Money 1960; Money 1968).

The hillforts on the northern side of the Weald, then, have a very different history from those on the south, and belong predominantly to the Middle and Late Iron Age (Hamilton and Manley 2000). They seem to be part of a general movement back into a zone south of the North Downs that had not been intensively occupied since the end of the Bronze Age, and perhaps even further into the Weald, a region that appears to have been little used for much longer, but was now beginning to be valued for its economic resources, perhaps especially its iron. There are, of course, some uncertainties about this suggestion: many of the sites are not well dated; where excavated, the sites have rather varied records of interior occupation; and the long-term landscape history of the area south of the scarp of the Downs is not as well documented further west as it is in the area of the HS1 route. Nevertheless, the evidence, such as it is at present, is broadly consistent and compatible with this hypothesis. Such a process would also be part of a wider phase of settlement expansion and consolidation that characterises many regions of south-eastern England (Hill 2007, 23).

Seen in this context, the Beechbrook Wood enclosure would be part of a much wider attempt to recolonise a landscape little used in previous centuries. Though not to be categorised as a hillfort as are most of the sites to the west, it enjoys the same sort of prominent location. Although there is no evidence yet for an oppidun in the area of the Stour Valley around Ashford, unlike Quarry Wood Camp to the west in the upper valley of the Medway tributaries, the area did become an important focus of Iron Age activity with a very rich burial at Westhawk Farm (Booth *et al.* 2008, 27–34) and other burials at Hothfield Common (Brinson 1943), and an extensive settlement incorporating warrior burials at Brisley Farm (Williams 2003). This was followed in the immediate post-conquest period by the development of the small town at Westhawk Farm. The Beechbrook Wood enclosure therefore represents the first significant evidence of re-occupation of an area that may have been largely abandoned for several hundred years, or at least only used in a non-intensive way.

Production and procurement, technology and trade

The HS1 sites produced evidence for the exploitation of many different raw materials and the practice of a wide range of craft activities in the later prehistoric period. In this section, the evidence for the procurement of raw materials and the production activities will be considered, including the facilities and tools needed for the various processes, the debris of production, and the raw materials being exploited. In the following section the products of these crafts, where identifiable, will be discussed in the light of their role in the social life of the period.

Bronze

Two sites produced possible evidence for the actual working of copper alloy, and that was unfortunately indecisive. The majority of the evidence comes from Beechbrook Wood (Northover in Diez *et al.* 2006). A small piece of bronze-working waste had the characteristic composition of bronzes widely used in southern England in the Taunton period of the Middle Bronze Age, but it was found in a context dated to the Iron Age. Other waste items, including possible crucible residue, could not be similarly analysed, but would be compatible with such a date for bronze-casting, but equally could be somewhat later. It seems certain that one or more episodes of bronze-casting happened at Beechbrook Wood, and probable that one of these was in the Taunton phase, but certainty beyond that is impossible. The only other possible evidence for the working of copper alloys was a rivet found in an Iron Age pit at White Horse Stone (Hayden 2006a, 162). The pit was in the area probably used for metalworking and contained much iron-working waste. It is possible that bronze-working was also carried out in this area.

Objects of copper alloy were not common finds. Highly corroded pieces of bronze rod may be the remnants of Middle Bronze Age pins from Sandway Road

(Northover in Northover and Shaffrey 2006, 3) and Beechbrook Wood (Northover in Diez *et al.* 2006, 3–6); other finds from the latter site include a possible ring, a piece of strip metal, possibly from tweezers, and a blank for a knife blade. The most impressive objects of this period were the knife or dagger blade and the possible pin selected for deliberate deposition in the top of a waterhole at Thurnham Roman Villa site (Northover in Booth *et al.* 2006, 3–7; see Fig. 4.39). Finds later than the Middle Bronze Age were limited to a decorated strip of bronze, possibly a fragment of a bracelet, from Little Stock Farm (Ritchie 2006, 5), a La Tène I brooch and ring from West of Northumberland Bottom (Keily and Richardson 2006a, 12) and a ring-headed pin from White Horse Stone (Fell *et al.* 2006, 5), all of Early Iron Age date. Other finds from Beechbrook Wood, mentioned above, including a possible ring and tweezers, were found in Iron Age contexts, but may have been earlier.

Iron

The most prolific evidence for iron-working came from White Horse Stone (Keys in Fell *et al.* 2006, 10–14; Hayden 2006a, 160–1). More than 100kg of various types of slag were recovered from the excavated sample of the site; most of this was from the east side of the excavated area, where iron-smelting and smithing waste was found in most pits, probably indicating the approximate location of the iron-working activity. Two shallow, bowl-shaped pits which had been exposed to intense heat may have been the sites of smelting furnaces or smithing hearths. The technology used was the bloomery process known elsewhere in England, and the slag represented all three major stages of iron production including initial smelting of the ore, primary smithing to consolidate the bloom and secondary smithing to produce the final artefact. The smelting slags suggest that a variety of methods were used, since they included tap slags and slag lumps that consolidated at the bottom of the furnace. The hammerscale residues show that the final fabrication of iron objects was also being carried out.

Possible traces of earlier iron-working were found at Beechbrook Wood. Iron slag was identified in a pit with Late Bronze Age pottery; some may have been intrusive from later disturbance, but some was more securely stratified at the base of the pit (Brady 2006a, 64). Other evidence for iron-working at this date is known in Kent at South Street, south of Herne Bay (Allen *et al.* 1997).

As with the bronze objects, the total number of recovered items seems very small, and the major ones were clearly selected for deliberate deposition: context 6132 at White Horse Stone contained a human cremation accompanied by a bronze ring-headed pin and six small iron objects, including two knives and four awls (Fell *et al.* 2006, 3–6; Hayden 2006a, 159) (Fig. 4.34), while Pit 175 at Eyhorne Street (see Fig. 4.25) contained an iron dagger bent into a near-circular shape (Hayden 2006b, 23–4). Apart from these obviously placed deposits, iron objects were rare: at Tollgate there was a

Figure 4.34 White Horse Stone: metal artefacts from Iron Age pit 6132

La Tène I brooch (see Fig. 4.36) and two rings, as well as possible fragments of a blade and an implement such as an awl (Keily 2006a, 8–13), while at White Horse Stone other finds were limited to fragments, mostly of nails or spikes. Fragments of iron sheet associated with rivets and nails were found in two pits at White Horse Stone, suggesting something more complicated in terms of production (Hayden 2006a, 162).

It was not until the final stages of the Iron Age that evidence for iron production became more common, for example at Tutt Hill, Beechbrook Wood and Leda Cottages, and finds of iron objects more prolific in the archaeological record.

Though there have been no analyses to attempt to identify the source of the iron ore used in these processes, there seems little doubt that it would have originated locally, somewhere in the Weald. The evidence from the iron-working sites in the Weald suggests a date for the start of the major exploitation of the Wealden iron deposits in the Late Iron Age (Cleere and Crossley 1985), but there is no reason why it could not actually have started much earlier. The scale of iron production in southern England seems to have increased steadily in the Early and Middle Iron Age, with the major production centres in the Forest of Dean, the Jurassic ridge and the Weald beginning to dominate, as shown by the distinctive

forms of ingots in which their products were distributed, the so-called 'currency bars' (Allen 1967; Hingley 1991). If the spit-shaped bars found in the Thames Valley are correctly identified as the products of the Wealden district, it would suggest a significant upturn in the scale of production during the Iron Age. Even so, the White Horse Stone evidence is perhaps the earliest yet discovered to support the idea of the exploitation of Wealden iron in the Early Iron Age.

Shale

Among the finds at White Horse Stone were a shale bracelet and a shale disc (Hayden 2006a, 164). Occasional finds of shale, especially bracelets, are known from later prehistoric sites in Kent, beginning with Mill Hill, Deal (Champion 1980, 233 and fig. 4, 4–5), and a piece of shale was placed in the abandoned Dover boat somewhat earlier (Clark 2004, 216). The find of a disc, however, suggests the actual working of shale at the site. Such discs are the discards from working circular bracelets from blocks of shale, as demonstrated by the best known industry of its type in later British prehistory, in Dorset, using the local occurrence of Kimmeridge shale (Calkin 1953). In addition to the White Horse Stone finds, evidence for shale-working in Kent is now also known from a site a short distance to the north in the Medway Valley, at Burham (Chris Ellis, Wessex Archaeology, pers. comm.); shale bracelet rough-outs and debitage, as well as flint tools for working the shale, have been found there. It is possible that raw shale was being brought from Dorset to be worked in Kent, as has been generally presumed for the earlier finds, but it is equally possible that another source was being exploited. Though none is known in Kent, similar shale deposits are known to occur in northern France, near Boulogne (DPS Peacock, pers. comm.), and it is an interesting possibility that the shale came from cross-Channel contacts, though further research will be required to substantiate this suggestion.

Flint

Flint was found throughout the route, though in comparatively small quantities (P Harding 2006). On many sites it was difficult to determine the presence of a flint industry dating to the Middle Bronze Age, Late Bronze Age or Iron Age because of the problems of residuality. The case for continued exploitation of flint in the 1st millennium BC has recently been made (Young and Humphrey 1999; Humphrey 2003; 2007), but the characteristics of these late industries make them hard to discern; they are typified by a comparatively low-level technology, and by flakes with little retouch and few signs of elaborate core preparation. Throughout the route the specialist reports discuss the problem of flint tools and waste in contexts of the Middle Bronze Age and later; those in Roman and medieval contexts are presumably residual, but flints from later prehistoric contexts are more problematic. The reports at sites like West of Northumberland Bottom, Tollgate, Cobham Golf Course, White Horse Stone and Saltwood Tunnel all refer to assemblages in later prehistoric features that are characterised by high levels of debitage, hard hammer mode, irregular flakes, and limited retouch. There is undoubtedly an element of residuality, but it also seems highly likely that there was a contemporary 1st-millennium flint industry producing flake tools. All the flint exploited in later prehistory would have come from deposits derived from the North Downs, though probably from clay-with-flint layers or gravel outwashes at the foot of the scarp.

Interest in flint-working in the Iron Age may have extended beyond the limited production of irregular flakes. Some deposits, especially the upper fills of pits at West of Northumberland Bottom (Askew 2006, 19–20), contained significantly large collections of flint, some of which must have been of much earlier date: Pit 147, which also included many other carefully selected items of animal bone (see Fig. 4.38), also contained a barbed-and-tanged arrowhead. These unusual deposits will be discussed in more detail below, but it is possible that people in the Iron Age were aware of earlier prehistoric flints, especially distinctive tools, and collected them for deliberate deposition. Less easy to date are three hammerstones from Iron Age contexts at White Horse Stone, two of them from burials, and one showing evidence of heavy use (Cramp 2006, 15); accidental incorporation into later contexts seems very unlikely in these instances, so either they were deliberately collected and selected for deposition as curiosities, or they demonstrate the reality of flint-working in the Iron Age, unless they were for some other function such as crushing iron ore.

Stone

Items of worked stone of later prehistoric date other than flint were recovered from five sites: West of Northumberland Bottom (Keily and Richardson 2006a, 26), Tollgate (Keily 2006a, 8), White Horse Stone (Hayden 2006a, 163–4), Sandway Road (Northover and Shaffrey 2006, 3), and Beechbrook Wood (Diez *et al.* 2006, 8–11). All were fragmentary; though some could be recognised as parts of saddle querns, in other cases it was not clear whether they were querns, rubbers, whetstones or even some other processing tool. Some of the rocks could be identified as coming from sources in the Lower Greensand, while others were of various sandstones as yet unidentified. At Tollgate Iron Age finds included a piece of sarsen which had been heavily used, possibly as a whetstone or rubber for a quern, as well as two pieces of glauconitic sandstone that had been used as querns. There was no evidence of debitage to suggest the working of any of these objects on site, and they may well have been fashioned at or near their quarry sites, wherever they may have been.

There have been few other published accounts of querns and rubbers from prehistoric sites in Kent. The HS1 evidence, however, is well matched by that from a site at Iwade in north Kent, where the origins of the artefacts were the Lower Greensand and other unidentified sandstones (Riddler and Vince in Bishop and Bagwell 2005, 46–7); ferruginous sandstones were also used for querns at Coldharbour Road, Gravesend (Roe in Mudd 1994, 399) and Hayes Common (Philp 1973, 51). In the Middle Iron Age, utilised stone found at Farningham Hill included mostly Lower Greensand, but also a piece of sarsen (Parfitt in Philp 1984, 36–7). There is no evidence that any of the rocks used need have been from sources other than fairly local within Kent; the Greensand is a productive source of stone for querns, most notably at Folkestone (Keller 1989). The HS1 sites and the others mentioned above are all located to the north of the Downs and show that the Greensand sources, and possibly the ferruginous sandstones, were being exploited for querns to be transported over some distance within the county.

Salt

Some of the most significant information for the nature of Late Bronze Age and Early Iron Age technology from the HS1 has been the evidence for salt production (Morris in Booth 2006a, 106–16). Sites for prehistoric salt production have been known in Europe since the 19th century, recognised by the characteristic remains of fired clay artefacts known as *briquetage* (Riehm 1961). This term has come to be used for a wide range of objects, including troughs and their supports used in the early stages of production as well as a variety of containers used in later processing or transporting and distribution of the finished salt cakes, as well as many pieces whose original function is still obscure. Though many different fabrics were used for the vessels and other equipment for salt production, many can now be recognised by their distinctively oxidised fabrics, frequently with an organic tempering, and often with a marked pink or purple colouration or a white surface layer (Morris in Booth 2006a, 107). Evidence of hearths, pedestals and other equipment is a good indication of a site used for some stage or stages of the production, though finds of briquetage containers are more difficult to interpret. They may represent sites used for a stage of the production and distribution process, or they may indicate the final place of usage of the salt and the abandonment of any containers used to acquire it.

Briquetage material (Fig. 4.35) was found on seven of the HS1 sites (Morris in Booth 2006a, 106–16). The clearest evidence of production is from Cobham Golf Course, where the briquetage included several items identified as the remains of pedestals as well as containers, dated to the Late Bronze Age. Of a broadly similar Late Bronze Age date were finds from Beechbrook Wood, where several contexts contained fragments of briquetage containers, the small quantity suggesting this was a site of consumption or usage, rather than production. Similar small quantities of containers were also recovered from Little Stock Farm in the Earliest Iron Age and from Cuxton and White Horse Stone in the Early Iron Age, again suggesting final usage of the salt. More difficult to interpret are rather larger quantities of briquetage containers from West of Northumberland Bottom and especially Tollgate; the briquetage containers here were found in association with evidence of burning, including fired clay, possibly from hearths or clay-lined

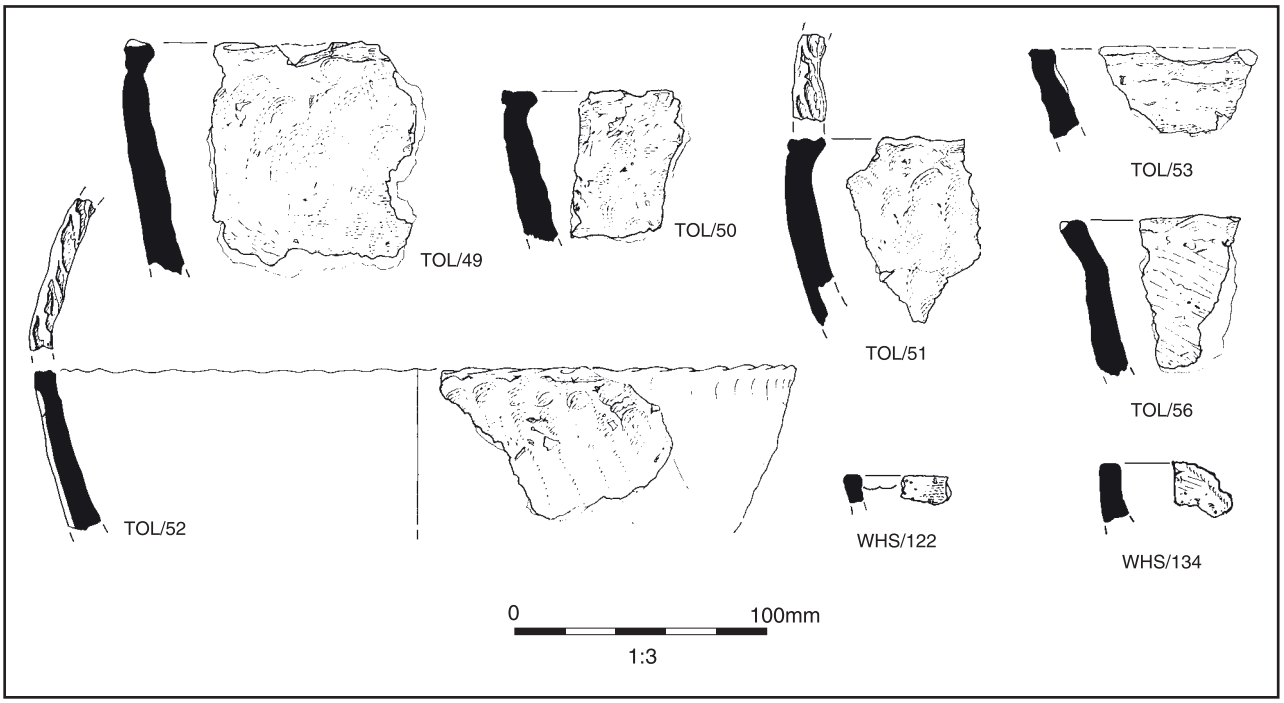


Figure 4.35 Selected briquetage vessels from Tollgate (TOL) and White Horse Stone (WHS)

pits which might have been used in a production process. Subsequent work on the A2 improvement scheme has produced more briquetage from the areas of Iron Age occupation adjacent to the HS1 easement, demonstrating salt production on a considerable scale (Allen and Donnelly 2009).

These seven sites add considerably to our knowledge of the production and distribution of salt in prehistoric Kent. Evidence for salt production in the Thames estuary area has been known, or at least suspected, since the 19th century, primarily through knowledge of the so-called Red Hills of Essex, now known to be major salt production sites of the Late Iron Age and early Roman period (Fawn *et al.* 1990). Research on these sites led to the recognition of earlier finds from the Upchurch Marshes in north Kent, where clay pedestals had been recovered by the 1830s (Barford 1990, 81). Worsfold excavated briquetage remains from Minnis Bay in the Isle of Thanet and published one sherd from a semi-cylindrical trough or mould (Worsfold 1943, fig. 8, no. 10), though without recognising its significance. Much similar material was found in further work at the site, and the connection with salt production was established, though the full implications were not followed up. Important new discoveries were then made in southern Essex, especially at Mucking (Jones 1977; Barford in Bond 1988, 39–41 and 50–1), while a radiocarbon dated hearth at Fenn Creek pushed the industry back into the Middle Bronze Age (Wilkinson and Murphy 1995, 157–9).

Comparable discoveries from the southern side of the estuary in Kent have been slower to come to light. A pedestal and what was probably a fragment of a hearth wall were found in excavations at Cliffe in 1976 (Cameron and Barford in Kinnes *et al.* 1998, 54) dating to the Early Iron Age, while further pedestals have now been found at Swalecliffe (Masefield *et al.* 2003, fig. 28) and at Hoo St Werburgh (Moore 2002, fig. 3, 1–2), both of Late Bronze Age date; other evidence of salt-working has also been reported from the Isle of Grain (Philp 2002, 139) and from the Isle of Sheppey (Pratt 2004), as well as from sites in east Kent, especially at Highstead (Bennett *et al.* 2007, 268–70) and, at least from the Late Iron Age, the products of a source probably in the south-east of the county (Macpherson-Grant 1980b).

The previous finds had all been small-scale and fragmentary, so the HS1 evidence adds considerably to the number of sites producing or using salt in Kent, as well as to the quantity of salt-related material. The evidence for production now seems to fall into two geographical groups, one in north-west Kent, and one in the east around the Wantsum and Thanet, both with origins in the Late Bronze Age, with a possible third in the south-east starting before the end of the Iron Age. It must be remembered, however, that there have been very significant changes to the shoreline of north and east Kent since later prehistoric times, and much evidence for salt-working may have been eroded away or covered by later coastal accretion; much evidence may still remain in the north Kent marshes or under later deposits in the Wantsum or Lydden valley areas. Both known groups show generic similarities to industries known elsewhere around the southern North Sea and the English Channel, especially to those in Essex (Barford 1990), around Poole harbour in Dorset (Morris 1994) and in Lincolnshire (Lane and Morris 2001), and across the Channel in Belgium and Holland (Thoen 1975) and in northern France (Prilaux 2000); though there are considerable variations in the material elements used in the processes, all are characterised by the use of pedestals and troughs or pans for some stage of the production process.

Further research is still needed to clarify the exact process and the locations of the various stages (Morris in Booth 2006a, 1015–116). The evidence for salt-working at Cobham may at first sight seem strange, since the site is about 4km from the current coastline and at a height of about 50m above sea level. Precisely the same points were made about the discoveries at Mucking, when the evidence was first found there (Jones 1977). Coastlines will have varied since prehistory, and it has been argued that the modern inland locations of salt-working sites in Belgium (Thoen 1975) and France (Prilaux 2000, 82–3 and fig. 56) can be accounted for by marine transgressions in later prehistory, making them originally much nearer the coast at the time they were in operation. That may possibly be the case for the Thames estuary sites, but they seem likely to have been situated some way above sea level, and therefore not in the obvious location for the primary evaporation of the sea water. It is more likely that they were sites for secondary drying, crystallisation and moulding of the salt, ready for distribution. At the other end of the chain, sites such as Beechbrook Wood and Cuxton, with comparatively small proportions of container briquetage among their ceramic assemblages, may well have been sites where salt was consumed or used. In between, however, there are sites such as Tollgate and to a lesser extent West of Northumberland Bottom, where the proportion of container briquetage is much higher. It may be that they played a similar role in production to that of Cobham, but pedestals and other such equipment have not yet been found; alternatively, they may have had a later role in the process, perhaps in packaging or distribution; or, again, they may have been large-scale consumers of salt.

The final purpose or purposes of the salt are also unclear. There is no particular evidence at the moment to suggest what it was being used for; though the preservation of meat or dairy products seems a reasonable suggestion, this cannot be supported by clear archaeological evidence. In view of the absence of fish bones from later prehistoric contexts in Britain, discussed above, it was not for the preservation of fish, though pork or other meat may have been possible. If salt was being produced at Cobham and other sites in north-west Kent, we have little evidence yet as to how far it was being distributed, if indeed it did get beyond sites such as Tollgate. The briquetage found at Cuxton may have come from this area or from another salt-working area in the lower Medway region, as yet unlocated. Similarly, it is only possible to suggest a speculative origin for the finds from Beechbrook Wood and Little Stock Farm, which may

have come from the Wantsum or Thanet area or possibly from an unidentified source in the south-east of the county; if so, salt was being transported up to 50km inland.

Pottery

Pottery was the most frequent material recovered from the later prehistoric sites (Morris in Booth 2006a, 34–121), but there is almost no direct evidence for its actual manufacture or firing. As elsewhere in Britain at this time, the pottery was hand-made, and presumably fired in a bonfire or clamp, leaving little archaeological trace. It is possible, however, to say something about the procurement of the raw materials of clay and temper, and the development of traditions of ceramic practice; perhaps also about the question of local production or longer-distance exchange within the region. This section will therefore consider such questions of the production and distribution of pottery, while the range of outputs and their social uses will be discussed later.

One of the problems in examining the localisation of ceramic production is the comparative homogeneity of the geology in long sections of the route. West of the Medway the route runs along the Upper Chalk foothills of the North Downs, with a similar availability of clay and flint throughout that length; in places also the Woolwich and Reading beds provided a source of clay and sands, some with a distinctive component of fossil shell. East of the Medway the route runs along the grain of the geology, providing little variation throughout the route. The Gault Clay and the Lower Greensand deposits, together with the Weald Clay to the south and the Upper Chalk to the north, offered broadly similar resources from Maidstone to Folkestone, with little variation; the Greensand and the Weald Clay are likely to have been the source for the glauconitic and ironstone-rich clays that are major components of the ceramic repertoire here. Within these geological zones, therefore, there may be little chance of discriminating between the local and the non-local, but pottery made in a different geological zone may be easier to recognise if made with distinctive materials.

In the Middle Bronze Age (Morris in Booth 2006a, 56–8) the pottery throughout the route is characterised by a very similar suite of fabrics, with flint-tempering in a silty matrix. In the later part of the Middle Bronze Age, the period distinguished above as the Middle/Late Bronze Age transition (ibid., 59–61), new fabrics were used, tempered with grog or with flint and grog. A similar development has been documented elsewhere in Kent, as at Kemsley (Mcnee in Diack 2006, 31), Iwade (Hamilton and Seager Thomas in Bishop and Bagwell 2005, 26) and probably Shrubsoles (Raymond in Coles *et al.* 2003, 24–7), and can also be seen in Essex (Brown in Wymer and Brown 1995, 77–92). Various authors, including Morris (in Hearne and Heaton 1994, 34–43), Woodward (2002b, 109–10) and Brück (2006), have linked the adoption of grog-tempering to other forms of material culture and social practice in the later Middle Bronze Age, including changes in burial rite and the fragmentation of material objects as a means of reinforcing social cohesion. Another feature of equal interest is the widespread geographical homogeneity of practice in the use of flint and grog tempering in ceramic recipes, in contrast to the much more varied and localised technologies that developed later. Again, we may be seeing an episode in the production of material objects where shared technological practices are helping to promote social cohesion at a time of major cultural change.

In the Late Bronze Age, we begin to see the regional diversity in fabrics that characterises later ceramic production. Though there are no large assemblages in the central part of the route, we can distinguish the region in the chalk lands of north-west Kent to the west of the Medway from that at the eastern end of the route. In the former, the use of grog disappears and tempering is of flint; in the latter, there is a varied use of flint, grog, and flint with grog-tempering. By the end of the Late Bronze Age and the Earliest Iron Age, the sandy matrix common to most later prehistoric pottery had been widely adopted and the distinctive glauconitic and iron-oxide clays were beginning to be used (*contra* Seager Thomas 2008, 47). The reasons for this regional diversity may have been rooted in a changing significance of pottery within contemporary society, perhaps now emphasising regional identity more than wide-ranging cohesion. Whatever the cause, it allows us to see something of the movement of pottery: at White Horse Stone, for instance, one vessel in an iron-oxide-rich fabric stands out from the rest of the assemblage, which was predominantly flint-gritted, and presumably represents an import from further east (Morris in Booth 2006a, 82).

In the Early Iron Age, the regional diversity continued. In the north-west, the predominantly flint-tempered tradition gave way to the use of shell-tempered pottery, while east of the Medway fabrics were characterised mainly by the use of quartz sand and glauconitic clays. The site assemblages of this period are characterised by a fairly narrow range of fabrics, dominated by varying proportions of flint and shell to the west, quartz sand and glauconite to the east. Differences in these proportions may be a result of chronological variability, of small sample size, or regional preference within these zones; further research will be needed to clarify the reasons for these variations. One site, however, stands out for the strikingly different range of fabrics represented: White Horse Stone. Though approximately half the pottery is in flint-tempered fabrics that might be expected for a site on the edge of the chalk, there are many other different fabrics represented there, some of which could not have been locally produced, for example the shell-gritted wares that must have come from north of the Downs. Given what has been said about the widespread occurrence of similar clay and temper resources, it is difficult to reach firm conclusions on how much of the White Horse Stone pottery was local and how much the result of exchange. What is perhaps more important is the uniquely wide range of fabrics

represented, suggesting a very different composition of the social group living at White Horse Stone from those at other sites, and possibly a very different function for the site (Morris in Booth 2006a, table 3.6).

The picture of ceramic production in the Middle Iron Age is limited by the small number of such assemblages, dominated by that from Beechbrook Wood. There are no significant groups west of the Medway, but the evidence from Farningham Hill (Couldrey in Philp 1984, 38–70) shows that shell-tempered fabrics continued in common use, but alongside an increasing proportion of glauconitic wares, imported from south of the Downs, although these in turn gave way to grog-tempered fabrics in the transition to the Late Iron Age. The Beechbrook Wood assemblages also show the growing predominance of glauconitic sandy wares east of the Medway, together with iron-rich, flint-tempered and grog-tempered fabrics (Morris in Booth 2006a, 85–6).

The size and number of the HS1 assemblages can thus allow us to establish something of the history of the procurement and usage of clays and tempers in later prehistoric Kent, and to put in a better context the pattern of fabric usage seen in the Late Iron Age (Thompson 1982, 8–17). The grog-tempered fabrics that became widespread then had a long history of continuous usage, especially in east Kent, at least since the Late Bronze Age. The glauconitic fabrics of Thompson's Pottery Zone 4, centred on the Medway Valley around Maidstone, were the continuation of a pottery tradition that went back to the start of the Iron Age and even to the Late Bronze Age and had dominated production in the Middle Iron Age, while the shell-tempered pottery of her Zones 2 and 3, in south-east Essex and west Kent, continued another regional tradition that had begun in the Early Iron Age.

The picture of preferred ceramic fabric recipes may be beginning to emerge, but the reasons for the changing patterns need further research and discussion. The rise in the proportion of the shell-tempered and glauconitic fabrics during the Iron Age may represent a greater degree of specialisation of production, or may be a recognition of the superior suitability of certain fabrics for specific uses. The similarity of geology over considerable distance of the route limits the possibility of discussing the localisation of production, but it does provide some evidence for the movement of pottery away from the region of its geological origin. The uniquely wide range of fabrics found at White Horse Stone has been discussed already, but other vessels are also found out of the production zone. Morris (in Booth 2006a, 84) has suggested that burnished bowls may have been the particular subject of exchange, perhaps denoting a special social significance for this form.

None of the pottery need have been made from sources outside Kent. Though some vessels show an obvious connection to forms better known in France, as will be discussed below, the geological similarity of the zones on either side of the Channel means that it will be difficult to determine possible imports on the grounds of fabric alone.

Textiles

The main evidence for textile production is in the form of loomweights of various types for weaving. Other evidence, for the earlier stage of spinning the yarn, and the later stage of finishing the cloth or clothing, was much rarer.

The only spindle whorls found were at White Horse Stone, where two examples were placed in grave 2296, with the articulated remains of an adult male; these were the only such objects found in the White Horse Stone excavation or anywhere on the HS1 route and were clearly deliberately selected for deposition in the grave. In view of the discussion below about the deposition of small finds it is difficult to make any inference from this find about the organisation of textile production in the region; spindle whorls are not common finds in Kent, and it is tempting to think that this must under-represent the reality of prehistoric activity.

Loomweights have been found at several sites, covering the entire later prehistoric period. The earliest examples are of the cylindrical form now well known from sites of the Middle and Late Bronze Age. Sites with finds in certain or probable Middle Bronze Age contexts include West of Northumberland Bottom (Keily and Richardson 2006a, 10) and White Horse Stone (Hayden 2006a, 65 and 105), while for the later period there are finds at Cobham Golf Course (Keily *et al.* 2006, 4–5) and again at Beechbrook Wood (Buss 2003, 73). Less common are examples of the type that seems to follow them, the pyramidal form with a tapering square profile and a horizontal perforation near the top, as found for instance at Mucking (Bond 1988, 37–9 and fig. 26, 7–9). Though comparatively rare in Britain, they are the commonest form in Iron Age Europe, with some finds from contexts that clearly show their function in a warp-weighted loom (Schierer 1987). The only site to produce examples of this form was Beechbrook Wood, where they occurred in Group 2442 in a probable Late Bronze Age context (Buss 2003, 73). A similar example from Kent is recorded from Highstead (Bennett *et al.* 2007, 276, no. 44 and fig. 160).

From the Early Iron Age onwards the commonest form in Britain is the triangular type, found widely in southern and eastern England and also in the neighbouring areas of north-western Europe (Champion 1975; Wilhelmi 1977; 1987). Though it has been argued that not all triangular objects of fired clay had the same function, and that some may have been associated with ovens (Cunliffe and Poole 1991b, 380; Poole in Cunliffe 1995, 285–6), it still seems probable that some of these objects were in fact loomweights, and that interpretation is followed here. Fragments of triangular loomweights were found in Early Iron Age contexts at West of Northumberland Bottom (Askew 2006, 18–19), White Horse Stone (Hayden 2006a, 163) and Eyhorne Street (Hayden 2006b, 24), and also in the Middle Iron Age enclosure at Beechbrook Wood (Brady 2006a, 27).

Finds from later stages of textile production were rather fewer. The only item possibly connected with

textiles is a probable bone needle from West of Northumberland Bottom (Keily and Richardson 2006a, 9). Though only a limited number of sites of later prehistoric date have yet been published in full from Kent, such a low number of spinning, weaving and cloth working implements is not uncommon.

Bone and antler

Though objects of bone and antler are well known from many later prehistoric sites in southern Britain, they were again very rare in the HS1 project. At Tollgate there was a worked antler point, which had been trimmed, rounded at the end and drilled as though to form a handle for something, as well as a fragment of waste from antler-working (Keily 2006a, 11). At White Horse Stone a sheep horn core and red deer and roe deer antlers showed evidence of working, while fragments of burnt antler may have been from antler handles for tools (Hayden 2006a, 156). Otherwise the only evidence was at the Early Iron Age site at West of Northumberland Bottom, which produced a bone pin or needle and a 'gouge' or point, both from the same pit (Keily and Richardson 2006a, 13).

The evidence for deer has been discussed earlier in the sections on the environment and food resources; they seem to have been present at least in the area west of the Medway. Domestic animals, especially sheep and cattle, were present throughout the route, and would have provided a ready source of raw material for a wide range of products. It is surprising, therefore, that so few artefacts were found.

Leather, wood and basketry

Although no remains of any organic materials such as wood, leather and fibres were found in prehistoric contexts, it is reasonable to presume that they played a significant part in the material culture of the period. It is perhaps surprising that so few tools possibly associated with the exploitation of these materials were found. The set of iron knives and awls from Pit 6132 at White Horse Stone (see Fig. 4.34) has already been mentioned, but otherwise the evidence seems limited to a single bone tool of a type sometimes referred to as a 'gouge' from West of Northumberland Bottom (Keily and Richardson 2006a, 13); the true function of these objects, and they may have been multi-purpose tools, is not known, but they may been used, among other things, for basket weaving.

Unknown technologies

Perforated clay slabs, often surviving in only fragmentary form, have become a well recognised element of the material culture of the Late Bronze Age and the Earliest Iron Age in the region of the Thames Estuary, though their true function or functions are not yet established (Champion 1980, 237–8 and figs 8–9). The HS1 project has added two more sites to the list of approximately 40 where these objects have now been found: four fragments were found in the isolated Late Bronze Age Pit 537 at Tollgate (Bull 2006b, 11; Keily 2006a, 14), while three fragments were found at Cobham Golf course, again in Late Bronze Age contexts (Davies 2006, 12; Keily *et al.* 2006, 5–6).

The slabs all seem to conform to a general pattern, being about 150–200mm by 120–150mm, where dimensions can be established, and up to about 20–25mm thick in the middle, tapering somewhat towards the edges. In some cases one or two edges have semicircular grooves, possibly a result of the method of manufacture rather than a functional trait. Some appear to have regular arrays of five or six perforations, while on others the pattern is more irregular. Various functions have been suggested, including cooking, ventilation or some industrial process involving heat or fire, such as salt-working or metalworking. The association of the slab fragments at Tollgate with fire debris, including charcoal, burnt gravel and fire-crackled flint, and at Cobham again with burnt flint, supports the suggestion of a connection with a pyrotechnic technology, well documented at Highstead (Bennett *et al.* 2007, 286). Despite the fact that one of the Cobham fragments is made in a briquetage-like fabric, and the strongly estuarine distribution of the finds, a connection with salt extraction seems unlikely in view of the distance of some of the finds from salt water, for example at Runnymede Bridge (Needham 1991, 152), Queen Mary's Hospital. Carshalton (Adkins and Needham 1985), or the Springfield area of Essex (Lavender 1999; Manning and Moore 2003), let alone on the west London gravels at Yiewsley (Champion 1980, 237–8 and fig. 8).

The distribution of the slabs shows a general congruence with concentrations of Late Bronze Age field systems mapped by Yates (2007, 20–8, 73–7, 112–6) from the West London gravels through the coastal zone of the Thames to the Wantsum, with clusters inland in the Wandle Valley around Carshalton and in the Chelmer basin around Springfield, areas which also show marked concentrations of deposition of Late Bronze Age metalwork. There is a particular association with the defended enclosures or ringworks of the Late Bronze Age, or with sites very near to them: Queen Mary's Hospital, Carshalton, and Highstead Enclosure B70, both cited above, as well as South Hornchurch (Guttman and Last 2000), Mucking North (Bond 1988) and South Rings (Jones and Bond 1980), and Springfield Lyons (Buckley and Hedges 1987) have all produced examples, sometimes in considerable quantities. The perforated slabs have a remarkably constricted distribution in space and a very limited lifespan; perhaps in some way they are associated with the explosion of agricultural and technological intensification that characterised much of the Lower Thames area at the end of the Bronze Age. Further research into the contexts of these enigmatic objects will be required to investigate this suggestion and identify their actual function.

Material culture

The number of later prehistoric artefacts registered as small finds seems rather small compared to better known regions in Wessex or the Thames Valley (Table 4.10). This subjective impression needs to be tested, however, by detailed analysis of comparative volumes of earth excavated. As was pointed out above, the pits from the Late Bronze Age and Iron Age sites are small compared to those known from other regions and the occupation sites had few ditches; with the exception of Beechbrook Wood, there were no enclosed sites. The fills of pits and ditches are the contexts for the vast majority of finds, so it would perhaps not be surprising if the quantity of finds was small. On the other hand, there may be more complex reasons for the incorporation of small finds into the archaeological record, and this question will be discussed further in the section below on deposition, where it will be suggested that the range and quantity of finds is not a representative sample of what might originally have existed.

The tools of technological production, such as loomweights and spindlewhorls, have been discussed above. In this section, discussion will turn to items that were used for other purposes in everyday life.

Clothing and adorning the body

Though there was plentiful evidence, discussed above, for the production of textiles, it is hardly surprising, given the environmental conditions, that no actual fragments of clothing were discovered. The nearest that we get to the clothing of the prehistoric body is in the artefacts used to fasten or adorn the clothes. In the Middle Bronze Age these were pins, and examples of possible bronze pins of this date were found in the top filling of the waterhole at the Thurnham villa site (Northover in Booth *et al.* 2006, 6-7) (see Fig. 4.39), in a highly corroded form at Sandway Road (Northover and Shaffrey 2006, 3), and also, possibly unfinished, at Beechbrook Wood (Diez *et al.* 2006, 3–4). These finds fit well with others from Kent: in the Middle Bronze Age pins have been found at sites in Ramsagate and St Margaret's-at-Cliffe (Hawkes 1942; Rowlands 1976, Vol. 1, 84–5), Walmer (Parfitt 1994) and Princes Avenue, Dartford (Needham and Rigby in

Table 4.10 Later prehistoric artefacts, other than pottery, briquetage and flint

Site	*MBA and M/LBA*	*LBA*	*Earliest IA*	*Early IA*	*MIA*
West of Northumberland Bottom	Clay: cylindrical loomweight			Clay: triangular loomweight; Bronze: LTI brooch, ring; Bone: needle, gouge; Stone: saddle quern fragments	
Tollgate		Clay: perforated slab		Iron: LTI brooch, ring, fragments (?awl); Stone: sharpening tools (?), quern fragment (?), flint hammerstone; Antler: handle	
Cobham Golf Course		Clay: perforated slab, cylindrical loomweight			
White Horse Stone	Clay: cylindrical loomweight			Clay: spindle whorls, triangular loomweights; Stone, whetstone and quern fragments, sling-shot; Shale: disc and bracelet; Antler: fragments (?handles); Iron: knives, awls, nails, spikes, sheet; Bronze: ring-headed pin, rivet	
Thurnham	Bronze: knife and pin				
Sandway Road	Bronze: rod (?pin); Stone: quern fragments				
Eyhorne Street				Clay: triangular loomweights; Iron: dagger	
Beechbrook Wood	Clay: cylindrical loomweights; Bronze: blade and pin shaft; ring and ?tweezers (date uncertain)	Clay: pyramidal - loomweights; Stone: quern and rubber fragments			Clay: triangular loomweights
Blind Lane				LTI brooch	
Little Stock Farm			Bronze: strip (bracelet?)		

Hutchings 2003, 63–4). In the Late Bronze Age, simpler forms of flat-headed pin were in use in Kent, as at Mill Hill, Deal (Champion 1980, fig. 5.1), or in the form of moulds for multiple castings at Highstead (Needham in Bennett *et al.* 2007, 258–65), though no pins of this age seem to have been found in the HS1.

In the Early Iron Age, the only pin recovered was the small copper alloy ring-headed pin from the group of metal objects in Pit 6132 at White Horse Stone (Fell *et al.* 2006, 4–5; Hayden 2006a, 159) (see Fig. 4.34). The ring-headed pin is a well known form of this period, and well documented in other regions, so it is perhaps surprising that this is the only example so far known from excavations in Kent; the Portable Antiquities database also contains no example.

The HS1 work did, however, produce three examples of La Tène I brooches (Fig. 4.36), from West of Northumberland Bottom (Keily and Richardson 2006a, 12), Tollgate (Keily 2006a, 11) and Blind Lane (Diez in Hayden 2001, 34). Though others have been found in Kent, these are the first known examples from controlled excavation; the number of known associations for such brooches is not large nationally (Haselgrove 1997, 69–70), and these finds are therefore important for establishing a dated ceramic chronology, as discussed above. If the HS1 finds are compared with the pattern of Early Iron Age brooches from the whole of Kent, they conform well to previously published finds (Hull and Hawkes 1987; Kelly 1991; Parfitt 1999), and to those recorded in the Portable Antiquities database. The comparatively large numbers of the earliest forms of the safety-pin brooch, those of Hallstatt D types, coupled with the almost total absence of the ring-headed pin in Kent may suggest that the switch from pins to brooches took place quite early. This is only to be expected in the most south-easterly quarter of the country, nearest to the continent, but more detailed study in other regions further inland would be needed to test this suggestion.

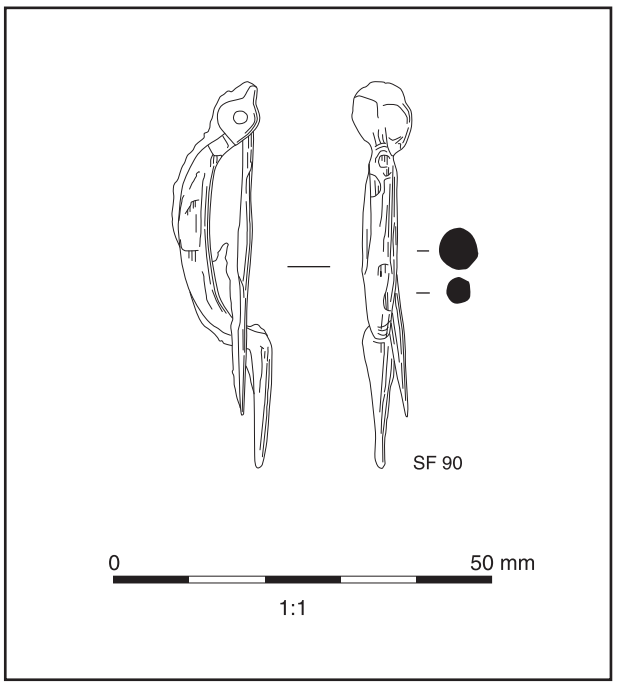


Figure 4.36 La Tène I brooch from Tollgate

Apart from the pins and brooches, there were few other items of adornment for clothing or the body. There was a strip of copper alloy at Little Stock Farm, probably from a bracelet similar to one from All Cannings Cross (Cunnington 1923, 119 and pl. 18, 5), and at White Horse Stone there was a fragment of a shale bracelet (Hayden 2006a, 164); otherwise the only other finds were small rings of bronze or iron found in Iron Age contexts at West of Northumberland Bottom (Keily and Richardson 2006a, 12) and Tollgate (Keily 2006a, 12), and another of bronze at Beechbrook Wood (Northover in Diez *et al.* 2006, 5), though not closely datable. Their precise function is unknown, and they may have nothing to do with bodily adornment, but equally they may have been used to adorn clothing, hair or the body.

Eating and drinking

The evidence for the preparation and consumption of food and drink is, with the exception of pottery, rather sparse. The record of possible hearths and ovens has been discussed earlier. Querns were derived from local sources, especially in the Greensand; all the fragments appeared to be from saddle querns and rubbers, with no evidence of the introduction of the rotary quern. The iron knives found at White Horse Stone (Fell *et al.* 2006, 5) may have been multi-purpose implements, but among those uses would have been the preparation of food.

Pottery took on a new social importance in the Middle Bronze Age and a more prominent role in the serving and consumption of food, roles which were enhanced further in the Late Bronze Age (Barrett 1989; Woodward 1995). Though the Middle Bronze Age assemblages are quite modest in size, the HS1 evidence fits this wider pattern. The majority of the vessels fall into two size groups, with estimated rim diameters of 10–16cm and 20–28cm (Morris in Booth 2006a, 90–1). There are few surviving indications of usage, but sooting and burnt residues show the use of some pots in cooking. The presence of a row of perforations just below the rim on some vessels may be linked to the use of a cover to protect stored food. The one large jar outside the normal range was used as a funerary urn at Tutt Hill; it is not clear whether it was specially made for this purpose, or an example of a rarer class of large storage vessels. There is one example of a very small vessel, *c* 6cm, perhaps showing the occasional use of pottery for individual consumption rather than cooking and serving. Most of the vessels would be classed as coarse wares, but finer vessels did exist, such as the globular jars from Sandway Road (Morris in Booth 2006a, 46), showing the use of pottery for more symbolic and social purposes in Kent as elsewhere.

In the Late Bronze Age the range of vessels increased considerably, with the proliferation of smaller and more open forms such as bowls and cups, and large jars

(Morris in Booth 2006a, 91–7). As in the Middle Bronze Age, there is a little evidence for use, and both jars and bowls seem to have been used for cooking. The increasing frequency of the smaller forms of bowls and cups shows an increasing use of pottery in the serving of food and drink and in individual consumption. Though the frequency of decoration is never high, it appears to increase throughout the Late Bronze Age and into the Earliest Iron Age. By the end of the period there is evidence to suggest a general increase in the size of vessels, continued in the Early Iron Age.

In the Early Iron Age, the pottery is marked by a decline in the use of decoration, but a continued increase in the size of the vessels (Morris in Booth 2006a, 98–100). The jars and bowls are substantially larger than those reported from contemporary assemblages elsewhere in southern England, with diameters on average 8cm wider, and the assemblages also include a higher percentage of large and very large jars over 30cm in diameter (Fig. 4.37). The reasons for this are hard to define. It might be a functional response to regional variations in the style of cooking or serving food, which required larger volumes for the bulk of the food. Alternatively, it might represent the social practice of serving more food, perhaps to feed a larger family group or perhaps in response to local customs. With so little evidence yet available about how food was prepared or about the size of the family or the household, it is difficult to decide.

One other possibility is that it may be an imitation of practices in continental Europe. There is certainly a well established similarity in form and decoration of pottery in Kent and in northern France (Leman-Delerive 1984; Hurtrelle *et al.* 1990; Blancquaert and Bostyn 1998), though more detailed analyses of vessel sizes would be needed to substantiate this hypothesis. As well as the general similarity of pottery, there are specific traits of surface finishing, including rustication, red slip and occasional polychrome painted surfaces, that are common to both sides of the Channel. There are also two individual vessels that demonstrate more marked imitation of continental culture: at Eyhorne Street there was a unique small conical cup which can be best paralleled in the cemeteries of the Marne and Aisne region of France (Morris in Booth 2006a, 45 and fig. 3.8c, EYH/2), while at White Horse Stone (Morris in Booth 2006a, 44 and fig. 3.7f, WHS/147) there was a rim sherd of a distinctive *coupe à bord festonné* or *coupe en parasol*, a type well documented in Early La Tène France, especially the north, but not previously found in England (Lambot 1988; Milcent 2005). Both vessels are in fabrics that are, or could be, local, so they may well be copies rather than actual imports. It is significant that the best evidence that we have for cross-Channel connections and the influence of continental styles is in brooch forms for the fixing and adornment of clothing and in the vessels for the socially important act of drinking.

In the Middle Iron Age, the vessel sizes reduce again, partly because of a lower proportion of large and very large jars, but also because of a predominance of smaller bowls and cups (Morris in Booth 2006a, 101–3). This picture may be distorted because our understanding of the repertoire of Middle Iron Age potters is almost entirely dependent on one large assemblage from Beechbrook Wood, which may not be typical. Nevertheless, the pottery of this phase is dominated by open jars and bowls, including saucepan pots more typical of the area further west. This limited range is very different from what emerged in the Late Iron Age, and although evidence is needed from more sites to give greater confidence, the

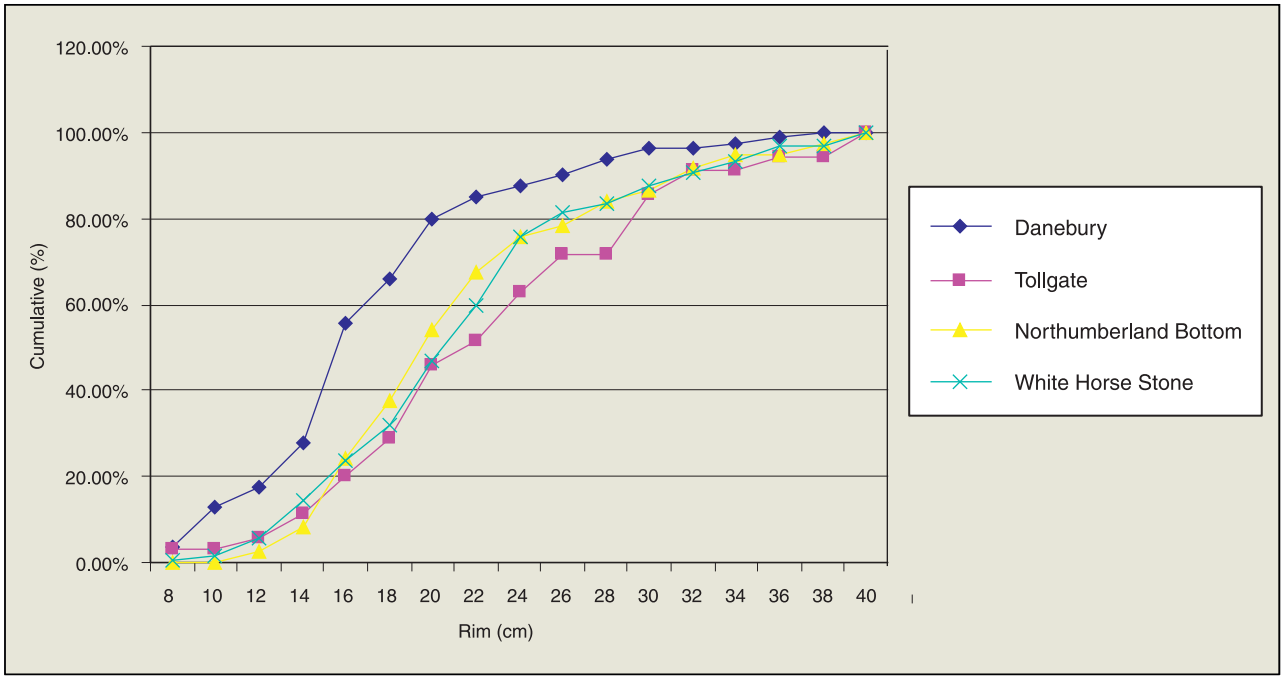


Figure 4.37 Cumulative percentage frequency of rim diameter size for Early Iron Age assemblages from Danebury and HS1 sites

changes in ceramic technology and repertoire, as well as in the nature of what was eaten and drunk and the social context in which it was consumed, were probably very similar in Kent to those described by Hill (2002) for the Late Iron Age in the area north of the Thames.

Defence and attack

Weaponry, whether for warfare or hunting, is seldom in evidence on later prehistoric settlement sites, and the only examples from the HS1 all occur in special deposits, which will be discussed in more detail in the next section. Reference has already been made to the deliberate filling of the waterhole at Thurnham with a layer of flints that contained two Middle Bronze Age bronze items. One of these was the blade of a dagger or short dirk (Lawrence 2006, 15–17; see Fig. 4.39).

One of the most unusual artefacts is the iron dagger found in pit 175 at Eyhorne Street (Hayden 2006b, 23–4; see Fig. 4.25). Iron Age daggers have been distinguished from swords by being designed for multi-purpose cutting and stabbing, and having a blade length between 130 and 305mm (Stead 2006, 5). They are comparatively rare objects. An important group from the River Thames and others totalling 40 items were discussed by Jope (1961) and there have been occasional further finds since, in particular from rivers (Fitzpatrick 1998-2003), burials in East Yorkshire (Stead 1991, 71), and occasional metal detector finds (Babb 2001, plus two others recorded in the Portable Antiquities database). Daggers have also been rare in settlement excavations, even those producing substantial assemblages of iron work. At South Cadbury (Barrett *et al.* 2000, 236) two daggers were found, plus possible fragments of three others, but at Maiden Castle (Wheeler 1943, 270–86 and especially 277; Sharples 1991, 162–5) the blades appear to belong to swords rather than daggers. Interestingly, there do not seem to be any daggers recognised in the extensive assemblages of ironwork from Danebury (Cunliffe 1984, 346–71; Cunliffe and Poole 1991, 333–54), despite the presence of many knife blades. Daggers are well represented as settlement finds in western Britain, especially in Somerset (see references in Barrett *et al.* 2000, 236) and north Wiltshire, as at Groundwell Farm (Gingell 1981, fig. 18, 9), but are rare elsewhere. Another example from Kent was a 19th-century find in an iron hoard at Bigberry (Thompson 1983, fig. 19, 53), suggesting the type may have survived into the Late Iron Age. The example from Eyhorne Street matches the other known finds well, but it is difficult to know whether it was an oddity in the region or an example of a type that was more common than its occasional deposition might suggest.

The only other item is a sandstone pebble shaped like a sling shot, found with human remains in a pit at White Horse Stone (Hayden 2006a, 164). Sling shots are well known from hillforts such as Maiden Castle (Wheeler 1943, 48–51; Sharples 1991, 232) and Danebury (Cunliffe 1984b, 398, 425–6; Cunliffe and Poole 1991b, 370, 404), where they had a defensive function, and there are examples from Oldbury in Kent (Ward Perkins 1944, 166). They may well have been used in many other places and for other purposes, possibly hunting.

The only clear evidence for inter-personal violence is derived from the human remains (Skeleton 2030) in Pit 2031 at Little Stock Farm (Ritchie 2006, 8; see Fig. 4.22). This was the skeleton of an adult woman, aged about 40 or more, and dated to 770–400 cal BC (NZA-19915). Two of the parietal vault fragments show an unhealed wound from a 'pick-like' implement. This adds an important piece of evidence to Redfern's argument (2008) for the level of violence inflicted on women, though at a rather earlier time than her data from Middle and Late Iron Age Dorset. It seems likely that other finds, such as the adult female from Fairfield Park, Stotfield, Bedfordshire (Witkin in Webley *et al.* 2007, 100), who had suffered a depressed fracture to the parietal bone, will extend this picture even further.

Deposition and site formation

The nature of the later prehistoric archaeological record, and in particular the processes that led to its formation, have been the subject of considerable interest in recent years. A number of distinct, but partially overlapping, debates have explored various facets of this problem, but the different strands of the arguments have never been brought together in a unified study.

One long-standing debate has been about the interpretation of finds of bronze artefacts. It has been dominated by discussion of the hoards, though this has largely focussed on questions of the assemblage and formation of hoards rather than their deposition and non-recovery (Barber 2003, 43–63); too often there has been an assumption of burial for safe-keeping, with an intention to recover which was frustrated by circumstances. A parallel debate has concerned the interpretation of bronze finds, whether single objects or larger groups, in wet and watery places such as rivers and bogs (Bradley 1998b); here, unlike the hoards, a 'ritual', or at least a less utilitarian, explanation has been accepted, especially in the light of spectacular discoveries such as those at Flag Fen (Pryor 2001). Much less attention has been paid to the explanation of single finds on dry land, though with the explosion of discoveries as a result of the boom in development-related excavation, more and more have been recovered in controlled circumstances from settlement sites (Barber 2003, 65–9). In view of the widespread practice of recycling, it seems likely that only the smallest fragments would have been the result of accidental loss or deliberate discard, suggesting the possibility of other forms of purposive deposition: the increasing evidence for the archaeological record of settlement sites has also confirmed the unusual nature of finds in places such as rivers. Needham (1992, 60–5) recognised that many deposits on settlement sites were 'event-marking', related to important moments in the life of a site, such as foundation deposits or deposits marking the closure or filling of a feature.

Another long-standing debate has been over the question of burial traditions in the period after the use of round barrows. It has long been recognised that the practice of cremation burial, often with the ashes placed in a ceramic urn and often in or near a barrow, continued in the Middle Bronze Age; thereafter there appeared to be no readily recognisable tradition with the exception of some regional groups such as in East Yorkshire and western Cornwall, until the Late Iron Age, when cremation burial was again adopted in the south-east of England (Whimster 1981). There was considerable debate about the human remains that were known, such as skeletons placed in pits on Iron Age sites (Wilson 1981; Wait 1985), and considerable speculation about the possibility of practices such as excarnation (Ellison and Drewett 1971; Carr and Knüsel 1997; Lally 2008; Madgwick 2008). For the Late Bronze Age, Brück (1995) showed that human remains, both burnt and unburnt, were more frequent than had been imagined, but formal burials were less common than use of the remains in other contexts as a ritual resource. More recently, with more excavation and the wider application of radiocarbon dating, there has been a growing mass of evidence to suggest that formal burial was not as rare as had been expected; for instance, inhumations at Yarnton (Hey *et al.* 1999) and Suddern Farm (Cunliffe and Poole 2000, 152–74) are securely dated to the Iron Age. More unusually, the possibility of mummification and the curation of human bodies has been raised (Parker Pearson *et al.* 2005; Lally 2008). Most of the attention has been on whole bodies and formal disposal rites; while the presence of human body parts on many archaeological sites has been recognised for some time, there has been much less attention paid to their interpretation.

A third debate, largely limited to the Iron Age and focused on the evidence from Wessex, has concerned the classification and interpretation of pits and their fillings. The excavated pits at Danebury provided overwhelming evidence for repeated patterns of behaviour, especially in the deposition of whole animal skeletons or articulated joints and of human skeletons or body parts (Morris 2008). In an influential monograph Hill (1995) took the analysis of Iron Age pits in Wessex much further and argued that the animal skeletons and human bodies were part of a much more complex pattern of deliberate deposition of pottery, metalwork and other small finds. He also extended his analysis to enclosure ditches and demonstrated the existence of further patterns of deliberate deposition there. Despite the impact of this work on the interpretation of Iron Age sites, there have been surprisingly few detailed analyses (Gwilt 1997; Hamilton 1998; Rees 2008) of other regions to explore the wider validity of his conclusions.

These debates have mostly been rooted in the recognition of patterns in the evidence (or the absence of any evidence) and have sought to find explanations for them in the realm of human motivation or intention. Studies of the processes involved, the intermediate stage between the observed pattern and the human motivation, have been less frequent. Whittle (in Cunliffe 1984a, 128–46) distinguished between natural and artificial processes of pit filling at Danebury, and subsequent work at that site (Cunliffe and Poole 1991a, 161–2; Poole in Cunliffe 1995, 249–75) recognised that most pit fills represented a complex combination of these processes. A different model has been developed in the context of the excavation of the hillfort at Segsbury (Lock *et al.* 2005, 124–32), based on intentionality and knowledge of the nature of the deposits. Using a more empirical approach, most attention has been paid to the evidence offered by study of the pottery, in particular patterns of breakage, abrasion, and size and weight of the final sherds. A pioneering study by Bradley and Fulford (1980) was not systematically followed up by other similar work. Middens were investigated in detail at Runnymede (Needham and Spence 1996; 1997) and at Potterne (Lawson 2000; Waddington 2008) and elsewhere in Wessex (Tullett 2008), but these are comparatively rare features on other sites. Sherd abrasion was investigated at Danebury (Cunliffe 1995, 7–13) to investigate residuality and its impact on phasing and chronology, and the nature of sherd assemblages in individual contexts was an important part of Hill's attempt to define unusual assemblages in pits (Hill 1995, 51–2). Brudenell and Cooper (2008), in a detailed critique of the concepts involved in the discussion of 'structured deposition' in later prehistory, have now offered a more subtle analysis of the pottery and burnt bone on Late Bronze Age sites in Bedfordshire (Cooper and Edmonds 2007), arguing that the processes of site formation were much more complex and varied than usually presumed, and that it is therefore much more difficult to distinguish 'special' or 'unusual' deposits from the 'normal'.

Yet another theoretical debate has revolved around our understanding of the deposits that are often referred to as 'special' or 'deliberate' or 'placed', and in particular the concept of 'ritual'. The term, too often used as an unthinking description for those features of the archaeological record that do not seem to have an obvious utilitarian explanation, is based on the modern separation of the secular from the ritual. Applied to the later prehistory of Britain, this is a serious anachronistic misconception. From the decline in the use of round barrows in the 2nd millennium to the appearance of temples in south-eastern England in the 1st century BC, there are no sites that have an exclusively 'ritual' or non-domestic function, with the possible exception of sites such as Flag Fen (Pryor 2001) or Fiskerton (Field and Parker Pearson 2003), used for the deposition of artefacts in water. The secular and the ritual were intimately entwined (Bradley 2005). Brück's (1999a) discussion of the concept of ritual provides a basis for understanding the nature and context of repeated acts of 'site maintenance', even if we cannot understand the significance that they held for the people performing them. She had also (Brück 1999c) explored some of the repeated patterns of activity and deposition associated with houses of the Middle Bronze Age, developing the concept of the lifecycle of the house and practices of 'odd' deposition to

mark key events in that history, reminiscent of Needham's concept of event-marking deposition of bronze objects.

In the context of these overlapping and intertwining debates, it is perhaps surprising that one other concept of contemporary theoretical concern has not been more explicitly explored with reference to the later prehistory of Britain. The idea of fragmentation has been well developed for earlier periods and other areas (Chapman 2000; Chapman and Gaydarska 2007), but has had little explicit discussion in later British prehistory, except by Brück (2006). Hill (1995) emphasised what a small percentage of prehistoric material culture survived, but his point was to ask why anything at all was found, rather than to enquire what happened to the rest. In view of the rarity of finding any object complete, except perhaps in graves, hoards and ritual offerings, it is perhaps odd that this question has not been more actively investigated.

This brief review of recent work concerning the nature of object deposition and the formation processes of later prehistoric sites demonstrates the complexity of the issues. Successive attempts to pick out 'special' or 'odd' deposits have clearly shown that the archaeological record is not simply the product of disposal processes that are intuitively comprehensible to modern

Table 4.11 Major examples of 'unusual' deposits

Site	*MBA and M/LBA*	*LBA*	*Earliest IA*	*EIA*	*MIA*
West of Northumberland Bottom				Pit 147: bones of red deer, wild boar, pine marten, cat, sheep, pig, horse, Neolithic and EBA flint tools;	
Cuxton				Pit 343: large sherds of >50 vessels, many exposed to extreme heat	
White Horse Stone				Pit 6132: cremated human remains in bowl, six iron tools, bronze ring-headed pin, antler ?handle, deposit of almost fully processed wheat; Pit 8012: human skull and long bones in primary fill, also flint hammerstone and slingshot	
Thurnham	Context 10288: bronze knife and pin and Neolithic flint tools in backfill of waterhole				
Eyhorne Street				Pit 170: torso of cow, legs of horse (?articulated); Pit 175: bent iron dagger, fish tooth, large quantity of pottery; Pit 226: bisected pottery bowl, small cup	
Sandway Road	Context 357704: large deposit of pottery, querns, bronze				
Beechbrook Wood	Pit 237: large deposit including pottery, loom-weights, bronze fragment, cremated human remains, charred plant remains				Context 2213: large deposit of >30 vessels
Blind Lane				LT I brooch in posthole	
Little Stock Farm			Pit 2441: human skull fragments in gatepost hole; Pit 2104: placed deposit of decorated vessel; Pit 2304: >8 decorated vessels, nearly complete, and bronze strip (?bracelet); Pit 20231: human skeleton in pit; Pit 2031: human radius in pit		

minds, but the understandable emphasis on the distinctive has oversimplified the complexity of the processes involved and the variety of forms that could be the result of more 'normal' processes. A full understanding of the patterns in the archaeological record of the HS1 sites would demand a much larger research project than has been possible here, including a detailed analysis of site formation processes to establish the range of what is normal and therefore to distinguish the abnormal. Though the HS1 sites have produced some important evidence for deposition practices, the sample is still quite small (Table 4.11), and a more wide-ranging approach, to include especially a wider range of Late Bronze Age sites and the many Iron Age pits excavated elsewhere in Kent, would be more productive. In the following sections, therefore, some themes of particular relevance to the current debates summarised above will be selected, including the physical context of the deposits and the nature of the items deposited, as well as the possible events with which they were associated. To quote the words used an a similar context, 'this is not a wholly sound method to try and understand prehistoric rationales, but the great amount of groundwork that would have to be done makes a methodologically robust approach unfeasible for this study' (Gerritsen 2003, 83).

Pits

No detailed scheme-wide analysis of pit fills from all sites has yet been undertaken, though the pits at White Horse Stone and Eyhorne Street have been extensively analysed. In view of the comments above, the following observations may be little more than anecdotal examples of the more obvious sorts of patterning that may be seen. Fuller understanding of their significance must await the completion of the wider programmes of research and analysis of pits from both HS1 sites and more widely in Kent.

At White Horse Stone several different patterns of pit fill could be recognised (Hayden 2006a, 146–52). The central area of massed intercutting pits was difficult to interpret, but many of the pits had layers of sterile chalk, presumably from the digging of other pits; the function of this area is unknown. Other pits had clearer patterns of fill. In some areas the pits showed very little material in their lower fills, but combinations of pottery and animal bone in the upper layers, sometimes with charred grain or human bone. Other pits showed the opposite pattern, with finds concentrated in the lower fills, while a small number had finds deposited throughout the vertical sequence. There was no obvious correlation with the shape or size of the pit, and it was in fact the combination of human bones and small finds, discussed in more detail below, that proved to be the most striking pattern. Large quantities of slag from iron smelting and smithing were found in pits in Area 19 on the eastern side of the site, with very little from features anywhere else. Though other explanations may be possible, this marked spatial clustering seems most likely to have resulted from the activity of iron-working in this area, and the discard or rapid incorporation of waste material into the nearest convenient hollow.

At Eyhorne Street (Hayden 2006b, 22–7) there were eight pits, fairly shallow although possibly truncated. Finds occurred mostly in the upper fills, with few in the lower levels (see Fig. 4.25). There was some variation in the nature of the fills, but generally there was a negative correlation between the quantities of charred grain and of pottery, suggesting deliberately different processes of filling. Three pits stood out for the distinctive character of their contents. Pit 226 was the largest pit and contained two pots in the lower fills. One was an S-profile bowl with a footring, but it had been bisected vertically, leaving a complete half pot to be deposited. As well as this unusual treatment, it was the only vessel at the site in a particular quartz fabric. With it was a small cup, a unique example of a form more common on the continent, and again the only vessel at the site in a particular grog and quartz fabric. Both vessels may have had their own individual histories and significances, which may have been the reason why they were selected for deposition in this way.

Pit 175 contained an iron dagger in its upper fills, which had been bent into a near circle before being placed in the pit. It also contained a quantity of pottery that was considerably above average and a collection of faunal remains that included a tooth from a predatory fish of unidentified species. It seems unlikely that this resulted from normal food waste, and it was more probably an exotic oddity specially selected for deposit here. Pit 170 was different again, containing a large collection of animal bones in its middle fills. Though no longer articulated, this seems to have derived from the torso of a cow and the rear legs of a horse.

Pits at other sites have been less exhaustively analysed, but it is possible to pick out some important 'abnormal' deposits. Perhaps the most striking example is that of Pit 147 at West of Northumberland Bottom

Figure 4.38 Northumberland Bottom: Iron Age pit 147

(Askew 2006, 20–1) (Fig. 4.38). This was a bell-shaped pit, the deepest discovered on the site, and the only one of this form identified on any site; Hill (1995, 67) noted the fact that in Wessex special deposits were most likely to occur in beehive-shaped pits. It contained a highly unusual collection of material. Despite its size, it had a small amount of pottery, comparable in quantity to some other pits, but much less than two others. It had an unusually large assemblage of Late Neolithic or Early Bronze Age flintwork, including a barbed-and-tanged arrowhead; one other pit had a similar quantity of much earlier flint, but these two stood out from all other pits to such an extent that the flintwork seems very unlikely to have been the accidental residue of earlier occupation. The most distinctive feature of the pit, however, was the large and varied collection of animal bone, comprising more than 80% of what was found on the whole site. This included red deer, among which were three partially articulated skeletons of juvenile animals; cattle, including six partially articulated skeletons; and smaller quantities of sheep, pig, horse, wild boar, cat and pine marten. The large quantity of bones, the range of species, the mixture of wild and domesticated, and the presence of partially articulated skeletons, mark this pit out from all others, emphasised even more by the presence of the large collection of earlier prehistoric flintwork. It is tempting to associate the bones with some episode of feasting, possibly also with a celebration of hunting, but the significance of its deposition in this way is more enigmatic. The partially articulated skeletons must have been deposited fairly soon after dismemberment, yet other elements of the filling, such as the small quantity of abraded pottery, would have had a rather longer history of discard and redeposition.

The other pit at West of Northumberland Bottom that contained a large collection of earlier flintwork was Pit 205 (Askew 2006, 18). This also contained two bone artefacts, a 'gouge' and a needle; apart from a worked antler point, these were the only two items of bone or antler found anywhere in the HS1 sites. Their discovery here in association with the flintwork seems unlikely to have been accidental.

At Tollgate the part of the site excavated in the HS1 project will clearly need to be assessed in the light of the further excavations in advance of the A2 improvements (Allen and Donnelly 2009). For the moment we can note Pit 374, where most of the small finds from the site occurred in a single feature, including a La Tène I brooch, an awl, two sharpening tools, a flat pebble with grinding marks and a piece of sarsen used as a whetstone; also in this pit was an unusually large amount of pottery.

There are very few other pits yet published in detail from Kent, so there is little scope for regional comparison and discussion. Moody (2008, 123–4) provides some evidence for Iron Age pit fills in Thanet, in particular for the deposition of human remains, but a much wider study is needed.

Waterholes

One of the most striking deposits was that encountered in the upper layers of a disused waterhole at Thurnham (Lawrence 2006, 15–17; Fig. 4.39). The ramped hollow was filled with a water-lain silt, which unfortunately was not excavated, so there is no dating evidence for the possible earlier use of the feature. Above the silt was a layer of well-sorted flint nodules, smaller at the centre and larger towards the outer edges, up to 0.30m deep and containing between 10 and 15m^3 of flint; above this were further silt layers filling up the hollow. Towards the bottom of the flints at the centre were two bronze objects, a dagger or dirk blade and a pin or needle; these were characteristic products of the Acton Park or early Taunton phase of Middle Bronze Age metalwork, though the pin may have been several decades older than the dagger (Northover in Booth *et al.* 2006, 3–7). Also in the layer of flint nodules was a worn end-scraper of probable Late Neolithic or Early Bronze Age date; while it is possible that it is an accidental inclusion of a residual item from an earlier phase of activity, the lack of other comparable pieces on the site and the carefully sorted and laid nature of the flint nodules suggest that it is another deliberate inclusion.

Deliberate deposits of distinctive material in the fills of disused water features such as wells and waterholes can be matched elsewhere in Kent. In the excavations preparatory to the construction of industrial greenhouses at the Thanet Earth site, near Monkton on the Isle of Thanet, a feature that had been used as a waterhole in the Bronze Age contained a Middle Bronze Age palstave carefully placed in its silts (Rady 2009, 18) and at Swalecliffe a small pot was set at the bottom of a complex of waterhole features (Masefield *et al.* 2003, 71). Rather later in date is the waterhole at Bigberry near Canterbury, where the layers filling the depression contained a bronze harness item (Thompson 1983, 247–250 and fig. 17, 30). In excavations at Iwade in north Kent, feature 1145 was a well or waterhole which contained a single, almost complete fine-ware globular jar of Middle Bronze Age date in its lower fill; there was no other artefactual material, and the bowl must have been a deliberate deposit after the use of the feature as a well. The upper fills contained a collection of 22 struck flint items, including scrapers and a leaf-shaped and a barbed-and-tanged arrowhead (Bishop and Bagwell 2005, 14, 27, 82). The items are characteristic of Neolithic and Early Bronze Age flint industries, but the arrowheads in particular are unlikely to be contemporary. The assemblage cannot have been the result of the accidental incorporation of residual material, but must have originated from the discovery and collection of old artefacts or their long-term curation in society. The upper fills also included Late Iron Age pottery, but however many episodes of filling there may have been and whatever their date, it is clear that the deliberate deposit of unusual items was a part of the appropriate way of marking the end of the use of a well. These examples from the Late Iron Age suggest that the practice was a very long-lived one.

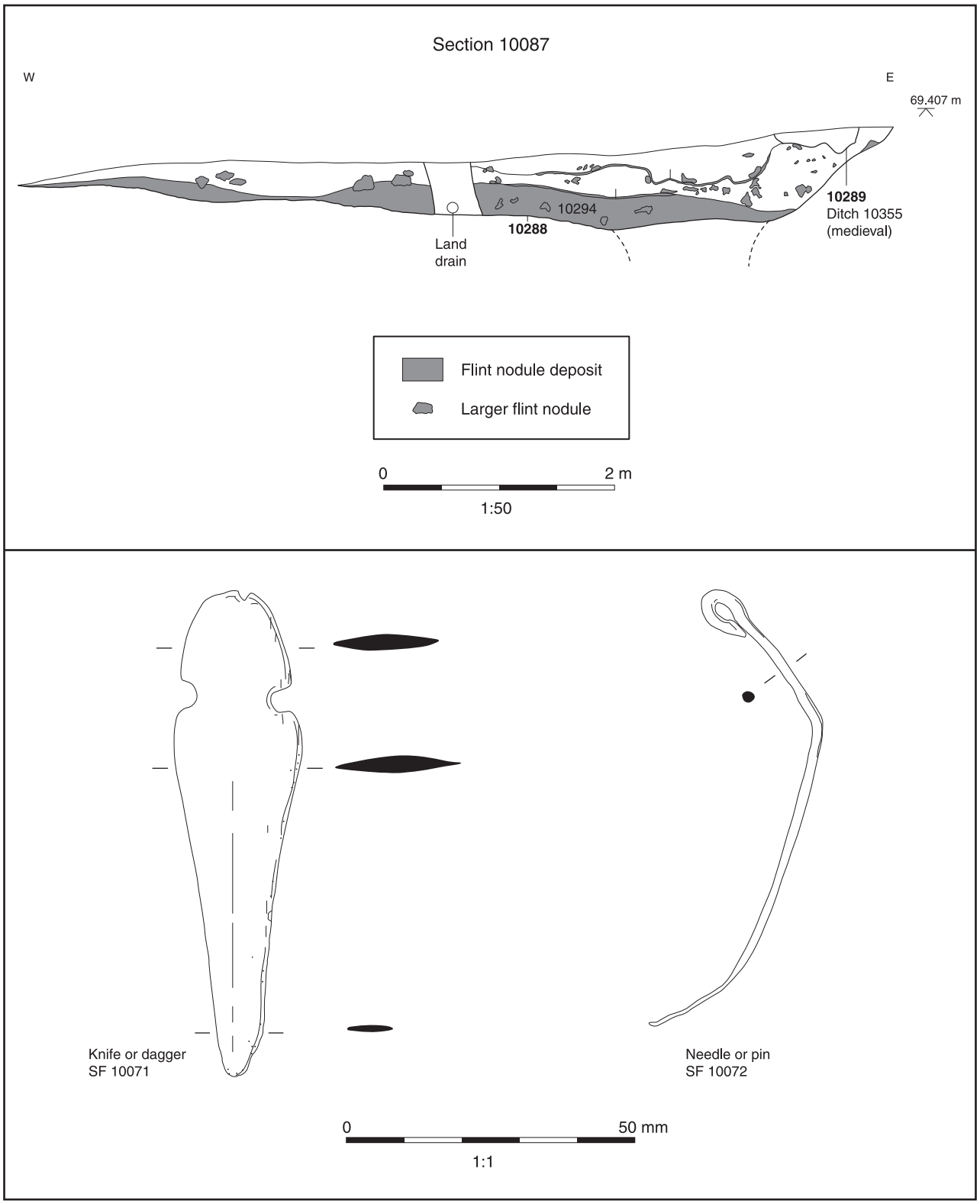


Figure 4.39 Thurnham Roman villa: section through waterhole and Middle Bronze Age metalwork from fill 10294

Pottery

Later prehistoric pottery was found on 21 of the sites investigated (Morris in Booth 2006a, 37–8). It was by far the most common material recovered from later prehistoric contexts, but there has been comparatively little analysis of the processes by which it came to be incorporated into the archaeological deposits. Full analysis of all the sites would be beyond the scope of this report, but some comments can be made about the assemblages and their characteristics, and some of the more 'abnormal' contexts identified against a background of the more 'normal', with attempts at possible explanations.

One way of summarily characterising ceramic assemblages is through calculation of the mean sherd weight (MSW) as a measure of breakage and fragmentation, itself a product of use, disposal and post-depositional processes. The HS1 sites have MSWs in the range 2.0 to 29.2g, although most of them, especially the larger ones in terms of sherd count, range between 5.8 and 16.7g. This corresponds with Hill's (1995, 51–2) observation that MSW tends to vary with the numerical size of the assemblage. Those below 5.8g are mostly small and well worn assemblages, while the one outlier at the top of the range, at 29.2g, is Cuxton, where the Iron Age assemblage is very unusual and will be discussed in more detail below.

The absolute values for MSW of the whole-site assemblages compare well with figures available for other sites. In Kent the figures for the later prehistoric (Middle Bronze Age to Middle Iron Age) component of the ceramic assemblages can be quoted from some site reports or calculated from figures provided: Highstead, 6.3g (Couldrey in Bennett *et al.* 2007, 101); Shrubsoles, 10.1g (Raymond in Coles *et al.* 2003, 22); Kemsley, 19.6g (Macnee in Diack 2006, 25). Elsewhere in southern England we can find 12.6g for Black Patch, Sussex (Ellison in Drewett 1982b, 363); 10.8g and 5.0g for the Middle and Late Bronze Age assemblages respectively at Mile Oak Farm, Sussex (Hamilton in Rudling 2002, 36); 13.8g for the Late Bronze Age site at Reading Business Park (Morris in Brossler *et al.* 2004, 58); 10.5g for the unsieved assemblage at Gravelly Guy (Lambrick and Allen 2004, 261); 20.8g at Watkin's Farm (Allen 1990, 32). Hill's (1995, table 6.7) survey of Iron Age sites in Wessex, concentrating on pit fills rather than whole-site assemblages, gave roughly similar figures in the range 9.3 to 17.9g. Doubtless more systematic research would provide a larger set of statistics, but these figures suggest an approximate range for the MSW of later prehistoric sites, which would be a function of the mechanical properties of the pottery, the patterns of usage, breakage and discard, post-depositional processes, and recovery methods. At this gross level, the HS1 assemblages, with the exception of Cuxton, do not seem out of the ordinary.

A more detailed understanding of the processes forming the archaeological record requires a more discriminating analysis, ideally focusing on individual features and individual contexts within them. The data for such a detailed analysis in the site archives, but it is beyond the scope of this discussion. To illustrate some of the potential, it is possible to note that from the statistics provided for pits and their fills at Tollgate (Bull 2006b, table 3) and Eyhorne Street (Hayden 2006b, table 8 and associated pottery records) there is considerable variation in the quantity and density of pottery in pits within the two sites as well as between them. The explanation for such variability needs much more detailed analysis.

One feature of several of the HS1 sites is the presence of one particular context which contains an abnormally large quantity of pottery, often a significant percentage of the entire site assemblage. In the Middle Bronze Age site at Sandway Road, Context 357704 contained 75 sherds weighing 528g (Morris in Booth 2006a, 46; Trevarthen 2006, 14); the quantity and the weight may not be absolutely large, but these constituted 94% and 99% of the site totals respectively, and the assemblage was a distinctively fine-ware one in comparison to other sites. This localised deposit in a ditch also included a fragment of a quern and two corroded pieces of bronze rod, possibly the remains of a pin, an unusual collocation of pottery and small finds. In the Late Bronze Age at Cobham Golf Course, Pit 137 (Davies 2006, 11) contained pottery amounting to 41% of the site total by sherd count, and 37% by weight. In the Early Iron Age at Tutt Hill, Pit 5 contained more than 3 kg of pottery, representing 53% of the site total by sherd count, but only 27% by weight (Brady 2006b, 20); the MSW of this feature was 2.5g, against a site average of 4.9g, showing that this was some of the most fragmented material on the site. The only significantly large collection of Middle Iron Age pottery was that found in a single large deposit at Beechbrook Wood, where context 2213 contained 18,369g of pottery, with a MSW of 16.8g.

These large dumps of pottery, sometimes together with other important finds, clearly do not originate direct from some significant social activity since the pottery has undergone processes of fragmentation and deposition that must have consumed varying lengths of time. Nevertheless, the act of making such deposits may have had a social significance, and they can be matched on other sites. In Kent, the Middle/ Late Bronze Age site at Kemsley had a similar deposit (239), which comprised 31% of pottery by count and 51% by weight; though it was deposited in the Late Bronze Age, much of the pottery was substantially older (Mcnee in Diack 2006, 41). Further afield, they are known at Lofts Farm, Essex (Brown 1988, 270–1) and Petters Sports Field, Surrey (O'Connell 1986, 14; Needham 1990, 129–30). For the Iron Age, various examples are discussed by Rees (2008, 70) and by Hill (2002, 154). They could be interpreted as event-marking or closure deposits, especially when in the upper fill of enclosure or boundary ditches, but there may also have been an element of major site maintenance about them.

Two other individual deposits also need comment. At Cuxton, a large pit (343) contained a distinctive assemblage of pottery, including sherds of at least 50 vessels, among which were 21 bowls or saucepan pots and 33 jars (Morris in Booth 2006a, 42; Mackinder 2006, 9; see Fig. 4.23). Much of the pottery had been subjected to extreme heat after manufacture, causing many of the vessels to become cracked and twisted. The sherds were comparatively large and unabraded. Although this deposit represents a stage in the post-usage life of the pots much nearer to the point of breakage than is the case with most of the other, much more fragmentary groups, it is still true that no more than 10% of any individual vessel was found in this pit group. This group is clearly different from the other large assemblages discussed above, in the size of the sherds and the heat treatment they had experienced. It is tempting to think of it arising from a single incident: possibly the burning down of a house and its

contents, or possibly a feast associated with a funeral or some other event, after which the pots were deliberately discarded and burnt. Whatever the social context, it seems likely that there was a deliberate fragmentation and selection of pots for deposition in this pit, since the processes of abrasion and dispersal that are normally assumed would not have had time to operate. Less than 10% of any one vessel was found, so at least 90% was treated in some other way; whether it was buried in other pits at the site not located in the excavation, or taken away to other sites as souvenirs of the event can only be a matter of speculation.

At Little Stock Farm, two features could be dated to the Earliest Iron Age by virtue of the decorated pottery (Morris in Booth 2006a, 51–2; Ritchie 2006, 5–6). The small pit or posthole 2104 contained a single vessel, while the small pit 2304 held the remains of at least eight vessels, some of them largely complete, as well as briquetage and a copper-alloy strip, probably from a bracelet. The pots were clearly placed deliberately in these features, and comprise jars and bowls with a high degree of decoration. They were indeed the only groups on the HS1 route that could be assigned to a hypothetical decorated phase of post-Deverel-Rimbury pottery, and add some support to the argument, discussed above in the section on chronology, that such decorated assemblages should be seen, not as a separate chronological period, but as special deposits, distinguished by the use of decorated pottery, within a longer chronological continuum (Brudenell 2008).

Animal bones

Survival of animal bone was generally not very good throughout the route, and no detailed analysis of animal bone deposition has been carried out. It is possible to identify an occasional act of deposition such as the horse skull placed in a posthole of a four-post structure at White Horse Stone (Hayden 2006a, 143), but in the circumstances it is only otherwise possible to make two important points. The first is the completely anomalous nature of the animal bones in Pit 147 at West of Northumberland Bottom (Askew 2006, 20–1; see Fig. 4.38), discussed above in the context of pit fills. Against a background of a comparatively low density of bones of the major domesticated species, with very rare occurrences of wild animals, this pit contained a very large collection of wild and domesticated animals, including the articulated partial skeletons of three red deer and six young cattle.

The other observation concerns the comparative lack of evidence for animal skeletons or articulated bone groups, other than those in Pit 147 at West of Northumberland Bottom. At White Horse Stone, Pit 8080, which was difficult to date but probably belonged to the Early Iron Age, contained the partial skeleton of a sheep, including skull, mandible, vertebrae and ribs (Hayden 2006a, 155). At Eyhorne Street, Pit 170 contained a large quantity of animal bone, which had probably originally been derived from the torso of a cow and the hind limbs of a horse; it was not clear, however, that the bones had been articulated when deposited (Hayden 2006b, 24–5). On the basis of the HS1 sites, therefore, it looks as though the practice of depositing whole or partial animal skeletons, which has attracted so much attention on Wessex sites (e.g. Hill 1995; Morris 2008), did not extend to Kent.

Small finds

It was noted in the discussion above of material culture that there was a very limited number of manufactured items discovered on all the sites together. Some consideration of their deposition and associations may help to clarify whether this a true reflection of a material poverty or whether there were other factors at work in producing the observed record.

A rapid survey of the contexts and associations shows that many of the artefacts were found in deposits that stand out for other reasons as unusual. For the Middle Bronze Age, the two significant bronze objects were placed in the top fill of a waterhole at Thurnham (Lawrence 2006, 15–17; see Fig. 4.39). At Sandway Road (Trevarthen 2006, 14), the remains of a small bronze rod, possibly a pin, were found with cremated human bone and a large collection of pottery in a single dump in the lower filling of a ditch. For the Earliest Iron Age, the decorated bronze strip, possibly part of a bracelet, was found in feature 2304 at Little Stock Farm, together with the abnormal collection of pottery described above (Ritchie 2006, 5–6). For the Iron Age, the pit assemblages have been discussed above, while the associations with human remains will be considered in more detail below. Among the pit finds we can note the find of a La Tène I brooch in Pit 374 at Tollgate with an exceptionally large quantity of pottery (Bull 2006b, 14), and two bone implements, the only ones from the site, in Pit 205 at West of Northumberland Bottom (Askew 2006, 18), with a collection of much earlier flint tools. At Eyhorne Street, Pit 175 contained a bent iron dagger in its upper fill (see Fig. 4.25), together with a much larger assemblage of pottery than in the other pits (Hayden 2006b, 23–4).

Among the finds associated with burials, which will be discussed below, the two spindle whorls with the adult burial 2295 at White Horse Stone (Hayden 2006a, 158), and the group of iron objects, together with a possible antler handle, a whetstone and a ring-headed pin, found with the cremation in 6132 from the same site (ibid., 159), are the only examples of these types of find from the site, or indeed from any HS1 site. Similarly, the fragment of shale bracelet with the human bone in 2130 was unique, as was the sling shot in Pit 8012. Other items found with these burials, including a hammerstone and a fragment of triangular loomweight, were rare discoveries, though not unique.

The recurring pattern of small finds being located in contexts and features that are strikingly abnormal

suggests that they are not random survivals of the suites of material culture in use on the sites at the time, but items carefully selected for deliberate deposition. There is therefore little reason to make inferences from these finds about the abundance or otherwise of material culture in later prehistoric society. Such items seldom entered the archaeological record except by deliberate human acts.

Formal burial of human remains

The only possible example of a cemetery of the later prehistoric period is a small group of burials and other features at Saltwood Tunnel (Riddler and Trevarthen 2006, 15–17; Fig. 4.40), but several other examples of the formal disposal of the dead were found at various sites. In addition, human remains were located in contexts that were clearly not the primary burial site, and these will be discussed in the following section.

The burials datable to the Middle and Late Bronze Age were all cremations (McKinley 2006a, 12–13). At Tutt Hill (Brady 2006b, 15–16) the cut features were severely truncated but one burial contained 7g of cremated bone and charcoal under an inverted bucket urn. Another also contained 7g of cremated bone and some calcined flint, but these were unurned; this was radiocarbon dated to 1440–1210 cal BC (NZA-20102). Both of these are clearly of Middle Bronze Age date, and were found near to the ring ditches of the earlier barrows. Other features near the barrows are more problematic. One feature, Pit 46, contained a much larger amount of burnt human bone, 1288g, and the remains of a bucket urn and other pottery, but because of vandalism the details are not secure; it may represent another urned cremation or something more complex. Other pits nearby, including one dug into the fill of the earlier Bronze Age ring ditch, contained various combinations of pottery and charred plant remains but no human bone; they may be the remains of offerings associated with the barrow and the burials, or of unrelated domestic activity.

Other burials of the Middle Bronze Age were found at West of Northumberland Bottom and East of Newlands Road. At the former site (Askew 2006, 16), a cremation burial placed in an urn was discovered, though there was little other sign of contemporary Middle Bronze Age occupation apart from residual material in Iron Age pits. At the site East of Newlands Road (Morris in Booth 2006a, 47; McKinley 2006a, 50), there was a cremation burial in a Middle Bronze Age bucket urn, and another cremation apparently deposited without an urn, but possibly contemporary. Again, there was little sign of related occupation.

At Saltwood Tunnel (Riddler and Trevarthen 2006, 12) two unurned cremations were identified, though the presence of cremated bone in later graves suggested that many more such cremations may originally have existed. One of these cremations, Grave 3602, was found 75m south of one the earlier Bronze Age ring-ditches, 10055; it was radiocarbon dated to 1410–1210 BC (NZA-20655). It may be associated with the barrow, though it was a considerable distance away; alternatively, it may have been associated with other evidence of Middle Bronze Age occupation activity in the area and unrelated to the barrow.

At Beechbrook Wood (Brady 2006a, 24 and 45), two unurned cremation burials were dated: burial 1294 to 1270–990 cal BC (NZ-20050) and burial 1290 to 1190–920 cal BC (NZ-21507). A similar burial, 1603, was unphased, but may well have been of the same date. In this case there was no association with a previous barrow, but all the burials lay roughly along the line of ditches of the Late Bronze Age field system.

At Pepper Hill, Grave 10314 (Biddulph 2006a, 8) contained pyre debris with a radiocarbon date of 920–800 cal BC (KIA-23932). The discovery of a small quantity of fragmented and abraded pottery of Late Bronze Age date suggests that it may have been related to contemporary occupation.

At White Horse Stone, after a phase of Middle Bronze Age settlement, there were few features that could be confidently dated to the Late Bronze Age. These included two unurned cremations in pits (Hayden 2006a, 118–9). These were assigned to the Late Bronze Age on the basis of radiocarbon dates: Grave 852 dated to 1190–920 cal BC (NZA-21505), and Grave 948 to 1010–830 cal BC (NZA-21492). There were other features also containing small deposits of cremated human bone, but similar features could also be assigned to the Late Neolithic and possibly the Roman period, so their phasing is insecure. In the circumstances, with very limited evidence for Late Bronze Age activity, it is difficult to say much about the context of these cremation burials.

The HS1 sites also produced some important evidence for formal burial in the Iron Age. The largest group of features was at Saltwood Tunnel (Fig. 4.40), where a small cemetery complex was found at the eastern end of the site, adjacent to the earlier Bronze Age ring-ditch 33 (Riddler and Trevarthen 2006, 15–16). A small square ditch (62), about 3m square, may have represented a mortuary enclosure or a barrow. At one point it cut through a shallow pit (1699) which contained charred material and human bone that gave a date of 760–390 cal BC (NZA-20597). The eastern side of the ditch was cut or overlain by five small deposits of charred material, two of which contained cremated human bone; one of these, feature W1726, gave a radiocarbon date of 790–450 cal BC (NZA-20598). These dates are not statistically distinguishable, and the whole sequence must lie in the Earliest Iron Age or the early part of the Early Iron Age. Near this enclosure was a group of eight certain or probable inhumation graves. Bone preservation was very poor, but five of these features contained some human remains and the interpretation of the others is based on their proximity and similarity of shape. Two of the graves, W1732 and W1737, appeared to cut the fill of the square enclosure, though the relationship was not conclusive. Another two of the graves, W1411 and W1421, contained sherds of carinated bowls. While it is possible that these may have been residual material in the

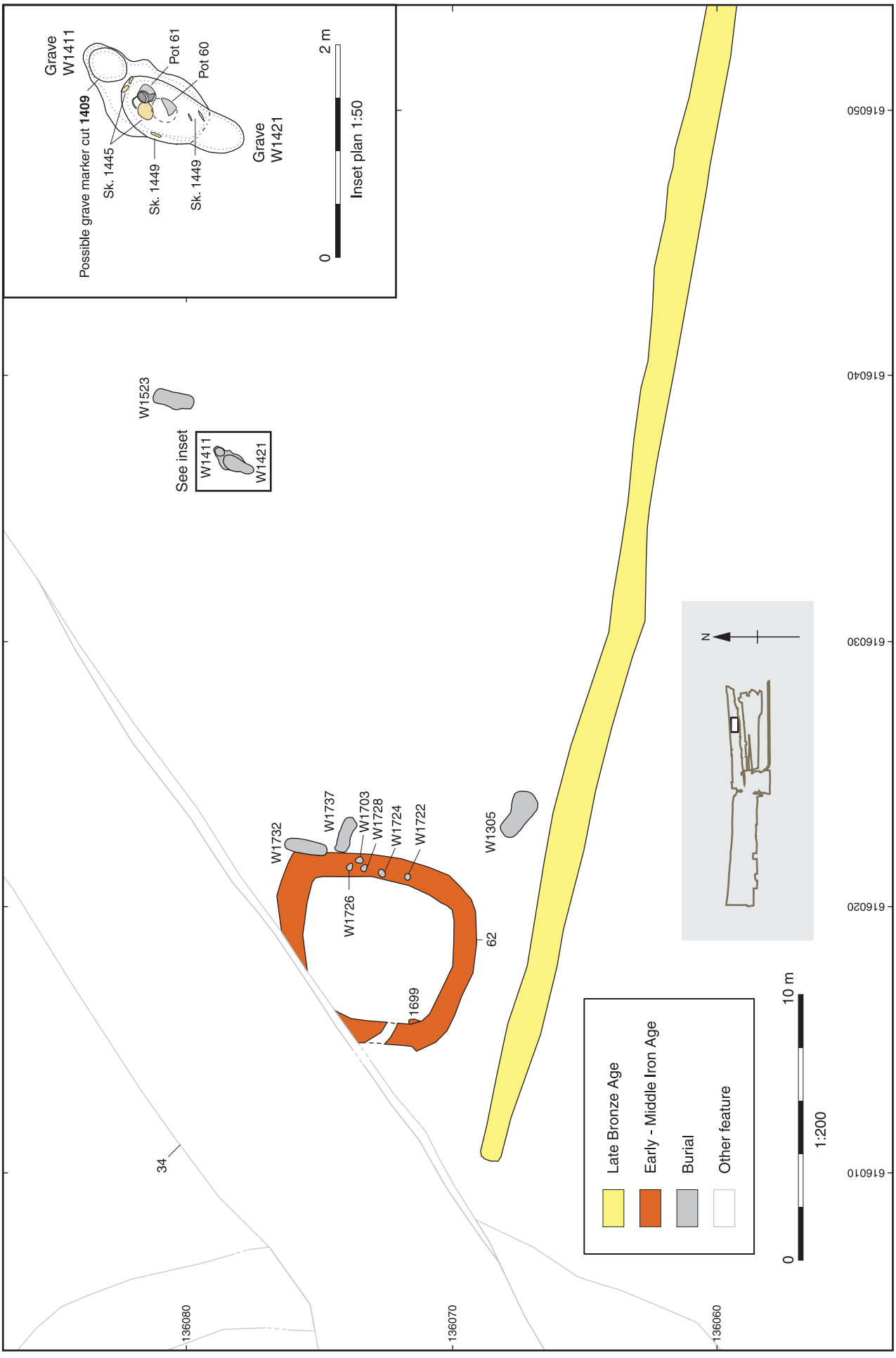


Figure 4.40 Saltwood Tunnel: Iron Age burial complex

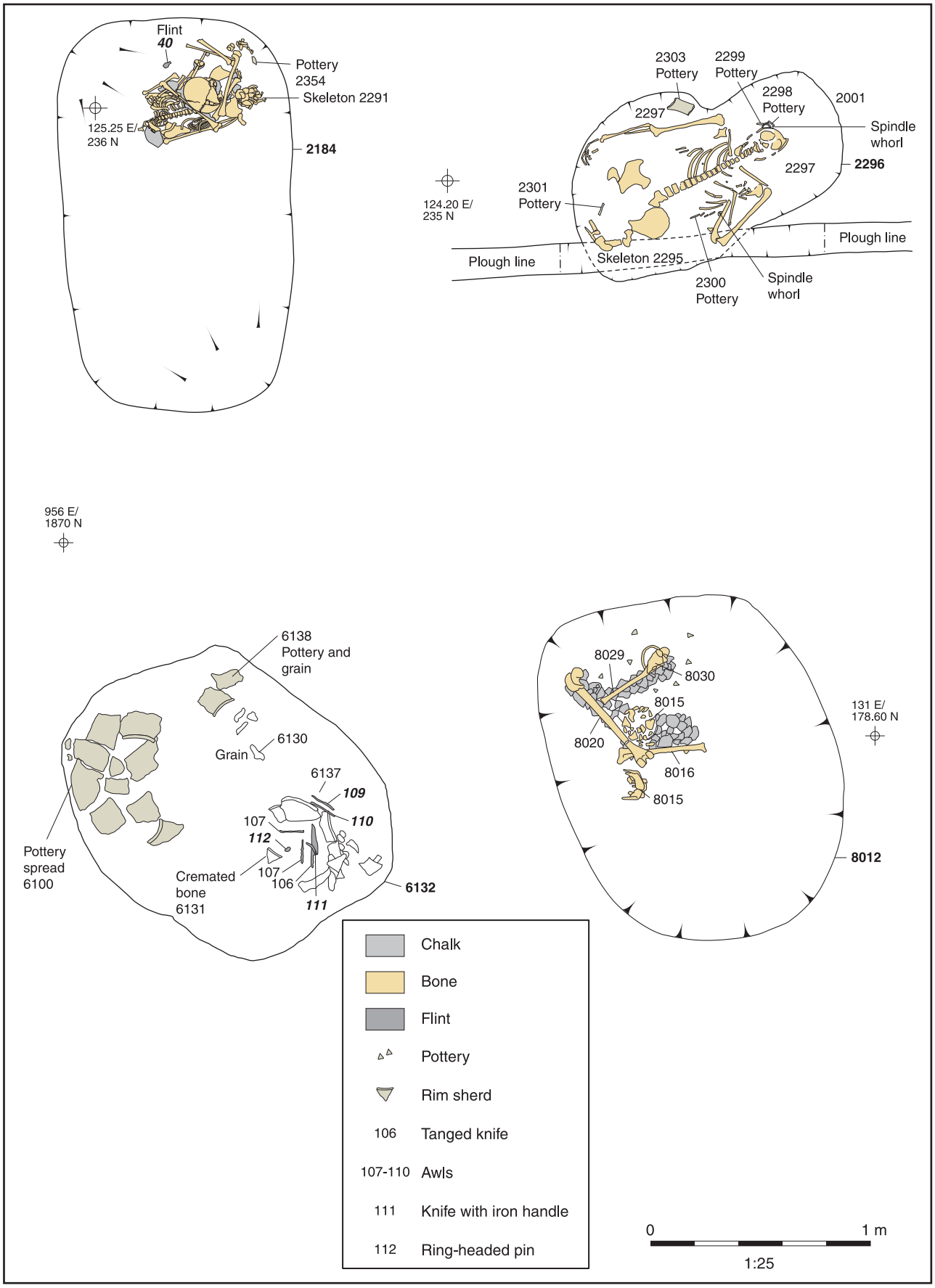


Figure 4.41 White Horse Stone: burials and pits containing human remains from the Iron Age settlement

grave fill, there is almost no other evidence for Iron Age activity in the area from which they could have been derived, and the similarity of the sherds suggests the deliberate deposition of incomplete pots as grave goods. The pottery would date to the 5th or 4th centuries BC, possibly overlapping with the end of the possible date range for the cremation deposits.

The only other Iron Age burial evidence at Saltwood Tunnel was at the far western end of the site, where an unaccompanied inhumation (C24) was found (Riddler and Trevarthen 2006, 16). This was located near to ditch 10042, one of the complex of ditches that marked the boundary that developed as the major north-south trackway 10156, but appears to have originated in an episode of Iron Age land division and enclosure. The extended inhumation was dated to 370–110 cal BC (NZA-27734), confirming the Iron Age origins of this landscape.

One unexpected discovery at the site of the Roman cemetery at Pepper Hill (Biddulph 2006a, 9) was the presence of a burial (Grave 10404) of an adult male, laid face downwards. This was radiocarbon dated to 350–40 cal BC (KIA-23946). There was no other indication of occupation in the area at that date, and the burial remains an isolated phenomenon.

Figure 4.42 White Horse Stone: photograph of burial in pit 2184

The evidence for human burials in the Iron Age at White Horse Stone was more variable and less easy to interpret (Hayden 2006a, 157–60). It ranged from what might be called formal burials through whole bodies in pits to body parts or individual bones in pit fills (Fig. 4.41). Although it creates an unhelpful division of the material, the possible formal burials will be discussed here and the remaining evidence in the following section. There were three deposits that might be regarded as formal burials. One (2295) was as inhumation of an adult male, placed in a shallow pit (2296) that was not long enough to take the body fully extended, so that the knees were drawn up over the torso. The fill of the pit contained two ceramic spindle whorls, the only ones found on the site. In a nearby pit (2184) was the body of a child (2291), placed in the lower fill (Figs 4.41–2); the upper fills contained fragments of pottery and animal bone, and also of triangular clay loomweights, one of only three contexts containing such finds anywhere on the site. This burial was dated to 410–90 cal BC (GU-9089).

The third deposit was in a shallow oval-shaped pit (6132), which contained the cremated remains of an adolescent, which had been placed in a bowl. Also in the bowl were a set of iron tools, including two blades and four awls, the remains of some antler, possibly a handle, and a copper alloy ring-headed pin. The bowl, the metal tools and the antler all showed signs of burning, possibly from being placed on the cremation pyre. Also in the pit were a jar containing a deposit of almost completely processed wheat and the remains of at least four other vessels. The cremation was dated to 460–160 cal BC (GU-9088). The radiocarbon dates for this cremation and the inhumation 2184 are the latest from the site, and they suggest that they were among the latest activities carried out in the Iron Age phase of occupation.

The significance of these burials will be discussed further after the treatment of other human remains has been described.

Other human remains

Human bone was found at two sites in contexts that were not the primary formal burial location, White Horse Stone and Little Stock Farm. At White Horse Stone, unburnt human bone was found in six Iron Age pits (Hayden 2006a, 159–60). In Pit 8012 a group of bones was carefully placed on top of the primary fills, including a skull with mandible separate, and a selection of long bones (Fig. 4.43); the pit also contained a hammerstone and a sling shot. In five other pits human bone was found in the upper fills, almost exclusively fragments of skull and fibula or tibia. Other finds in these pits were generally similar to those around them, including pottery and animal bone, but pits 2119 and 2214 also contained the only examples of dog and red deer bones found on the site, while in Pit 2130 there was a fragment of a shale bracelet, again the only example found on the site.

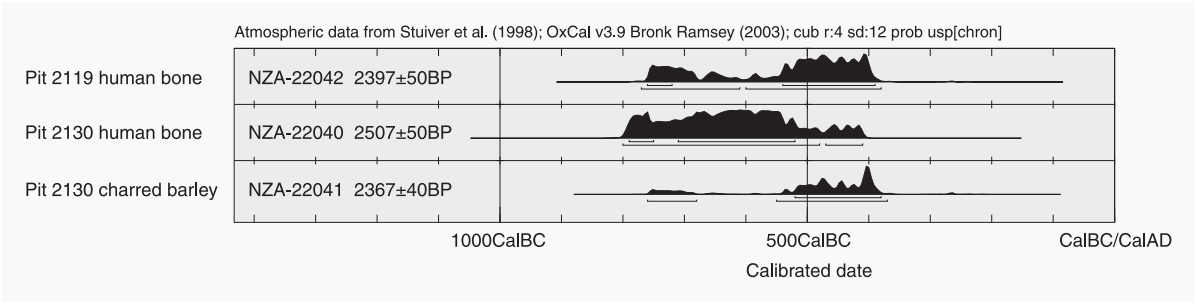
An attempt was made to date the human bone, to assess whether it was contemporary with the rest of the

material in the pit fill or had been curated (Hayden 2006a, 134). This test was focused on two pits. Pit 2130 contained a deposit of charred barley in its lower fill, with a fragment of adult human fibula in the upper layers; the pit was in turn cut by Pit 2119, which also contained a fibula fragment. The radiocarbon dates seem to show that the fibula from the upper layers of Pit 2130 is somewhat earlier than the other two dates (Fig. 4.44). Modelling of the dates (Allen *et al.* 2006, 30–2) suggests that, although it is possible to reconcile these dates with the stratigraphic sequence, the date for the charred barley fits the model rather poorly and it is quite possibly out of sequence. An alternative explanation would be that the human fibula from Pit 2130 was old, quite possibly very old, by the time it was deposited.

Figure 4.43 White Horse Stone: photograph of burial in pit 8012

A similar possibility also arises from the dates of human remains at Little Stock Farm. A rectangular enclosure with an east-facing entrance is poorly dated, but probably belongs to the Early Iron Age on the basis of the little pottery found there. The entrance was defined by a gap in the fence line, with a large posthole on either side (Ritchie 2006, 8–9). One of these held three non-joining fragments of human skull, dated to 800–510 cal BC (NZA-19916). This was clearly a form of foundation deposit at the entrance, but in view of the poor dating evidence for the rest of the structure it is difficult to know whether the bone was old at the time of deposition.

In another part of the site, where the occupation belonged to the later part of the Iron Age, continuing into the Roman period, human remains were found in two intercutting pits, which had themselves been disturbed by a medieval pit (Ritchie 2006, 8). In the stratigraphically earliest pit (2037) were the partial remains of a young adult woman. This pit was cut by another pit (2031), which also contained human remains. Analysis of the



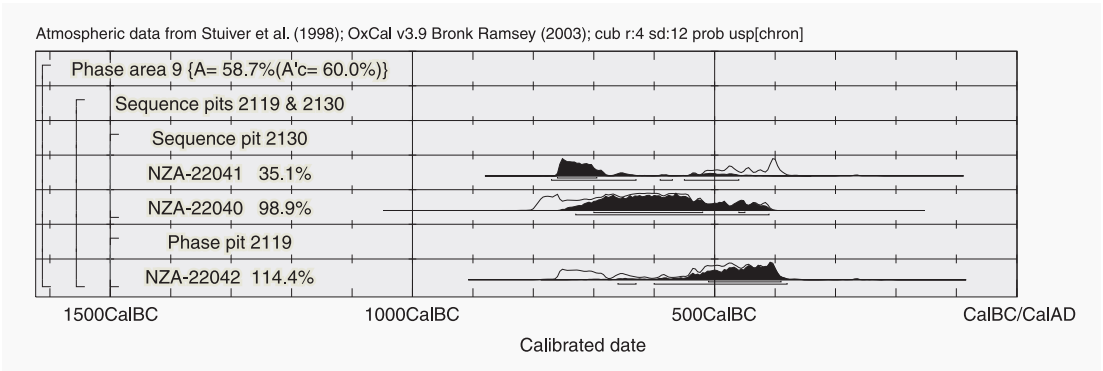


Figure 4.44 White Horse Stone: a) Radiocarbon distributions from pits 2130 and 2119 and b) the probability distributions and posterior density estimates from the modelled data

human bone showed that almost all of it belonged to a young adult woman, who had suffered a blow to the parietal vault, causing a wound that had not healed. In addition to her skeleton, there was also another human radius. It seems likely that the female skeleton had been buried in the lower pit, and that the body was at least partially articulated at the time of burial, though some degree of disturbance or removal of parts, before or after deposition, cannot be ruled out. It was then certainly disturbed by the digging of the second pit, which caused some bones to be redeposited. Also included in the fill of the upper pit was an additional isolated human radius, though it is possible that it was originally in the lower pit and was also redeposited. The bones were radiocarbon dated: those in the lower pit were dated to 380–170 cal BC (NZA-19987), while the additional radius in the upper pit was dated to 770–400 cal BC (NZA-19915). These dates show that the individual radius in the upper pit was substantially older than the disturbed body buried below it. It must have been redeposited from some other location; even if redeposited from the lower pit, it was still substantially older than the other skeleton. The radiocarbon dates of course only refer to the date of death of the individuals, not to the deposition; the only other dating evidence is the pottery found in the two pits. The lower pit (2037) contained pottery that belonged comparatively late in the site sequence; pottery from the upper pit (2031) was less diagnostic, but could be broadly contemporary with the lower. The deposition of the radius in the upper pit must post-date the death of the individual buried in the lower pit. That means that the body must have been curated in some way, perhaps buried, for a period of least several decades and possibly several centuries before being retrieved or exhumed for final redeposition.

Burial, deposit or offering?

This review has shown how varied was the treatment of the human body in later prehistory. At one end of the spectrum is something that would be clearly recognised as formal, primary burial. At the other is something that is obviously not that, but a use of human body parts as a ritual resource alongside other categories of object suitable for such deposition. In between, there are examples that do not fit easily into our categories of burial or ritual offering, such as the burials in Iron Age pits. The following discussion will try to situate the HS1 evidence in the light of what else is known for the region.

The continuation of a cremation burial tradition into the Middle Bronze Age, using earlier barrows or less commonly newly constructed ones, is well documented in southern England (Woodward 2000, 43–5). In Kent Deverel-Rimbury bucket urns are reasonably well known, though the details of the burials from which many of them presumably derived are less well recorded (Champion 1982, 34; 2007c, 111). In the Monkton cemetery, Middle Bronze Age cremation burials were found in and near several of the ring-ditches, especially Ring-ditches VI, IX and X (Bennett *et al.* 2008, 99). At Bridge (Macpherson-Grant 1980a), Barrow 2 contained ten burials within the ring-ditch and a further six outside; several were covered by inverted bucket urns, but many were simply placed in small pits. The cremation burials from Tutt Hill, and possibly Saltwood Tunnel, are therefore part of a pattern that is well known elsewhere in southern England and is now beginning to be better documented in Kent.

How long the practice of making such burials associated with barrows continued is as yet uncertain, but with the wider application of radiocarbon dating it is becoming clear that unurned cremation burials were more common in the Middle and Late Bronze Age than previously suspected and that burials were increasingly being placed in settlement contexts rather than barrows or cemeteries. Radiocarbon dates from the HS1 sites (Allen 2006, 14) demonstrate a tradition of cremation lasting throughout prehistory and well into the Roman period (Fig. 4.45). Deposition in settlement sites seems to have started already in the Middle Bronze Age, as burials from the enclosure complex at Shrubsoles Hill in Sheppey, some deposited in urns, show (Coles *et al.* 2003, 13). The context of the Middle Bronze Age burials at West of Northumberland Bottom and East of Newlands road is not clear, but there was no indication of nearby barrows and they may have been related to settlement. The Late Bronze Age burials at White Horse Stone and Beechbrook Wood were certainly placed in settlement contexts, in the latter case close to the ditches of a field system.

Brück (1995, 257) has documented the regular occurrence of human remains in Late Bronze Age sites, frequently used as a metaphorical resource for the demarcation of liminal places and especially spatial boundaries. Her Class B, representing formal burials in settlements sites, was not numerous, but subsequent research suggests it may have been under-represented in her list of sites. Unurned and unaccompanied cremation burials are difficult to date without the use of radiocarbon, unless they have an obvious stratigraphic or contextual relationship, which is comparatively rare. More recent work, especially more intensive excavation and the wider application of radiocarbon dating, is now revealing many more examples of such burials. They are now being reported from a growing number of sites in Kent, such as Shrubsoles (Coles *et al.* 2003, 17–19) and Shelford Quarry, near Canterbury (Boden 2004). In both these cases the burials are located near or along boundaries and enclosures, as at Beechbrook Wood; at Shrubsoles the enclosure ditch seems to have already filled up before some at least of the burials were deposited, but the attraction of the boundary was clear.

One repeated feature of these cremation burials is the quantity of cremated bone that is collected and deposited, which rarely even approaches the amount that would be expected from a full body, and is occasionally as low as 7g. Though it may have been accepted practice to collect only a token amount, leaving the rest of the bone and the pyre material to be dispersed naturally, the

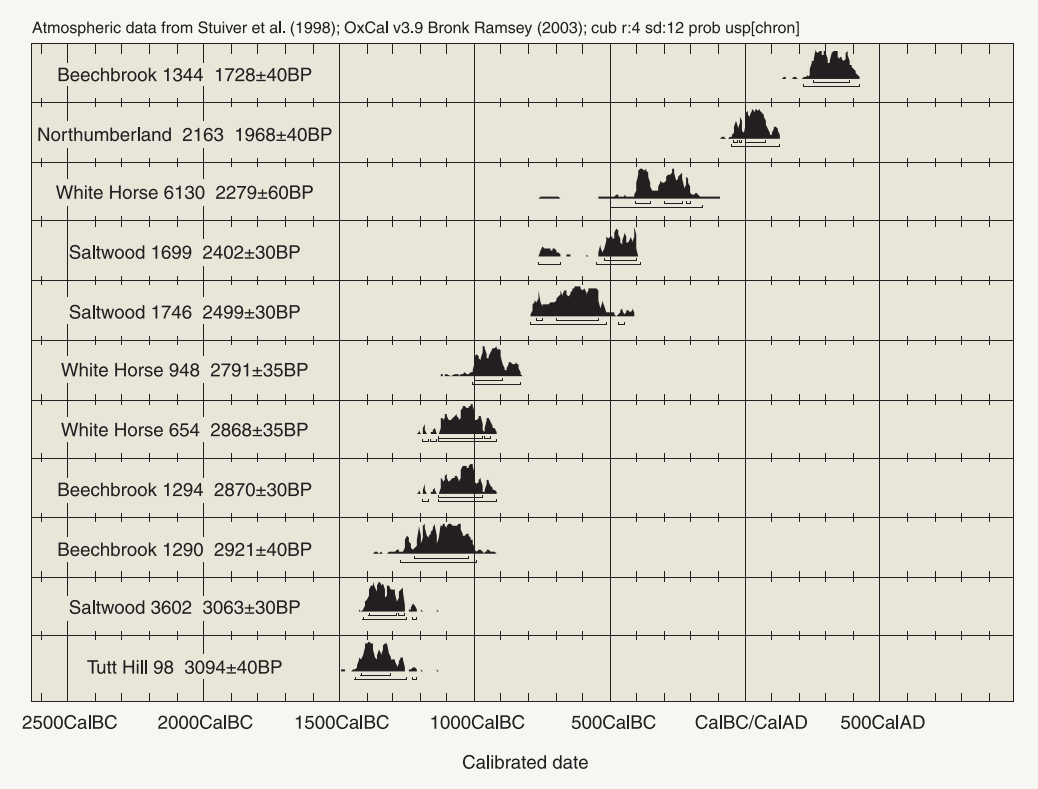


Figure 4.45 Radiocarbon dates of unurned cremations

possibility should not be overlooked that the rest of the cremated bone was deliberately dispersed and deposited in small quantities at places other than the 'burial'. Some site reports, for example at Beechbrook Wood (Brady 2006a, 18), document the presence of small collections of cremated bone in various contexts, often described as residual or redeposited, but possibly part of a practice of fragmented or dispersed disposal.

Brück (1995) also records the frequent use of unburnt human bone in specific contexts, such as foundation deposits, at or near the entrances to houses and enclosures. The burial of fragments of human skull in a posthole at the entrance to the rectangular enclosure at Little Stock Farm, which dates to the end of the Bronze Age or the very beginning of the Iron Age, is an excellent example of such a practice.

The distinction between formal burial and the deposition of human remains for ideological or metaphorical reasons is reasonably clear in the Bronze Age, despite the comments above about the liminal location of burials and their very partial nature. The distinction becomes much more difficult to draw in the Iron Age. The evidence for formal burial is clearest at Saltwood Tunnel, where the group of four, or possibly eight, inhumations can be interpreted as a small cemetery, albeit associated with other deposits of burnt material and the small square enclosure. The isolated inhumations at Saltwood Tunnel and Pepper Hill can also be seen as formal burials, though the boundary location of the former may well have been important too. These examples are significant additions to the growing evidence for inhumation burial in Kent and elsewhere in southern England in the Iron Age. The inhumation tradition is best documented in Kent in the Late Iron Age at Mill Hill, Deal (Parfitt 1995), in a group of burials inserted into the ditch of the Neolithic long barrow at Jullieberrie's Grave (Jessup 1937; 1939) and in a poorly recorded cemetery at Highstead near Sittingbourne (Vale 1987), but it clearly began much earlier. Radiocarbon dates from Deal (Parfitt 1998) suggest it may have started at least as early as the 3rd century BC; a burial at North Foreland, Broadstairs (Perkins and Macpherson-Grant 1981, 21-24) contained distinctive sherds of Early La Tène pottery. These inhumation burials from Kent match the record from elsewhere in southern England, as the examples from Yarnton and Suddern Farm, cited above, show. The cremation burials from Saltwood Tunnel, however, only serve to remind us that other rites were also practised.

The evidence for human remains from White Horse Stone is the clearest example of the problems with our categorisation of such deposits. The burial of the child (2291) in a pit is something that can be well paralleled in many other sites in southern England (Whimster 1981; Wilson 1981; Wait 1985), where it has been most frequently characterised a 'pit-burial tradition'. The main focus of the interpretation is, therefore, to try to explain why a subgroup of the population had been treated to what was clearly an abnormal burial rite, whatever the rite accorded to the majority of the population might have been; groups such as enemies, outcasts, or those killed in warfare have regularly been cited (Lally 2008, 124). Treating these deposits as burials thus removes them from consideration alongside other instances of human remains in pits, in particular partial skeletons or

fragmentary human bones, and categories of evidence such as animal skeletons, pottery or querns.

Three observations that can be made of the archaeological record at White Horse Stone might support the argument that these cases of human bones should be regarded as ritual deposits rather than burials. The first of these concerns the feature 6130, which contained a cremation deposit and a set of iron tools; but rather than an accompanied burial, we could regard it as a group of special deposits which included the iron tools, the cremated bone, the processed wheat in a jar and other pottery. Secondly, the human remains, whether whole or fragmentary, were often accompanied by small finds or other things that were the only examples found on the site, as noted above. In addition to the iron tools and the ring-headed pin with the cremation burial in 6130, the only spindle whorls were in the same feature as the adult inhumation (2295), the fragmentary human remains in various pits were associated with the only examples of a shale bracelet and of dog and deer bones, and the child inhumation (2291) was found with one of only three examples of triangular clay loomweights. In the case of the pit deposits containing human and other finds, the normal interpretation would be to see them as carefully selected items appropriate for such deposition, whatever the event. It therefore seems possible to regard the complete human skeletons found with similarly distinctive items as deliberately selected sets of deposits rather than burials accompanied by grave goods. Thirdly, the radiocarbon dates show that the cremation deposit with the iron tools (6130) and the child inhumation (2291) were some of the latest activities on the site, possibly after the main phase of occupation had finished. It seems reasonable to see them as acts marking an important event, the abandonment of the site, in much the same way as the placing of the bronze objects and the flint tools in the upper fill of the waterhole at Thurnham marked the closure of that feature.

The partial or fragmentary deposits of unburnt human bone were dominated by skull and long bone fragments, a phenomenon discussed by Brück (1995, 256–7). Since these are the most robust parts of the human skeleton, it is understandable that they are the ones that have survived to be selected for later deposition, but the question of where and how the skeletons were preserved between death and final deposition of some parts still remains. The evidence from Little Stock Farm suggests that the interval between these events could be lengthy, so we must envisage either above-ground curation or exhumation of below-ground burials.

A proper understanding of the human remains, as of the pit deposits in general, will only be possible with the analysis of a larger sample of sites from the region. The HS1 evidence does, however, demonstrate some of the variety of ways that human remains were treated. In general they conform to the patterns that have been seen in other parts of southern England, but provide detailed evidence for the first time for Kent, and add substantially to the argument for the curation and reuse of human body parts in later prehistory.

Something old

One striking feature of the special deposits that have been described here is the regular selection of something that must have been obviously old at the time of final deposition. It has been possible to recognise this practice through a combination of radiocarbon dating, stratigraphy and association with other finds. So, radiocarbon dates and stratigraphic superimposition show that the skeletal fragment buried in pit 2031 at Little Stock Farm must have been decades or even centuries old. Similarly the contextual association of the earlier flint item with Middle Bronze Age bronzes in the waterhole at Thurnham shows that the flint must have been old; likewise the flints incorporated into the fills of some of the pits at West of Northumberland Bottom. These methods, however, will only identify a minimum number of such events, which may very well underestimate their occurrence. At Thurnham, for example, the bronzes themselves may have been old when deposited; since the feature was not fully excavated, there is no hard evidence for the date of the final filling of the hole. At Little Stock Farm it is not impossible that the lower of the human burials may also have been old, possibly partially disarticulated, at the time of deposition. At White Horse Stone, few of the skeletal fragments were radiocarbon dated, so we have no evidence to suggest that any of them may have been old, other than the fibula in pit 2130 discussed above.

One apparent anomaly may also be explained by this practice. At Tollgate two pits were dated by means of residues on the surface of pots found in their fill (Bull 2006b, 15). In pit 387 the date was 760–380 cal BC (NZA-22886); this may seem rather early for the Early Iron Age, but the most likely calibration lies in the 5th century BC, well in line with expectations. The other pit, 374, contained a La Tène I brooch, which would be securely dated to around the 4th century BC, but also a sherd with burnt residue surviving on the interior which gave a date of 850–760 cal BC (NZA-22880). This incompatibility could be explained in one of three ways. It could be a statistical outlier, with a calendar date of 400 BC just falling with very low probability within the calibrated range at three standard deviations. Alternatively, it could be that the pot was an old one, though the sherd (PRN 1186) is in a form and a shell-gritted fabric that would have been unusual at around 800 BC. Or the sooting could derive from some organic material that was itself very old at the time of burning, though it is difficult to guess what that might have been. At the moment it is hard to suggest which is the least unlikely explanation.

The wide range of objects selected for deposition and their very varied ages suggest that we are dealing with complex patterns of behaviour and with items that may have had complex histories. At the very least we can distinguish those objects that seem more likely to have been accidentally found from those that had been somehow curated. Stone artefacts from the Neolithic or Early Bronze Age would have been found, as now, in agricultural operations, recognised as not part of contem-

porary material culture and retained as curiosities. Reference has already been made to the Neolithic and Early Bronze Age flints deposited in the top filling of a well at Iwade (Bishop and Bagwell 2005, 14, 27, 82). Other examples of the practice involve the deposition of Neolithic axes in the filling of Iron Age pits. In one pit at Ellington School, Ramsgate, dated to the end of the Bronze Age or the Early Iron Age, two polished axes and a large quantity of other implements and flakes were found on top of the basal fill (Boden 2007a, 28). A Neolithic axe was also found in the extension of the Tollgate site excavated in improvements to the A2, placed in an Iron Age pit alongside an iron spike (Allen and Donnelly 2009, 40). On the other hand, some items seem likely to have been old or even carefully curated. Unfortunately we know very little about the treatment of human bone in later prehistory, but the discussion of the later prehistoric chronology at the start of this chapter referred to examples of Bronze Age metalwork associated with what would seem to be much later pottery at Shrubsoles (Coles *et al.* 2003, 15, 30–1) and Iwade (Bishop and Bagwell 2005, 15 and fig. 22); objects that were either themselves old or of a type that was recognised as old were selected for such depositions. Other examples will doubtless come to light with further excavation or with the willingness to recognise these finds as deliberately selected and deposited rather than being accidental residues from earlier occupation.

Discussion

This brief analysis of some of the evidence for deliberate deposition and for the processes of site formation has been able to do little more than indicate the possibilities for further research. At the theoretical level, it has demonstrated the need to rethink the categories of burial and ritual deposition that are generally used in site reports, and has also argued for the need to explore the processes of site formation in more detail in order to be able to discriminate the normal from the abnormal. More factually, it has shown patterns of pit filling that must be the product of deliberate acts of deposition; though the whole or partial animal carcasses known elsewhere appear to be rare or absent, it is noticeable that small artefacts are regularly part of these patterned deposits. The social context of those acts is not always clear. At Little Stock Farm, the deposition of human skull fragments suggests a foundation deposit, while at Thurnham the deposition of bronze objects was clearly part of the formal closure of the waterhole; at White Horse Stone, various deposits may be marking significant events, possibly the abandonment of the site. It has also been possible to show how human remains were treated in various ways, ranging from formal primary burial to ritual deposition of individual bones, especially skull fragments and long bones. One important characteristic of the deposits is the regular use of something that must have been known to be old, whether it was earlier prehistoric flintwork or human body parts.

Conclusions

After this detailed review of the later prehistoric discoveries and their significance, it remains to summarise the key points and also perhaps suggest what questions have not been illuminated.

Perhaps the most important result has been the understanding we now have of the Greensand region south of the Downs, a zone that had been little explored by previous work and where the archaeological record is very different from that of the better known north and east of the county. The Middle Bronze Age shows a picture of a rapid and dispersed colonisation of the region, coupled with the beginning of widespread woodland clearance, but we have very little idea of how this was achieved in human terms. Where did these people come from? What was the nature of the groups who inhabited the rather vestigial settlement sites of this period? What was the relationship with the rather different societies north of the Downs? In the later stages of the Bronze Age, the population seems to have consolidated to the occupation of a smaller number of sites, but with larger and more substantial field systems. What did this mean in terms of social organisation? If the fields are an expression of power, who exercised that power? One of the surprises is perhaps that the detailed excavations found not a single piece of Late Bronze Age metalwork, despite the enormous quantities that were deposited in hoards in Kent, including some now known in the vicinity of the fields. We clearly need to know more about the relationship between the control of land and its products and the control of bronze and other precious commodities, especially gold.

The end of the period in which bronze and gold had circulated as items of wealth, around 800 BC, unfortunately coincides with a problem in the chronology, and the difficulty of determining the true chronological sequence from Late Bronze Age to Earliest and then Early Iron Age. How was the collapse of this exchange and circulation system reflected in local social organisation? In the Iron Age the regional contrast between different parts of the county continues, but the central importance of the Medway Valley continues; the site at White Horse Stone, which plays a central role in the economy and society of the region, is another episode in the long-term significance of this place. The distinctive enclosure at Beechbrook Wood also seems to mark the emergence of the region around modern Ashford as a similar nodal point at the crossing of the Greensand vale and the Stour Valley, later marked by a Roman town.

The later prehistoric period also saw major changes in the environment, whether externally driven, like the rise in the relative sea level that had such an effect on the coastline of the Thames estuary, or humanly induced, like the woodland clearance that transformed the visible landscape of the region. How the people of the region saw their relationship to the land and to the sea and the lands beyond the sea, no doubt also changed enormously during this period. Though most of what they produced and used throughout the period was made from local

resources, there were some indicators of a wider world. The bronze ornaments of the Middle Bronze Age were made from metal that must originally have come from outside the region; the adoption of a new variety of wheat, spelt, of which Kent has the earliest records so far documented, was presumably also an introduction from across the Channel. The Late Bronze Age shows no evidence for outside contacts, though again any bronze that might have been in use would have been imported. The Early Iron Age, however, shows intriguing evidence of a new level of contact across the Channel, as is revealed by the adoption of the new fashion of brooches and of the domestic fowl, as well as the similarity of pottery production, even down to the presence of some distinctive cups that were, if not actual imports, at least inspired by the cultural practices of northern France.

Chapter 5

The Late Iron Age and Roman periods

by Paul Booth

Introduction

The High Speed 1 (HS1) sites typically show a lack of direct association between activity of most of the 1st millennium BC and that of the end of the Iron Age and later. In contrast to this disjuncture at the end of the Middle Iron Age (see Champion, Chapter 4), almost all of the sites discussed here were occupied continuously in both Late Iron Age and Roman periods (although rarely throughout the latter), the 'dividing line' of AD 43 being, as so often in relation to 'Romano-British' rural settlements, archaeologically meaningless. These points are discussed in greater detail below, but provide the essential justification for treating the Late Iron Age and Roman as a single period, one which has produced significantly more archaeological evidence for settlement and other activity than any other comparable chronological unit (in this case, *c* 500 years) represented in the HS1 project. The term 'Roman' is generally used as a convenient shorthand for 'Late Iron Age and Romano-British' in a purely chronological sense; more precise terminology is used elsewhere when required.

Traditional views of Roman Kent have seen it as, amongst other things, the focus of the Claudian invasion of Britain, the seat of the *Classis Britannica*, and a homeland of rich villas, particularly in the north-west of the county. The HS1 Section 1 fieldwork has produced relatively little evidence that has a direct bearing on these topics, but much that informs understanding of wider aspects of rural settlement (for the location of the HS1 sites and others mentioned in this chapter, see Fig. 5.1). There have been several syntheses of the evidence for Roman Kent as a whole, varying widely in scale and approach. The survey in Volume 3 of the *Victoria County History* (Wheeler 1932) was itself a composite work of two generations. It was initiated by Haverfield before the First World War, his contributions being completed after his death by Margerie Taylor (Freeman 2007, 380). It was then revised for publication by Wheeler, with significant additions by him and R F Jessup. The emphasis of this and another more recent substantial survey by Detsicas (1983) was on presentation of the evidence for Roman settlement within an historical framework and from a Romano-centric perspective. This is unsurprising given Haverfield's clearly defined views on Romanisation; 'Almost every feature in Romano-British life was Roman' (Wheeler 1932, 5) may be taken as a typical example—a view from which Wheeler himself presumably did not dissent significantly (for comments on the extent to which Haverfield 'recycled' some of the introductory text of his VCH contributions see Freeman 2007, 311). The pervading influence of Haverfield's perspective can be seen as far as Detsicas' survey and the brief review by Blagg (1982), and the essence of his definition of Romanisation (though not the acceptance of its importance) has survived into some recent work on Kent (eg Andrews 2001). A rather different approach was followed by Williams (2003, 221) and particularly in the most recent overview, that of Millett (2007).

In recent years concepts of 'Romanisation' (broadly that the Roman conquest entailed a 'civilising mission', manifested archaeologically in material culture from pottery to building types, the superiority and therefore desirability of which in relation to what had preceded them was uncontested) have been subject to extensive critique, deconstruction and redefinition (*inter alia*, Barrett 1997; Freeman 1993; 1997; Grahame 1998; Greene 2002; Hanson 1994; Hill 2001; Keay and Terrenato 2001; Mattingly 1997; 2006, 14–16; Millet 1990; Webster and Cooper 1996; Woolf 1998; Hingley 2005 for an overview with copious further references). Many different perspectives have emerged, including a view that the term 'Romanisation' now has no usefulness at all (eg Mattingly 2002; 2004, 9). This survey does not attempt to add to the more theoretical aspects of these discussions, but hopes to present new information informed by some of the recent thinking. Undoubtedly, many material transformations did take place, but not as a result of a coherent centralised policy of imposition of 'Roman' cultural values. Equally, a simple desire by the British to emulate (in the interests of sustaining their social and/or political positions) their new masters, whose cultural 'superiority' was manifest and undisputed, is likely to have been rare. Current thinking emphasises the existence of complex patterns of interactions between the wide variety of identities labelled 'Roman' and 'British', whose interests may have been variously conflicting, convergent or completely separate, with variation in all these possible combinations in the course of time.

The durability of the Romanisation paradigm means that the focus of interest in most reviews of Roman Kent, including to a considerable extent that of Millett, has centred very much on higher order (ie more 'Romanised') settlements: forts, towns and villas. Detsicas' (1983, 84)

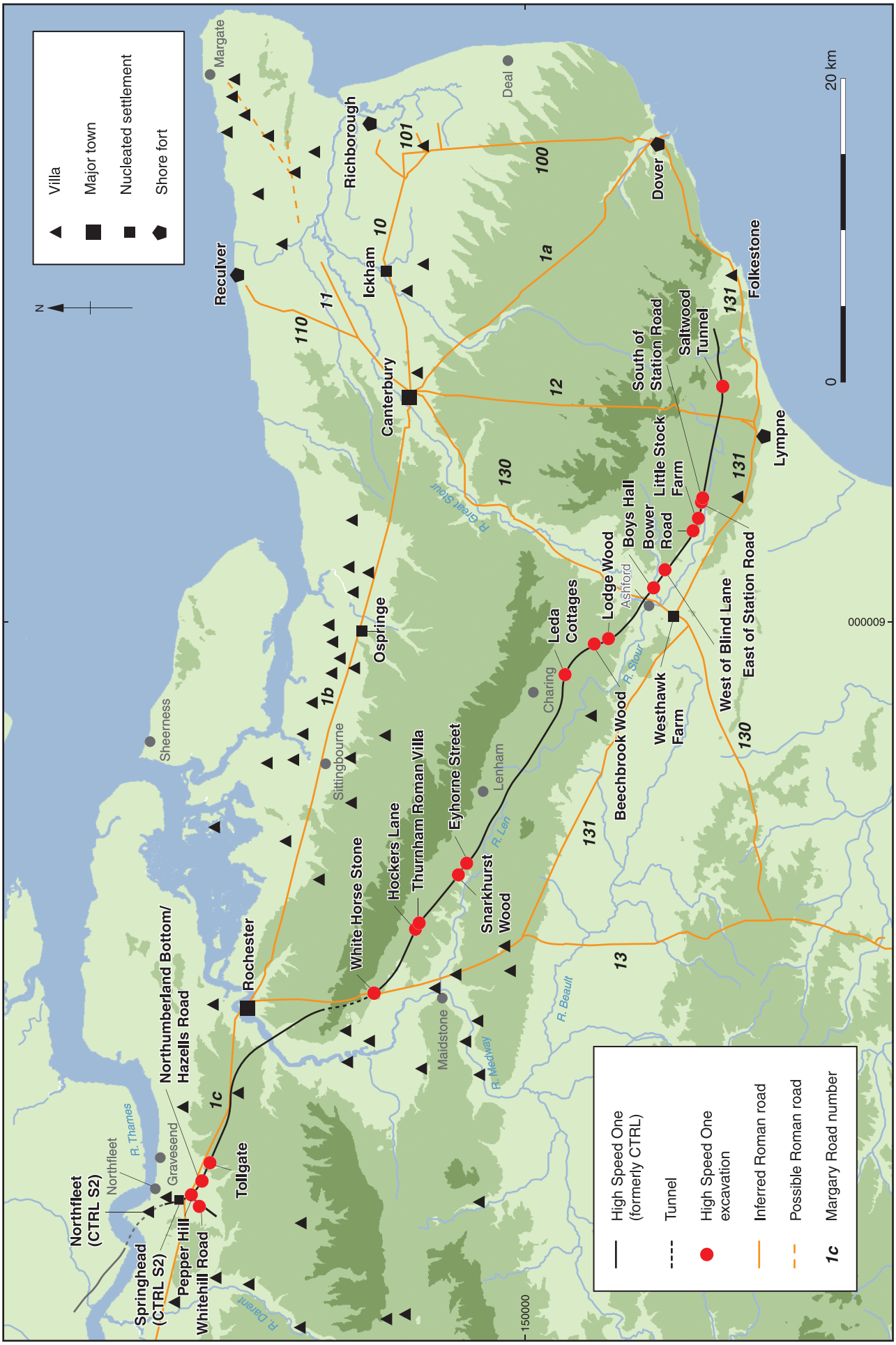


Figure 5.1 Map of Roman Kent showing HS1 principal sites (background detail partly based on Andrews 2004, 21 and Bennett *et al.* 2010, fig. 1)

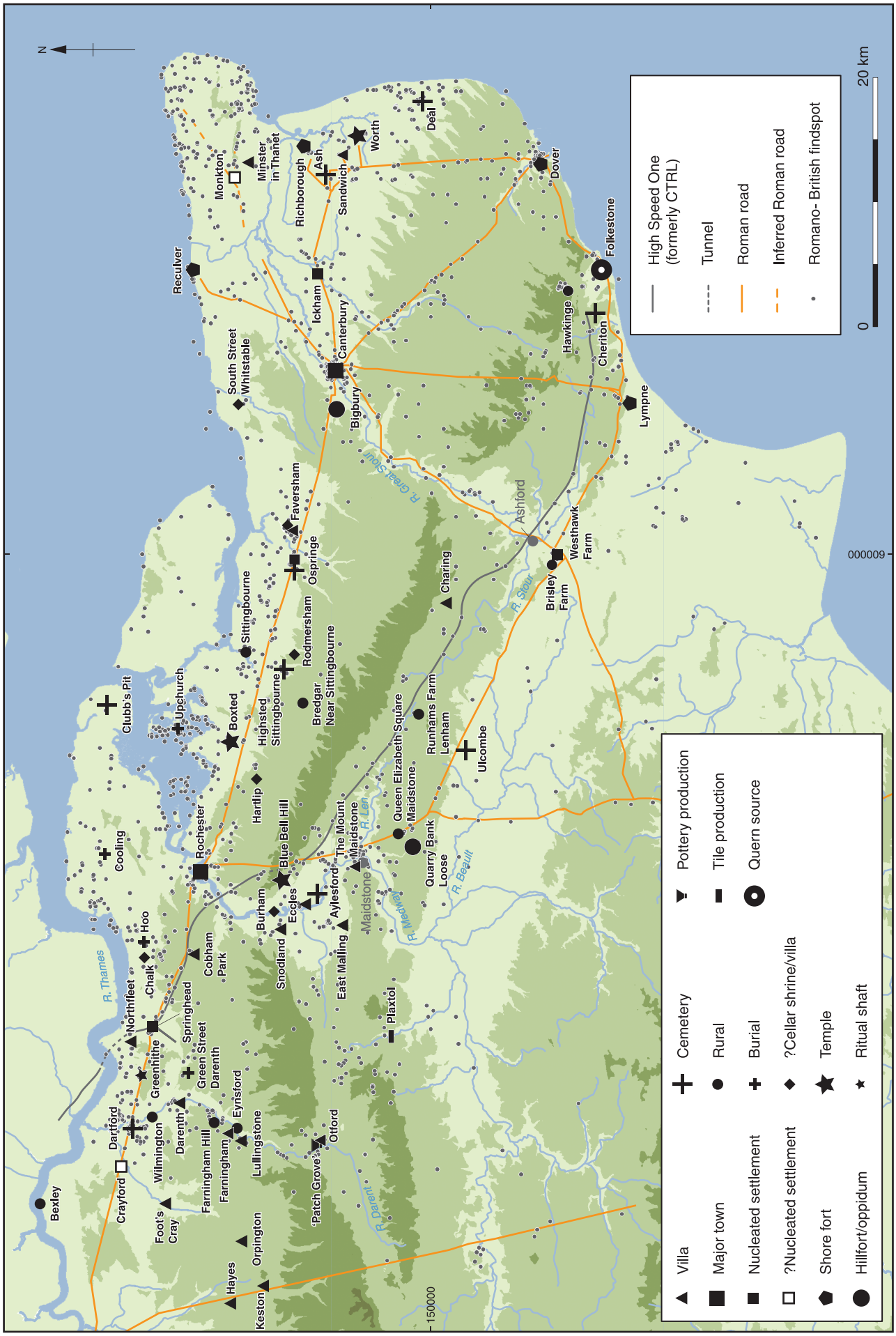


Figure 5.2 Map of Roman Kent showing places named in the text and general distribution of Roman findspots (based on Andrews 2004, 24)

four stage classification of rural settlement ended with 'farmsteads, usually with round huts and ditched enclosures', to which he devoted a single page. This simplistic characterisation has been retained even more recently (eg Andrews 2004, 20). In part this bias resulted from a lack of relevant evidence in comparison with the volume of material available for the main buildings of villa complexes (but not for their economic basis, evidence for which is largely lacking), but it also reflected perceptions of the importance of the lower order sites. It is only with the growth of systematic development-led archaeological programmes that this imbalance has begun to be redressed. An aspect of this is seen in relation to the distribution of Roman sites in Kent. Detsicas' (1983, 34) map of Roman Kent shows the south-western part of the county effectively empty of anything except occasional indications of iron-working. A more recent map (Andrews 2004, 24; cf Fig. 5.2) shows more sites in this area (a good number of those in the Chart Hills zone were identified in HS1 work), but still shows a heavy concentration of sites on the north Kent coastal plain and in east Kent. These distribution patterns may reflect some aspects of Romano-British reality (including a notable apparent absence of settlement on the North Downs), but the increase in the number of sites plotted away from the major concentration (and from subsidiary ones such as the Darent and Medway valleys) may indicate the existence of other realities, particularly involving the widespread distribution of settlements which were not focused on stone-built structures.

The Late Iron Age and Roman evidence recovered in HS1 Section 1 exemplifies these trends. Examination of a large part of the already-known villa complex at Thurnham was the only component of HS1 which involved stone-founded Roman structures, apart from some poorly-preserved foundation fragments at Bower Road. By contrast, parts of perhaps eleven other rural settlement sites were excavated—figures probably reasonably representative of the relative numbers of these types of site—mostly falling within Detsicas' definition of 'farmsteads' and mostly of Late Iron Age to Early Roman date. The definition of 'settlement' here is problematic since many sites were only very partially impacted and sampled. Systematic criteria for identification of site character have therefore not been established, but usually the existence of settlement is felt to require the presence of a variety of feature types (ie not just ditches) and reasonable quantities of 'domestic' material (a criterion which would not necessarily be valid outside southern Britain)—in this case generally more than *c* 250 sherds of pottery. Of the 13 probable settlement sites (including Thurnham and Bower Road) all but two (Lodge Wood and Blind Lane, both slightly uncertain) were defined as principal sites in the main programme of HS1 site reporting. A further five principal sites were considered not to represent settlement directly, although four probably lay close to settlement (the fifth was the cemetery at Pepper Hill, see below). Late Iron Age and/or Roman features and finds came from a minimum of 13 further locations not included in the principal site reporting programme. One of these was a small cemetery at Boys Hall, Sevington (but see further below), while for the remainder the evidence was insufficient (on the criteria given above) to allow confident attribution to the settlement category. These sites, as well as many of the definite settlements, included elements of roads or trackways and field systems, though the relationship of such features to some of the settlements is unclear. One of these minor roads, close to the Roman 'small town' of Springhead, proved to have a major cemetery (Pepper Hill) alongside it, an unexpected and extremely important discovery. The data from this site can be set alongside the evidence from elsewhere on the route for burials of individuals or small groups of people in association with rural settlements.

The main emphases of the HS1 evidence are therefore largely complementary to those of previous studies of Roman Kent, and this discussion will attempt to concentrate on these aspects—rural settlement, economy and society in particular. An attempt will be made to understand the use of the landscape by farming and (perhaps) other communities, not only as the location for settlements and fields, but also for the dead and for religious practices, and to understand how settlements related both to one another, to their surrounding landscapes and to the wider network of nucleated sites and major roads. These last were important in sustaining the archaeologically visible trade that is so characteristic of the Roman period. Here, however, the quantities of many classes of artefacts appear to have been relatively modest and analysis will rely heavily on ceramic evidence, the study of which has an honourable tradition in Kent (eg Monaghan 1987; Pollard 1988). The application of a uniform system for recording the HS1 pottery allows ready comparison of the evidence across the route, enabling patterns of distribution to be discerned.

The value of the HS1 project in providing a transect through the rural landscape with its various settlement types is clear. It should be remembered, however, that the transect is not a totally random one (see also Chapter 1 above). It inevitably avoids modern centres of population as far as possible, with the implication that some locations favourable to settlement in earlier periods as well as today might also have been avoided. Moreover, although divided into eight geographical units as an aid to analysis, much of the Section 1 route (some 60% on a conservative estimate) lies in a single broad topographical zone, on the Greensand belt of the Vale of Holmesdale and the Chart Hills at or towards the foot of the North Downs (Zones 4–8 of the landscape zones defined for the purposes of this project; Fig. 5.3). It is not possible to assess the precise significance that this might have had for limiting the type and number of Late Iron Age and Roman sites encountered, but the possibility that the route location did have some effect on these aspects should be borne in mind. As a single example, the Greensand belt, close to the north-eastern fringes of the low Weald, was always likely to be marginal to settlement patterns which included villas (with the obvious exception of Thurnham), and so

Figure 5.3 Thurnham: View of site looking north-east across aisled building to the North Downs

it proved, but the impression of settlement homogeneity in this area may be exaggerated because of the physical location of the transect.

Chronology

Late Iron Age and Romano-British chronology, albeit more closely-defined than that of preceding periods, still involves uncertainties and variable degrees of precision. Pottery was the principal dating tool for all of the HS1 sites of this period, and the only one for some of them (see Fig. 5.6). Indeed the definition of the 'Late Iron Age' as an entity is largely a ceramic one, since the evidence of settlement form in characterising the period is imprecise (though it does play a part) and other aspects of material culture were generally in such short supply as to add almost nothing to the wider picture. Such evidence did include occasional coins, since Iron Age coins came from four sites, of which two (Hockers Lane and Little Stock Farm) had coins exclusively of this date. The total number of Iron Age coins recovered was only six, however. Even the distribution of Roman coins was limited; they only occurred on six sites, and quantities were always quite small (see Table 5.6). Coins were therefore of little help in constructing the chronological framework of most sites, and completely irrelevant for many.

At the Pepper Hill cemetery radiocarbon dating was used in an attempt to refine the dating of particular sequences of burials in order to elucidate the overall development of the site. The close correlation of this work with the relatively detailed ceramic dating available for some of the graves is discussed in the site report (Biddulph 2006a), but it was not intended to provide an alternative to the ceramic framework. The latter was therefore applied elsewhere across the route. It is for this reason that the framework of the ceramic chronology of the area is set out here in some detail, so that the rationale for dating of individual sites can be understood. The framework rests on the traditional props of samian and other imported wares in both the Late Iron Age (very occasionally) and the Early Roman period, as well as the overall pattern of ceramic chronology for Kent developed by Pollard (1988). In addition the work of Monaghan (1987) on the products of the North Kent industries was very important, particularly at Pepper Hill.

The development of trends in supply and the introduction of new ceramic styles need not have been synchronous across the region, however. Not only might north Kent have received products of its local Roman pottery industries earlier than sites in the Folkestone area, for example, but it is probably also true to say that the chronology of local ceramic production in the Roman period is better understood in north Kent than further south, with the result that sites in the north have a chance of being more precisely dated. Close estimates of absolute chronology based on the pottery need always to be treated with caution. This is particularly the case with

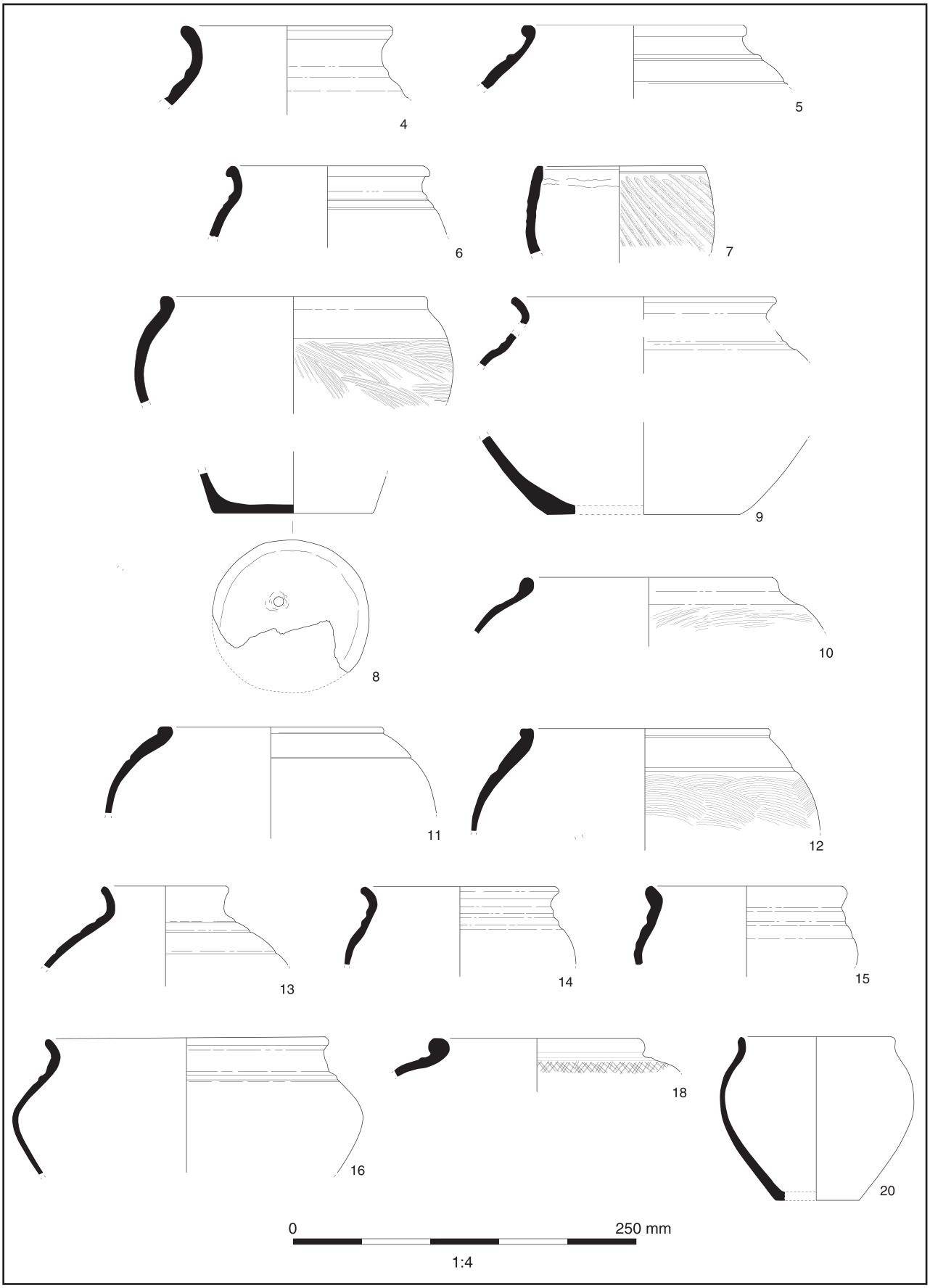


Figure 5.4 Grog-tempered 'Belgic type' pottery from Beechbrook Wood

regard to the pottery of the late pre-Roman Iron Age (see Booth 2006b). Despite the fairly regular occurrence of relatively well-dated continental pottery in pre-conquest contexts in Kent, very little such material was encountered on HS1 sites (and some of the few examples occurred residually in Roman contexts), leaving the locally produced coarse wares with no supporting framework. Pottery of 'Belgic' type (*sensu* Thompson 1982, 4) and related material was therefore the key material and chronological indicator (Fig. 5.4). The principal Late Iron Age ceramics in the region are fairly clearly identified, and consist mainly of vessels in grog and glauconite tempering traditions (although flint and shell traditions also occur), but the precise interrelationship of these remains to be elucidated and their chronological and spatial patterning may be quite complex. Sites defined as 'Late Iron Age' on ceramic criteria will have material in one or more of these traditions and could date from as early as the beginning of the 1st century BC, the date suggested by Champion (Chapter 4) on the basis of metalwork and other associations. This chronology would merit more detailed consideration than has been possible in the present chapter and may be subject to change in the light of future work. If the inception of the Late Iron Age ceramic traditions(s) of the region is placed in the early 1st century BC, however, it does not follow that all sites defined as Late Iron Age on ceramic criteria will necessarily have been established so early.

The date of the earliest appearance of the most widespread of the Late Iron Age ceramic traditions, grog-tempering, is difficult to establish precisely. The problem is exacerbated by the relative lack of independently dated assemblages with a significant Middle Iron Age as well as a Late Iron Age component. At one of the few such sites, Little Stock Farm, the latest groups appear to have been dominated by grog-tempered fabrics (cf. Morris 2006, fig. 3.9). At Beechbrook Wood, there is a radiocarbon date of 100 cal BC–130 cal AD (NZA-21220; Allen 2006) for a ditch group dominated by grog-tempered 'Belgic' pottery. This is entirely consistent with the suggested 'ceramic' date of *c* AD 25–60 for this group, but hardly helps address the issue of the earliest appearance of grog-tempered pottery in the region. At Beechbrook Wood this problem is exacerbated by the realisation that here, and at other sites in the Ashford area at least, the grog-tempered tradition was already in use in the Middle Iron Age—sites in this area cannot be assigned to the Late Iron Age simply on the basis of the presence of grog-tempered pottery fabrics alone; these have to occur in the vessel types typical of the period. In view of the evidence for the existence of distinct sub-regional Late Iron Age traditions such as the glauconite tempering of the Medway valley and a separate south-east Kent sand-tempered tradition (Thompson 1982, 14–15; Pollard 1988, 31), as well as flint-tempered and shell-tempered traditions in the northern part of the county (cf. Thompson 1982, 6–7, maps 1 and 2), the introduction or continued use of grog-tempering in the Late Iron Age need not have been synchronous across Kent (Booth 2006b; see also below). This complexity of ceramic traditions is highlighted by the recent identification of the probable use of Kentish Ragstone as temper in a distinctive group of material of mid 1st century AD date from Leybourne Grange, near West Malling (Biddulph 2011), although pottery of this type was not identified on HS1 sites.

Both grog and glauconite tempering traditions continued to be used up to and after the Roman conquest; indeed, grog-tempering in one form or another survived to the very end of the Roman period in Kent. Here as elsewhere the conquest is not reflected immediately in the ceramic record, but the Thameside industry started to develop quite early in the post-conquest period. It concentrated mainly on sand-tempered fabrics, amongst which the fine 'Upchurch' reduced ware fabric R16 (pottery fabric codes are derived from the Canterbury Archaeological Trust fabric series; for details of fabric codes and more extended discussion see Booth 2006b) is the most characteristic and also one of the earliest to appear, perhaps as early as *c* AD 50. It supplemented, rather than supplanted, the existing ceramic repertoire and it is possible that some sites saw little of this material before about AD 70, after which time it seems to have been ubiquitous, at least as far as the HS1 sites are concerned. It was particularly well-represented in the cemetery at Pepper Hill, and characteristic vessels constitute all the grave goods in the two mid-late 1st century graves from that site shown in the lower half of Figure 5.5.

Flavian to mid-2nd-century pottery assemblages are therefore characterised by the presence of fine 'Upchurch-type' grey wares, though they are far from being dominated by them. By the later 1st century, if not a little earlier, this production was augmented by both oxidised and reduced sandy wares from the Canterbury kilns. As with the Thameside products, the supply of Canterbury pottery to the HS1 sites, where it was never as common as Thameside material, spanned the early 2nd century, which seems to mark the transition from an 'Early' to a 'Middle' Roman ceramic phase. At the majority of sites the most obvious marker of this change was the appearance of Thameside BB2-type ware (fabric R14) after about AD 120.

The Thameside and Upchurch industries continued to be a significant source of pottery for the region through the first half of the 3rd century, but Canterbury coarse ware production did not significantly outlast the 2nd century (Pollard 1988, 93–7). From the end of the 2nd century onwards grog-tempered 'native coarse ware' (fabric R1; ibid., 98) was a component of many assemblages. Although it was not very common on HS1 sites, nor always easily separated from other grog-tempered fabrics, it is characteristic, alongside Thameside products, of the later part of the 'Middle Roman' ceramic phase, up to about the middle of the 3rd century.

A Late Roman ceramic phase is marked by the appearance of characteristic widely-distributed indicators such as Oxfordshire products, which may have reached the region as early as the mid 3rd century, although certain evidence of this is scarce (Pollard 1988, 121–2; cf Young 1977, 133). The most readily identifiable contem-

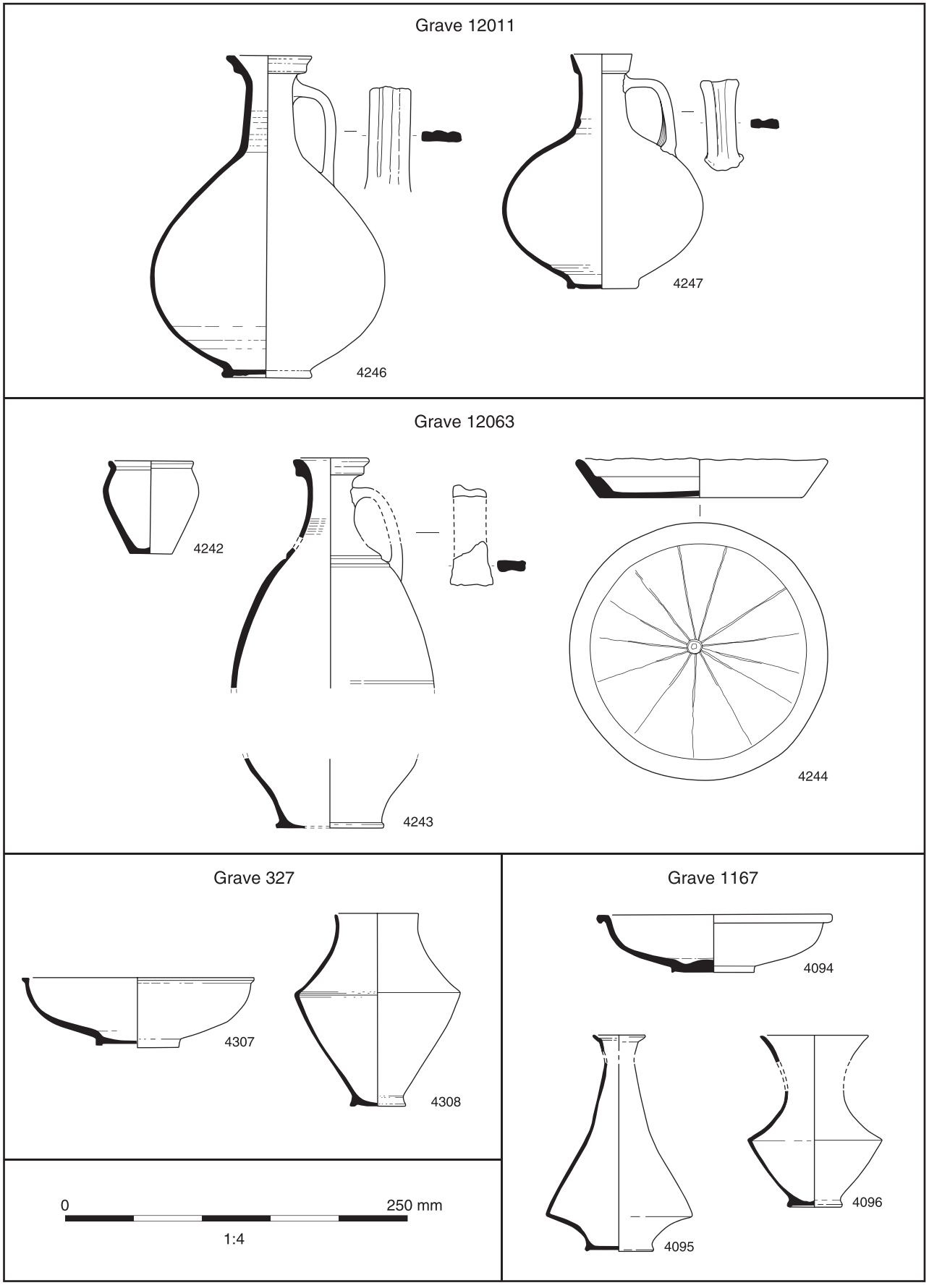


Figure 5.5 Pottery assemblages from mid 1st and mid-late 1st century graves at Pepper Hill

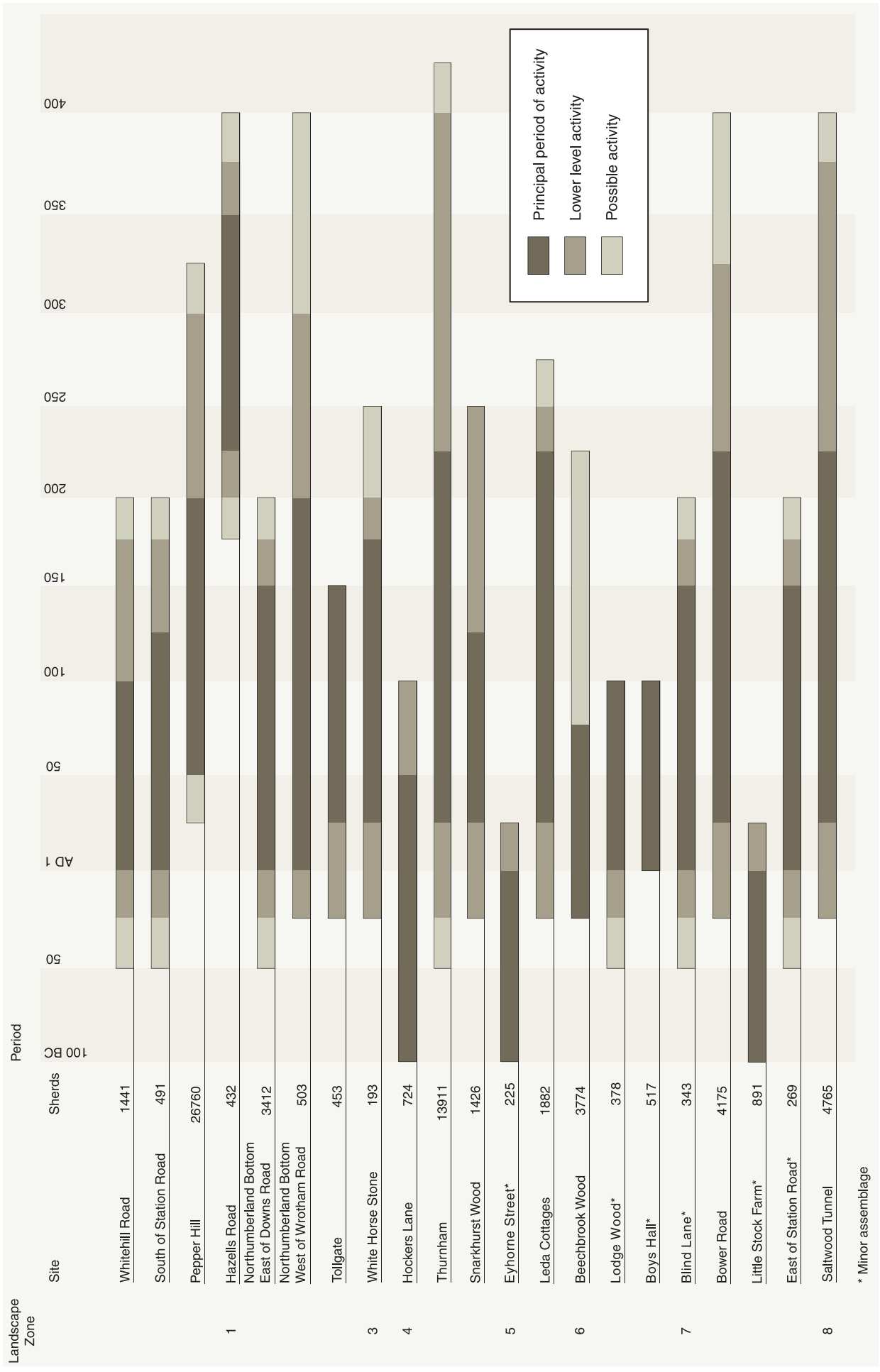


Figure 5.6 Late Iron Age–Roman ceramic chronology by site along the HS1 route

porary coarse wares are the Late Roman grog-tempered wares of the LR1 family and, to a lesser extent, sand-tempered fabrics of the LR2 group, neither of which can be assigned to a particular source area but are likely to have been produced within the county from the later 3rd century onwards. Non-local coarse wares consisted mainly of Alice Holt grey ware (fabric LR5), supplemented to a lesser extent by oxidised 'Portchester D' fabric (LR6) and other occasional fabrics. Some of these fabrics, including the local ones LR1.3–LR1.6 and the 'imported' LR6, may have belonged exclusively to the mid/late 4th to early 5th century and mark the latest identifiable stage in the evolution of the Roman pottery of the region.

The ceramic outline just discussed provides the basis for the individual site chronologies set out in Fig. 5.6. This shows a certain amount of variability in site histories within a relatively consistent broader framework, with a heavy emphasis on settlement activity in the Late Iron Age and Early Roman periods and more variable evidence for continuing activity from the mid 2nd century onwards. Assemblages were rarely large enough to allow detailed consideration of potential variability in intensity of occupation within the overall site date ranges and no such evidence (for temporary abandonment or significant reduction of settlement activity, for example) was recorded. The resulting 'broad brush' chronological frameworks may therefore fail to reflect nuances in the sequence of development of individual sites, but this could only have been achieved with substantially larger pottery assemblages, ideally supplemented by non-ceramic evidence. Generally, however, individual sites seem to have had continuous sequences of development (even where this involved significant spatial reconfiguration, as for example at Snarkhurst Wood or Bower Road). In only a single case, at Hazells Road, does the dating evidence suggest that a site may have developed in a new location, potentially as a successor to an earlier component of the local settlement pattern, now disused. The Northumberland Bottom site at East of Downs Road may have been the predecessor in this instance.

Environmental setting

Evidence for the character of the environment/landscape during the Late Iron Age and Roman periods comes from animal bones, charred and waterlogged plant remains, pollen, insects and molluscs, although some of these categories of material were only examined at a very small number of sites as a consequence of considerable variation in degree of survival. The evidence overall is reviewed by Giorgi and Stafford (2006). One of the main problems is that the environmental conditions implied by the biological remains may vary significantly over short distances (ibid.). Nevertheless a few key sites produced evidence that sheds significant light on the local/regional environment. Data include molluscan assemblages, particularly from dry-valley deposits along the Kent Plain and North Downs section of the route, a wide range of remains from Thurnham, 'waterlogged' plant remains from Parsonage Farm and pollen and macro-plant remains from East of Station Road.

The landscapes of the North Kent Plain and North Downs section of the HS1 route probably carried very little woodland by this period. Molluscan assemblages from colluvial sequences in the dry valleys of the area invariably comprise species with open-country affinities suggestive of arable and short-turfed grassland. These deposits probably resulted from soil erosion as a consequence of agricultural intensification and the practice of autumn sowing adopted in many areas during the later prehistoric and Roman periods.

On the south-west side of the Downs Road dry valley a distinct change in colluviation, marked by the presence of relatively coarse chalk inclusions, may have been of Late Iron Age or Early Roman date and may represent intensification of agricultural activity (ploughing) on the upper parts of the valley slopes. In contrast, molluscan remains from Middle to Late Iron Age features on the higher ground to the east, at Northumberland Bottom, comprised predominately shade-demanding taxa with a small open-country element indicating the persistence of some scrub or woodland environments during this period. The Late Iron Age to Early Roman assemblages, however, demonstrated more open conditions, containing mixed assemblages of open country and shade-demanding taxa. Further east again the Roman molluscan assemblages suggested the presence of established, dry open conditions, either open pasture or arable habitats in the vicinity, indicated also by the presence of colluvial deposits in the Wrotham Road dry valley. A possible exception to this pattern of open ground might, however, be suggested in landscape Zone 2, where there was a striking absence of Late Iron Age and Roman sites. Although this absence may relate in part to the presence of the closely adjacent Cobham villa, which could have dominated the local landscape to the exclusion of other settlement types, another possibility is that parts of this landscape were occupied by woodland, suggested by the presence of large tracts of historic woodland in the area today. There is, however, no direct evidence for this.

Much more certain is the fact that the molluscan assemblages from the scarp slope of the Downs at White Horse Stone generally indicated short turfed grassland and arable environments within the catchment. Molluscs from a ditched trackway of Roman date stratified within colluvial deposits in the valley bottom suggested the presence of scrub, possibly a hedge line, but in an otherwise open environment. A possible stabilisation horizon at the top of the Roman colluvium at White Horse Stone was indicated by peaks in magnetic susceptibility and shell abundance. The absence of colluviation during the post-Roman period is possibly linked to a change in land use that may have been initiated sometime in the Roman period, perhaps indicating a heavier emphasis on pastoralism.

Five kilometres south-east of White Horse Stone, at Thurnham in the Vale of Holmesdale, good environ-

mental evidence was recovered from the late Roman well. The waterlogged plant remains (including mosses), pollen, insects and molluscs all suggested a fairly consistent pattern of woodland regeneration during this period, but here it is difficult to determine the extent to which this reflects wider conditions rather than the character of the immediate vicinity of the well itself.

The insects indicated partly wooded conditions, the majority coming from a range of habitats in the surrounding landscape including woodland and grassland. Scarabaeoid beetles pointed to the presence of domestic animals. There were relatively few, mainly small, water beetles, which would have lived in the well itself.

The molluscs included both land and freshwater species, with evidence for an environment of broadleaf deciduous woodland with an abundance of shade-loving species. There were almost no dry land open country snails. Freshwater slum species reflected damp conditions; stagnant or standing water within the well or possibly puddles around it, while the presence of lush vegetation was suggested by marsh species that are found on erect vegetation such as reeds and sedges. There were also damp tolerant terrestrial molluscs.

Plant remains from the well also point to a wooded environment, with macroscopic evidence of 'large' trees, such as oak and ash as well as smaller trees including species which were both tolerant and intolerant of shade (for example holly (*Ilex aquifoilum*) and sloe respectively). There was a moderate range of ruderals, especially stinging nettle (*Urtica dioica*), suggesting human disturbance around the well, but there were few wetland plants, for example sedges (*Carex* sp.), and only occasional grassland plants. The general picture is of oak/ash (also major components of the charcoal assemblages) woodland and possible trampled areas around the well. Tree pollen was dominant (75–85%), comprising mainly ash but also with evidence for oak, lime (*Tilia* sp.) and alder (*Alnus* sp.). Shrubs (15%) were dominated by hazel. There were only small counts of herb (grass) pollen and few records for aquatic/marshland plants. Mosses from within the well probably grew on its walls (on both dry and wet areas) and on overhanging trees. *Leucodon sciuriodes*, which is often associated with ash trees, was common.

Together the evidence for woodland at Thurnham is very strong, but the picture is likely to have been skewed by the clear indications that the well was overhung by one or more ash trees, resulting in the unusual quantities of pollen of this species (which is usually underrepresented) and of other taxa closely associated with ash trees. The extent to which this distinctive environment was representative of the surroundings of the villa as a whole is therefore very uncertain.

Another very localised environment was examined at Parsonage Farm, a site with no major Roman settlement component but close to Beechbrook Wood. Here plant remains from a stream channel represented at least three discrete habitats (woodland, wetland and disturbed ground). There was less definite evidence for woodland in the (?)Late Iron Age period (compared with earlier deposits) and a brushwood platform built on or close to the stream bank at about this time was associated with wetland plants representing a relatively disturbed environment, but also showing that the channel was submerged in winter, drying out seasonally. Evidence for mixed broad-leaved woodland came from a channel fill cutting deposits that sealed the platform, but a change to wetter conditions is also suggested by the wetland plants here, indicative of water standing for all or almost all of the time. However, this particular channel was undated and may have been substantially later than the earlier deposits (and very likely not of Roman date at all). In contrast, both the pollen and waterlogged plant remains from East of Station Road, with some evidence for Late Iron Age activity, suggest a fairly open environment in the vicinity of that site.

Further light is shed on the character of the woodland environment in this period by the charcoal remains, recovered from nine sites covering all the landscape zones except the North Downs Zones 2 and 3. A range of taxa was present. The best-represented species in most of the zones were oak and ash, suggesting the widespread availability of these woodland resources. Oak was typically dominant in deposits relating to metalworking (eg at Leda Cottages, Beechbrook Wood and Thurnham), although one sample from a furnace at Leda Cottages produced a large amount of alder. The preference for oak charcoal in iron-working is matched elsewhere in the region, for example at Westhawk Farm, Ashford (Challinor 2008) and beyond (eg Figueiral 1992), but was not universal in the Wealden iron industry (Cleere and Crossley 1985, 37; Sim and Ridge 2002, 38–9).

Oak was equally the preferred fuel for cremation pyres, for example at Pepper Hill, Northumberland Bottom, Beechbrook Wood and Boys Hill Balancing Pond, although there were occasional exceptions. The assemblage from a Late Iron Age cremation pit at Chapel Mill was dominated by ash, with a little oak and also tubers (presumably for kindling), while another cremation burial from this site yielded alder/hazel charcoal. Another unusual charcoal assemblage was from a Late Iron Age cremation burial at Beechbrook Wood in which the greater part of the charcoal was from gorse/broom (*Ulex europaeus/Sarothamnus scoparius*), while hazel was also well-represented. At Pepper Hill, three unurned cremation burial groups were dominated by ash, one of the urned cremations had 30% alder charcoal and a pyre deposit had mixed oak, ash and field maple (*Acer campestre*) charcoal. Overall, however, oak was the dominant species in 36 of the 40 assemblages examined in detail at Pepper Hill (Challinor 2006) and it is clear that it was usually the fuel of choice there.

Evidence from agricultural structures shows the use of oak and ash in an oven at Thurnham and mainly ash with oak and Maloideae (hawthorn, apple, pear etc), maple and hazel in the corn drier from the same site. Ash was also the dominant charcoal in a late Roman oven from Saltwood Tunnel, together with a small amount of Prunoideae (cherries, blackthorn etc) and hazel, while in

the late Roman corn drier at Hazells Road the stokehole was full of oak but charcoal from within the structure was dominated by hazel.

The charcoal evidence suggests that there was a ready supply of oak at many HS1 sites, for example through the Roman period at Thurnham and throughout the use of the cemetery at Pepper Hill. While the wide range of other woodland taxa represented at sites such as Bower Road might suggest a scarcity of oak resulting in use of other species it is, rather, considered to indicate that locally available material was exploited and, in tandem with the widespread evidence for the use of oak elsewhere, to suggest that there was relatively little pressure on woodland resources, where present, during this period (Giorgi and Stafford 2006). The one possible exception was at Saltwood Tunnel at the south-east end of the HS1 route, where oak was widely used in the early prehistoric but ash was the main charcoal recovered from contexts of Late Iron Age–Early Roman date. A reduction in the range of taxa in the Late Roman period, and the presence of large quantities of charcoal of Rosaceae, characteristic of open, scrub woodland, suggest that there was less woodland cover at this time (ibid.).

The overall picture, though patchy, therefore suggests a landscape not vastly different from that seen today; the northern and southern coastal zones (Zones 1, perhaps 2 (for which there is very little evidence in this period) and 8) and the North Downs were therefore largely open and used for mixed agriculture, though there was probably an emphasis on pasture on the upper part of the Downs in Zone 3 and perhaps even in parts of Zone 1. Occasional woodland was encountered and some of the numerous trackways were probably lined with hedges. Elsewhere, in the Vale of Holmesdale and the Chart Hills (Zones 4–7), more woodland was in evidence, but the density of settlement, particularly in Zone 6, suggests that this may have been, at least locally, quite limited in extent. Here the fields associated with individual settlements perhaps formed substantial contiguous areas of open ground, rather than presenting a picture of localised woodland clearance around individual farmsteads—a pattern of settlement more characteristic, for example, of parts of the Weald in later periods (and perhaps also in the Roman period (Aldridge 1998), though the evidence is still slight). Generally, however, while the data suggest the ready availability of woodland resources, they are insufficient to allow firm conclusions to be drawn on the exact balance between the extent of woodland, arable and pasture in these areas.

The data also provide relatively little time depth within the Roman period. It seems almost certain that the apparent expansion of settlement in the Late Iron Age–Early Roman period would have led to increased woodland clearance at this time, but only at Saltwood are there indications that this may have resulted in a change in the character as well as simply the extent of woodland. One interesting aspect is the general scarcity of evidence for woodland management practices. The widespread availability of woodland resources suggested above may mean that there was little need for such practices, in contrast to the situation in the vicinity of major towns such as London (see eg Brigham *et al.* 1995, 39–41). In the Weald, where the demand for timber for conversion to charcoal for use in iron smelting would have been enormous, there is nevertheless no consistent picture of woodland management (Cleere and Crossley 1985, 37; Sim and Ridge 2002, 39–42) and at Westhawk Farm, close to the HS1 line, detailed analysis of charcoal associated with iron-production features provided no indication of the use of coppice material (Challinor 2008). Existing evidence therefore suggests that processes of natural regeneration may have been relied upon to maintain supply in an extensive resource. Less clear is the extent of possible specific woodland regeneration in the Late Roman period, which has been suggested at Thurnham, although the evidence there could reflect very local conditions. In broader terms regeneration must be considered a possibility in view of the apparent decline in rural settlement at this time. This is discussed further below.

Infrastructure and the pattern of major settlements

Present evidence gives little scope for establishing the existence of significant variation in site character in the Late Iron Age (for morphological variation see below), and therefore provides no basis for construction of site type hierarchies. There is equally relatively little evidence from the surrounding area through which the HS1 transect runs to provide a basis for any hierarchical framework of settlement. Overall, Kent has few obvious 'central places' in the Middle Iron Age. By the Late Iron Age hillforts remained in use in the extreme west of Kent and at Bigbury Camp near Canterbury. The latter, possibly abandoned after the invasion of Julius Caesar in 54 BC (Thompson 1983, 258–9), was probably superseded by an extensive, nucleated open settlement at Canterbury itself, characterised as an unenclosed oppidum (Blockley *et al.* 1995, 458). Other sites of broadly comparable type, and of more direct relevance for the understanding of developments in the HS1 area, are at Quarry Wood, Loose (most of the site is within the parish of Boughton Monchelsea) and perhaps at Rochester, the latter sometimes thought to have succeeded the former as a regional focus (eg Detsicas 1983, 2; Parfitt 2004a, 16). The site of Quarry Wood, just south of Maidstone, lies some 6.5km south-west of the HS1 line at Thurnham. In contrast to Canterbury it has a substantial single rampart and ditch (Kelly 1971), which probably defined one component of a larger complex, indicated by other linear earthworks (ibid., 73). Apart from the earthworks the site is only poorly known, but recent work at Furfield Quarry nearby has revealed a major rectilinear enclosure probably of Late Iron Age date (Mackinder 2005) and other features very likely forming part of the Quarry Wood oppidum complex. It is not yet clear if these discoveries will refine understanding of the chronology of the oppidum-related

features, but the occurrence of substantial Early Roman structures and features at the same site (see further below) must be significant. An apparent concentration of Iron Age coin finds in this area, including a hoard of potin coins from Thurnham (Richardson 2003), may underline the role of Quarry Wood as a local power centre. The importance of Rochester is also demonstrated by the discovery in excavation of, amongst other items, 'coin moulds' and Iron Age coins (Chaplin 1962), but the overall extent of this activity is unknown and the attribution of some other Iron Age coins to Rochester is less certain (Holman 2000, 227–8).

In the case of each of these three centres the nature of their relationships with other elements of the settlement pattern remains elusive. They may have served for example as centres of trade, although socially-controlled distribution mechanisms could have been just as important (but these might well have operated from the same locations, in which case distinguishing between these mechanisms on the basis of distribution patterns would be impossible). In commenting on the increasing similarity of Iron Age coin type ratios east of the Medway after *c* 50 BC, however, Holman (2000, 224–5) suggests that this indicates potential economic unity, implying a market function for at least some of these types. Imported pottery is amongst the few classes of material for which distribution can be demonstrated clearly, but the quantities of such material reaching HS1 sites are such that the nature of the dissemination remains speculative—though the quantities themselves might suggest that this was not through normal trade.

Subsequent to the Roman conquest two of the three possible centres were directly incorporated into the Roman infrastructure system, Canterbury and Rochester both becoming major urban centres on the line of Watling Street, although the urban character of Canterbury in the Early Roman period, in particular, is unclear and it may have been seen principally as a religious sanctuary at this time (eg Millett 2007, 158). There is no clear evidence that the Loose/Boughton Monchelsea oppidum site retained a role as a significant nucleated settlement in the Roman period (see below), but its ?focal enclosed area lay only just over 1km west of the line of the road from Rochester to the Weald, while the Furfield Quarry site was even closer to this road and would have been easily accessible from it.

The relative and absolute chronology of the pattern of major Roman roads is uncertain, but it is likely that the Watling Street route, joined at Canterbury by the road (Margary (1973) route 10) originating at Richborough (for discussion of the Richborough to Canterbury part of this route see Bennett *et al.* 2010, 328–35), was the earliest, and it was certainly the most important in strategic terms (Detsicas 1983, 33, 35). Most of the other major Roman roads ran from the two Watling Street 'hubs' of Canterbury and Rochester (see Fig. 5.1). Of these the most important in terms of the HS1 sites were Margary roads 12, 130 and 13. The first of these, Stone Street, connected Canterbury with the coastal installations at Lympne, but although intersected by the HS1 route it was not seen during work in the vicinity. Road 130 ran south-westwards from Canterbury up the Stour valley towards the Weald and would have been traversed by the HS1 route at Ashford, though the details of its course through the later town are obscure and opportunities for observation in this area were extremely limited. Road 13 ran south from Rochester, leaving the valley of the Medway to cross the North Downs, where it was almost certainly encountered (in the form of north-south aligned roadside ditches, 11–13m apart) at White Horse Stone, roughly 100m east of the alignment proposed by Margary (1973, 44) (Fig. 5.7).

Road 13 descends into the Medway Valley at Maidstone, whence it trends slightly south-eastwards before turning south again, close to the Loose/Boughton Monchelsea oppidum, a change of alignment that may be significant, to a course into the Weald, where it is met by road 130 near Benenden. The 'hypotenuse' of the approximately right-angled triangle formed by these two roads was made by road 131, Margary's Maidstone-Dover road (1973, 49–50). As Margary says, the exact course of this road between Dover and Lympne has never been established, although a likely route is shown on Figs 5.1 and 5.2. From Lympne, however, the line northwestwards is clear as far as south Ashford, where it met the line of road 130 at what is now known to be the major roadside settlement of Westhawk Farm (see below). There is no evidence for the crossroads which Margary envisaged here (ibid., 49) and it appears that the northwesterly continuation of this road towards Maidstone was from a point some distance further west along the line of road 130, in the vicinity of Stubbs Cross (Aldridge 2006, 180). Amongst other things this evidence is useful in demonstrating that the construction of road 131 was subsequent to that of road 130, which at Westhawk Farm can be seen to have been in existence perhaps as early as the mid 1st century AD (Booth *et al.* 2008).

The line of road 131 roughly mirrors the NW-SE trend of the successive topographical zones in this part of the county, but at some distance from what seem likely to have been the more extensively settled *pays* of Holmesdale and the Chart Hills. There is, however, no evidence for a major road running along these zones, although the presence of tracks linking settlements here must be considered almost certain. While it is possible that the prehistoric 'North Downs trackway' (Parfitt 2004a, 16) remained in use, this route did not link major settlements and was in character substantially different from the other principal Roman roads. It may have retained only local significance.

All the main centres of the Roman settlement pattern of Kent were linked by elements of the major road system. Canterbury, the largest, became the centre of the *civitas Cantiacorum*. It and Rochester were the only Roman towns to be defended (although the possibility that London was also part of the *civitas Cantiacorum* (Millett 1996, 35) should be remembered), but Canterbury apparently never had earthwork defences (unlike Rochester) and was not enclosed with a wall until the later 3rd century. Unfortunately, the defences are the best-

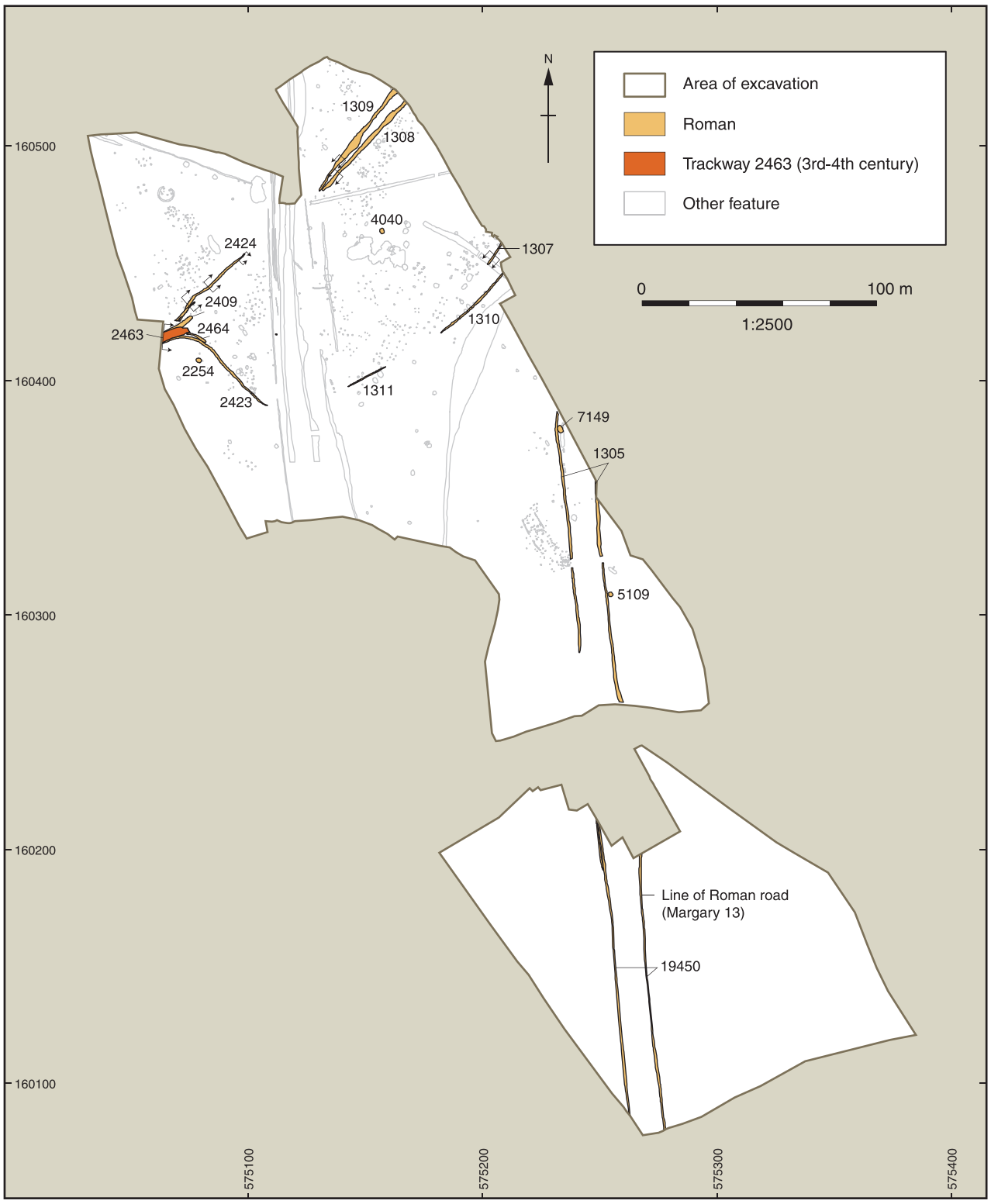


Figure 5.7 White Horse Stone: plan of Roman features, showing line of Roman Road (Margary 13)

known aspect of Roman Rochester (Ward 2004; for longer summaries of the town see Detsicas 1983, 54–9; Burnham and Wacher 1990, 76–81), although it is clear that the interior may have contained a significant density of buildings, some of them substantial. There has been much speculation about the status of Rochester. The idea that it may have served as the centre of a western pagus of the Cantiaci is plausible but, as Detsicas (1983, 38, 59) admits, not supported by any direct evidence. Burnham and Wacher's elevation of the town to the status of 'potential city' (1990, 76–81) therefore appears rather arbitrary (cf Booth 1998, 615). As a port and a major river crossing (the name *Durobrivae* means at 'bridge(s)-fort' (Rivet and Smith 1979, 347; for the bridge itself see Flight 1997)), however, it was clearly of great regional importance. Whether there was a significant perceived or

actual distinction between Rochester and other nucleated settlements along the line of Watling Street is less clear. Of these sites, named in the sources, that near Syndale Park, Ospringe, between Canterbury and Rochester, was probably the *Durolevum* of the Antonine Itinerary (Rivet and Smith 1979, 351), and extended some 400m along the line of Watling Street (its east and west limits defined by cemeteries) and at most *c* 100m south of that road line (Sibun 2001, 191). West of Rochester the site of *Vagniacis* is certainly Springhead (Rivet and Smith 1979, 485), the small town which lies close to the west end of HS1 Section 1 and formed the focus for the settlement encountered in topographical Zone 1 of the project, while *Noviomagus* (probably Crayford; Bird 2000, 156; Rivet and Smith 1979, 428), still relatively little known as a major settlement, lay some 11km further west and probably exerted little influence on the HS1 rural settlements.

This was clearly not the case with Springhead, however. Already well known for its temple complex and other structures (summarised by Burnham and Wacher (1990, 192–8) and more critically by Detsicas (1983, 60–76)), understanding of the site has been significantly enhanced by the excavation of the Pepper Hill cemetery, almost certainly directly associated with it, and by fieldwork undertaken for Section 2 of HS1 (Biddulph 2006a; OWA 2006; Andrews *et al*. 2011) (Fig. 5.8). In particular the latter has added immensely to our knowledge of the religious aspects of the site. The head of the Ebbsfleet River was enclosed on the eastern side by a substantial, curving ditch dug in the Late Iron Age and remaining open into the Early Roman period. Late Iron Age features were absent from within this area, but contemporary finds included a substantial number of coins. Running north from this feature two parallel ditches defined a trackway, possibly a 'ceremonial' or processional way close to, but not on the crest of the slope on the east side of the valley. This extended for *c* 450m and led up from the edge of the river, terminating at a point high up on the slope whence the springs and the whole of the surrounding area could have been seen. A large Late Iron Age rectilinear enclosure extended eastwards from the 'processional way' to the top of the slope and onto the adjacent plateau.

Elements of what appears to have been a large, Early Roman, sub-rectangular enclosure lying just south of the head of the Ebbsfleet have been identified on several occasions during previous investigations at Springhead. Possible components of this enclosure may have related to the curving Late Iron Age–Early Roman ditch which enclosed the area around the east side of the springs and may have formed an integral element of the Early Roman enclosure.

In the Early Roman period a metalled road, flanked by re-cut ditches, led SSE from the head of the Ebbsfleet towards the enclosure. It was subsequently buried beneath up to a metre of ?dumped deposits, upon which were small structures of late 1st to early 2nd century AD date. These were succeeded by a sanctuary complex of two main phases, the central part within an area partly defined by fence and pit lines. The earlier phase was of timber and the later and more fully-developed phase was built partly in stone. Both included a temple building facing the spring head from the south-east. A variety of ancillary structures and features, including pits with special deposits, was present. Finds indicate use of the complex into the 4th century but the majority of the structural evidence is no later than 2nd century in date.

West of the head of the Ebbsfleet, part of Watling Street, a subsidiary road heading north-west, associated property boundaries and a variety of structures, including a possible bathhouse, a further temple, a late Roman wayside shrine, timber buildings of several phases and burials were examined.

Springhead can now be seen as both more extensive and more complex than previously understood. The religious activity within the settlement is clearly polyfocal, having significant components outside the previously-known temple enclosure, and there can be little doubt that the principal importance of the settlement lies in this aspect.

The major settlements of Roman Kent lay principally on Watling Street and in coastal locations at the ends of the roads radiating from Canterbury—Reculver, Richborough, Dover and Lympne. Further west a substantial roadside settlement with an estimated area of *c* 15 hectares has now been identified at Westhawk Farm, just south-west of Ashford at the junction of Margary's roads 130 and 131. This lacks the stone buildings found in the other sites of this category, but incorporated elements of regular planning in its layout (Booth *et al*. 2008). The structural evidence included an irregular polygonal shrine (Booth 2001). Further north, Maidstone has been discussed as the possible site of a further nucleated settlement, for example by Wheeler (1932, 98–101, agnostic), Webster (1975, fig. 8, optimistic) and Detsicas (1983, 78–9, dismissive). The evidence is at best inconclusive and has been summarised most recently by Houliston (1999, 158) 'all that can be said is that there is an intensification of activity along the routes of the Medway and the main Rochester road in the Maidstone area'. In terms of the distribution of major settlement, however, Maidstone remains a plausible location for at least a modest nucleated site (Booth and Howard-Davis 2003, 26), perhaps related in some way to the nearby presence of the Late Iron Age centre at Loose/Boughton Monchelsea, and this aspect of the area merits further attention.

The major coastal sites all have an important military aspect, in the case of Richborough from the conquest period onwards, but there is little indication of significant military activity associated with any of the other towns and nucleated settlements. An early ditched enclosure at Springhead, sometimes thought to be of military origin (Penn 1965; cf Detsicas 1983, 60–2) was partly examined in HS1 Section 2 work, which does not indicate a specific military character (OWA 2006), although the suggestion of some military presence at Springhead is not inherently improbable. Military involvement in road and bridge construction (eg over the Medway at Rochester) is likely, but need not have been

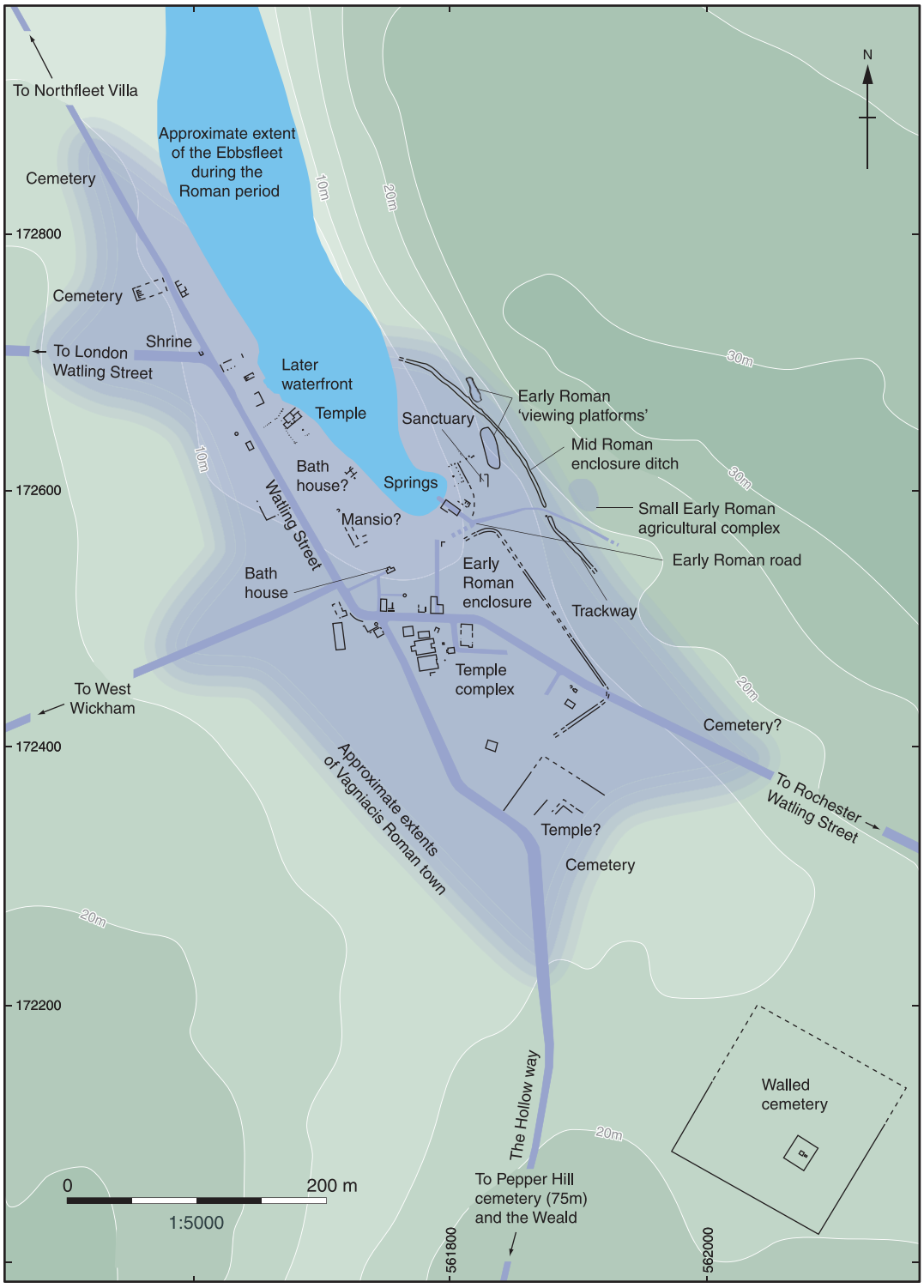


Figure 5.8 Plan of Roman Springhead (after Andrews *et al.* 2011, fig. 4.2)

long term. The impact of the military after the immediate conquest period (regardless of the location of the invasion of AD 43) may therefore have been relatively slight in many cases. It could have been felt most specifically in relation to iron production in the south-western part of the county; this is discussed further below. An alternative view, however, is that 'military control of the terminal points of the route through Kent from the Channel ports to London could have given Early Roman Kent a profoundly military character' (Mattingly 2006, 138). There is no evidence from the HS1 sites that would support such a perspective, but possible evidence of military activity close to the line of Watling Street is known a little further west, near Dartford, where a potential temporary camp has been identified (Philp and Chenery 2001; Simmonds *et al.* 2011, 76, 194–5). This is not closely dated, but can almost certainly be assigned to the 1st century AD.

The Late Iron Age and Roman settlement pattern

There was notably little connection between those HS1 sites which produced Late Iron Age (as defined above) and later pottery, and those which produced material in earlier traditions analysed as part of the later prehistoric ceramics programme. Many sites had evidence for activity of one or the other major period, but few had evidence for both, and where this did occur there was often spatial discontinuity between features assigned to the two periods, as for example at Beechbrook Wood (see below). The implication of this is that there was significant discontinuity of settlement patterns, at least at very local level, between the Middle and Late Iron Age, although occasional exceptions exist, notably a recently-excavated site at Ashford Orbital Park very close to the HS1 site of Boys Hall Moat, which has Middle and Late Iron Age but no Roman occupation (Anker and Biddulph 2011). Such sites apart, the absolute chronology of Middle to Late Iron Age settlement discontinuity is uncertain, however, for ceramic-related reasons such as a lack of closely-dated imports outlined above and because the problem has not been addressed by a concerted programme of radiocarbon dating.

The clearest example of a close but slightly indirect relationship between settlements of Middle Iron Age and Late Iron Age–Early Roman date amongst the HS1 sites is seen in the southern part of the large site at Beechbrook Wood (Fig. 5.9). Here a double-ditched oval enclosure (Enclosure 3072) assigned to the Middle Iron Age was succeeded by ditched features close by to the west and south-west, the alignments of some of which make it clear that they respected the outer enclosure ditch, although the plan is not sufficiently coherent to support the suggestion that these features should be seen as an 'extension' of the Middle Iron Age enclosure (Fig. 5.10). More interesting, in terms of the relationship between these two phases of activity, is the suggestion that the placing of a small group of Late Iron Age cremation burials close to the entrance of Enclosure 3072 was related to termination of use of the enclosure (Brady 2006a).

The proximity of and spatial relationships between the Middle Iron Age and later features here are sufficient to suggest that continuity of community may be envisaged, even though the absolute chronology of the pottery is insufficiently precise to demonstrate this. A similar situation may have existed at Little Stock Farm where Late Iron Age enclosures overlay a Middle Iron Age trackway and other features (see Fig. 5.15). In general, however, such patterns are notable for their rarity in the HS1 transect.

There is equally relatively little evidence for continuity of more extensive landscape features, some of which might have been expected to survive whatever the

Figure 5.9 Beechbrook Wood: plan of Middle Iron Age to Roman features

Figure 5.10 Beechbrook Wood South: plan of Middle Iron Age to Roman enclosures

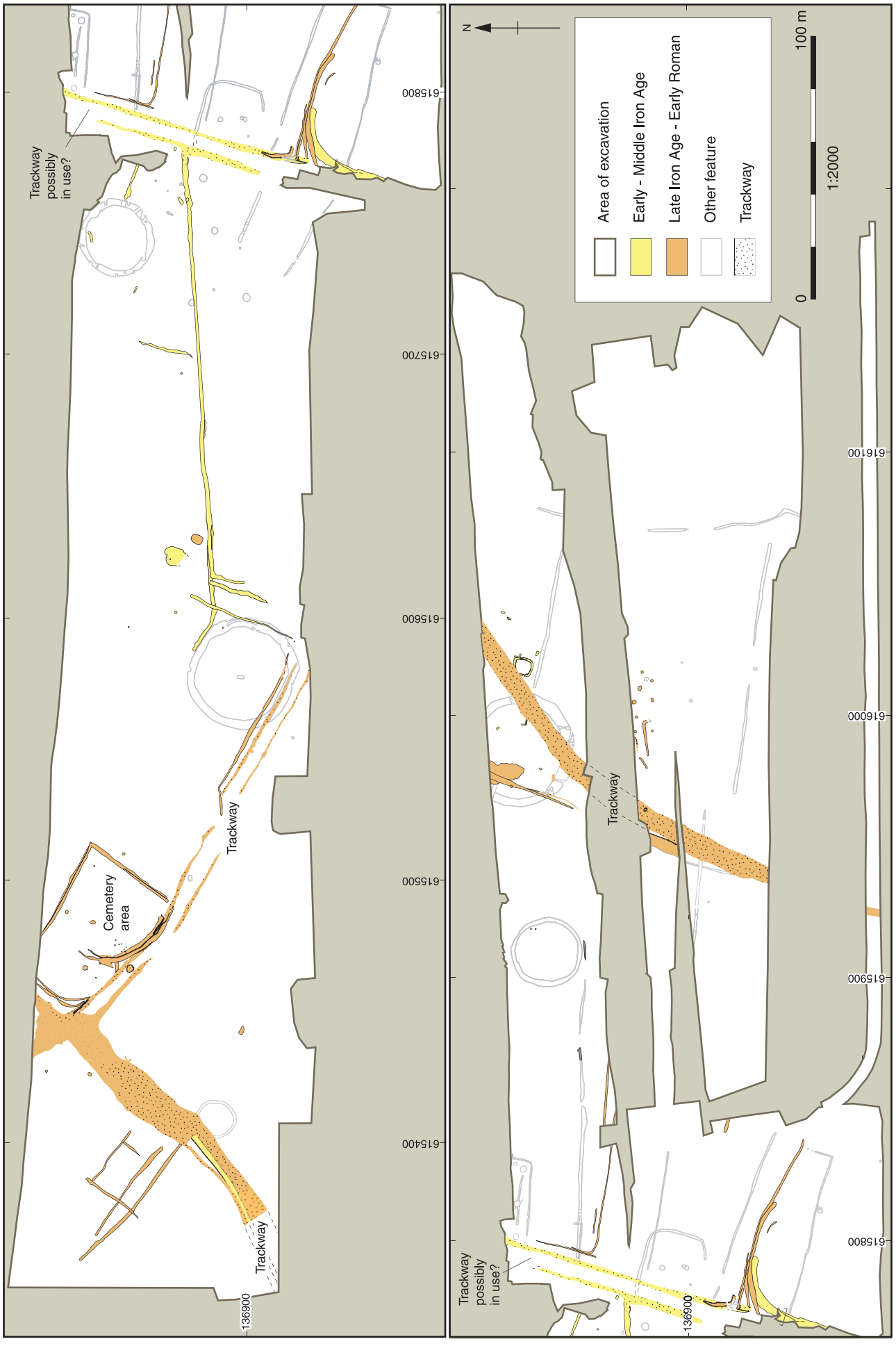


Figure 5.11 Saltwood Tunnel: overall plan of Iron Age and Roman features showing location of trackways

causes of settlement relocation may have been. At Saltwood Tunnel, three trackways, all aligned broadly NE-SW, which are thought to have originated in the Early/Middle Iron Age, all survived in use into the Roman period and one (trackway 10156, at the western end of the site) was joined by subsidiary trackways of Roman date (Fig. 5.11).

Again this pattern appears unusual, although this may be a consequence of the inherent difficulty of dating such features, some of which—while apparently of Late Iron Age and later date—might have been established earlier. On balance, however, the consistent association of many trackways with dating material and with settlement components apparently exclusively of Late Iron Age and Roman date suggests that this was indeed the time when they were put in place. Occasionally trackways relate to earlier settlement features but without any indication that the latter were maintained into the Late Iron Age or later. So for example at White Horse Stone (see Fig. 5.7), a trackway entering the site from the south-west led into an area defined by ditches which surrounded the location of the majority of the Iron Age settlement, by now long out of use, but themselves enclosed no significant Roman features. Generally, however, identification of ditched trackways as landscape features of later Iron Age and later date, rather than having earlier origins, is consistent with wider patterns discussed by Taylor (2007, eg 57–65, 113). Overall, therefore, the contrast between Middle and Late Iron Age patterns of activity may represent not discontinuity of settlement location between the two periods but rather a significant and perhaps rapid increase in the density of settlement in the later period, along the lines discussed by Hill, who sees parts of Kent as amongst those regions which 'seem to have had relatively little permanent settlement *c* 300–100 BC' (Hill 2007, 24). From a Roman perspective at least, the HS1 Section 1 evidence seems potentially consistent with this view, with an increase in density of settlement implied for the period from the early 1st century BC onwards.

As already mentioned, many HS1 sites may have grown up in the second half of the 1st century BC. At Hockers Lane, Eyhorne Street and perhaps Little Stock Farm, however, occupation probably commenced as early as the beginning of the century. This is best established in the case of Hockers Lane, where the pottery evidence was supplemented by a Class I potin coin, stratified in a ditch of the first phase (although such coins could have circulated right up to the time of the Roman conquest; Holman 2000, 208). The pottery assemblage from Eyhorne Street was smaller and less well characterised and, unusually, activity here (and also at Little Stock Farm, as at Ashford Orbital Park mentioned above) may have ceased in the 1st century AD before the Roman conquest. For the majority of the remaining sites a start date about the middle of the 1st century BC or within the second half of the century seems likely, with continuity of activity thereafter at least into the 2nd century AD in most cases. Of the 30 'locations' of Late Iron Age and/or Roman activity mentioned above (sites more than *c* 500m apart, as in the north and south parts of Beechbrook Wood, have been considered to be separate locations), pottery evidence indicates that a pre-conquest origin is likely at 27, with only Pepper Hill (effectively), Hazells Road and a minor site at Nashenden Valley being entirely of post-conquest date.

The evidence just discussed suggests a relatively dense pattern of activity, although with a total route length for HS1 Section 1 of *c* 74km (excluding the length of the North Downs Tunnel but including the 5.5km stretch through Ashford and Sevington where archaeological observation was at a minimal level) this represents only one 'site' per 2.5km (or 0.4 sites per km) in the Late Iron Age, the period with the greatest number of locations of activity.

Late Iron Age and Roman sites are listed in Table 5.1 in geographical sequence from north-west to south-east, relating them to the sub-regional landscape zones defined for the project as a whole (Zones 1–8).

Presented graphically (Fig. 5.12) it is clear that the distribution of sites across the sub-regional landscape zones was not even. The North Kent plain (Zone 1) was relatively densely occupied, with an average of 0.6 sites per km, but the area immediately west of the Medway and the higher parts of the Downs (Zones 2 and 3) had fewer sites (none at all of this period in Zone 2). Zones 4–8 all occupy a broadly similar topographical location, but closer to the foot of the Downs at the north-west (Zone 4) and moving into the southern coastal area in Zone 8. Within these zones there is, however, considerable variation in settlement density, from typically 0.2–0.3 sites per km up to 0.9 sites per km in Zone 6, north-west of Ashford (site density in the adjacent Zone 7 increases to 0.5 sites per km if the 5.5 km stretch of minimal archaeological intervention through Ashford is excluded from the calculation).

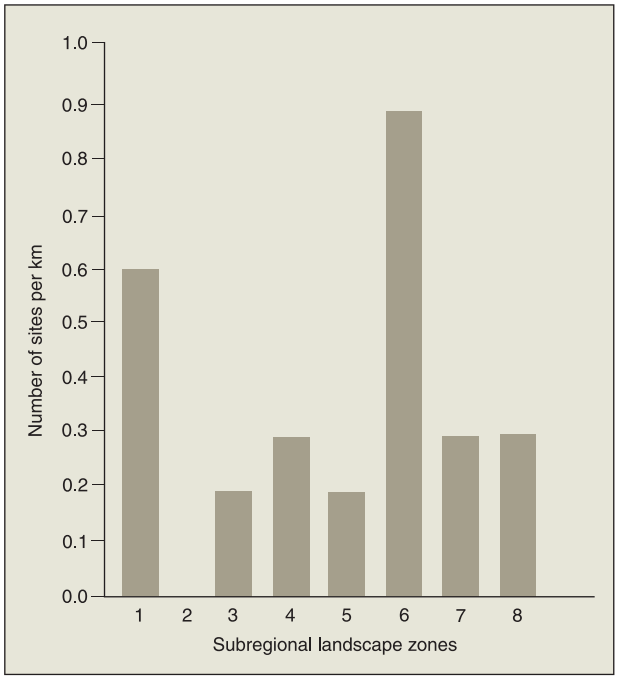


Figure 5.12 Distribution of late Iron Age and Roman sites per km by landscape zone

Table 5.1 Late Iron Age and Roman sites in landscape zone sequence

Landscape Zone	*Length (km)*	*Principal Site element*	*Minor site*	*Comments and LIA/RB Context*
1. Boundary of North Kent Plain/ North Downs dip slope (Upper Chalk/ head deposits)	11	Whitehill Road South of Station Road Pepper Hill Hazells Road Northumberland Bottom, E of Downs Road Northumberland Bottom, W of Wrotham Road Tollgate		Dominated by Springhead and the line of Watling Street. An area of relatively intensive settlement
2. North Downs dip slope (Upper Chalk/head deposits)	5	-		Villa at Cobham Park lies just to the south
3. North Downs scarp slope (Upper Chalk/head deposits)	8.5	White Horse Stone	Nashenden Valley	N-S Rochester to Weald road with probable settlement/temple complex just to the north at Blue Bell Hill and cluster of villas, including Eccles, in the Medway valley to the west
4. Wealden Greensand, Vale of Holmesdale (Gault Clay)	7	Hockers Lane Thurnham		?Oppidum complex at Quarry Wood, Loose to SSW and possible nucleated settlement at Maidstone. A number of villas and other rural settlements in the Maidstone area
5. Wealden Greensand (Lower Greensand – Folkestone and Sandgate Beds)	13	Snarkhurst Wood	Eyhorne Street Chapel Mill	Little known except for Runhams Farm, Lenham, settlement with some iron production
6. Wealden Greensand (Lower Greensand - Folkestone and Sandgate Beds)	8.5	Leda Cottages Beechbrook Wood north Beechbrook Wood south	Hurst Wood Newlands Leacon Lane Westwell Leacon Tutt Hill (Parsonage Farm) Lodge Wood	Small villa north of HS1 line at Charing (Detsicas 1975a) at north end of this zone. Notable concen tration of settlement etc in Ashford area to the south (see below)
7. Wealden Greensand (Lower Greensand - Atherfield Clay)	17.5	Bower Road Little Stock Farm	Boys Hall Blind Lane Church Lane E of Station Road	12 km excluding Ashford stretch. Extensive LIA settlement in south Ashford, including sites such as Brisley Farm. Canterbury-Weald road and road from Lympne form junction, with major roadside settlement at Westhawk Farm
8. Wealden Greensand (Lower Greensand - Folkestone and Sandgate Beds). Coastal zone	3.5	Saltwood Tunnel		Canterbury-Lympne road, coastal establishments at Lympne just to SW. Rural settlement in Folkestone area to east

These figures must be used with caution, since a variety of non-archaeological factors could have had a bearing on the visibility and location of sites as well as on wider aspects of the location of the HS1 transect in relation to settlement patterns. Nevertheless, the broad trend is illuminating. Marked concentrations of activity are seen in the northern coastal plain and in the vicinity of the valleys of the Great and East Stour in the Ashford area, while the North Downs are particularly thinly occupied. How are these broad variations to be explained? The physical characteristics of the landscape clearly played a part. The highest parts of the Downs, for example, have never been favoured locations of settlement (Lawson and Killingray 2004 passim) and the Late Iron Age and Roman periods would not be expected to show a marked contradiction of this trend, though the absence of sites in Zone 2, west of the Medway, is less easily accounted for, particularly as the villa at Cobham (Tester 1961) lay just south of the HS1 trace. The villa may have been so close, however, that there were no other settlements in the immediate vicinity. Moreover, the HS1 route is so close to the line of Watling Street over a 2km length that the presence of rural settlements would be unlikely in this stretch since such settlements do not typically front directly onto major roads.

The figures can be compared with general data on Romano-British site distribution. Data from a variety of regions in lowland Britain assembled by Millett (1990, 184) suggested a mean of 0.8 (±0.5) sites per km^2. This is quite close to a crude figure of 0.9 sites per km^2 for

England overall, obtained by dividing the total area by a notional figure of some 117,000 'possible sites' quoted by Taylor (2007, 23). The figures are of course not intended to stand up to detailed analysis, but are useful as potential indicators of order of magnitude. The HS1 data can be adjusted to bring them into line with these estimates; on the assumption that the average width of the HS1 transect was *c* 200m (perhaps a generous estimate), the figures given above (per linear km) can be multiplied by five to give numbers of sites per km^2. This could suggest figures of up to 4.5 'sites' per km^2, or densities (except in Zone 2) consistently equivalent to and in places up to five times the mean suggested by Millett, if each of the 'sites' constituted a settlement. Such figures are not impossible at a local level; the highest could suggest the presence of multiple small farmsteads each on average about 20 hectares in extent (or almost 50 acres—for comparison it may be noted that a large majority of landholders in the Weald in the 16th–early 17th century held 50 acres or (often considerably) less (Zell 1994, 22–9)) and in turn implies a densely settled landscape. Alternatively the high figures may reflect a particularly favourable topographical/environmental niche preferentially occupied by settlements and coincidentally by the HS1 transect, thus exaggerating estimates of settlement density. However, while the densities suggested around Ashford probably are high in comparison with the Wealden clays and the Downs to the south-west and north-east respectively, there is no particular reason to believe that they are not representative of the Vale of Holmesdale/Chart Hills area, and they are supported by other evidence for intensive Late Iron Age–Early Roman activity in the Ashford area (eg Johnson 2002; Philp 1991; Rady 1992; 1996).

Such a concentration of settlement, and its potential contrast with adjacent areas, suggests considerable local variation in intensity of exploitation, in part reflecting the diversity of the landscapes encountered. Such an interpretation may imply a degree of environmental determinism in relation to settlement location, although it is notable that a number of the sites close to HS1 in south-east Ashford are in low lying areas recently characterised by relatively poor drainage, so this explanation may have limited validity. The environmental picture drawn from the HS1 evidence itself does not seem to show enough variability to account for the most pronounced differences in settlement density along the route (although there are insufficient data for this to be certain). Social factors were therefore presumably also important in determining variations in settlement density and character.

Rural settlement: physical characteristics and development

Rigid categorisation of the rural settlements encountered by HS1 has not been attempted as it is unlikely to be very meaningful, particularly in view of the incomplete nature of most site plans; there is not one single complete settlement enclosure from the whole of the scheme. Distinctions can be made, however, on the basis of characteristics of overall site morphology, the form of enclosure elements, architecture and the range of social end economic contacts and practices suggested by artefactual and ecofactual evidence. A combination of these factors allows the separation of Thurnham, unsurprisingly, from most of the other sites. This is based principally on architectural criteria, however, because as will be seen there are some aspects in which Thurnham is not readily distinguished from other HS1 settlements. Bower Road is in many respects similar to Thurnham and could perhaps represent part of a villa complex, the domestic focus of which lay outside the HS1 line. Traces of the regular rectilinear site layout of Thurnham and Bower Road may also be seen in the eastern part of the Northumberland Bottom complex (west of Wrotham Road). While only the margins of this site fell within the HS1 footprint, parts of the northern side of what is fairly certainly the same enclosure complex were subsequently revealed in excavations on the line of a new route for the A2 (Allen *et al.* forthcoming) and confirm the firmly rectilinear nature of its layout. That this was probably a site of relatively high status is strongly suggested by the associated burials also discovered on the A2 (ibid.; see further below). Elsewhere, settlements appear to be characterised by layouts of enclosures and other boundaries of varying degrees of regularity and do not lend themselves to detailed typological subdivision.

Chronology and character of development from the Late Iron Age onwards

Late Iron Age settlements were not only for the most part chronologically and spatially distinct from those of the Middle Iron Age, and correspondingly chronologically continuous with Early Roman activity, but in terms of physical form and location they are rarely distinguished from the latter in any meaningful way. These Late Iron Age–Early Roman sites were generally characterised by linear features and enclosed elements, sometimes of quite irregular plan. A tendency for settlement layouts to become more regular, with enclosures laid out on more nearly rectilinear lines in their later phases, which is seen in some parts of Roman Britain (for example in some parts of the Upper Thames Valley from the early 2nd century AD; Booth *et al.* 2007, 43) and in northern France (Haselgrove 2007, 506) was not commonly observed here.

Enclosures

Enclosure is very often a dominant characteristic of both Late Iron Age and Romano-British rural settlement (eg Hingley 1989, 55–9; Taylor 2007, 24) and the HS1 sites are no exception to this, although Taylor (ibid.) notes their (apparent) relative scarcity in Kent (except for the

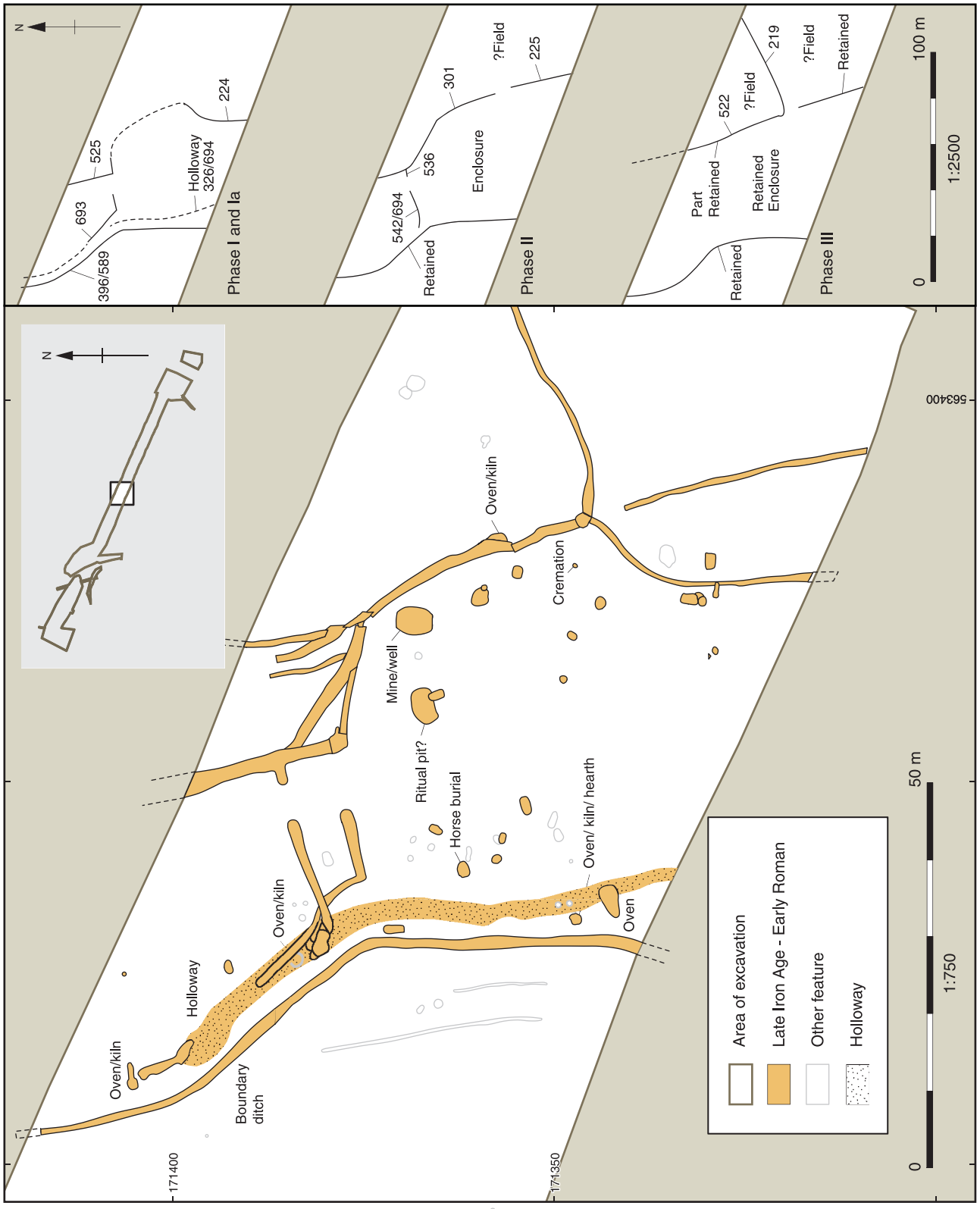


Figure 5.13 West of Northumberland Bottom (East of Downs Road): overall plan of Late Iron Age–Early Roman features and schematic representation of phase development

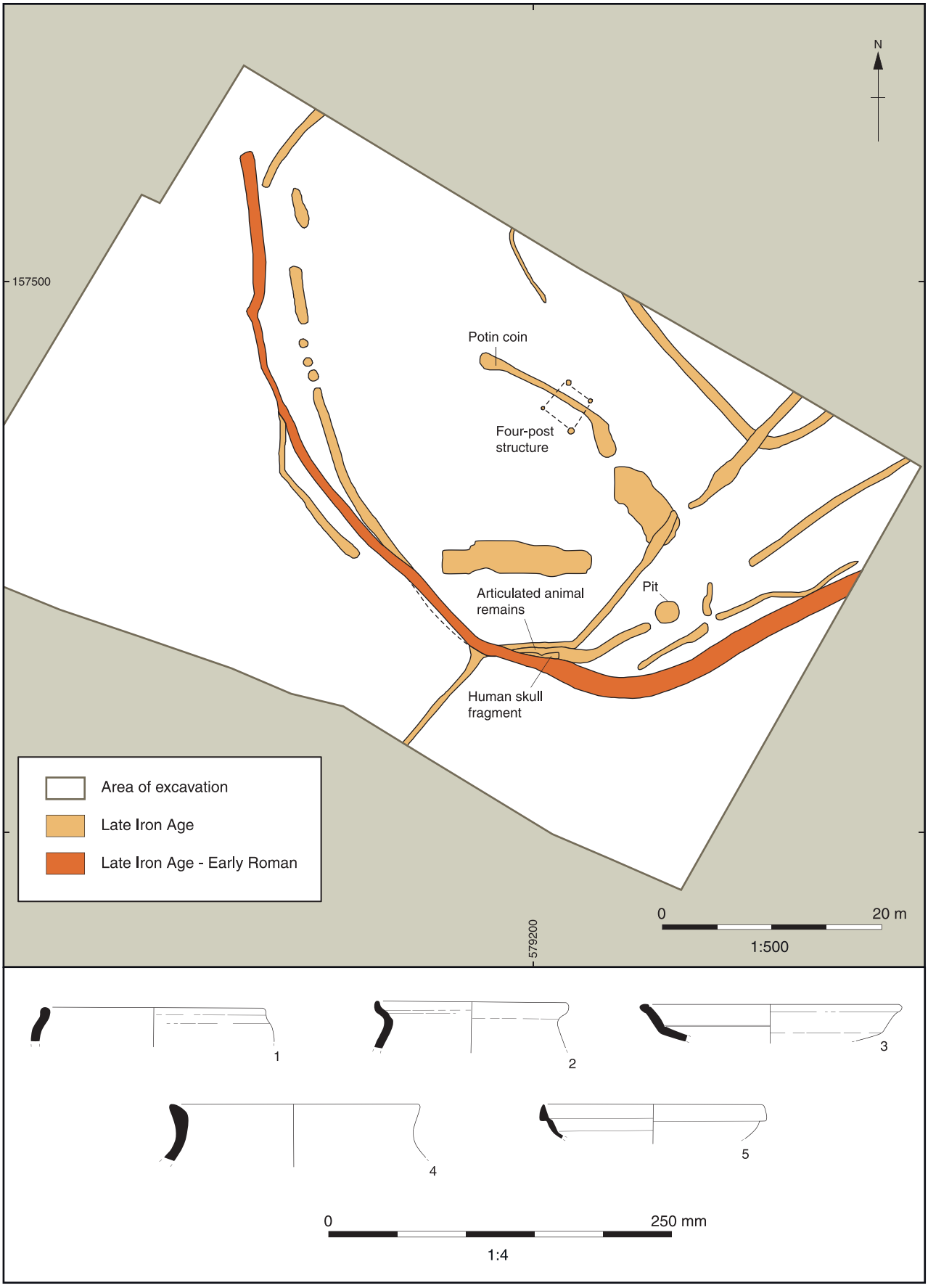


Figure 5.14 Hockers Lane: overall plan of Late Iron Age–Early Roman features and selected Late Iron Age pottery

eastern extremity of the county) and other parts of the South-East. Enclosures (of one shape and another) are a consistent feature of all the main HS1 settlements and variations in their plan constitute one of the most obvious (but not necessarily the most meaningful) ways of considering settlement form. The occasional survival of simple ditched enclosures from the Middle Iron Age into the Late Iron Age is seen at sites such as Farningham Hill (Philp 1984, 7–71), though there is still insufficient evidence from the area for it to be certain that such enclosures were typical of the Middle Iron Age. Not all Late Iron Age and later enclosures necessarily related strictly to settlement; the ditches that defined the Pepper Hill cemetery (see Fig. 5.44) are the most obvious exception, though they did not constitute a coherent enclosure form. The small rectangular enclosure at the trackway crossing at the west end of Saltwood Tunnel, which defined the cemetery there (see Fig. 5.11), whether or not this was its primary intended function, is a clearer example. The northern enclosure at Beechbrook Wood, which seems to have been associated specifically with iron production, may have been another (see Fig. 5.39).

There seem to have been two broad groupings of enclosure types, although the distinction between them is not always clearly drawn. The first group may be defined as 'irregular and evolving' and the second as sub-rectilinear and rectilinear. Sites in the first category include Northumberland Bottom (East of Downs Road) (Fig. 5.13), Hockers Lane (Fig. 5.14) and Beechbrook Wood, particularly the southern area (see Fig. 5.10), although the extent to which the features there can be defined as an enclosure at all might be questioned.

The sinuous character of the East of Downs Road site may be linked to its position on the chalk hillside and was also partly determined by the line of an adjacent trackway which may have predated the domestic site. These conditions did not apply at Hockers Lane and Beechbrook Wood, but in the southern settlement area at the latter site the location of the rather irregular linear features reflected the presence of the adjacent Iron Age enclosure. This, however, was of unusually clearly-defined concentric circular form. None of the enclosures in question was completely excavated, so little more can be said.

Sub-rectilinear and rectilinear enclosures are encountered more widely, but again the incomplete nature of site plans may render this category of limited value. At Little Stock Farm a sequence of relatively rectangular enclosures, probably entirely of Late Iron Age date, overlay a fairly rectilinear Early–Middle Iron Age arrangement of possible trackways and other linear features (Fig. 5.15; Ritchie 2006). The Late Iron Age enclosures were superseded by a track or droveway on a similar east-west alignment. Dating evidence was almost non-existent, so the timespan during which the trackway was in use is unknown, but survival at least into the Early Roman period is distinctly likely. The Little Stock Farm enclosures may have been agricultural in function rather than relating strictly to settlement, and as a result of the paucity of associated artefacts, dating of subphases of the enclosures is difficult. A comparable arrangement, in which successive stages of rectilinear enclosure can be seen clearly, is found at South of Station Road. Here only one corner of the enclosures projected into the excavated area, but it was noticeably angular in plan. An oven with associated cereal remains was set in what may have been the latest phase of the ditch, an association that is noted quite commonly in the HS1 rural settlement sites, as for example at Northumberland Bottom West of Wrotham Road (see Fig. 5.34).

Other approximately rectilinear enclosures are seen at Northumberland Bottom (West of Wrotham Road) (Fig. 5.16), Thurnham (see Figs 5.20, 5.23), Snarkhurst Wood (see Fig. 5.18) and Leda Cottages (see Fig. 5.17).

Of these, the West of Wrotham Road enclosures appear markedly rectilinear (see above). As at Downs Road to the west, one side of the enclosure lies alongside a trackway, but the regular layout appears to be much less conditioned by nuances of topography than in the former site. While only the southern edge of this enclosure system was encountered within the HS1 trace,

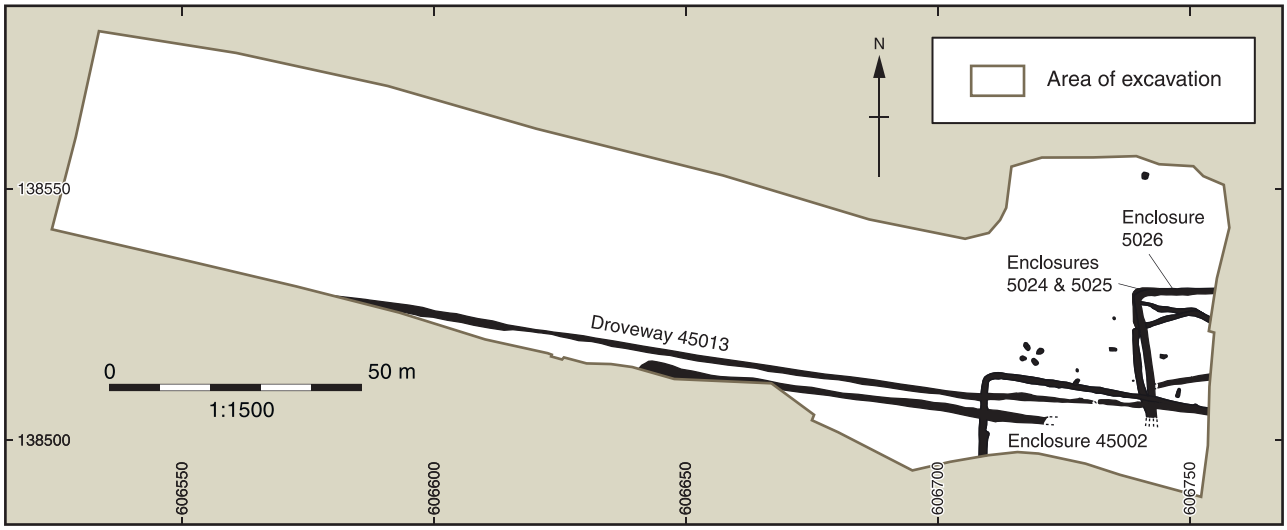


Figure 5.15 Little Stock Farm: Late Iron Age trackway and enclosures

it is clear that to the north a similarly rectilinear layout was maintained. It is likely that this was broadly the case at Thurnham, but here the definition of the north-east side of the settlement enclosure was never very clear, except in the Late Iron Age phase. It is possible, however, that in the later phases this boundary lay beyond the limit of the excavated area. This was always true of the south-western part of the enclosure, where it has been plausibly suggested that the alignment of the ditch would have lain at the break of slope at the top of the small plateau upon

Figure 5.16 West of Northumberland Bottom (West of Wrotham Road): overall plan of Roman features

which the main buildings were situated (Lawrence 2006). Also of interest at Thurnham is the relationship of the successive phases of the enclosure to what seems to have been a more extensive boundary feature to the north-west. Apparently separate from the enclosure ditch itself in the Late Iron Age phase, this feature was realigned to accommodate the proto-villa house (see Fig. 5.23) and realigned again to provide space for the Middle Roman villa (see Fig. 5.26), the foundations of the latter being carefully placed right to the bottom of the Early Roman ditch. In these phases the ditch defined the north-western limit of the occupied area and formed that side of the settlement enclosure, though it seems likely to have continued both north and south of the enclosure. It was only in the Middle Roman period that further enclosures to the east of the main villa complex reached their most developed form, surrounding a subsidiary building and defining other aspects of the approach to the villa.

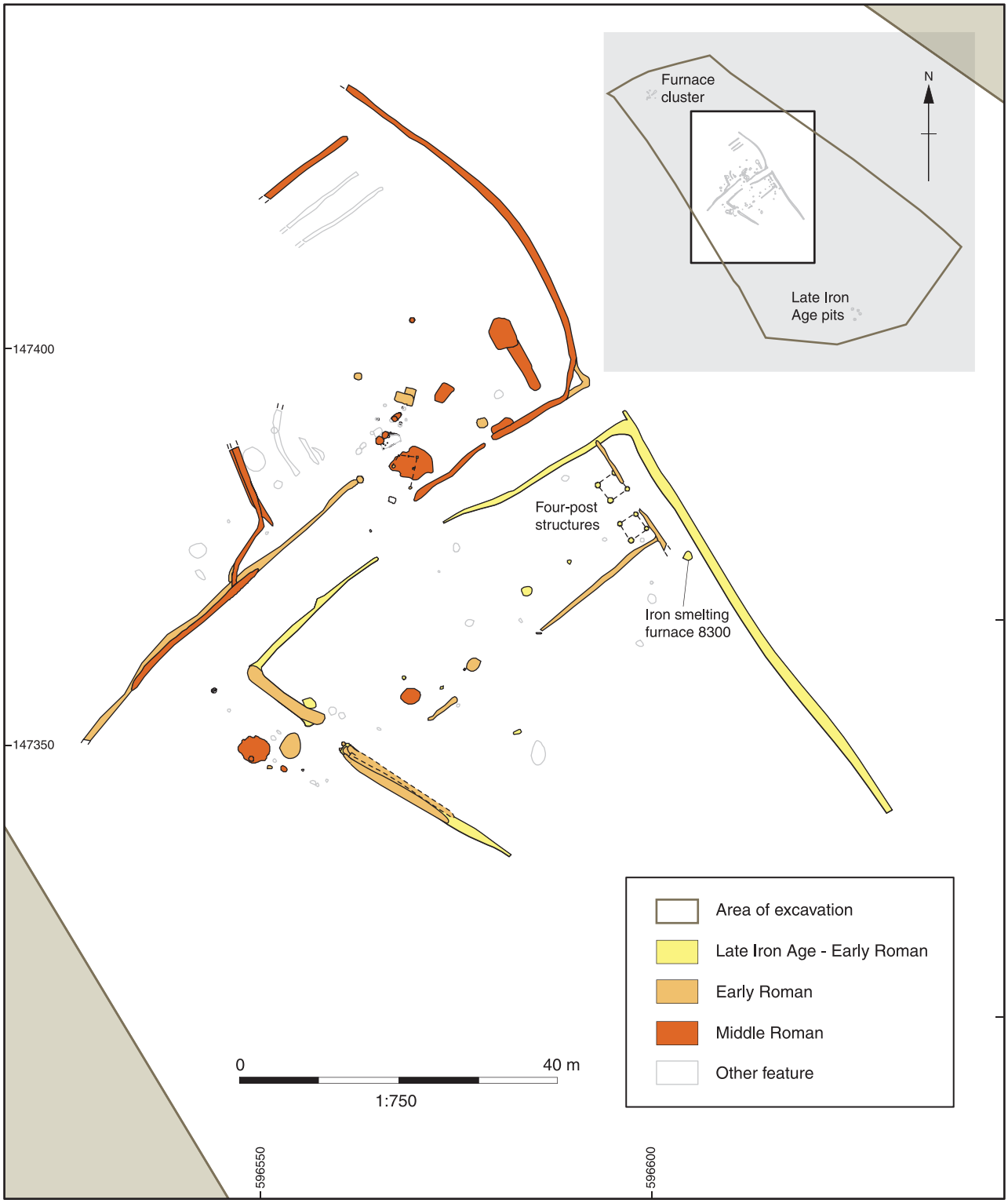


Figure 5.17 Leda Cottages: overall plan of Late Iron Age and Roman features

At both Snarkhust Wood and Leda Cottages it looks as if the Early–Middle Roman layout of principal linear features was actually less regular than that which had been in use earlier. At Leda Cottages (Fig. 5.17) the main Late Iron Age 'enclosure' was a three-sided feature with gaps in two of the sides, but no trace of the fourth (south-east) side. It is possible that this was simply a result of variable preservation, but sections excavated toward the south-east ends of the north-east and south-west sides showed that these ditches were about 0.5m deep (Diez 2006a), ie they were not becoming increasingly shallow towards their termini, so erosion does not seem a likely explanation. It is perhaps more likely that the 'missing' side of the enclosure was formed by an organic feature such as a substantial hedge or a patch of woodland which has left no distinct trace in the archaeological record. To the north, however, it is clear that the survival of linear features is very much more variable and the vagaries of the plan of the north-west 'enclosure', again separated from the original one by a trackway, are probably explained by preservation factors.

At Snarkhurst Wood (Fig. 5.18) a trackway was again an important component of the plan, but here in the Late Iron Age phase it ran into the ?principal enclosure, rather than lying alongside it. A curious feature was an arrangement of postholes between the trackway ditches just outside the point at which these ran into the enclosure. The positioning seems too precise to be coincidental, and it is possible that these features formed part of a system of control of stock movement into and out of the enclosure (Diez 2006b). As already mentioned, the later features at Snarkhurst Wood suggest less of a concern with enclosure definition than in the Late Iron Age. In particular, the well-defined trackway from the west was suppressed and the western side of the enclosure redefined with slighter ditches of more irregular layout. There is little indication of significant changes in the character of activity within the enclosure, however; four-post structures, for example, were present in both Late Iron Age and Early to Mid Roman phases.

Overall, therefore, there is little indication of systematic development of enclosure form, for example from irregular to more rectilinear plans. Such a sequence is only seen clearly at one site, Bower Road (Fig. 5.19). Here an irregular layout of Late Iron Age and Early Roman ditches was directly replaced by a much more orthogonal series of enclosure ditches and other features in the Middle Roman period (Diez 2006c). The extent to which the early features themselves formed part of settlement enclosures is uncertain, however, and it is possible that most related to an evolving sequence of trackways adjacent to settlement, rather than defining the settlement itself. Either way, the rectilinearity of the subsequent features is particularly marked and implies at least local reorganisation of the landscape in the way that was seen rather earlier, for example, at nearby Little Stock Farm.

The scale of enclosure ditches is consistently fairly modest. There is no indication that these were ever seen as defensive in character; as a broad generalisation they rarely exceeded 2m in width and 1m in depth. The emphasis of the enclosures was presumably on definition of occupation and other areas and containment/exclusion of stock. Only at Thurnham is there clear evidence for the provision of relatively substantial gateway structures, and these were almost certainly associated with status display and reinforcing the monumental aspect of the approach to the site. The potential stock control arrangements at Snarkhurst Wood (see above) were of very different character.

The incomplete nature of most of the HS1 enclosures is mirrored at other sites in the county where, even in recent relatively large scale projects, completely exposed settlement enclosures are lacking (again reflecting the largely linear character of such projects). Comparable sites include the West Malling and Leybourne Bypass, just west of Maidstone, where well-defined rectilinear ditched enclosures were dated to the Late Iron Age–Early Roman period (Ellis 2009, 9). Further enclosures of similar date and character have also recently been examined just south of there at Leybourne Grange (Biddulph 2011).

Buildings

A general lack of structural evidence is typical of the Late Iron Age and Roman settlement sites of HS1, although there is limited evidence for a variety of structural types. Four-post structures are the most significant exception to this lack, with a total of thirteen examples from six different sites assigned a Late Iron Age to Roman date range (Table 5.2). This structural tradition was well established in Kent as elsewhere in the country, with some 55 examples of Early–Middle Iron Age date at White Horse Stone alone (see Chapter 4). Two examples probably of later Middle Iron Age date were encountered on HS1 east of Downs Road (part of the Northumberland Bottom complex) and a further one of similar date was found at Beechbrook Wood; these provide the chronological link with Late Iron Age and later examples of this structural type.

The Late Iron Age and Roman four-post structures varied considerably in size, from noticeably small pre-conquest examples at Snarkhurst Wood (two *c* 1.2 x 1.5m; Diez 2006c) up to a broadly contemporary one at Hockers Lane measuring almost 3m square. The latter therefore provided five times the floor area of the Snarkhurst Wood structures, assuming that the conventional reconstruction as raised floor 'granaries' is followed. At Leda Cottages the largest assemblages of charred grain and chaff from the site came from the two four-post structures (8402 and 8403) (see Fig. 5.17). These remains indicate that cereal processing activities were taking place in the vicinity, and in addition structure 8402 produced some small weathered lava quern fragments. While suggestive, this evidence does not prove that these structures had a granary function because the grain and chaff-rich samples derived from the fills of the postholes and will generally have been

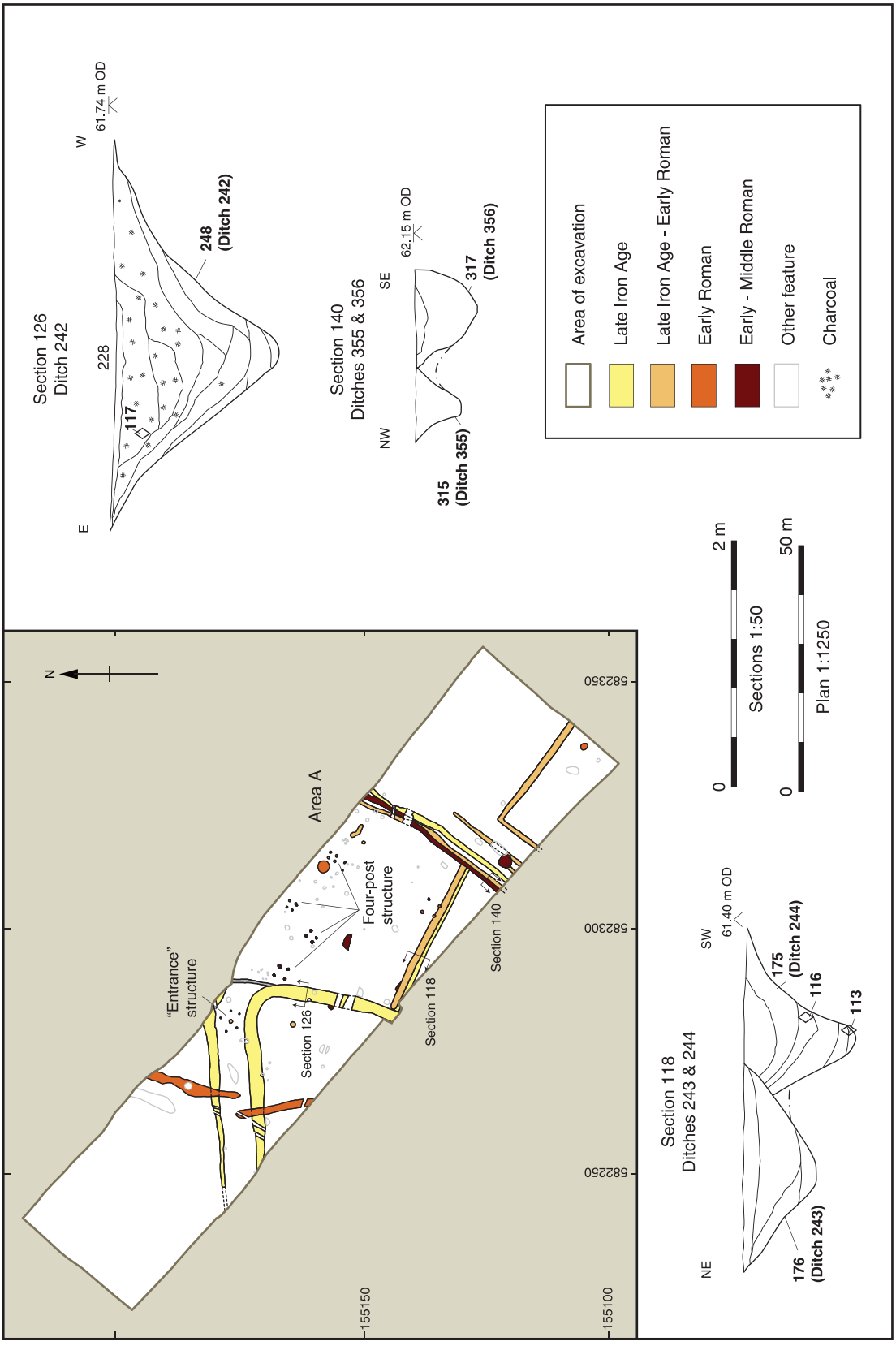


Figure 5.18. Snarkhurst Wood: overall plan of Late Iron Age and Roman features and selected sections

deposited after the disuse of the structures. Dating of the four-post structures was typically imprecise, though few are likely to have been later than the late 1st century AD. Three of the examples from Snarkhurst Wood, however, may have been in use (or even have been constructed) later than this, but they are not closely dated and could equally have been of mid–late 1st century date as later.

Only at Thurnham was there evidence for a contemporary association of four-post structures with other building types, in the Late Iron Age–Early Roman phase (perhaps *c* AD 20–60/70; Fig. 5.20).

Here one certain and one possible roundhouse were indicated by surviving lengths of drainage gully. One four-post structure lay within 2m of the incomplete gully, with the other some 10m east of it. Exact contempo-

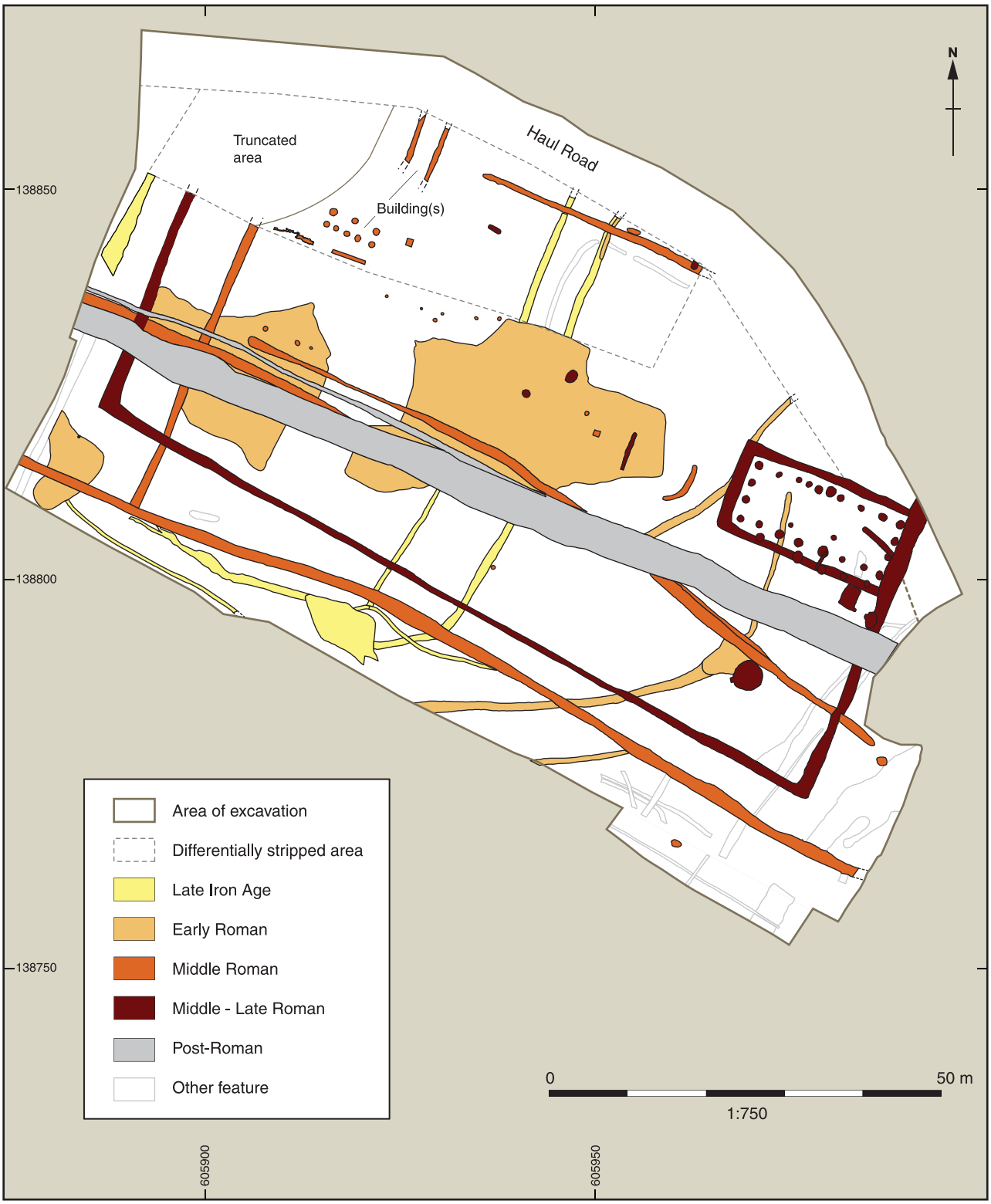


Figure 5.19 Bower Road: overall plan of Late Iron Age and Roman features

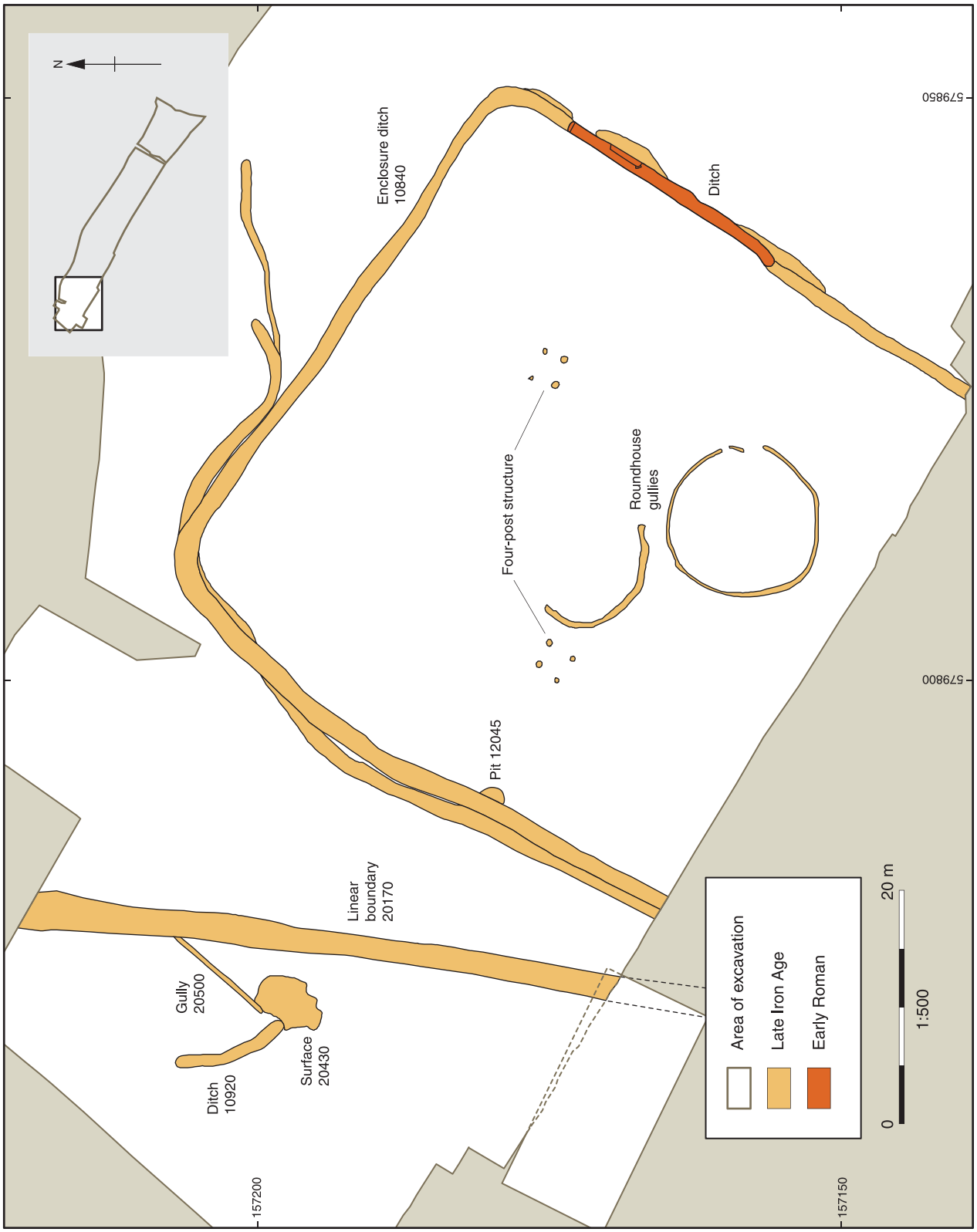


Figure 5.20 Thurnham: Late Iron Age phase plan

Table 5.2 Four-post structures, late Middle Iron Age to Early Roman

Site	Feature	Size	Date	Comment
Northumberland Bottom	group 40578	2.3m square	?late MIA	
(east of Downs Road)	group 40578	2.8m square	?late MIA	next to above
Hockers Lane	341	2.9–3m square	LIA (?50–1 BC)	
Thurnham	12710	2.5m square	LIA/ERB (?c AD 20–60)	
	12450	2.5m square	LIA/ERB (?c AD 20–60)	
Snarkhurst Wood	205	1.2 x 1.5m	LIA/ERB (50 BC–AD 30	
	204	1.2 x 1.45m	LIA/ERB (AD 30–50)	
	206	1.15 x 1.75m	E-MRB (AD 50–250)	
	207	2.12 x 2.33m	E-MRB (AD 50–250)	
	366	2.6 x 2.95m	E-MRB (AD 50–250)	
Leda Cottages	8402	1.9 x 1.5m	LIA/ERB (50 BC–AD 70)	in corner of enclosure
	8403	1.9 x 1.75m	LIA/ERB (50 BC–AD 70)	ditto - next to above
Beechbrook Wood	2203	*c* 2m square	?late MIA	Inside concentric enclosure
	6043	1.8m square	LIA/ERB (?50 BC–AD 100+)	
	6044	1.5m square	LIA/ERB (?50 BC–AD 100+)	fairly close to above, but on different alignment
Little Stock Farm	5015	2.6m square	LIA (120 BC–AD 43)	

raneity between these structures cannot be proven, but seems very likely. The better preserved penannular gully was roughly circular with an internal diameter of 12.3m and an entrance 3.5m wide facing due east. A short gully segment between the entrance terminals reduced the width to 1.6m, but it is not clear if this was a subsequent addition to restrict entry or part of an original arrangement for controlling access to the building. The feature to the north consisted of a 13m portion of gully, with an estimated internal diameter of 10m and a well-defined terminal at its eastern end, suggesting a south-east facing entrance. The gullies were of virtually identical form, both having U-shaped profiles 0.4–0.6m wide and up to 0.2m deep.

No internal structural traces or other features were associated with either of the Thurnham gullies. This, alongside the total lack of evidence for round buildings on any of the other Late Iron Age–Early Roman HS1 sites, presumably indicates something of the character of such buildings. While it is possible that domestic buildings in this period were of a totally different (non-circular) form, there is even less evidence to support this view than there is for the problematic round buildings. It is most likely, therefore, that the latter was indeed the prevailing plan form for Late Iron Age–Early Roman domestic buildings, but that the buildings were probably of above-ground construction, possibly utilising interior post-pads and an ephemeral exterior wall such as simple wattle panels, or (perhaps more likely) of mass wall (eg cob) construction (see further below).

Site preservation factors will have been crucially important in relation to the identification of such structures—ephemeral in terms of the archaeological record although potentially substantial in terms of their form as built. The continued use of the round building tradition is clear at sites such as Westhawk Farm, Ashford, where ten such structures, not necessarily all domestic buildings, were identified, entirely or in part, on the basis of the existence of gullies (Booth *et al*. 2008). The profiles and the character of their fills suggested that most if not all of these features are likely to have been for drainage around the structure rather than being wall trenches. The internal diameters of identified circular gullies, or diameters extrapolated from surviving gully segments, varied widely from *c* 7m to *c* 12m. There was no clear chronological patterning with relation to variation in gully diameter (eg an increase in size through time), and circular structures were in use through out the life of the settlement, from the early post-conquest period up to about AD 250. In one case only, arcs of stakeholes survived at three points around the perimeter of the structure and suggested the position of the wall line of a building of *c* 10m diameter, with the wall set very close to the associated drainage gully. A probable stake-supported wall construction, 7.8m in diameter and probably with a central post, was assigned to the Late Iron Age–Early Roman Period 1 at the Marlowe Car Park, Canterbury (Blockley *et al*. 1995, 33-34), while Early Roman circular buildings from Newgate Street in London included examples with wattle and daub walls, but at least one other was defined by a gully with no clear indication of the nature of the structure which it surrounded (Perring *et al*. 1991, 3–6, 101).

The best evidence for circular buildings of Early Roman date in the region therefore comes from the larger nucleated settlements, including further examples from Springhead (HS12) and Heybridge in Essex (Atkinson and Preston 1998, 94, 105). It is uncertain if the better survival sometimes found in these contexts provides a reliable guide to the nature of structures: were the majority in fact of stake and wattle and daub construction, or was cob or some other mass-walling technique widely used in this period, as has been suggested for example for the Upper Thames Valley (Allen *et al*. 1984), perhaps particularly in rural contexts? As a structural medium, cob would leave no below-ground traces. An alternative interpretation is to postulate the use of a box-frame building tradition (Bird 2000, 159). It might still

be expected, however, that provision for drainage would be needed around most buildings of these (or indeed any other) construction type, but it is notably lacking.

The apparent contrast between the incidence of circular and four-post structures in rural and nucleated settlements is seen elsewhere in Kent, for example at Keston, where one six-post and ten four-post structures were assigned to the Late Iron Age (Philp *et al*. 1991, 13, 25–9) but there was no indication of circular buildings. Likewise at Queen Elizabeth Square, Maidstone, two 'four-posters' formed the only Late Iron Age–Early Roman structural evidence (Booth and Howard-Davis 2003, 5–6, 11). At Hawkinge, near Folkestone, a recently excavated Late Iron Age–Early Roman site had at least a dozen four-post structures and additional larger posthole buildings, but only one possible circular structure, also post-built (House 2005, 1).

Apart from the substantial buildings of Thurnham and Bower Road there are slight traces of other Early Roman structural types elsewhere on HS1, particularly at Northumberland Bottom where, however, they were mostly poorly-defined. Structural features of probable mid–late 1st century date within the rectangular enclosure on the north side of the east-west Roman road west of Wrotham Road included two gullies at right angles to each other defining an area of *c* 5m x 4m, and a further comparable arrangement of gullies further east (see Fig. 5.16). In both cases these are suggested as forming structures, though the second pairing of gullies may have been directly associated with a small group of burials (Askew 2006). South of the Roman road at about the same date was another possible timber structure, consisting of a group of postholes which may have been associated with a cut hollow. Slightly later than both of these (assigned to the mid Roman phase, dated AD 120–250), and lying between them, was a feature *c* 4 m square cut into the fills of a holloway and interpreted as a sunken-featured building (see Fig. 5.16). Its details are somewhat obscure but it is broadly reminiscent of the features of comparable late 1st–2nd century date from Monkton (Bennett *et al*. 2008, 107–50, 273–7). Recent work on the East Kent Access Road in Thanet has revealed further examples of this type of structure at several different locations (K Welsh pers. comm.). The type was clearly particularly common in north-east Kent, and the apparent occurrence of occasional examples further west is of some interest. The Northumberland Bottom feature contained no other structural elements or finds that shed light upon its function. It lay between two ditches some 9m apart which cut across the line of the former holloway and could have defined the location of a building of which the sunken-feature formed a part. A further possible structure of this type was recorded in the nearby A2 works in 2007, but this is not well dated; a Late Roman or an Early Anglo-Saxon date is possible (Allen *et al*. forthcoming).

Elsewhere, even structures as ephemeral as these are scarce. There is nevertheless some evidence for the existence of a widespread tradition of posthole construction across the area, as seen for example at Westhawk Farm, where a total of eight, mostly simple, rectilinear buildings of posthole construction were found and numerous other groups of postholes could have formed parts of fence lines or of further very poorly-preserved rectilinear buildings (substantial fence lines based on individual upright posts are a regular feature of sites in the region and are often better defined than comparably built buildings; examples are seen at Thurnham, Keston and Furfield Quarry, Boughton Monchelsea (Mackinder 2005, 14), and Westhawk Farm as well as at other sites). Amongst the more substantial structures of this type are the probable aisled buildings at Furfield Quarry, Boughton Monchelsea (ibid.). The Westhawk posthole buildings included an example of what appears to be a distinct regional tradition, two more of which were excavated on HS1, at Bower Road (Fig. 5.21) and Thurnham. The type has some similarities with aisled buildings, and at Thurnham it was noted that the plan dimensions of the 'fourteen-post building' were almost exactly the same as the area defined by the nave arcade posts of the aisled building at the same site.

The characteristics of the type are carefully paired post settings (as in most aisled buildings), but these appear to define the line of the main walls, with no aisles. In addition one or two post settings of similar size to those in the long sides are found in the short sides. The function of these additional posts is unclear, but they are a distinctive component of the plan and help to distinguish these buildings from those of aisled type or of simple paired-post construction, the latter seen widely across Roman Britain, including at Keston (the South Timber Building; Philp *et al*. 1991, 55–8), alongside the type under discussion here (examples of paired-post buildings (amongst many others) occur at sites such as

Table 5.3 Paired-post structures with additional posts in short axes

Site	*Structure*	*Dimensions (m)*	*Alignment*	*Posts in long axis*	*'Inner' posts in short axis*	*Date*	*Comment*
Westhawk Farm	Structure D	*c* 14 x 7	NW-SE	5	2	150-250	
Thurnham	Building 11250	*c* 15 x 7	WNW-ESE	6	1	2C-?e 3C	
Bower Road, Smeeth	Building 550	*c* 20 x 7.5	WNW-ESE	8	2	late 2C	2 additional posts in NE
Keston	Centre timber building	*c* 14.6 x 6.8	W-E	6	1	Period Va *c* m-l 2C	side
Keston	North timber building	*c* 21.4 x 7.5 without additions	W-E	10	2	Period VI end 2C-e 4C	'corridors' added to N and W sides subsequently

Figure 5.21 Bower Road multiple post structure viewed looking WNW

Alcester (Mahany 1994, 150–1, 155), Baldock Building I (Stead and Rigby 1986, 33–4, 37) and Carmarthen (James 2003, 165)). Excavated buildings clearly conforming to the type with additional posts in the short sides appear to be few and are possibly confined to south-eastern Britain. In addition to the three examples mentioned so far there are two further ones, the Centre Timber Building and North Timber Building, at the villa site at Warbank, Keston (Philp *et al.* 1991, 59–61, 81–7). Details are given in Table 5.3 and comparative plans on Fig. 5.22.

The Thurnham building is one of the most important in this group, having a preserved *in situ* floor surface and lacking the extensive truncation of the upper deposits seen at some of the other sites. Based upon the posthole arrangement the building covers a little over 100 sq m, which is only slightly smaller than the example at Bower Road but almost identical to Westhawk Farm and the Centre Timber Building at Keston. Interestingly the floor surface at Thurnham extended beyond the south-east end wall and up to the edge of the eaves drip gully to the north-east. There is no evidence that the walls extended this far (drainage gullies set close to the postholes were a feature of the buildings both at Bower Road and Westhawk Farm), and it is quite likely that the walls comprised planking attached to the posts in a manner similar to that of a timber building excavated at Southwark (Brigham *et al.* 1995, 31–2). A scatter of iron nails along the gully and from the floor surface at Thurnham might indicate that the walls were attached in this way rather than being of (for example) wattle and daub construction. If so, the floor surface extending up to the drainage gully may have been an extra means of draining the external surface adjacent to the wall. The extension of the cobbles beyond the south-east gable end would also have created an external yard-like surface.

The buildings could have been gable-ended, although it has been tentatively suggested that the centrally-positioned gable post(s) might reflect a hipped roof construction (Booth *et al.* 2008, 376). The nature of the roofing material remains uncertain. A moderate amount of roof tile was recovered from the vicinity of the Thurnham building (though much of it may have been recycled) and the size of the posts suggests that all were capable of carrying a tiled roof. At Bower Road and Westhawk Farm, however, a general absence of tile suggests the use of organic material (shingles or thatch) and these could have been used at Thurnham as well.

This building type did not necessarily have a specific functional association, but the majority of such associations are, unsurprisingly, agricultural. Building D at Westhawk Farm fronted onto the main road through the settlement and a mixed domestic/trade-related function has been suggested in that instance (Booth *et al.* 2008, 376). At Thurnham some of the finds suggest that there was also a domestic component to its use, but its location and other associations indicate that it had a primarily agricultural function. The view that the domestic element was of relatively minor importance is

reinforced by the lack of domestic hearths or ovens within the building and by the utilitarian appearance of the surfaces and drains. The dominant evidence indicates an association with crop-processing activities, and it is quite likely that it was used for the storage of processed cereals. The comparable building at Bower Road produced convincing evidence of a similar function in relation to the storage of processed cereals, although the wider context is less clear (Diez 2006b). Again there was a lack of material suggesting significant

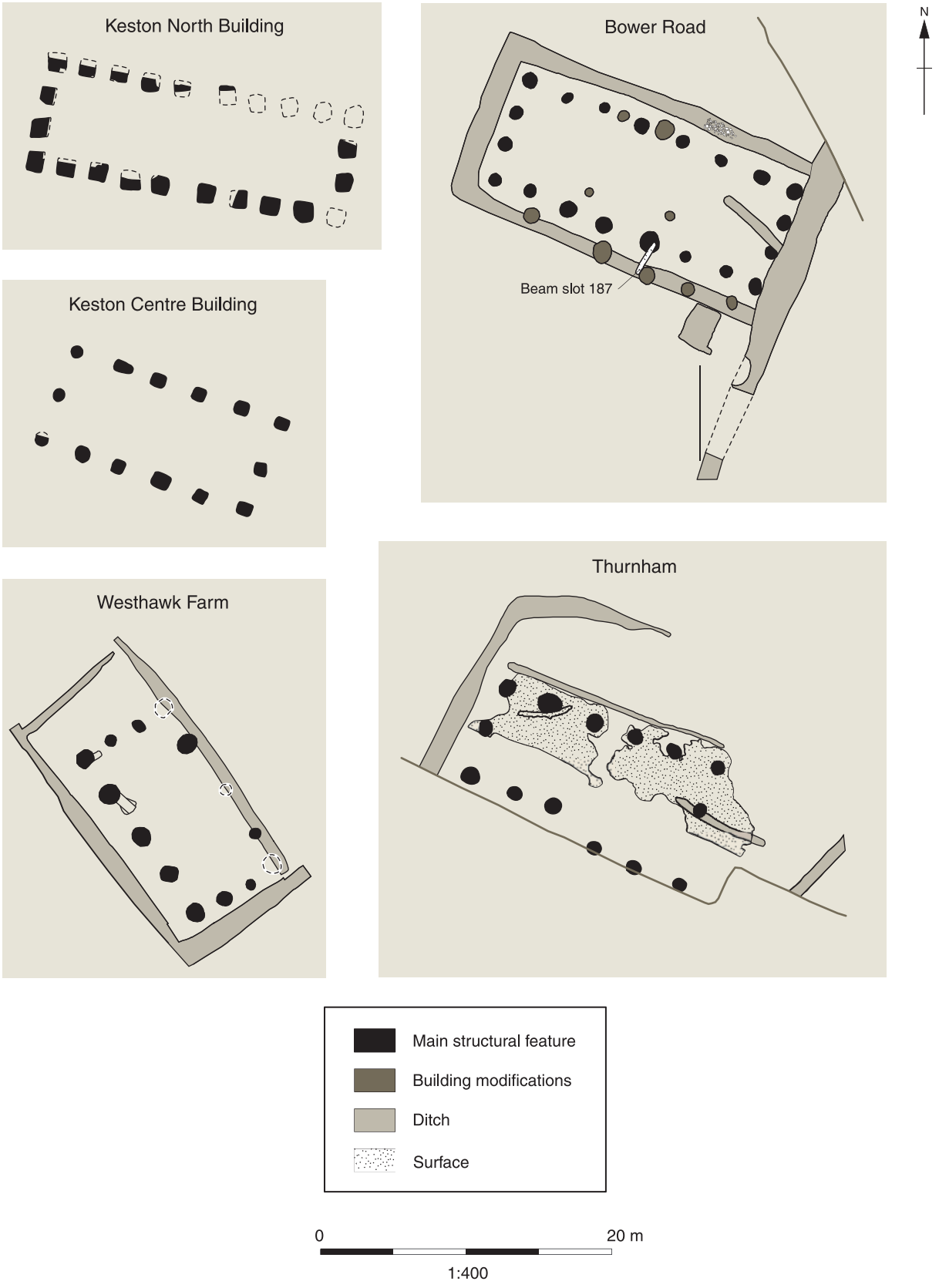


Figure 5.22 Comparative plans of '14 post' and related buildings (Thurnham, Bower Road, Westhawk Farm, Keston)

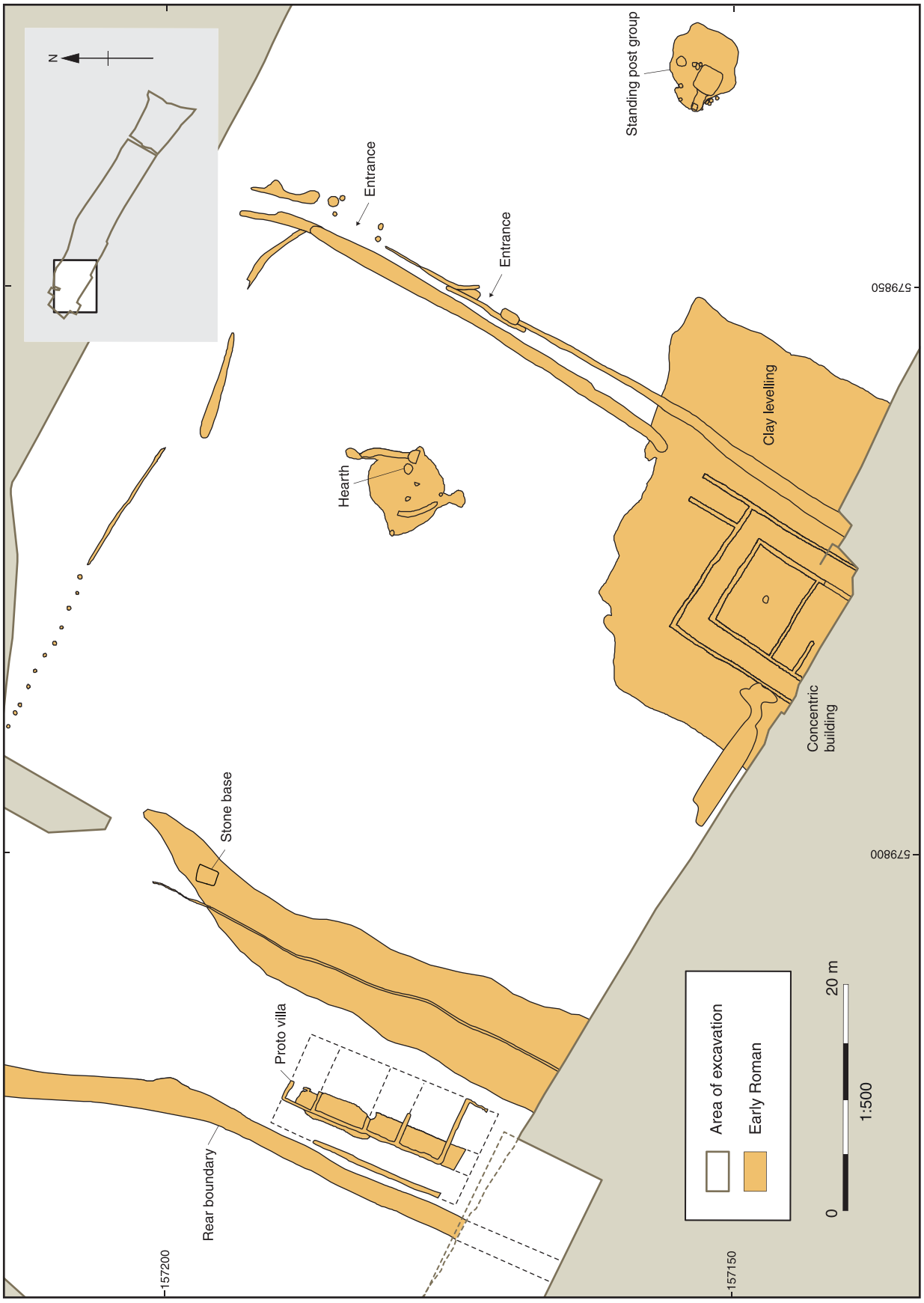


Figure 5.23 Thurnham: Early Roman ('proto-villa') phase plan

domestic activity. Agricultural functions are clearly implied by the context of the Keston buildings. The North Timber Building there, uniquely amongst the other buildings of this group, saw external additions and the insertion of corn-drying ovens in a manner very reminiscent of the development of some aisled buildings.

The Keston and Thurnham structures were clearly subsidiary to other components of their respective villa complexes. The situation at Bower Road is less clear, but the posthole building there was clearly not the only significant structure. It is particularly unfortunate that a second building, and possibly others, lay within an area of the site which was damaged by machine activity (see Fig. 5.19). Structure 686 comprised eight substantial postholes in two parallel east-west rows, five to the south and three to the north, covering an area (measured from the centre of the post-pipes) of 6.4m by 1.8m. Remnants of ragstone footings were identified in the vicinity, one roughly parallel to the southern row of posts and 2m south of it, and others perpendicular to the two rows of postholes to the east and further north (parallel and *c* 2.5m apart). The dating of all these features was very poor but their alignment corresponded well with the more securely dated Middle Roman ditches and therefore suggests broad contemporaneity with the post-structure to the south-east.

It is unclear if the wall foundations formed part of the same building as the postholes or belonged to a subsequent structure in the same location. The arrangement of posts in itself seems incomplete if considered as a free-standing structure, but it is unlikely that further comparable posts could have been completely removed without trace. The layout of the extant posts is reminiscent of an arrangement, equally 'incomplete' as the Bower Road one, found at Runhams Farm, Lenham (Philp 1994, 11–13), where it formed the only structure on the site. The wall foundations at Bower Road are equally problematic, but were so shallow that other comparable walls could have been completely removed without trace. It therefore remains uncertain if they represented one or more large structures, or perhaps a walled yard with small buildings set against it on one side.

The evidence of enclosure form, enhanced by the high-status burials found on the A2, suggests that substantial structures might have been expected within the Northumberland Bottom (West of Wrotham Road) enclosure. Hints of such structures, particularly involving a substantial posthole and probable beam-slots in the centre of the southern side of the enclosure (see above), are suggestive, as is a group of postholes located in the northern part of the enclosure in the A2 Tollgate excavations, but unfortunately the evidence is not sufficiently clear to allow further interpretation (see Fig. 5.16).

The HS1 buildings that were both the most substantial and the most readily recognised in terms of form are from the villa complex at Thurnham. It should be noted, however, that ceramic building material: bricks, roofing tiles (both tegulae and imbrices), box-flue tiles, and voussoir tiles, reused in the corn-drier structure at Hazells Road, must have derived from a building with a hypocaust heating system and perhaps with a vaulted roof. If not brought from Springhead, only just over 1km distant to the west, this material suggests the presence of a substantial building, perhaps of villa type, close to the HS1 site in this area.

The plans of the main houses and the aisled building at Thurnham are quite conventional. The principal Early Roman domestic building, the 'proto-villa', was probably constructed as early as *c* AD 60–70 (Lawrence 2006) (Figs 5.23–4). It was located at the rear of the settlement space, rather than towards its centre as had been the case with the earlier roundhouses, and had a south-easterly frontal aspect, contrasting with the roughly east-facing alignment of the entrance of the better-preserved of the two Late Iron Age roundhouses. The general south-eastern aspect of the site was shared by a large number of villas in northern Gaul, where Haselgrove (1995, 73–4) argues that these alignments were related to pre-Roman patterns, as was also the case at Thurnham (see also the prevailing alignment of the multiple-post structures in Fig. 5.22). The Thurnham building was of a rectilinear form totally new to the site, but it was not much larger than its predecessor; including the possible rear corridor its ground plan occupied roughly 113 sq m, while a roundhouse of 11.5m diameter within gully 12500 would have covered roughly 104 sq m. It is of course impossible to be certain if the proto-villa had more than one storey, but if it did not the differences between it and its likely predecessor were more to do with external appearance and the organisation and presentation of internal space than with a significant increase in the scale of the accommodation.

A further aspect of the site worth consideration is the possible provision of a bath-house in this period. There is no direct evidence for such a structure, but it is suggested by the presence of tiles, particularly box-flue tiles and voussoirs, in red-brown fabric 3226, thought by Betts (2006) to date to the period *c* AD 70–100. A piece of the former was stratified beneath the Middle Roman aisled building, while the voussoirs came from late 3rd century deposits in Room F in the main villa. They may have been taken there after the demolition of the bath component at the south-west end of the main house, but that was not built until after the mid 2nd century at the earliest, by which time it is likely that tiles in fabric 3226 were already old. Possible half box-flue tiles also occurred in Eccles fabric 2454 (this fabric/form combination was a pre-Flavian phenomenon in London, Betts 2006), and bricks, presumably from a hypocaust, occurred in both Eccles fabric and in fabric 3226. As there is no evidence for a heated room or rooms in the proto-villa the most likely source of all this material may therefore be an early detached bath-house. Such buildings are found at a number of sites such as Gadebridge Park, dated *c* AD 75, and Gorhambury, in the 2nd century (Neal *et al.* 1990, 48–9). In a Kentish context potential detached or isolated bath houses were discussed by Detsicas (1983, 139–44), but the setting and

Figure 5.24 Thurnham. The foundations of the proto-villa beneath the corridor wall of the later house, looking WNW

chronology of a number of these are unclear. Examples at Hayes and Foot's Cray (ibid., 140–1 and 118, fig. 24) may be valid analogies, although both are dated to the 2nd century rather than earlier. A more certain example occurs at Minster-in-Thanet, where a small building 9.55 x 7.15m was built closely adjacent to the villa house in the late 1st or early 2nd century (Parfitt 2004b, 33) and may suggest what could have occurred at Thurnham. However small, such a building would have been a significant addition to the site layout and perhaps alters the perception of the importance of the domestic components. It would presumably have been located in the south-western part of the enclosure. If this interpretation is correct, the fact that baths were not added to the Middle Roman villa until the later 2nd century might suggest that a detached bath-house outlived the associated proto-villa structure.

The Middle Roman house completely replaced the proto-villa in the early 2nd century (Figs 5.25 and 5.26). Combination of the evidence from the present excavation with the ground plan recovered in 1958 shows that the core of the building had a symmetrical arrangement of rooms at each end, joined at the rear by a range of slightly unequally-sized rooms. The overall size in this phase, 32m x 14.8m, is modest, but not unduly so. It is broadly comparable to buildings at Cobham (Tester 1961), Sandwich (Bennett 1978) and Lullingstone (period 1; Meates 1979, 138), for example, although much smaller than the nearby villa at Eccles (Detsicas 1963–1977a), which was probably contemporary with the proto-villa at Thurnham. The plan incorporates elements long recognised as forming a 'set' of rooms (set S5, Drury 1982, 295–8), the component here being rooms B–E, the last of these interpreted by Drury (and J T Smith (1997, 49–50)) as a 'vestibule' or 'lobby' serving a principal room (D) with paired subsidiary rooms (B and C) on the other side. The formation of the core of a domestic unit using such a room set with an additional larger room at each end, as seen here at Thurnham, has several parallels amongst Romano-British villas, for example at Little Milton, Ditchley and probably Barton Court Farm, all in Oxfordshire, the early villa at Ditches, Gloucestershire (Trow *et al.* 2009, 53–5) and at Boxmoor, Herts (Drury 1982, 295–8), while in Kent such an arrangement was incorporated into the Farningham II villa (ibid.; Meates 1973, 4). Apart from Barton Court Farm, all these examples may be assigned to the late 1st or early 2nd century (Drury 1982, 298).

The similarities between Thurnham and Boxmoor (Neal 1977, 53–110) are particularly marked (Fig. 5.27). Their central blocks, consisting of the same room 'set' (the 'vestibule' is to the right of the central room at Thurnham (as seen from the front of the building) and to the left at Boxmoor) with a larger room at each end, are respectively *c* 25.2 x 8m and 26.2 x 8m. Both had projecting two-room wings with their front walls linked by a corridor foundation. The principal difference between the two buildings is that the wing rooms at Boxmoor were wider and did not extend behind the rear of the main rooms—the back of the building being occupied by a single continuous corridor, while at Thurnham the rear 'corridor', apparently subdivided

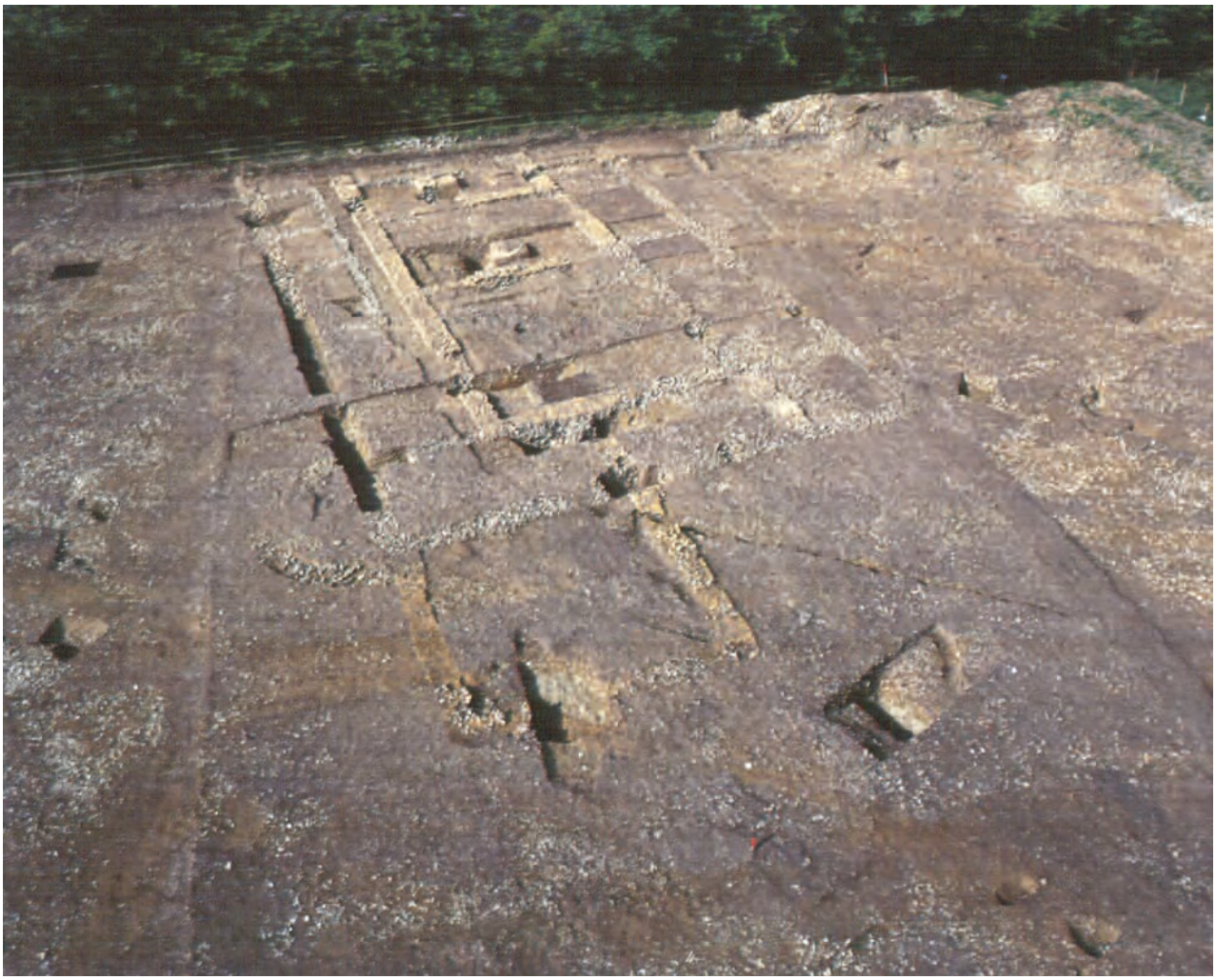


Figure 5.25 Thurnham: view of main villa house looking SSW

from the beginning, ran between the rearward projecting wings in the same manner as the front corridor.

The significance in a domestic context of the room sets identified by Drury remains debatable, but he rejected (1982, 299) the idea that they indicate the unit system of villa occupation as advocated by Smith (1978; 1997). Neither addressed in detail the question of the function of the two smaller rooms (although Smith (1997, 50) again uses the term 'lobby' in this context), or considered the question of the relationship of any of these rooms to possible upper floors—a concept dismissed more or less out of hand by Smith (ibid., 128–9). At Thurnham the very solid construction of the core part of the building and its internal walls certainly indicate a more substantial superstructure for this part of the building than for the wings and corridors, and may suggest that it had an upper storey. It seems likely that the slighter outer foundations supported a lean-to style of construction with a tiled roof, effectively enveloping the core.

The Thurnham sequence is one of very few from Kent to show probably continuous progression from Late Iron Age roundhouse to Early Roman proto-villa to more substantial 2nd-century villa house. Such sequences may have been relatively common in the region, but cannot usually be demonstrated. Iron Age occupation and two pre-villa buildings were present at Eccles (Detsicas 1983, 120). The latter were already substantial structures with stone foundations, one interpreted as a granary (Detsicas 1989, 87–8). Buildings at Orpington, Farningham II and East Malling, for example, superseded pre-Roman activity (Detsicas 1983, 86, 88, 94), though the nature of the associations is unclear, and at Otford a building first occupied at about the end of the 1st century 'succeeded an earlier round hut' (ibid., 90). At Keston, however, where there was clearly continuity of activity from the Late Iron Age onwards, there are no certain domestic structures assigned to the early phases.

A notable feature of the Thurnham sequence is the continuity not only of the general location of the principal domestic structures but also of significant elements of the associated enclosure. In particular, the position of the south-east side of the Late Iron Age enclosure, once established, was retained throughout the life of the site. The corresponding north-west side was realigned in successive periods, but without fundamental alteration of the character of the enclosure. The successive houses, proto-villa and 2nd century house (the latter more than four times the plan size of the proto-villa), occupied a position towards the rear of the enclosure characteristic of such buildings in relation to associated

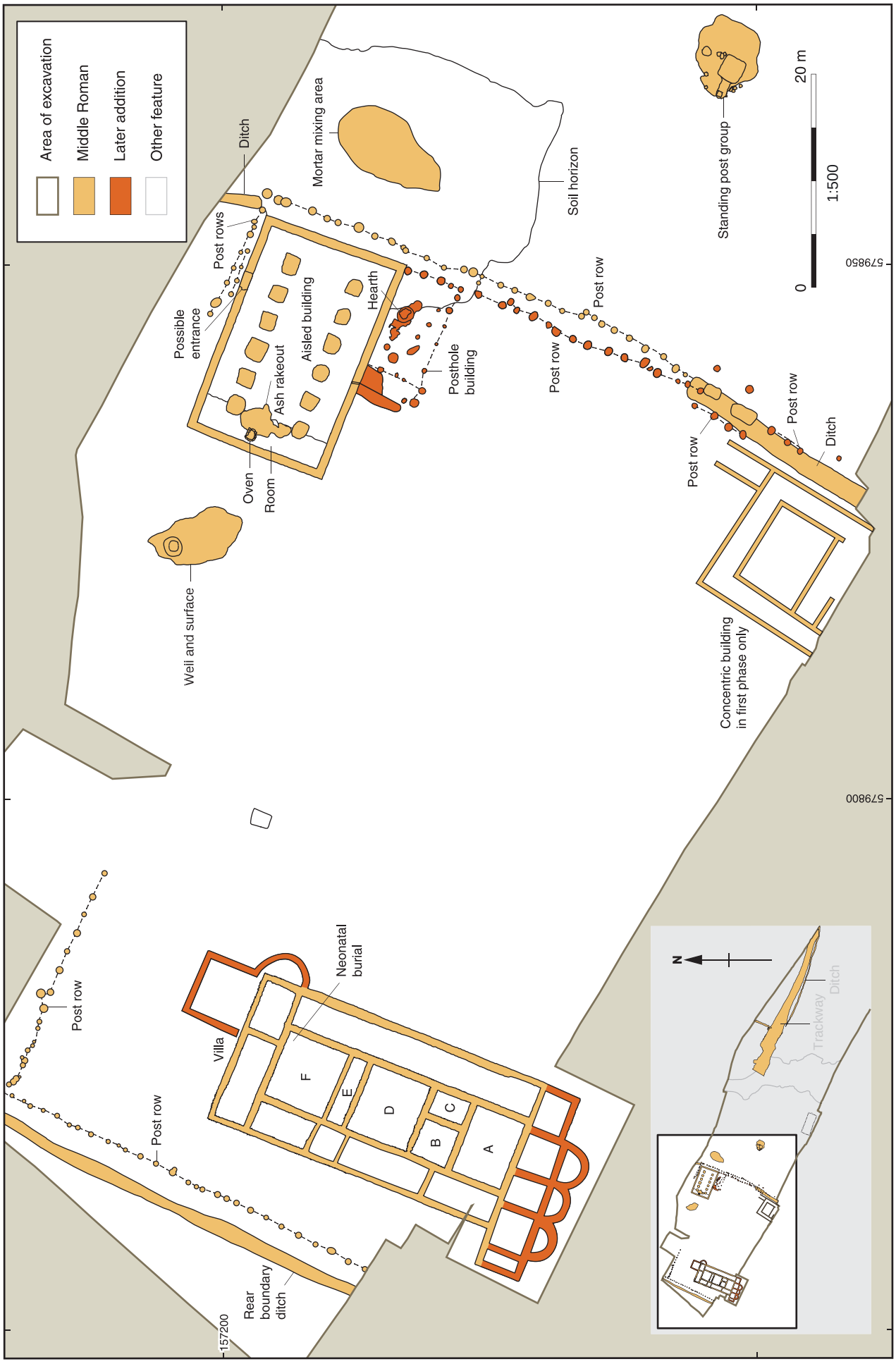


Figure 5.26 Thurnham: Middle Roman phase plan

enclosures or (often, particularly in the later Roman period) walled courtyards, as seen in Kent at Minster in Thanet (eg Perkins 2004b, 31) and (for the later period) at Darenth (eg Philp 1984, fig. 23) and more widely elsewhere, but by no means universally adopted.

This continuity of location strongly suggests that the building identified as the 'proto-villa' at Thurnham was in fact the principal house. It was, however, substantially smaller in plan area than the approximately contemporary building lying south-east of it (see Fig. 5.23). This would probably have framed the left hand side, and been the most striking component, of the view of the visitor approaching the site from the south-east, the likely main axis of approach (allowing for the fact that there could have been other structures, perhaps including a small bathhouse, in the lost south-western part of the enclosure; the aisled building, which would have formed the corresponding right hand side of the frame, was added in the 2nd century and did not form part of the proto-villa phase). Partly on this basis, and more particularly in view of some aspects of its plan, this building was interpreted, albeit tentatively, as a Romano-Celtic temple during the

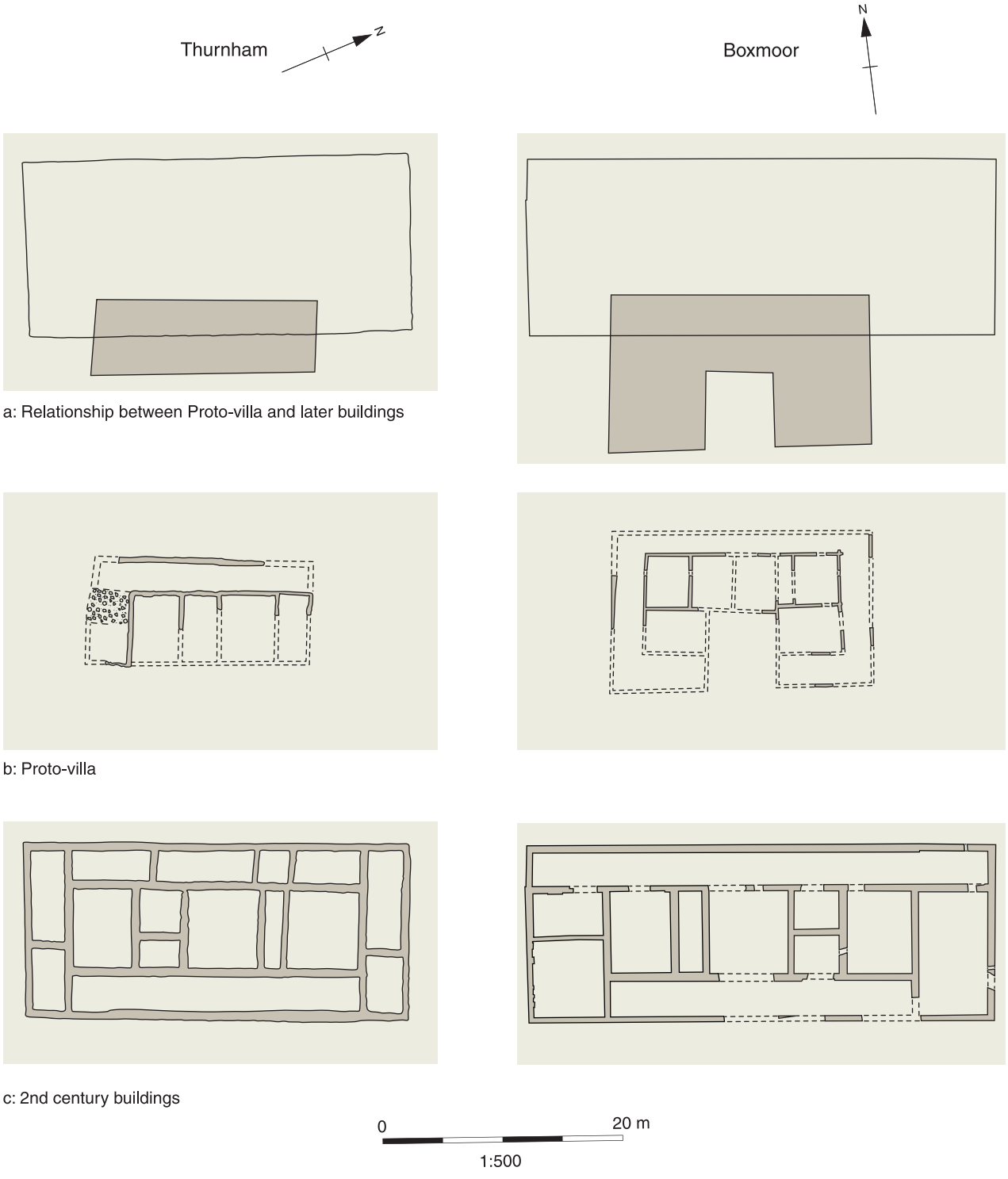


Figure 5.27 Thurnham and Boxmoor: comparative development of villa house plans

excavation, an interpretation followed in the site report (Lawrence 2006; see discussion below). This interpretation is questionable, however, because the building plan is not complete and its exact form is therefore uncertain. Moreover, recent work at Minster in Thanet has revealed a building with quite close similarities of plan to the Thurnham structure and in a broadly analogous position in relation to the main villa house and enclosure (Parfitt 2006c). This building was in turn compared by Parfitt to the South Masonry Building at Keston (ibid., 131; Philp *et al*. 1991, 120–5), both being considered domestic in function, as well as to a building at Darenth.

The Minster and Keston structures and, as far as can be seen, the Thurnham building as well, do have a number of features in common, of which the most notable are a general similarity of overall size, and the concentric nature of their plans (Fig. 5.28). The latter is one of the principal characteristics that influenced the interpretation of the Thurnham building as a temple. Whether or not this is correct, the fundamental question about concentricity is whether it is sufficiently characteristic of this group of buildings to suggest that they might have shared a similar function. Alternatively, was an enveloping 'passage' simply an architectural feature that could have been used in a variety of contexts? The apparent scarcity of such buildings in villa settings may relate to the concentration of study on the principal houses at the expense of subsidiary buildings; in the former context, however, they are rare. As J T Smith (1997, 142) says, 'A … problematic group … includes porticuses running continuously (or nearly so) around a comparatively small row-house, so that the amount of what is commonly called 'corridor' is altogether disproportionate to the amount of living space'. Occasionally the width of the 'porticus' is such that it was clearly not just a corridor, as in an example at Ovillers (Somme; ibid., 141–2), but a building at Biha -Založje (Bosnia) of very similar plan but with narrower porticus is placed by Smith in a different group (ibid., 201). A further building at Elchovo/Čatalka (Bulgaria), with a 'corridor' of intermediate width between the Ovillers and Biha -Založje examples, is of identical overall form but the central of the three rooms is wider than the flanking ones (unlike the other buildings in this group); the building does not appear to be closely dated (Henning 1994a, 484; 1994b, 163 no. 9, 175). Interestingly, the villa at Ditches, Gloucestershire, assumed a similar form in its early–mid 2nd century phase (Phase 6), when a corridor was placed around the room set discussed above (Trow *et al*. 2009, 46, 55–9).

At Minster the use of the 'corridor' as a room may be suggested by the secondary insertion of a small hypocaust into its south-west corner, and also by the widening of the 'corridor' in a later phase. Here the concentric element was compared with the later addition of a corridor encircling the main villa house (Parfitt 2006c, 131), a feature thought perhaps to be suggestive of Gallic influence (cf Black 1987, 140). In the South Masonry Building at Keston and in the main house at Minster the 'corridor' was subdivided by cross walls, with clear implications for the use of these units as rooms (it is not clear, however, if these subdivisions were secondary, whereas limited subdivision of the corridor at Ditches certainly seems to have been). Such subdivision was not seen in the first phase of Building 4 at Minster (a single later wall may have performed such a function), nor within the excavated part of the Thurnham building. It is unclear if this has functional implications or may reflect chronological factors–Thurnham and Minster Building 4 being the earliest of the group under discussion, while the South Stone Building at Keston was certainly of late Roman date. Is it possible that these, like the multiple post buildings also discussed above, represent another distinctive regional building type? Other British parallels appear scarce, but as well as Ditches include a possible example in Building B at Gadebridge Park (Neal 1974, 33–5), and in view of the occasional continental examples as well (see above) it would be unwise to claim regional uniqueness.

Minster Building 4 is interpreted as a domestic structure, and glossed as possible accommodation for the estate bailiff (Parfitt 2006c, 132). The Keston building was also interpreted as domestic in function (Philp *et al*. 1991, 124–5), and the continental examples mentioned above are all thought to have been houses, while the Ditches building was clearly the principal domestic structure on that site. Neither at Minster nor at Keston do the associated finds shed much light on functional aspects, although they are potentially more compatible with domestic than with agricultural functions (the main alternatives considered by both Parfitt and Philp). In both cases, however, the buildings were certainly or probably chronologically secondary to existing main houses, and less imposing than them in architectural terms. At Thurnham, however, the 'concentric' building was at least broadly contemporary with the proto-villa (although the dating evidence is insufficient to allow the sequence to be precisely determined either way) and, as noted above, substantially larger. If it was of the two room and central passage form of the Keston South Masonry Building, as is possible (the existing elements would allow reconstruction of the plan in this way), it would have been of very similar size and proportions to Keston and a little longer than Minster Building 4 phase 1/1a, but of the same width. Moreover, with an estimated plan area of *c* 275 sq m it would have been two and a half times the size of the proto-villa (on a minimal interpretation it is almost twice as large in area). It seems improbable that there would have been such a disparity in size between the principal dwelling and a subsidiary domestic building, which raises the whole question of the relationship between the two. It may be that the relationship was determined by relative status or function. Unfortunately there is very little material from the building or from contemporary adjacent features that sheds light on its function, whether domestic, agricultural or other. If the building had been a domestic one, identification of its occupants as (for example) of lower status than those of the proto-villa

house leaves unexplained the striking size disparity between the two buildings and the extremely prominent location of the concentric building, unless the building was slightly later than the proto-villa house and reflected a need for much more domestic accommodation at a time of rapid expansion, perhaps at the end of the Flavian period. From the early 2nd century, however, some additional domestic accommodation was certainly provided by the aisled building (Fig. 5.29), raising the question of whether the concentric

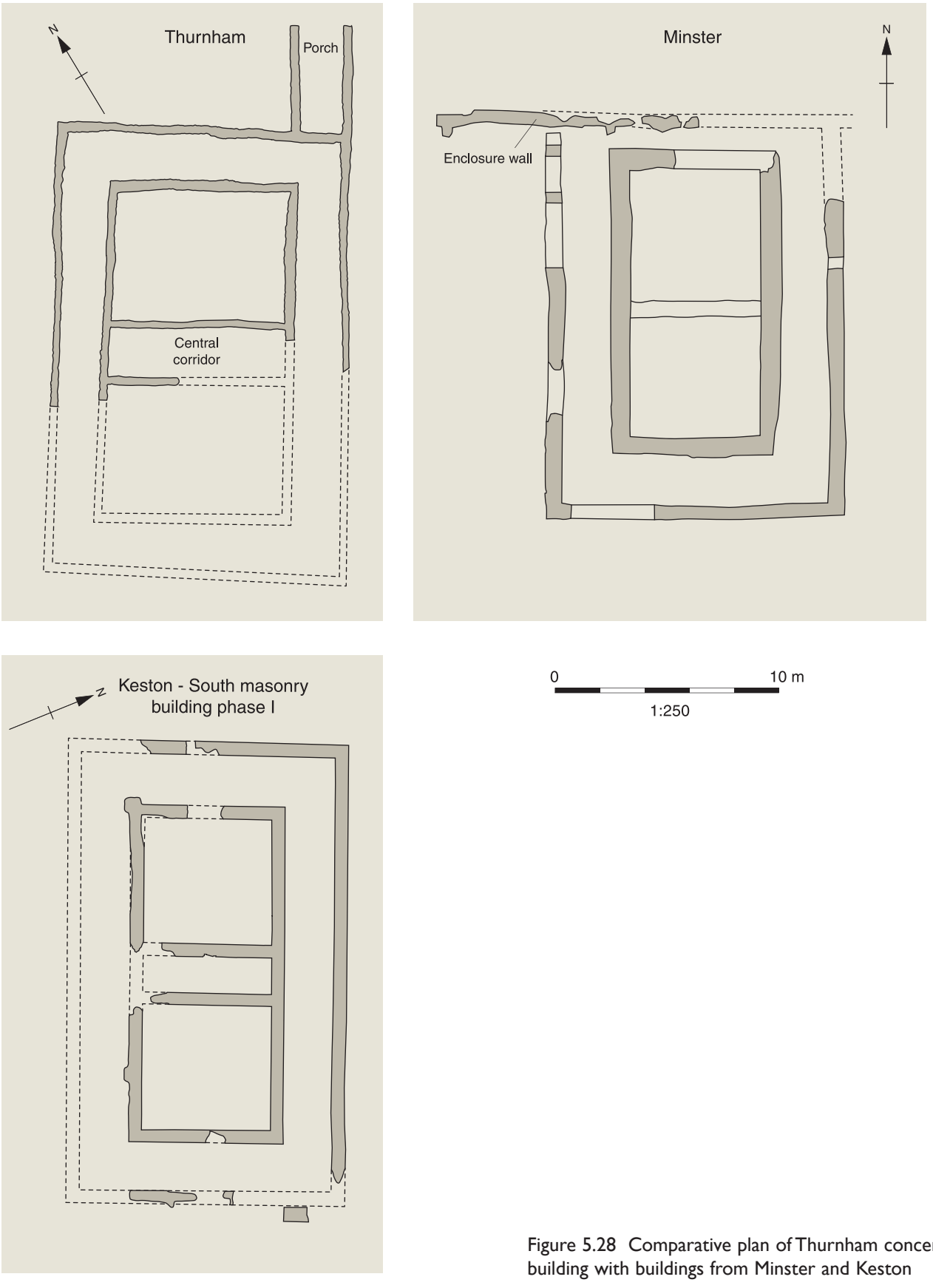


Figure 5.28 Comparative plan of Thurnham concentric building with buildings from Minster and Keston

Figure 5.29 Thurnham: view of aisled building with concentric building in background

building, which continued in use at this time, ever had a domestic function.

It is on this basis that the possibility of a religious function for the Thurnham concentric building is considered. Unfortunately, however, because of the location of the feature at the margin of the excavated area and the difficulties of reconciling the HS1 evidence with information from the previous excavation on the line of the Maidstone Bypass (now M20) in 1958 (Pirie 1960), the plan of the structure, and therefore its interpretation, is not certain (see above). Interpretation as a Romano-Celtic temple of concentric form requires some additions and other features of less typical character to be taken into account. These included the apparent subdivision of the 'cella', the alignment of the building (most unusual for a temple, given that the presence of boundary features appear to preclude the existence of an entrance in the south-east side) and arrangements for access to the building and the small 'porch' projecting from the eastern end of the north-east side, parallel to the main enclosure boundary of the villa complex.

The access questions are relevant whatever the interpretation of the building. There was one clear entrance on the north-west side of the building, presumably reflecting access from the direction of the proto-villa house. Access also seems to have been achieved from the north-east, although the interpretation of the projecting 'porch' structure on this side remains uncertain. Perhaps the most compelling argument in favour of it providing an access to the building is the way in which its open (north-east) end coincided with an opening in the adjacent enclosure boundary. The presence of a crushed tile surface against the south-east wall of the building suggests a path running between it and the enclosure boundary as far as the open end of the projecting porch, as if it was intended to minimise the visual intrusion of non-residents of the proto-villa house accessing the building. Why this should have been desirable is unknown, however, and why it was necessary to have a projecting porch at all, rather than simply an entrance into the corridor/ambulatory at its eastern corner, is unclear.

In summary the problems are: that the concentric form is neither exclusively religious nor domestic (the domestic examples are few in Britain, but may concentrate in Kent); that the Thurnham building is substantially larger than the contemporary house (which presents some problems for any interpretation); and that the incomplete plan and lack of associated finds preclude a confident attribution of the building's function. On balance, however, the morphological characteristics seem less consistent with a temple than with other types of building.

Evolution of settlement through the Roman period

The Thurnham villa has not only the most varied and distinctive range of structural types but also (and partly for this reason) one of the more readily identifiable sequences of site development in the Roman period. Indeed it is one of the very few HS1 sites that show occupation throughout the period. The development of the HS1 sites can be tracked in a number of different ways, but one of the simplest is in relation to the ceramic evidence. This has been plotted on Fig. 5.6 in terms of the relative frequency of occurrence of material (within the context of the individual site assemblages) divided into approximate quarter-century units. These are of course fairly notional—many fabrics and vessel types are not susceptible to such close dating —but the general picture is clear for most sites. Against the pottery evidence can be set that of the coinage, where present. This has its own patterns of chronological development quite separate from those of the pottery (eg Reece 1995a, 179), but these can be taken into account for comparative purposes. Activity with regard to the structural sequence cannot readily be assessed independently of these chronological indicators, but the peak periods of building activity at each site represented on Fig. 5.6 correlate with the observable ceramic peaks; ie there are no cases of significant construction activity (whether of buildings or enclosure ditches or other features) at times when ceramic deposition is at a low level in relative terms.

As already discussed, almost all the main HS1 sites were probably in existence before the Roman conquest—Hazells Road being the only certain exception to this picture, although there may have been only minimal activity at Pepper Hill at this time. Activity at Eyhorne Street might have already ceased by the time of the conquest, while at Hockers Lane it was probably at a low level by this time, and it is quite likely that this site was eclipsed, if not completely superseded, by the Late Iron Age–Early Roman developments at Thurnham. Activity within the excavated part of Hockers Lane had certainly ceased by the end of the 1st century AD at the very latest, but it is conceivable that it continued in the area to the north beyond the limits of excavation, and the same was true at Lodge Wood and Boys Hall, though both of these were minor sites, the latter represented principally by a small group of cremation burials.

Another site apparently exclusively of Late Iron Age date was Little Stock Farm. However, the much longer-lived site at Bower Road lay only 700m west of the Little Stock Farm enclosures and it is possible that these two sites had a comparable relationship to that postulated for Hockers Land and Thurnham, the one being in some way succeeded or subsumed by the other. Alternatively, the discovery of small quantities of Early Roman pottery in evaluation just east of Little Stock Farm at Park Wood Cottage may suggest settlement shift in this direction (Ritchie 2006), though the limited date range of this material could still be consistent with a partly sequential relationship with Bower Road. It is, however, even more likely that sites with limited chronological ranges had sequential relationships with other (unknown) sites lying outside the line of HS1.

Beechbrook Wood, like Lodge Wood and Boys Hall, also had an early peak, but activity there may have continued at a low level as late as the early 3rd century. Elsewhere, the phase of relatively intensive activity at settlement sites lasted at least into the early–mid 2nd century, but continued beyond this time at barely a third of them (7 of the total of 21 HS1 Section 1 sites with ceramic sequences plotted in Fig. 5.6). The sites already out of use or in terminal 'decline' by this time were all apparently lower-status rural settlement components, such as Northumberland Bottom (East of Downs Road), Hockers Lane, Snarkhurst Wood and Beechbrook Wood, or had contained elements of related features such as trackways and field systems (Whitehill Road, South of Station Road, Tollgate, Lodge Wood, Blind Land, Little Stock Farm and East of Station Road), or cemeteries (Boys Hall and Beechbrook Wood again). Some of these sites had also carried out specialised activities, particularly iron-working, as at Beechbrook Wood.

The sites surviving in the second half of the 2nd century form an interesting group. In north-west to south-east order the first is the Pepper Hill cemetery, which may have been in decline by this time, and was fairly certainly (allowing for the undated graves) decreasingly used in the 3rd century. At the easterly Northumberland Bottom site (just west of Wrotham Road) the settlement and related trackway system had already undergone considerable development (as had the system of trackways at Tollgate, 1 km further east; Fig. 5.30), including the closing off of one of the more important tracks by ditches surrounding a possible sunken-featured building (see above). The main phase of activity here seems to have continued to the end of the 2nd century, but this may not be representative of the settlement as a whole (its focus clearly lay north of the HS1 trace) as there are (unusually) hints of continuing low-level activity through both the 3rd and 4th centuries. At White Horse Stone, however, the 'main' phase of activity (probably quite restricted in time), involving a trackway and enclosures around the former location of Iron Age settlement, seems to have ended within the second half of the 2nd century.

Further south lay three of the most important HS1 settlement sites. At Thurnham and Bower Road significant construction work can be assigned to the later part of the 2nd century, but there is no such evidence for Leda Cottages, where the only identified structural evidence consisted of four-post buildings of Late Iron Age date, although occupation clearly continued at this time (Diez 2006a). At Saltwood Tunnel there was no direct evidence for settlement at all, but a number of trackways were presumably in regular use and nearby activity is indicated by a range of pottery.

Pottery evidence provides the main indication that the most intensive use of all these four sites came to an end in the first half of the 3rd century. Continuing use of buildings thereafter can be demonstrated, for example at Thurnham. Here, however, the main villa house had

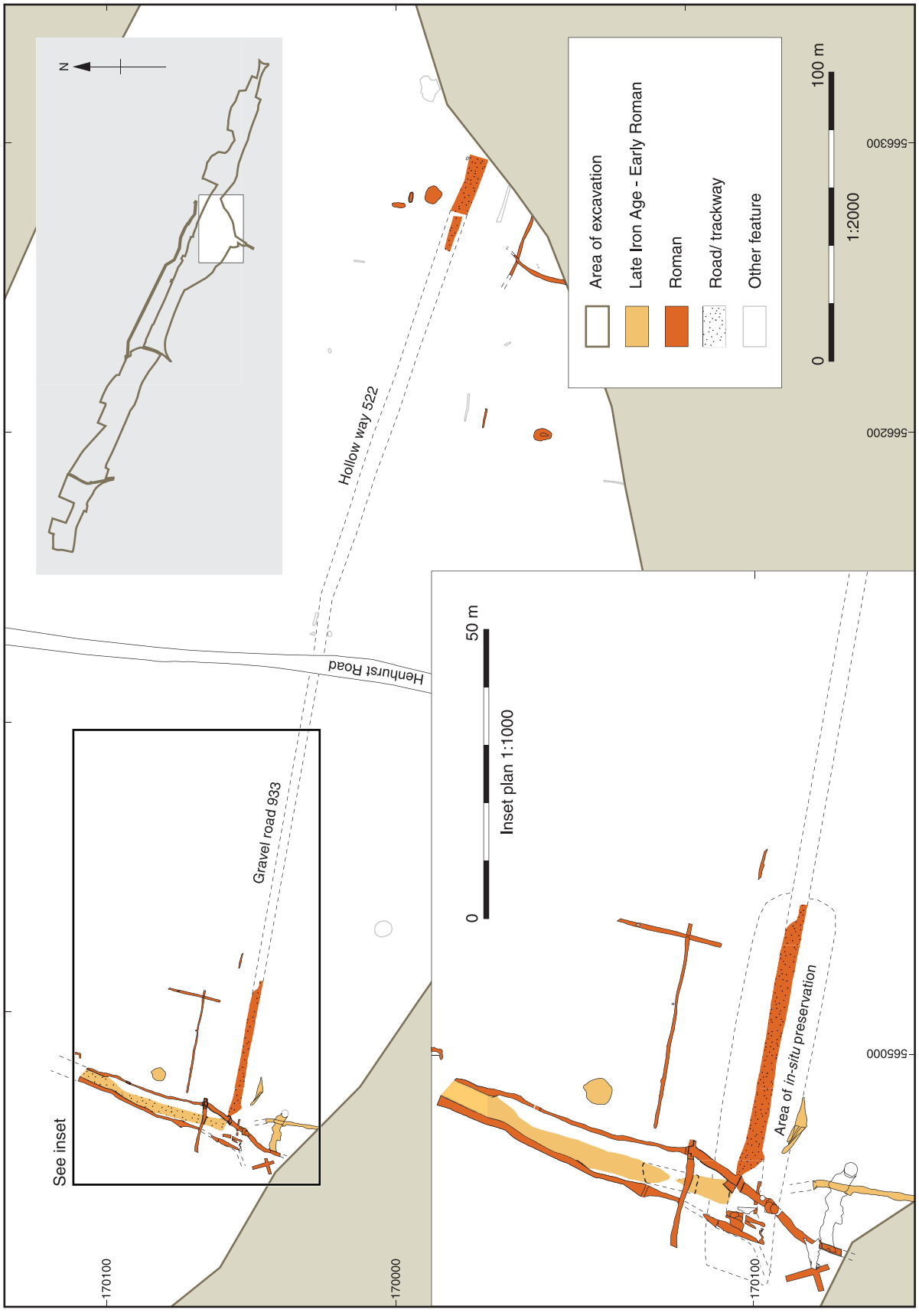


Figure 5.30 Tollgate: overall phase plan with detailed phase plan of road sequence in the western part of site

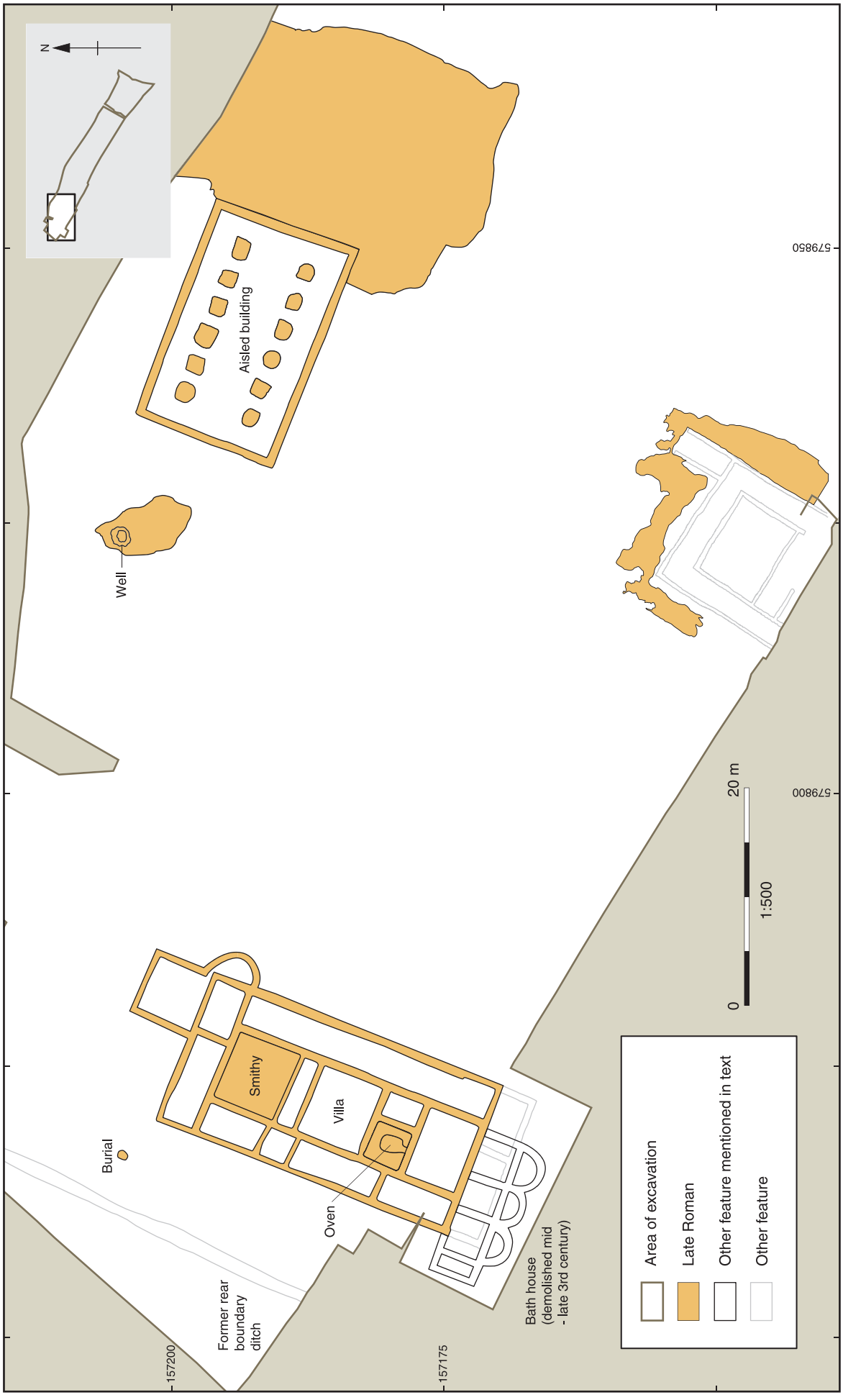


Figure 5.31 Thurnham: Late Roman phase plan

probably ceased to serve this function by the later 3rd century and the bath suite had been demolished, while the multiple-post building outside the villa enclosure may have been removed to make way for a corn-drying oven, probably leaving the aisled building as the principal domestic focus (Fig. 5.31).

At Bower Road the multi-posted structure, probably of late 2nd century date, is likely to have remained in use for much of the 3rd century, but it is uncertain how long it survived thereafter, and evidence for 4th-century activity on the site, while certainly present, is limited. At Saltwood Tunnel, Late Roman pottery and a number of individual objects constitute the main indicator of continued activity, supplemented by a single inhumation burial. Only one site, Hazells Road, was exclusively of later Roman date. Here the pottery indicates activity from the early 3rd century onwards, while a number of coins demonstrate that the site, of agricultural character, its principal feature being a large corn-drying oven located adjacent to a trackway (see Fig. 5.36), continued in use at least through the first half of the 4th century and probably at a lower level up to the end of the century. By this time contemporary activity, again only at a low level, can be suggested further east within the Northumberland Bottom complex at Wrotham Road and at Thurnham, Bower Road and Saltwood Tunnel, ie at about a quarter of all the HS1 sites where Late Iron Age and Roman activity was encountered. This pattern of Late Roman activity is discussed further below.

Rural economy

It is likely that the economy of all the HS1 settlement sites was based on agriculture. There is limited evidence for more specialised activities such as iron production (at Leda Cottages and Beechbrook Wood) and pottery production (also at Beechbrook Wood and possibly at Snarkhurst Wood), but in no case was the scale of this activity sufficient to suggest that it was more than supplementary to agriculture. Characterisation of the rural economy is problematic, however, because of the nature of the soils. On the Greensands and clays of Holmesdale and the Chart Hills, in particular, the acidic soils resulted in a generally very low level of survival of animal bone, and the preservation of charred plant remains was also adversely affected. Preservation was much better on the chalk Downs, but at some sites where chalk formed the solid geology the overlying deposits (for example, the sands, gravels and brickearth at Pepper Hill) were still acidic and resulted in very poor survival of bone.

For many sites it is difficult to determine the extent to which agricultural production rose above subsistence level. Direct evidence even for some of the most basic of domestic activities, such as cooking, is not widespread, and it is notable that the best-preserved evidence for hearths and ovens (probably, but not demonstrably, simply for baking/cooking) comes from the higher-status sites such as Thurnham and Northumberland Bottom, West of Wrotham Road (Figs 5.32–4).

Figure 5.32 Thurnham: Middle Roman oven (15280) in north-westernmost bay of aisled building

Figure 5.33 Northumberland bottom, West of Wrotham Road: well-preserved Early Roman oven in hollow beside enclosure ditch, looking east

Figure 5.34 Northumberland Bottom, West of Wrotham Road: Mid Roman oven cut into south-east corner of Early Roman enclosure ditch

Other structural evidence for agricultural activity has been partly discussed above, and relates most clearly to the storage and processing of grain, with four-post 'granaries' a recurring feature. More widely, the evidence for field systems is generally insufficiently coherent to allow their characterisation—were ditches used to define arable fields or were they principally a means of creating stock enclosures? In the absence of evidence for widespread field systems the latter may be more likely, but the linear character of the project limited the ability to define evidence for such systems. There is, however, no indication of the presence of extensive areas of field systems, whether systematically planned or not, to compare for example with those perhaps seen in parts of Essex (Going 1993, 100–1), on the Berkshire Downs (Bowden *et al*. 1993) or in South Yorkshire (Riley 1980). Equally it is not possible to tell if there may have been variation in field sizes related to factors such as subsoil type (cf Bird 2000, 164).

The only examples of ploughmarks of probable Roman date, from west of Wrotham Road in the Northumberland Bottom complex, lay adjacent to an enclosure ditch. The most likely (but speculative) interpretation of this association is that the ploughmarks lay in an arable area that was not itself closely divided by ditched boundaries, but within which small enclosures could have served a variety of purposes. Apparent traces of plough scars at right angles suggest the use of a simple ard-type plough.

The main strands of evidence for the agricultural economy of the HS1 sites are summarised in Table 5.4. Notable evidence for grain processing and or storage (though not necessarily production) has also been mapped alongside other 'economic' data on Fig. 5.35, where an attempt has been made to distinguish between this material and evidence for routine household processing and consumption of grain, which is much more widely encountered. It is assumed, however, that arable production was probably practised at all settlement sites, even where there is little or no direct evidence for this.

Plant remains

Charred plant remains were widespread but the best assemblages came from Northumberland Bottom, Thurnham, Bower Road, Little Stock Farm and Saltwood Tunnel. The range of cereals represented at each site was generally similar throughout this period, although there was much more early than later Roman evidence, and the Little Stock Farm assemblage was entirely of Late Iron Age date. Spelt wheat and to a lesser extent hulled barley were the main cereals. Emmer wheat was generally rare in the main assemblages, having been more common in the earlier Iron Age, although larger quantities were recorded at Saltwood Tunnel. Occasional free-threshing wheat grains were recovered from Pepper Hill, Northumberland Bottom, Thurnham, Little Stock Farm, Bower Road and, Saltwood Tunnel, adding to existing records for sites such as Springhead (Campbell 1998). Oat grains, again in small quantities, were found at Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Beechbrook Wood, with larger amounts at Bower Road, but it is uncertain if these derived from cultivated or wild plants.

Other plants represented in charred deposits included legumes: occasional horse beans, peas or vetch/bean/pea at Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Saltwood Tunnel, for example. The Thurnham plants included cultivated pulses, such as broad bean (*Vicia faba*) and large seeded vetch/garden pea (*Vicia* sp./*Pisum sativum)* as well as non-edible vetches/clovers (eg *Vicia sativa* and *Melilotus* sp./*Medicago* sp./*Trifolium* sp.). The latter may have been cultivated for animal fodder, possibly as part of a crop rotation system, or may just have been cereal weeds (Smith and Davis 2006). Carrot (*Daucus carota*) seeds from the well at Thurnham may likewise have been from the wild rather than the cultivated species. Charred flax seeds were found at Northumberland Bottom and Thurnham, where waterlogged flax capsule fragments were also found in the Late Roman well. Wild resources were also utilised, as shown by fruit remains of sloe/blackthorn, apple, blackberry (*Rubus fruticosus*), blackberry/raspberry and hazel nut shell, again from the well at Thurnham. Charred hazel nutshell was found at seven sites and remains of sloe and *Prunus* species at Northumberland Bottom, Thurnham and Little Stock Farm. Mineralised *Rubus* seeds were identified at Bower Road.

Understanding of the way in which arable regimes operated is enhanced by consideration of the weed seeds as well as the cropped species. A wider range of weed seeds was present compared to the previous period, and they suggest that a greater variety of soil types may have been cultivated, for example at Thurnham, Little Stock Farm and Bower Road. Newly-recorded species included stinking mayweed (*Anthemis cotula*), an indicator of waterlogged loams and clay soils, which appeared on a number of sites including Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel. It was common in Late Roman samples at Hazells Road, where evidence of free-threshing wheat was also found. Bedstraw, which had been present in the previous period, also grows in clay soils and was again found at Northumberland Bottom and at Little Stock Farm. In contrast, narrow fruited corn salad (*Valerianella dentata*), associated with dry calcareous soils, was identified at Bower Road.

Weeds of acidic soils, widely present in the previous period, were again common at a number of the sites. They included sheep's sorrel and scentless mayweed at Beechbrook Wood, blinks (*Montia fontana*) and sheep's sorrel at Little Stock Farm, corn marigold (*Chrysanthemum segetum*), sheep's sorrel, scentless mayweed and wild radish (*Raphanus raphanistrum*) at Bower Road, and blinks and scentless mayweed at East of Station Road. At Little Stock Farm, Chenopodiaceae (particularly fat hen, *Chenopodium album*), associated

Table 5.4 Outline summary of evidence for agricultural economy from principal sites

Site	*Structures*	*Charred plant remains*	*Principal crops*	*?Crop processing*	*Querns*	*Animal remains*	*Principal animals*	*Comment*
Whitehill Road						Kitch 2006a	*cattle, sheep/ goat, pig	
South of Station Road		Giorgi 2006a	*spelt/emmer, barley	Y?				
Hazells Road	'corn-drier'	Davis 2006a	spelt (emmer, barley, oats)	Y	1 millstone unstratified	Kitch 2006b	*cattle, sheep/ goat, pig	millstone may not be Roman
Northumberland Bottom, E of Downs Road	2 4-post structures	Davis 2006a	spelt, emmer	Y?	7?	Kitch 2006b	*horse, cattle, sheep/goat, pig	
Northumberland Bottom, W of Wrotham Road		Davis 2006a	spelt (barley)	Y				
Tollgate		Davis 2006b	spelt	Y	1	Kitch 2006c	*sheep/goat, cattle	
Hockers Lane	4-post structure					Kitch 2006d	*sheep/goat, cattle, pig	
Thurnham	2 4-post structures multiple-post building, aisled building, 'corn-drier'	Smith and Davis 2006	spelt (barley)	Y	24?+ 2 poss millstones	Kitch 2006d	sheep/goat, cattle, pig	
Snarkhurst Wood	5 4-post structures	URS 2000b	spelt, barley					
Leda Cottages	2 4-post structures	URS 2003	spelt	Y	12?			
Beechbrook Wood	3 4-post structures	Giorgi 2006b	spelt (emmer, oats, barley)		1			CPR from cremation burial
Bower Road	multiple-post building with ?agricultural function	Stevens 2006a	spelt (oats, emmer, barley)	Y		Kitch 2006e	*cattle, sheep/ goat, pig	
Little Stock Farm	4-post structure	Stevens 2006b	barley (emmer/spelt)			Kitch 2006f	*sheep/goat, pig, cattle	
Saltwood Tunnel		Stevens 2006c	spelt, emmer, barley (pea)	Y	?	Worley and Nicholson 2006	*cattle, sheep/ goat	

Where possible the principal crop and domestic animal species are listed in order of importance, with proportionately minor presences in brackets. An asterisk (*) indicates that the sample sizes are too small for the assessment of relative importance to have any statistical validity

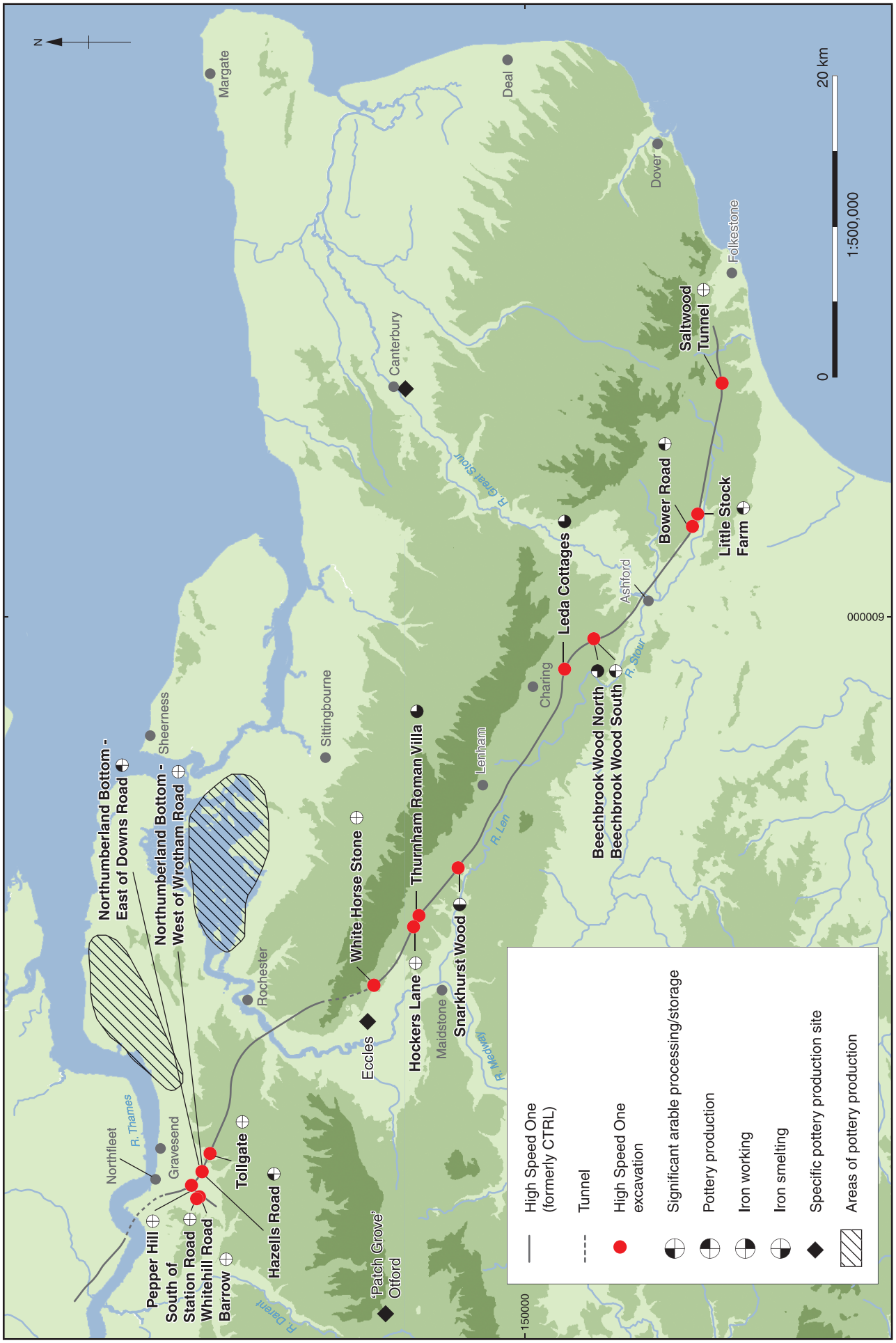


Figure 5.35 Map of principal 'economic' activities from HS1 Late Iron Age and Roman sites

with nitrogen-rich soils, declined in importance in the Late Iron Age to Roman period during which there was a corresponding increase in leguminous seeds. This may indicate a decrease in the fertility of the soils around the site, presumably as a result of over-exploitation. That the range of utilised land included wet ground is suggested by the presence of plants such as blinks and spike-rush (*Eleocharis palustris*), particularly at Thurnham and Bower Road, although their occurrence could have been quite localised.

The association of particular weeds and crops sometimes suggests the season of sowing or allows inferences about harvesting technologies to be drawn. The presence of knotgrass, black bindweed and fat hen suggests spring sowing, while corn gromwell may indicate that some crops were winter sown. Equally the presence of monocotyledon rhizomes in a 2nd–4th century deposit at Nashenden Valley might suggest that some cereals were harvested by uprooting, while an iron reaping hook from Hazells Road suggests a different method there. Better evidence is available for post-harvest processing practices since it is charred material derived from these practices which is generally recovered from excavated settlement site contexts. At the HS1 sites these remains were mostly from the final stages of crop-processing and comprise cleaned grain, chaff (from de-husking) and large weed seeds, such as bromes, characteristic of virtually cleaned grain. There was generally less evidence for the fine sievings (small weed seeds) separated at an earlier stage of crop-processing. Crop-processing debris appears to have been used as tinder or kindling in hearths and ovens. The latter were quite widely encountered and in the general absence of evidence for specialised functions for these, such as metalworking (see below), are interpreted as being used for domestic cooking activities.

Most of the grain would have been converted to flour or meal, typically by hand milling. Quern stones were recovered from five Late Iron Age and Roman settlement sites (Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Beechbrook Wood), of which only Thurnham produced two likely examples of millstones, both in Millstone Grit (a further millstone in the same stone type was an unstratified find at Northumberland Bottom and could have been of Roman or later date). In the absence of evidence for a convenient source of water power at Thurnham it is likely that the millstones there derived from an animal mill, as has been suggested at Keston (Philp *et al*. 1991, 180). The situations of the villas at The Mount, Maidstone (Kelly 1992, 228) and Lullingstone (Meates 1979, 110) are more ambiguous in this respect, and millstones there could have been either animal- or water-powered. The only unambiguous evidence for watermills of Roman date in Kent comes from the site at Ickham, near Canterbury, where there were multiple mill structures (Bennett *et al*. 2010). Either way, there seems to be a broad association of millstones with higher rather than lower status rural settlement sites, as noted for example in the Upper and Middle Thames Valley (Booth *et al*. 2007, 298). Moreover it is likely that the great majority if not all stones of Millstone Grit occurring in Kent were millstones rather than hand-powered querns (R Shaffrey, pers. comm.). So for example at Home Farm, Eynsford, three out of four stones of Millstone Grit were certainly millstones on the basis of size, while the diameter of the fourth stone could not be determined (Philp and Chenery 2002, 75–6).

An alternative use of grain, for malting, is suggested by one sample at Thurnham but is not convincingly attested elsewhere on HS1 Section 1, although there is some evidence for malting at other sites in the area such as Springhead (Campbell 1998, 37), The Mount villa, Maidstone (Robinson 1999) and Keston (Hillman 1991), and possibly at Westhawk Farm (Pelling 2008), while such evidence is prominent at the Northfleet villa, particularly in the Late Roman period (W Smith in Andrews *et al*. 2011). The relative absence of evidence for malting at the HS1 Section 1 sites is quite striking. The possibility that this reflects the chronological emphasis of the majority of sites was considered, on the basis that malting probably became more widespread in the middle and later Roman periods, after a number of the HS1 sites had gone out of use. However, the potentially relevant material at Thurnham came from a gully of mid–late 1st century date while none of the samples associated with the later 'corn-drier' (or with the large Late Roman corn-drier at Hazells Road) contained sprouted grain (Fig. 5.36). On balance it would be surprising if malting was practised at Thurnham in the Early Roman period but not later. A broadly contemporary (*c* AD 43–70) deposit at Westhawk Farm contained sprouted grains of spelt and barley but particularly also of brome grass, as well as a wide range of weeds, and its interpretation as containing material relating to the malting process also seems problematic. Unfortunately the relevant sample at Springhead was not well-dated (although associated pottery was mostly Early Roman), but the deposits indicative of malting at The Mount were dated *c* AD 175–225 (Robinson 1999, 149) and the single sample from Keston (small and therefore of slightly uncertain significance) was from a ditch with a *terminus post quem* of *c* AD 350 but containing residual as well as contemporary material (Philp *et al*. 1991, 130). The villa at Northfleet (HS1 Section 2) has produced significant assemblage of grain sprouts, providing the best evidence yet for malting (of spelt) in the area, in contexts ranging across much of the Roman period, but concentrated in the Mid/Late Roman. The material suggests malting on a substantial scale at this site.

Overall, the charred cereal remains from this period show that spelt was the principal grain with smaller amounts of hulled barley and generally only small amounts of emmer. Spelt and hulled barley are typically the main cereals found in Late Iron Age and Romano-British deposits from southern England (Greig 1991) while emmer is poorly represented (van der Veen and O'Connor 1998; Campbell 2000). It is usually assumed that emmer was no longer being extensively cultivated in southern England during this period, but the presence of reasonably high proportions of emmer in Roman samples

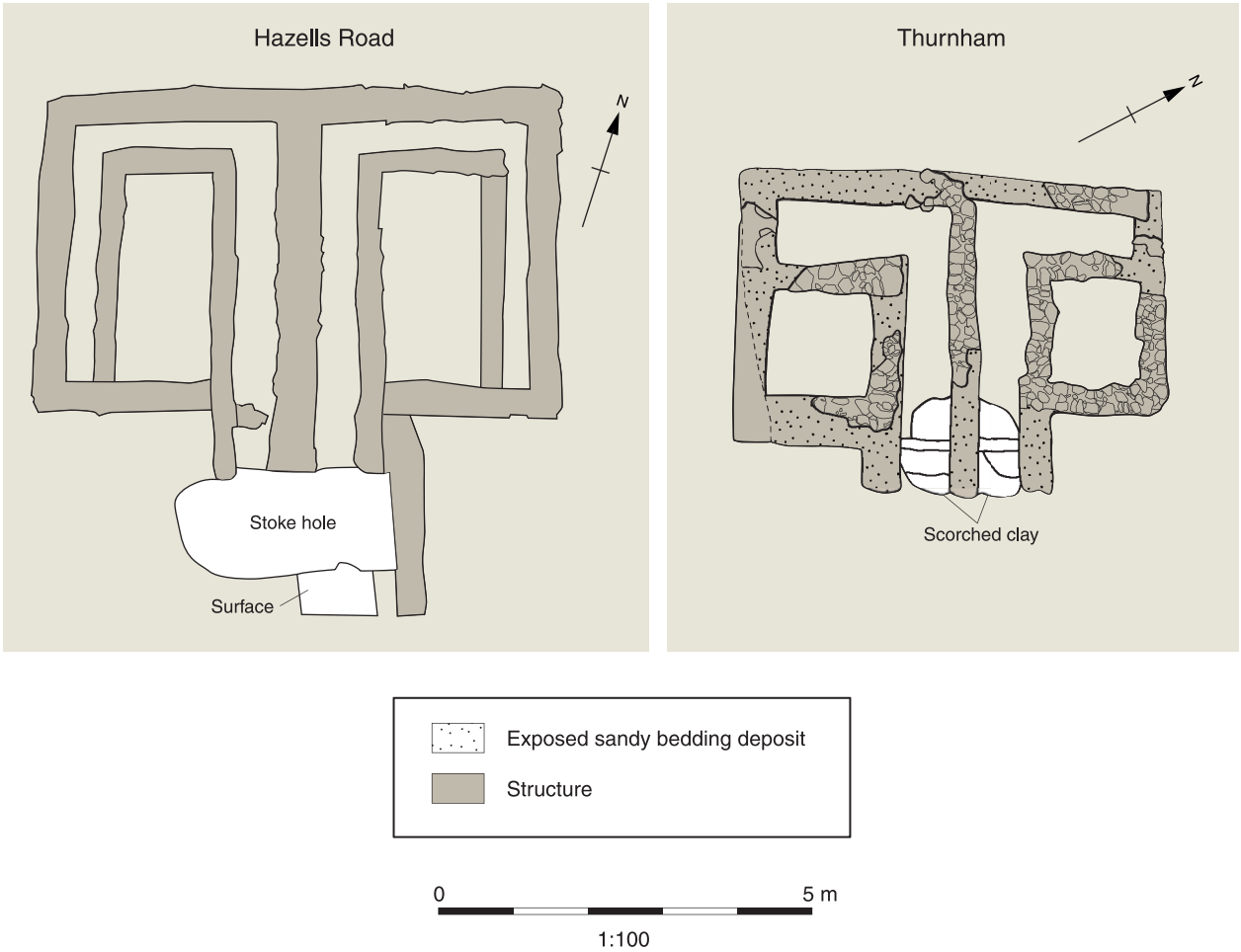


Figure 5.36 Comparative plans of corn-driers (Hazells Road, Thurnham)

from Saltwood Tunnel suggests that it may have continued to play a role in the agricultural economy in Kent. Almost equal proportions of emmer and spelt were recorded in a Late Iron Age pit at Wilmington, near Dartford, for example (Hillman 1982). Such evidence remains in the minority, however, and at Springhead (Campbell 1998, 37–9) and The Mount, Maidstone (Robinson 1999, 149) spelt was certainly or probably dominant (remains can sometimes not be identified more precisely than as spelt/emmer). At the low status settlement at Queen Elizabeth Square, Maidstone, emmer, while less common than spelt, was sufficiently frequent to suggest that it was not just a contaminant (Pelling 2003, 22) in the Late Iron Age and Early Roman periods. At Wingfield Bank, Northfleet, however, immediately east of Springhead, deposits of chaff dominated by spelt were recovered from an oven dated by radiocarbon to the Late Iron Age (Wheaton *et al*. in prep.). Variations in the proportions of these cereals may perhaps have been linked to site status, but there are still insufficient data for this to be tested rigorously.

Pulses and flax are not particularly well represented in this period and there is only limited evidence for the use of wild foods, mainly in the form of hazel nutshell. Recovery of evidence for pulses is, however, much less consistent than for cereals as there are no aspects of the various possible preparation processes (except for cooking) and reuse (for example of cereal chaff as fuel) that require contact with heat, so the occurrence of charred material will be entirely accidental, as at Queen Elizabeth Square (Pelling 2003, 22, 24), where large quantities of peas were dated to the Late Iron Age phase. Such evidence suggests that the use of such resources could have been quite widespread in the region and the absence of evidence does not necessarily represent the true picture with relation to pulses. Flax is subject to the same biases.

Animal remains

Issues of preservation are reflected in the fact that animal bone assemblages were only examined at ten sites of Late Iron Age and Roman date, in five of the eight landscape zones (1, 3, 4, 7 and 8). The largest assemblages came from Northumberland Bottom and Thurnham, but these amounted to only just over 2000 fragments and *c* 5350 fragments respectively (excluding very fragmentary material from sieved samples) and only at Thurnham are the data (barely) adequate to suggest possible changes in animal husbandry through time.

All four major domesticates, cattle, sheep/goat, pig and horse were identified at most of the sites with cattle and sheep/goat usually the best represented species, as

would be expected. Cattle were the most abundant species at the Early Roman site of Whitehill Road, at the Roman site of Bower Road and at Late Roman Hazells Road. Sheep/goat were most common at the Late Iron Age–Early Roman site of Hockers Lane while both sheep/goat and cattle were abundant at the Late Iron Age site of Little Stock Farm and the Late Iron Age–Roman site of Saltwood Tunnel. In early Roman deposits at Northumberland Bottom, horse was the best represented followed by sheep/goat, cattle and pig, but this phase sample included a large number of the horse bones from a burial with one complete fully articulated skeleton (Giorgi and Stafford 2006). All these assessments are based on very small numbers of fragments, however. Even in the case of Northumberland Bottom the total for the minimum number of individuals (MNI) in the Early Roman phase (14, of which 5 were horses), is less than half that recommended by Hambleton (1999, 39) as a minimum for meaningful discussion of differences in the relative numbers of the main species.

At Thurnham, data for MNI from the Late Iron Age to Late Roman period, although mostly from the Late Iron Age and Early Roman phases, are still not as numerous as would be wished, but appear to show sheep/goat to be predominant in the early phases (*c* 55% of a MNI total of 44), declining to *c* 35% (of a MNI total of 34) in the Middle and Late Roman period, while cattle correspondingly increased from *c* 20% to *c* 30% of MNI (Kitch 2006d). The data are too few to permit any meaningful distinction to be drawn between the Middle and Late Roman phases, although superficially the representation of cattle and sheep/goat is similar in both. The incidence of pig seems to have been fairly consistent, at about 20% of MNI, across the main periods.

The evidence for ages of animals at death provides some indication of husbandry practices at the different sites, but the lack of large datasets means that these are of a rather generalised nature. Mixed strategies are likely to have been pursued. Cattle, for example, were probably used for traction and dairy and meat products. Even where they were less numerous than sheep, cattle typically provided the majority of meat for many settlements because of their much greater body mass. It is impossible to say if this was consistently the case on the HS1 sites, but it is likely. At some sites, for example Northumberland Bottom, no evidence for butchery of sheep was recorded (with the implication that these animals may have made little or no contribution to the meat diet), but the small sample size may limit the value of this observation. Here sheep could have been particularly important for wool and perhaps dairy products, although in general they would also probably have been exploited for meat. Leather, bone and horn would have been useful by-products of cattle (evidence of horn removal, presumably for working, was found at Northumberland Bottom, Thurnham and Bower Road), but their production would rarely if ever have been a primary consideration in stock raising. Pigs were essentially raised for meat, with a few retained for breeding purposes. Horses are most likely to have been used for riding, with traction as a secondary function. There is no clear indication of inter-site variation in these broad patterns of exploitation. It is likely that animals were kept at most if not all settlements, but evidence of breeding, in the form of the presence of remains of very young animals, came from Whitehill Road (cattle and possibly sheep/goat), Thurnham villa (cattle, sheep/goat and pig) and Bower Road (cattle and sheep/goat). In contrast, the assemblage from Northumberland Bottom was notable for an absence of young animals.

Domestic fowl was the only other economic species encountered, at Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel. There were ten instances, including one almost complete carcass, of domestic fowl amongst cremated material at Pepper Hill, where these birds would have been placed on the pyre. It is likely that a majority of the considerably larger number of fragments identified only as 'bird' at this site were also of domestic fowl.

Game animals included finds of red and roe deer, represented by occasional bone remains at Hazells Road, antler at Little Stock Farm (both red and roe, respectively sawn and cut), and both at Thurnham villa and Bower Road (including sawn red deer antler). This evidence suggests that deer were hunted, but there was no indication of butchery on any of the post-cranial elements so it remains uncertain if these animals were eaten. It is clear that antler was worked at Little Stock Farm, Thurnham and Bower Road, but much of this could have been carried out using collected shed antler. Hare (*Lepus* sp.) was identified at Thurnham, but whether hunted and eaten, or occurring in some other context, is unknown.

Fish formed part of the diet at some sites. Occasional bones of cod (*Gadus morphua*) were identified at Northumberland Bottom and a few herring bones found at Pepper Hill. Fish bones at Thurnham, mostly from Early Roman contexts, included herring and flatfish (marine) and eel (*Anguilla anguilla* – marine or fresh water). Saltwood Tunnel produced the widest range of fish species, comprising large cod, haddock (*Melanogrammus aeglefinus*), herring or sprat (Clupeidae), eel and flatfish (including Pleuronectidae – plaice, flounder or dab). The Saltwood bone evidence is supplemented by a possible lead net weight and a long iron implement with a forked terminal which may have been a netting needle. A single possible pike (*Esox lucius*) vertebra was the only exclusively freshwater fish bone in the Saltwood assemblage. The presence of cod is the most unusual aspect of this material in a Romano-British context. It has been recorded as occurring only in towns (Locker 2007, 157) and is generally not common in Roman Britain, although Locker (ibid.) suggests that this need not have been because of perceived technical difficulties of deep-water fishing. The marine fish from all these sites indicate trade with settlements on the coast; their presence is most notable at Thurnham, the other sites being readily accessible from the coast.

A final feature of the evidence from Thurnham was the recovery of numerous examples of honey bee (*Apis mellifera*) in a late Roman well fill. This important and

rare find (for a recent parallel from Heathrow see Framework Archaeology 2006, 212) suggests that bee-keeping might have been practised within the villa complex.

Production and trade

The main economic activities not falling directly under the umbrella of agriculture consist of small scale production of a variety of commodities, and general patterns of trade, at a variety of scales. In both cases, but particularly the latter, the evidence of ceramics is extremely important, although caution is required in assessing the extent to which pottery evidence can really stand as proxy for the movement of other materials and goods (Greene 2005, 9–11; cf Fulford 2004, 320–1).

Pottery

Pottery production is attested directly at Beechbrook Wood, and seems likely to have been carried out at or close to Snarkhurst Wood, in both cases in the Late Iron Age or possibly (at Beechbrook Wood) into the Early Roman period. The fabrics produced were tempered with grog at Beechbrook Wood and with glauconite at Snarkhurst Wood, representing two of a number of contemporary ceramic traditions of varying character encountered in the HS1 sites in the Late Iron Age and Early Roman periods. Ceramic components of Middle Iron Age handmade character are also identified in the central part of the HS1 transect but these, including fabrics tempered with flint and/or quartz sand, mostly seem to have been contemporary with the 'Belgic' fabrics (see above) and represent yet another potting tradition (comparable with, but perhaps distinct from, one widely established across the region in the Early/Middle Iron Age (Morris 2006)), rather than a chronologically distinct phase of activity. Only at Hockers Lane is it likely that a slightly earlier ceramic tradition lay at the beginning of the sequence. There, probable saucepan-type vessels in the most common glauconite-tempered fabric (fabric B9.1) suggest continuity into the Late Iron Age of Middle Iron Age traditions which were well-established in the area around Maidstone. The Late Iron Age–Early Roman glauconitic tradition generally survived in contemporary use with 'Belgic' grog-tempered fabrics, although at Queen Elizabeth Square, Maidstone, it was suggested that their use was sequential (Biddulph 2003, 18). Its importance in the area is well known (Pollard 1988, 31) and is indicated for example by its apparent dominance of a group of pottery from Quarry Wood Camp, Loose (Kelly 1971, 78–84), which parallels its occurrence at Hockers Lane, Thurnham and Snarkhurst Wood. The exact sources of this material remain uncertain (cf Peacock and Williams 1978), although Snarkhurst Wood is one possibility, as already mentioned, on the basis of the concentration of fabric B9.1 there. An oven-like feature (Fig. 5.37) examined at this site may have been a fairly simple pottery kiln, although the interpretation is not certain.

Residual or reinvented ceramic traditions broadly of Middle Iron Age character therefore existed alongside grog-tempering, the most widespread of the Late Iron Age traditions (albeit with Middle Iron Age origins), and more localised traditions of sand-tempering in the south-eastern part of the county (Thompson 1982, 14–15; Pollard 1988, 31) and shell-tempering in the north. It was rare for a single tradition to dominate the assemblage from any one site.

These mixed assemblages of Late Iron Age and very Early Roman date thus comprised almost entirely locally or at most regionally-produced material. They were occasionally accompanied by Gallo-Belgic imports, but with the exception of two sherds of Terra Rubra (fabric B12) from Whitehill Road, Terra Rubra and Terra Nigra were confined to Thurnham and the closely adjacent site of Hockers Lane. A range of Gaulish white wares also occurred; again these being concentrated at Thurnham, where sherds of all eight early imported white ware fabrics identified on HS1 sites were found. These fabrics were slightly more widely distributed than TR and TN, occurring also at Northumberland Bottom (WNB98), Snarkhurst Wood, Beechbrook Wood, Bower Road and Saltwood. Not all of these early imports were necessarily of pre-conquest date, however, and none need have dated before the early 1st century AD. One of the few demonstrably pre-conquest pieces at Thurnham was an Arretine platter, residual in a Roman context (Booth 2006b, fig. 4.7, no. 59).

Some of the Late Iron Age sub-regional ceramic traditions survived for a short time after the Roman conquest while others, particularly the grog-tempering tradition, developed through the Roman period. The problem of identification of production sites of this material persists throughout the period and it is possible that a number of minor centres were involved at all stages. Generalised east and west Kent and in some cases east Sussex connections can be identified in relation to some particular vessels. Patch Grove ware, probably from the Otford area of north-west Kent, is one distinct grog-tempered product certainly reaching the area in the mid 1st century AD if not earlier. Another very different tradition of comparable date was the north Kent shell-tempered industry (fabric R69). Like the grog-tempered tradition, this evolved and survived well into the Roman period.

Specialised post-conquest ceramic production in the Maidstone area is indicated by the finds from Eccles, where the production of tiles in distinctive fabrics seems on the basis of pre-Boudiccan finds from London (eg Betts 2003, 108; Pringle 2002) to have been underway before the construction of the villa there (Detsicas 1983, 120). In view of the relative proximity of Eccles and Thurnham it is unsurprising that the proto-villa and concentric building at the latter, probably built by *c* AD 70 if not a little earlier, were almost entirely roofed with tiles from Eccles (Betts 2006). However, there is effectively no evidence for the presence of pottery from the same source (Detsicas 1977b), even at Thurnham. Only at Northumberland Bottom was Eccles pottery

tentatively identified, and although some of this material reached London (Davies *et al*. 1994, 36–7) its distribution is otherwise sparse (Pollard 1988, 188–9). Pottery production at Eccles may have been very short lived and perhaps, in view of the range of vessel types represented, intended for a very specific and essentially non-local market. The tiles were certainly more widely distributed, but it is notable that by the later 2nd century, the date of the only known tile kiln structure at Eccles (McWhirr 1979, 157–8), this site had ceased to supply its products to Thurnham. No Eccles products were present in the ceramic building material assemblage from Northumberland Bottom (Smith 2006a).

Sharply contrasting ceramic traditions appeared in the northern part of the county from the mid 1st century onwards. The Thameside industry (Monaghan 1987), producing mainly (but not entirely) sand-tempered fabrics, seems to have included a number of specialist products (such as Hoo-type flagons) amongst a diverse repertoire of fabrics and vessel forms. The fine 'Upchurch' reduced ware fabric R16 with its oxidised correlates such as R17 and R18.1, is particularly characteristic of the period AD 50–150. These products seem to have achieved a wide distribution quite rapidly, and unsurprisingly were an important component of early grave groups at Pepper Hill. Further afield, at Bower Road, however, it was suggested that they might not have appeared until the early Flavian period. It may therefore have taken a little while for north Kent products to reach the southern part of the county, but at Westhawk Farm, close to Bower Road, fabric R16 seems to have been firmly established well before the Flavian period (Lyne 2008).

By the late 1st century, if not a little earlier, 'Romanised' sand-tempering ceramic traditions were augmented by material from the Canterbury kilns. This included mortaria and flagons as well as standard oxidised and reduced coarse ware forms (jars and bowls), but the quantities were never large. As with the Thameside products, the supply of Canterbury pottery to the HS1 sites spanned the early 2nd century, which seems to mark the transition from an 'Early' to a 'Middle' Roman ceramic phase. For most sites the most obvious marker of this change was the appearance of Thameside BB2-type ware (fabric R14). This was seen particularly clearly in a large late 2nd–early 3rd century assemblage at Thurnham, where such wares comprised some 36% of rim equivalents (REs). BB2 amounted to 5.9% of the total sherds at Thurnham—this was the highest representation at any HS1 site, but lower figures elsewhere often reflect the cessation of site activity in the 2nd or early 3rd centuries.

A comparison of the contributions of the Thameside and Canterbury industries to the larger HS1 assemblages (over 1000 sherds) in Table 5.5 shows that the former were always dominant.

The presence of only small totals of pottery from both sources at Whitehill Road, Snarkhurst Wood and Beechbrook Wood, and to a lesser extent Northumberland Bottom, is explained by the predominantly 1st century date of activity at those sites. The domination of the Pepper Hill assemblage by Thameside products is entirely in keeping with the location and date range of the site. Canterbury products were probably always scarce in this part of the county (Pollard 1988, 68).

Table 5.5 Percentage of site sherd totals of Thameside and Canterbury products

Sites	*Fabrics*	*% Thameside products R14, R16, R16.1, R17.1, R17.2, R17.3, R18.1, R18.2, R73, R73.1, R73.2, R73.3*	*% Canterbury R4, R5, R6.1, R6.3, R9.1, R9.2, R10, R 96*	*Site sherd total*
Pepper Hill		68.9	+	26,760
Whitehill Road		5.3	-	1441
Northumberland Bottom		13.9	0.6	3412
Thurnham		28.0	2.8	13,911
Snarkhurst Wood		3.5	0.2	1426
Leda Cottages		23.8	1.3	1882
Beechbrook Wood		5.8	0.4	3775
Bower Road		11.3	6.0	4175
Saltwood		20.7	2.3	4764

A relatively high representation of Thameside products was maintained through the central and south-eastern parts of the HS1 transect. Even in the latter area these products seem to have been much more common than Canterbury ones. This may reflect a slightly greater diversity in the range of fabrics available from the Thameside industry, and in particular the importance of the fine fabric R16 which had no equivalent amongst the Canterbury products. In general the latter were more common at the south-eastern end of the route than further north-west, as would be expected given the relative proximity of this area to the source, only a little more than 20km distant. In view of this proximity the fact that Thameside products continued to outnumber Canterbury ones is all the more striking. From Thurnham south-eastwards this was in a ratio of 9:1 or greater, except at Bower Road, where the ratio was less than 2:1 and Canterbury products reached much their highest level (6%) in any HS1 assemblage. It is not certain why this was so, but a possible factor is the relative proximity of Bower Road to the route running south-west from Canterbury up the Stour valley. This suggestion might be supported by the fact that at nearby Westhawk Farm, lying astride this road, Canterbury products amounted to 5.4% of the total sherds, a very similar figure to that at Bower Road (Lyne 2008). Why the ratio of Canterbury to Thameside products at Saltwood should not have been similar to the Bower Road figure is unclear, however.

Canterbury coarse ware production does not seem to have significantly outlasted the 2nd century (Pollard 1988, 93–7). In contrast the Thameside and Upchurch industries continued to be a significant source of pottery for the region through the first half of the 3rd century, but production declined sharply thereafter, probably for economic reasons, although these are poorly understood (Monaghan 1987, 227–30). From the end of the 2nd

century onwards 'native coarse ware' (fabric R1; Pollard 1988, 98), a Middle Roman development of the grog-tempered tradition, was a component of many assemblages, but was not particularly important in numerical terms, being best-represented at Saltwood and Bower Road. A further development of this tradition from the late 3rd century, the grog-tempered wares of the LR1 family ('Late Roman grog-tempered ware'; ibid., 129), constitute the most readily identifiable local/regional late Roman coarse wares (at Thurnham, LR1 fabrics comprised 46% of all sherds from one of the latest groups; Booth 2006b, fig. 4.10, nos 127–133), supplemented to a lesser extent by sand-tempered fabrics of the LR2 group. Neither group can be assigned to a particular source area. Equally, because it cannot be demonstrated that each derived from a single source, the character of production that they represent is unclear. It may have remained at a small-scale local level throughout the later Roman period, although this would be in contrast to broader Romano-British trends, which tend towards some concentration of production in fewer centres than in the 1st–2nd centuries.

This trend is reflected in the gradually increasing quantities of extra-regional coarse wares recorded on HS1 sites. These were only ever of any significance in the Late Roman period, and were therefore only encountered at a few sites. Alice Holt grey ware (fabric LR5) was the most important of these wares, supplemented to a lesser extent by oxidised 'Portchester D' fabric (LR6, whether or not this derived from the Overwey (Surrey) kilns) and other occasional fabrics. Some of these last fabrics, and also some local ones (LR1.3–LR1.6) and the 'imported' LR6, may have belonged exclusively to the mid/late 4th to early 5th century and mark the latest identifiable stage in the evolution of the pottery supply to the region. The occurrence of relatively high proportions of Oxford wares (12.7% of sherds in a late group from Thurnham, for example) is consistent with this development. At Hazells Road, the only overall site assemblage assignable to the later Roman period, Oxford wares comprised 8.6% of the total sherds and the Alice Holt and related fabrics (LR5, LR5.1 and LR6) amounted to 26.2% (38.1% by weight). Late Roman grog-tempered ware (fabric LR1) accounted for 7.4% of sherds but 'native coarse ware' (fabric R1) was more common, perhaps supporting Pollard's suggestion (ibid., 126) that the latter might have continued in production into the 4th century. A coarse grey/black sandy ware (fabric R100), perhaps a Thameside product, was another important component of the assemblage, as it was at nearby Pepper Hill. If correctly assigned, it is more likely to have related to the earliest phases of activity at Hazells Road.

Pottery imported from the continent was present on many sites, but the quantities involved rarely amounted to more than a trickle. The only continental material to occur in quantities sufficient to suggest consistent trade was samian ware and even this was never common. Only at Leda Cottages did samian ware exceed 2% of the sherd count, although at Pepper Hill samian ware comprised 11.9% of the total assemblage by vessel count (perhaps the most precise indicator of quantities in this particular assemblage), supported by a figure of 14.7% based on REs. The sources represented by both continental and extra-regional British material are uniformly consistent with the picture established by the work of Pollard (1988 *passim*) and there was a complete absence of exotica. Late Iron Age and Early and Middle Roman fine wares came mostly from north-eastern France and the Rhineland. Occasional mortaria may have derived from the same general area. Amphorae, where present at all, were also from predictable sources, dominated by southern Spanish olive-oil containers. Only the occasional early amphora fragments from Thurnham stand out as noteworthy and none of these was particularly diagnostic, though an Italian source seems likely and the fabrics are consistent with wine amphora forms such as Dressel 2–4 or perhaps (in the case of fabric B19.1) Dressel 1B. The late British colour-coated wares were supplemented by a few sherds from the Argonne region at Thurnham and Saltwood, and single sherds of Mayen ware from Hazells Road and Saltwood were the only late coarse ware imports.

Overall, therefore, the quantities of extra-regional pottery, whether British or continental in origin, were modest, and it is difficult to determine potential distribution mechanisms from their occurrence. The greatest quantity (though even here the quantitative distinction from other sites was not marked) and variety of such material came from Thurnham, by virtue both of the size of its assemblage, its chronological range and also, presumably, of its character, which may have linked the site to a different set of distribution mechanisms from those that served other settlements in the area (see further below).

Building materials and other stone products

Like pottery, building materials and other stone objects are of value for assessing trade because they can sometimes be assigned to particular source areas. Ceramic building material was relatively scarce, however, occurring in quantity only at Thurnham (Betts 2006), with smaller assemblages from Northumberland Bottom (Smith 2006a) and Bower Road (Smith 2006b), both probably consisting of recycled material, and negligible amounts elsewhere. The production of ceramic building material at Eccles has been mentioned above. This source was clearly important in the 1st century but had been superseded at sites like Thurnham by the early 2nd century at the very latest. A single fragment of Eccles tile was noted at Bower Road but it appeared to be absent at Northumberland Bottom. The distinctive cream-pink tiles characteristic of Eccles production were replaced at Thurnham principally by red roofing tiles, perhaps from the London area (fabric group 2815; Betts 2006), where they were certainly available by AD 70, with production continuing to around *c* AD 160. Tiles in this fabric group comprised almost half of the Northumberland Bottom and Bower Road groups. The latter occurrence might suggest that a London source for this material is not very likely, and a range of individual fabric types similar to

that seen in the London 2815 group is also found at Canterbury, 36km to the east of Thurnham and only 20km from Bower Road. The Canterbury tiles come from two production sites, Whitehall Gardens and St Stephen's Road, both of which seem to have been in operation during the 2nd century, the Whitehall Gardens kiln being dated to AD 130–140 (McWhirr 1979, 152–6). A further production site of early–mid 2nd century date has now been confirmed at Plaxtol, some 20km west of Thurnham (Davies 2004), but although its products occur at Lullingstone, Chalk and perhaps Darenth, and in London, (ibid., 175) the fabric does not seem to appear amongst those recorded at Thurnham and Northumberland Bottom.

Other ceramic building material was mostly unsourced. Small amounts of tile from Northumberland Bottom were in fabrics (MoL fabrics 3060 and 3023) usually assigned to the Radlett area of Hertfordshire (Smith 2006a) and a single fragment from Bower Road may have originated from the tilery at Hartfield, East Sussex (Smith 2006b). The range of the unsourced material (and even of tiles attributed to fabric group 2815) might suggest that further relatively local sources remain to be identified. One such source may have been located in the vicinity of Westhawk Farm, Ashford, where the nucleated settlement would have been a significant consumer and otherwise unsourced ceramic building material fabrics occur in some quantity (Harrison 2008, 265). Equally it seems almost certain that tile kilns would have been established in the vicinity of Springhead, for example, as has been suggested by Detsicas (1983, 65–6) and is suggested by the consistency of many of the fabrics observed there (Poole 2011). Better understanding of this source could transform understanding of the supply of ceramic building material in this part of north Kent.

The structural use of stone on HS1 sites was as restricted as that of brick and tile. This is despite the fact that Ragstone (a form of Greensand), an important building stone for the south-east and widely exploited for example in London (Marsden 1994, 80–4; Cowley 2005, 90), was quarried in the vicinity of Maidstone, perhaps both north and south of the town (Detsicas 1983, 169; Wheeler 1932, 103). The wider exploitation of this stone may have ceased before the later 3rd century on the basis of evidence from Richborough (Allen and Fulford 1999, 177, 181) but Hill (1980, 68) refers to 'a large quantity of fresh ragstone' in the context of the riverside wall at London, probably built *c* 270 (for the date, see Williams 1993, 13). If Allen and Fulford are correct then this may represent one of the last episodes of large scale exploitation of Ragstone.

Stone construction concentrated at Thurnham, the only other occurrences being enigmatic wall foundations at Bower Road and the corn drier structure at Hazells Road. Flint, which was widely available from the chalk, was generally used for foundations—poor preservation limits the extent to which it can be shown to have been employed for superstructures as well. Chalk itself was also used occasionally at Thurnham, perhaps to provide decorative contrast with other materials. Ragstone was widely used at Thurnham and also for footings at Bower Road. As the local high quality building stone its use is unsurprising. Tufa was also used at Thurnham. It is found naturally in association with Ragstone (Worssam 1963) and was presumably exploited alongside it.

Of the stones in use for non-constructional purposes quernstones provide the clearest indication of movement of materials from outside the region. Local material consisted of Greensand querns, found at Leda Cottages (1), Thurnham and Northumberland Bottom (5 each). Many of these may have derived from the known source at Folkestone (Keller 1989), but only one of the stones from Northumberland Bottom, for example, was fairly certainly from that source. Leda Cottages and Thurnham also produced querns of Hertfordshire Puddingstone (2 and 3 respectively) while Thurnham was the only site to produce Millstone Grit stones that were certainly of Roman date, including two probable millstone (rather than quern) fragments (see above). A possibly imported Triassic sandstone fragment came from Leda Cottages, while the only certainly imported stones were of Niedermendig lava. This material was relatively common at Thurnham (50 fragments from 14 contexts) but because of its tendency to fragment in adverse soil conditions, as here, it is very difficult to assess its importance in relation to the other stone types. Lava fragments also occurred at Leda Cottages and Beechbrook Wood, while a single piece from Northumberland Bottom was probably of medieval date

Highly fragmented lava was seen at Westhawk Farm where, however, this material not only dominated the fragment count but the fragments weighed more (*c* 24kg) than the stone from all the other sources combined. Amongst these, Millstone Grit and Folkestone Greensand were the most important (Roe 2008). For the northern end of the HS1 route the Section 2 excavations at Springhead provide a large and important comparative assemblage of lava (33 stones plus numerous fragments), Puddingstone (various sources, 31 stones; see Shaffrey 2007), Millstone Grit (19 stones), Greensand (12 stones), Lodsworth Greensand (4 stones) and others (4 stones) (Ruth Shaffrey pers comm). At the Marlowe Car Park sites in Canterbury, by contrast, the catalogued fragments (described as a 'representative sample') comprised 14 of Lower Greensand, 5 of Millstone Grit and 3 of lava (Garrard and Stowe 1995, 1206).

Iron production

Evidence for iron production, as opposed to iron-working (smithing) was recovered at Leda Cottages and Beechbrook Wood. At Leda Cottages this activity was represented principally by a group of four furnaces located some distance from the main settlement (Fig. 5.38), probably in use in both the Late Iron Age and Roman periods, although a further furnace was located within the primary partial enclosure (Diez 2006a).

The function of the furnaces is suggested partly by the character of the related slags. Tap slag, formed during smelting as the liquid slag is allowed to flow out contin-

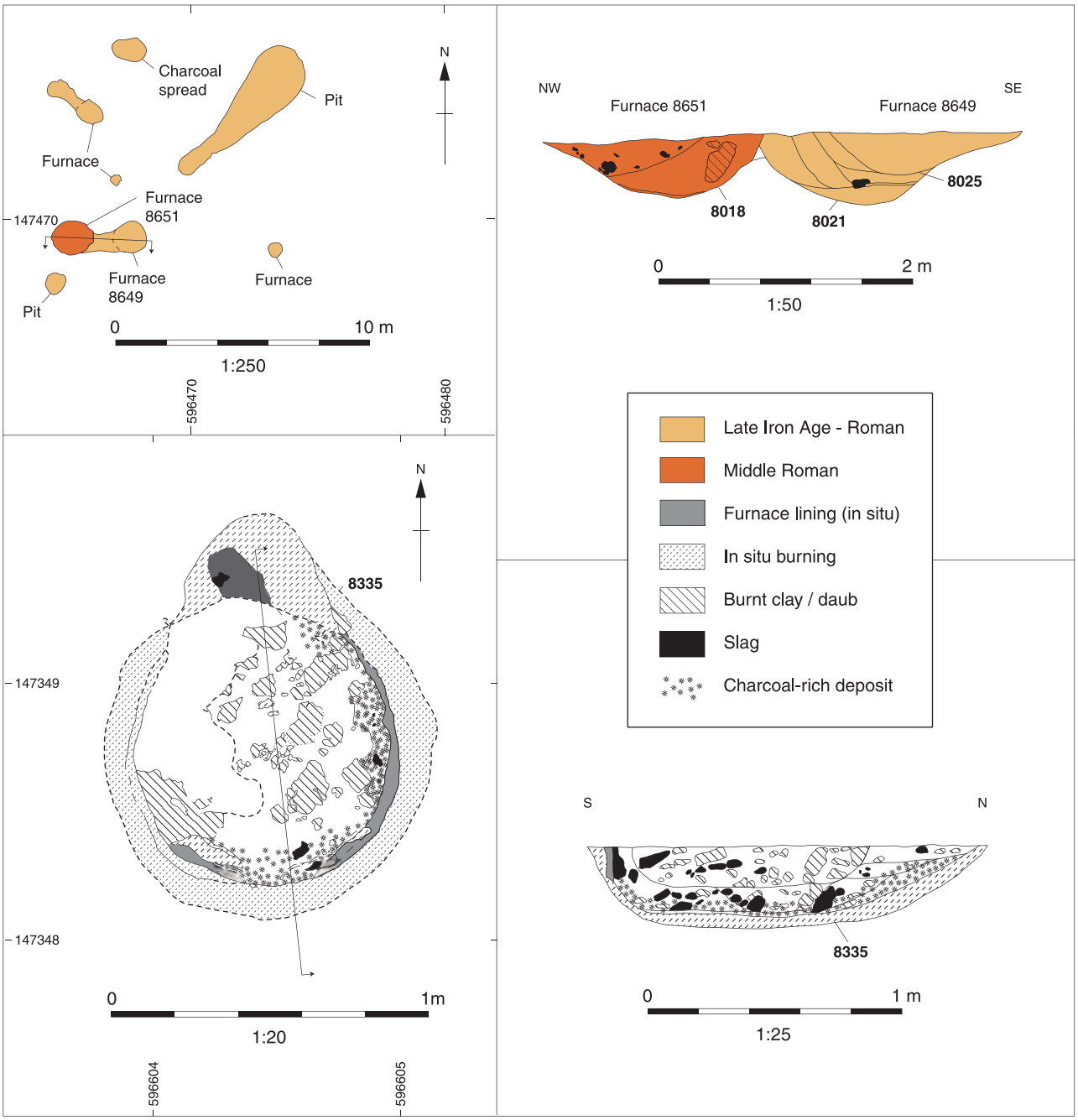


Figure 5.38 Iron smelting furnaces at Leda Cottages

uously or intermittently through a hole in the side of the furnace along a specially made channel into a hollow in the ground, was characteristic of the Roman period, but some 60kg of 'slag (pit) block' slag were also recovered. This distinctive slag would have been produced in a smelting furnace with a pit below in which the slag was allowed to collect, rather than being tapped out of the furnace. Slag blocks are common in southern Scandinavia, north Germany and Poland during the pre-Roman Iron Age and until recently examples found in England were believed to be of early Anglo-Saxon date. It is now becoming clear that slag blocks here are Iron Age in date, since several sites with Late Iron Age and Early Roman smelting but no later activity, as here, have produced them (Keys 2006a).

Slag and other metalworking debris were also found in contexts such as ditch fills associated with the settlement. It is likely that smithing activity was concentrated there, but some, presumably related to the primary smithing of blooms to remove impurities, may have occurred in the vicinity of the smelting furnaces.

At Beechbrook Wood features related to iron production, also in the Late Iron Age and Early Roman period, were concentrated in an enclosure (1022) in the northern part of the site (Fig. 5.39). Two pairs each of one large and one small hearth or furnace lay in the south-west corner of this enclosure and slag came from its ditch (Brady 2006a). In both cases only the larger of the furnaces/hearths contained smelting slag, while smithing slag was widespread, and it may be that the smaller

Figure 5.39 Beechbrook Wood north: General plan of Late Iron Age and Roman features with inset of probable iron-working enclosures

features were used only for smithing. Pits in an adjacent enclosure (1020) contained both smelting and smithing slag and may also have been associated with iron production. A possible spring lay within the latter enclosure and could have been utilised, particularly in relation to smithing. Different types of hammerscale indicate that smithing operations involved both the working of blooms and 'ordinary' secondary smithing (Keys 2006b).

The relationship of iron production to settlement at Beechbrook Wood is not clear, but it is likely that contemporary settlement lay closely adjacent to the excavated features just to the north of the area examined. A small undated posthole structure within enclosure 1022 is most likely to have been contemporary with metalworking activity and could have been a simple workshop. No evidence of iron-working was associated with the settlement area some 600 m to the south.

Elsewhere, small amounts of characteristic smelting slags (tap slag, run slag, and dense slag) were found in the Late Iron Age and Early Roman enclosure ditches at Thurnham. No hammerscale or smithing slag was present in these contexts, however (Keys 2006c).

As with pottery manufacture the scale of iron production, where present, appears to have been small and was potentially at no more than a domestic level, taking advantage of available raw materials—although surplus metal could have been traded with near neighbours, for example. This situation parallels that seen locally at sites such as Lower Runhams Farm, Lenham, where two furnaces were found (Philp 1994, 44–5), though the quantity of slag from that site was not recorded. At Westhawk Farm *c* 1.5 tonnes of smelting and smithing slag were recovered (Paynter 2008), mainly from two workshop areas, and other potential areas of iron production have been identified within the settlement on the basis of geophysical survey. Even there, however, the scale of production, if more clearly organised than at the sites discussed above, appears minor in comparison with the principal Wealden sites (Hodgkinson 1999). The Late Iron Age–Early Roman emphasis on iron production in the HS1 sites may reflect the overall chronological profile of most of these sites, but was only short-lived at Thurnham. Elsewhere, and at Lower Runhams Farm and Westhawk Farm, iron production may have continued at a low level throughout the life of these sites, parallel with, and probably with little or no reference to, the quite different exploitation of resources to the south-west (except perhaps at Westhawk Farm, where a link with the administration of Wealden iron production is tentatively proposed; Booth *et al*. 2008, 390).

Iron smithing was always widespread, but typically at a low level of intensity. With the partial exception of the smithing activities directly associated with smelting at Leda Cottages and Beechbrook Wood, much the most significant and coherent evidence came from Thurnham, where one of the main rooms of the 2nd century villa house was used as a smithy in the late 3rd century after regular domestic use of the building had ceased (see Fig. 5.31). Here, exceptionally, the scale of the evidence suggests more than occasional activity in a domestic settlement context. Perhaps smithing activities for the entire Thurnham 'estate' were concentrated here in this period.

Other aspects

A range of other crafts of varying importance would have been practised at many HS1 sites, but the evidence for these, such as non-ferrous metalworking, is largely minimal. Perhaps most importantly there is effectively no indication of textile manufacture at all. While the general absence of evidence for craft-working might be explained in part by preservation problems (such as the poor survival of bone) this cannot be the full story as there is at least limited evidence for the working of antler at Little Stock Farm, Thurnham and Bower Road (see above). The explanation for the lack of evidence of spinning and weaving remains elusive.

It is possible that salt production took place within the HS1 transect in North Kent during the Iron Age, based on the ceramic evidence of briquetage salt containers (Morris 2006). There is no such evidence for the Roman period, but trade in salt would have been very important. The main sources of supply were the North Kent marshes (Detsicas 1983, 170–1), where production may have been associated with pottery manufacture, in the Folkestone area and also in Romney Marsh. Direct evidence for the movement of salt is less common than might be expected, and the only probable briquetage fabric identified (BER15 in the Canterbury series) is a chaff-tempered one (Macpherson-Grant 1980b; Barford 1982) not assigned to a specific source by Barford (1995), but perhaps most closely associated with production in the north Kent marshes (Morris 2001, 391), although a Folkestone area source may also be possible (Lyne 2006). This fabric was widespread on HS1 sites, but generally only in very small amounts; fragments, fortunately quite distinctive, were also typically very small. The most frequent occurrences (by fragment count) were at Saltwood Tunnel and Beechbrook Wood, and tiny amounts were noted at Northumberland Bottom, Thurnham, Snarkhurst Wood, Leda Cottages and Bower Road. The quantities of briquetage recovered are such as to suggest that after production salt must have been transported in other types of container (although briquetage perhaps derived from Kentish sources (not closely defined) has been noted as far afield as Silchester (Timby and Williams 2000)). Some of these could have been of organic materials, but the use of north Kent shell-tempered jars as salt containers, found in London as well as further east, has been suggested (Perring and Brigham 2000, 154).

The dominant briquetage material recovered from north Kent sites closely adjacent to the HS1 route, however, was heavily organic-tempered. This type of material was present in several sites in the Dartford area west of Springhead, where most of it was of Late Iron Age and Early Roman date (Poole in Simmonds *et al*. 2011, 139; 232, 265), and at Springhead itself (Poole 2011). The character and quantities of material at these sites suggests secondary stages of production (away from the primary sources of brine) rather than just consump-

tion, whereas such evidence is lacking from adjacent HS1 Section 1 sites such as those at Northumberland Bottom.

The wider economy?

The limitations of the evidence relating to agriculture both for this period and earlier make assessment of developmental trends in the economy of the area in the Roman period very difficult. At the most basic level, a significantly increased number of settlements with associated fields and trackways suggests that the landscape was exploited more widely from the Late Iron Age onwards, but it is less clear if the level and character of production at individual sites were significantly different from what had been seen earlier. Changes in agricultural technology are not evident immediately. The most obvious indications of such change are the introduction of millstones and corn-driers. One of the two examples of the former at Thurnham came from a 2nd century context, while the other was Late Roman. The corn drier structures at Thurnham and Hazells Road (see Fig. 5.36) were both probably of 3rd-century date. These developments do not in themselves constitute evidence for intensification of arable production, although this may be suggested by the expansion of the range of weed seeds, some of which are indicative of the use of damp soils not previously exploited. Equally, increasing amounts of nitrogen-fixing plants suggestive of soil nutrient depletion would be consistent with over-exploitation, but the representation of such plants was never at such a level as to suggest that this was a serious problem. Animal husbandry may have seen an emphasis on sheep at some sites, but at Thurnham the balance seems to have switched in favour of cattle by the Middle Roman period. There is no indication of particular specialism in relation to either arable or pastoral production.

Other aspects of the rural economy are consistent with the agricultural evidence. Low-level pottery and iron production were supplementary activities in a long established tradition and emphasis on such production as a primary economic activity was centred at some distance from the HS1 sites, in the marshes of north Kent and in the Weald respectively. The economic networks into which the HS1 farmsteads were linked remain unclear but may have been largely local in scope. They could have been articulated through villa estates or local market centres, or both. The lack of evidence for the nature of land holding makes reconstruction of these networks particularly difficult (see further below). Equally, the general lack of Late Roman settlements, and a consequent absence of associated coinage makes it difficult to assess the extent to which sites of this period (the only time at which coins are widely found on low status rural settlements in Britain) were integrated into any level of coin-using monetary economy. Table 5.6 shows the very limited quantity of coins from HS1 sites, with comparative figures from selected sites of different types from elsewhere in Kent (for Eccles and Canterbury, Reece 1991; for Westhawk Farm, Guest 2008). The HS1 figures generally reflect the early Roman date range of the sites from which the coins derive. Only the small groups from Hazells Road and Saltwood have 'typical' rural loss patterns dominated by coins of the period from AD 330 onwards. The coin lists otherwise require no further comment here.

Belief and ritual

Religion/ritual/ceremonial activities (apart from burial)

The HS1 Section 1 sites have produced a wide range of types of evidence for Romano-British religious practice, although in terms of both quantity and variety this evidence concentrates at the villa site of Thurnham, which shows a good range from individual features up to a possible (although, on balance, unlikely) example of a temple in a villa context (see discussion above). Formal structural evidence is lacking from the other Section 1 sites. More widely, the evidence from HS1 Section 2 for religious activity at Springhead (see above) is clearly

Table 5.6 Percentage of total coin loss by broad issue period (after Reece 1973, 230)

Site	*Type*	*Issue period*				*Total coins*
		A up to 260	*B 260-294*	*C 294-330*	*D 330-402*	
Pepper Hill	Cemetery & trackway	53.8	7.7	7.7	30.8	13
Hazells Road	Rural settlement & trackway	3.4*			96.6	29
Northumberland Bottom	Rural settlement	50			50	6
Hockers Lane	Rural settlement	100*				1
Thurnham	Villa	31.4*	15.7	21.6	31.4	51
Little Stock Farm	Rural settlement	100*				2
Bower Road	Rural settlement	44.4	22.2	11.1	22.2	9
Saltwood Tunnel	Rural settlement etc				100	11
Non-HS1 sites						
Eccles	Villa	23.0	33.9	3.8	39.3	183
Westhawk Farm	Nucleated settlement	93.6	3.4	1.5	1.5	326
Canterbury	Civitas capital	9.2	42.9	3.7	44.2	3215

*Includes Iron Age coins

exceptional both in quality and quantity. It is representative of monumental aspects of religious practice which are much more typical of nucleated sites than of other settlement contexts, and seen in their most Roman form in Kent in the fragments of Corinthian capital from a likely classical temple located within a substantial temenos at Canterbury (Blagg 1984, 66–8). Two typical Romano-Celtic temples at Richborough (Bushe-Fox 1932, 34–6; for the civilian context see Millett and Wilmott 2003) and a much less regular timber shrine at Westhawk Farm (Booth 2001) and the small roadside shrine at Monkton (Bennett *et al*. 2008, 102, 107–8) illustrate the range of possible structures in other nucleated settlement contexts. Isolated or relatively isolated rural temples are also known, however, with examples in roadside contexts at the western margins of the civitas at Titsey (Graham 1936; Bird 2004a, 155–6) and Greenwich (Wheeler 1932, 116–7; Sheldon and Yule 1979; Wallower 2002a; 2002b; Brown 2002, 301–5) and in the east at Worth (Klein 1928; Lewis 1966, 170, see also Holman 2005, 8–10). Much closer to the HS1 transect the poorly-known site at Blue Bell Hill, Aylesford, roughly 1km north of White Horse Stone, is generally thought to be a probable temple complex (Detsicas 1983, 145). It too lay close to (just east of) a road line, in this case the road south from Rochester, but from the account of closely adjacent discoveries (summarised in Wheeler 1932, 104) it is possible that the site was associated with nearby settlement of some kind.

At Boxted, just over 10km ENE of Blue Bell Hill, a Romano-Celtic temple of typical plan and probable 2nd-century date was located half way between the villa and nearby Watling Street (Wilson 1973, 321–2) in such a position that it could have served both the villa community and people passing by on the road (Detsicas 1983, 145–6). Similar settings may be found elsewhere, as for example at Claydon Pike, Gloucestershire, where a simple circular shrine lay 70m east of the late villa complex facing away from it towards a nearby trackway (Miles *et al*. 2007, 181–4). A different arrangement is seen at Lullingstone, where the circular 'shrine' and the temple mausoleum were integral parts of the villa site and its layout (Meates 1979, 25, fig. 2).

Was there a distinction between temples forming part of villa complexes, as at Lullingstone (and just possibly Thurnham), and those which lay away from the settlement focus but still within the territory of the villa estate—as probably at Boxted? Temples in such contexts may have had a different trajectory of development from those situated elsewhere in the region. As it happens there are broad similarities of chronology between the Thurnham concentric building and Lullingstone, in that the circular shrine at the latter may have been constructed in the early 2nd century and dismantled by the end of the century (Meates 1979, 121), at very much the same time as the demolition of the Thurnham building. This may be a coincidence, but it is curious given that the main domestic structures at both sites continued in use at this time. It is particularly unfortunate that there is no good evidence for the disuse of the temple at Boxted. Pottery evidence, which suggests an early 2nd century construction date (Wilson 1973, 322), might indicate that the site did not outlast the 2nd century (Detsicas 1983, 145). This is speculative, but may be supported by comparable indications from the limited records of dating material from the 19th century excavations of the nearby villa (Wheeler 1932, 108–9). As already suggested, it is likely that the Boxted temple was intended to be accessed from Watling Street as well as from the villa site. In contrast to this possible chronological pattern, while there is some evidence for decline in the level of activity at Springhead from the later 2nd century it is clear that in the temenos south-west of Watling Street Temple 2, at least, continued in use into the 4th century (Detsicas 1983, 70). Temples closely linked with villas in this area may therefore have gone out of use early, but for reasons which remain obscure.

Although the situation at Lullingstone is less clear than at Boxted it is likely that temples in all these places were intended to be used by a wider population than simply the occupants of the villa sites. However it is interpreted, the considerable visual impact of the Thurnham building, indicated above, might suggest some intention to permit wider access to it, or at least a function not simply domestic in parallel to the proto-villa house. There were other striking aspects of the approach to Thurnham on the south-east, however, the most prominent of which was a setting for a large free-standing post, 0.50m in diameter, located on the slope running up to the enclosure 26m from its south-eastern boundary. This, accompanied by a further smaller standing post and several 'ancillary' posts, was erected in the proto-villa phase. The purpose of such a feature is of course difficult to determine, but the associations of comparable large posts are typically with sites or site components of a religious nature, as at Westhawk Farm (Booth 2001), Wood Lane End, Hemel Hempstead, Herts (Neal 1984) and at Ivy Chimneys (Turner 1999) and Heybridge (Atkinson and Preston 1998), both in Essex. Westhawk Farm provides a clear association between a shrine and standing post of 1st to 2nd century date, although there the two were integral. Wood Lane End had an arrangement of two free-standing posts set within the *temenos* associated with a significant religious complex (Neal 1984, see 206 figs 8 and 9 for comparison). The combination, size and spacing of these posts is closely similar to what is seen at Thurnham. Although dating evidence was lacking from Wood Lane End, the site had a Hadrianic peak and was probably active as a religious complex during the Flavian period, suggesting a close comparison in terms of date as well as structural detail (ibid.).

A further point of interest is the setting of these posts. At Thurnham the post arrangement lay outside the principal enclosure 37m from the possible temple building in a relatively elevated position. At both Ivy Chimneys and Wood Lane End the posts were also set a very similar distance from the associated temples in very visible positions but within *temene*. At Heybridge the post was actually placed in, and possibly marked, a

public area that was previously private, lying across the road from the temple complex (Atkinson and Preston 1998, 99). In the small town at Alcester, Warwickshire, a large post was sited at the edge of a gravelled area interpreted as a possible market space (Cracknell 1989, 30), and associations with religious enclosures or structures are less clear. The distinct similarities that exist between these examples and Thurnham suggest that they conform to similar principles in at least some important respects. The visual aspect and religious associations of these are generally clear. In each case the posts seem almost certain to have been significantly tall and free standing, although intimate contact with them may have been restricted, particularly at Westhawk Farm, where the uprights surrounding the main post setting might have carried screens rather than a formal roofed structure. In terms of chronology, Thurnham is the earliest well dated example although Westhawk Farm and Wood Lane End seem to be of the same late 1st to early 2nd century period and the Heybridge example appeared in the phase dated *c* AD 120–200. Ivy Chimneys is dated to the later 3rd century and so was probably later in date than the lifespan of the post at Thurnham, although this should not necessarily exclude the possibility that similar beliefs or reasoning relating to the raising of such posts were still held or governed their construction.

Few finds are ever related to these features, suggesting that they were not themselves the focus of cults or beliefs that required votive offerings. Equally, the possible temple at Thurnham itself was not distinguished by the presence of finds that shed any further light upon it, but such an absence of votive material, while relatively unusual, is paralleled exactly at Lullingstone (Meates 1979, 122), although the explanation that this was because the shrine was for the use of 'a private family' (ibid.) is not followed here. Nevertheless, a general absence of votive material is not uncommon in the context of temples closely related to villa complexes (Alex Smith pers comm) and is also seen in the shrine at Westhawk Farm (Booth 2001, 17). There is no suggestion in the admittedly summary account of the Boxted temple that this produced significant votive material.

At Thurnham the role of the large post in relation to the rest of the villa complex is uncertain. The wider associations suggest that these features served as markers—but whether they were passive signposts ('ritual centre this way') or features with other intrinsic characteristics and importance is impossible to say, though this might be suspected. Were the posts carved or otherwise decorated, for example? At Ivy Chimneys a possible association with the Rhineland tradition of Jupiter columns, more usually found in stone (Bauchhenß and Noelke 1981), was suggested (Turner and Wymer 1987, 55–7) but this was later rejected by Green (1999, 256–7). Fragments very likely from such a column come from the temple precinct at Springhead (Penn 1958; 87, 95, 108–10; 1967, 111, 113 and 123), although Blagg (1979, 229) fell short of a confident identification in the absence of supporting epigraphic evidence (he was more optimistic later; Blagg 1985, 68), but it is impossible to say if timber and stone columns could have been considered comparable.

Other markers were present in the immediate vicinity of Thurnham. The most significant of these was a possible wayside shrine, also assigned to the Early Roman period, located adjacent to the trackway approaching the villa from the south-east at the point where this met a boundary ditch at right angles. The location was marked by an isolated post, but as this was not set very deep it was thought to be relatively short, unlike the large post further north-west. Above an associated cobbled surface was a small but significant finds assemblage. It included a Colchester derivative brooch, which may have been deliberately damaged, and part of the hollow cast bronze base from a fairly large statue, recovered from the adjacent part of the silt deposit sealing the trackway.

Archaeological evidence for wayside shrines is often very difficult to identify, although they may have been quite common features, particularly at crossroads (Bird 2004b, 77). At Monkton, the shrine (mentioned above) was a 6m square sill-beam structure and contained a pit with a Cologne hunt cup in it (Bennett *et al*. 2008, 102, 107–8, 170). At Thurnham, despite the lack of structural evidence the association of trackway, boundary ditch, free-standing post and specific artefacts appears more than coincidental. It may indicate the importance of the state of transition represented by movement across the boundary; the latter probably defined the enclosures most closely associated with the villa. Such a location could have been the site of regular activity integrated within the routine cycles of daily life. If this activity involved the placement of offerings it is likely that these were simple and organic (eg flowers or foodstuffs), with more substantial items reserved for special occasions.

The occurrence of 'special' or 'placed' deposits in pits, ditches and wells can probably be seen in a similar way. Such deposits were not commonly present in HS1 sites, one possible reason for this being the often poor survival of animal bone, which characteristically comprises a large part of such deposits as identified in the archaeological record. The tradition of such deposits was certainly established in the region by the Middle Iron Age, as it was encountered in a pit of this date from West of Downs Road, in the Northumberland Bottom area (ARC 330B pit 147) and again in the same area in the course of recent work on the A2 (Tim Allen pers. comm.). Some 600–700m further east two pits in the Late Iron Age–Early Roman complex contained deposits potentially in this category. One of these was the burial of a complete articulated horse, aged 11–15.5 years in a pit (437) on the west side of the enclosure east of Downs Road. This need not have been a ritual deposit, and the only associated finds, small quantities of 1st-century pottery, may represent no more than domestic debris. However, the spinal column of the horse showed fusing of two of the lower thoracic vertebrae indicative of riding stresses and it is possible that as (perhaps) a favoured riding animal the horse was given special burial. Less

than 20m east of this feature a large pit (564) had a basal ashy fill, but its main fill contained disarticulated unburnt human bone from at least two individuals, along with two fragments of loomweights and a Colchester-type brooch.

The most striking instances of special deposits of Middle and Late Roman date come again from Thurnham. The first of these was related to the expansion of the site in the Middle Roman period. Just east of the ditch defining the limits of the crop processing area associated with the 14-post building was a curious pit and gully (10570) arrangement. The pit measured 2m by 2.5m and was 1m deep with a flat base; the V-shaped gully fed into it. A complete small Patch Grove ware storage-jar was placed centrally in the base of the pit. This had been filled with well sorted charred chaff fragments, predominantly of spelt wheat, and was accompanied by the complete lower stone of a rotary quern of Lower Greensand (probably from Folkestone), two complete *imbrices* and a large roughly-shaped block of Greensand, carefully placed in the base and leaning against the side of the pit (Fig. 5.40). A mid to late 2nd century date seems most likely for the feature.

Ritual deposition of functional querns, particularly in pits, has been identified on many Romano-British sites; these objects have a readily interpretable association with food preparation (Hill 1995, 131; Clarke 1997, 75; Shaffrey 2003, 164). This symbolism would appear to be confirmed here by the association with a storage jar and the charred residue from the final stage of cereal processing. However, the role of the roof tile is less easy to interpret, although it could represent the home. As the pit appears to have been dug at about the same time as the agricultural building was constructed its contents may have been intended as a foundation deposit to ensure the success of cereal production. The occurrence of a pot full of cereal chaff has a striking parallel in the roadside settlement at Wilcote, Oxfordshire, where a vessel filled with spelt chaff was recovered from a 2nd–3rd century feature interpreted as a clay quarry pit (Barber *et al*. 2004, 263; Pelling 2004, 331). This and associated features were also notable for containing 'an assemblage of miniature, repaired, reworked and deliberately damaged copper-alloy and iron objects, with probable votive associations' (Barber *et al*. 2004, 264), although the significance of these in relation to the chaff-filled pot was not discussed. Comparable deposits, in the sense of highly unusual combinations of artefacts, animal remains and so on, are seen at Lullingstone villa in the so called 'tannage pit', probably of late 2nd–early 3rd century date and an adjacent feature of the 4th century (Meates 1979, 106–10; Scott 1991, 116–7). Interestingly, the finds from the latter feature included large parts of two mill stones (Meates 1979, 110).

Another likely foundation deposit at Thurnham was a full term neonate burial (20431) placed in a corner of Room H at the north-east end of the early 2nd century villa house (see Fig. 5.26). The shallow grave was cut into the upper backfill of the earlier boundary ditch and sealed by the late 3rd and 4th century deposits within this room. The inhumation is most likely to represent the common practice of foundation burial associated with

Figure 5.40 Thurnham: Complete quernstone and large stone in partly excavated special deposit pit 10570

the new building. This need not necessarily represent a sacrifice, since 'a natural death may have resulted in the opportunistic use of a potential life force to ensure the longevity of the building' (Philpott 1991, 100–1). However, the existence of a marked peak in full term deaths such as this in the Roman period could be suggestive of infanticide immediately after birth and therefore potentially constitute evidence of such activity in a ritual context (Smith and Kahila 1992; Mays 1993), although Scott (1999, 89) makes the interesting point that infant sacrifice (outside the domestic context) characteristically involves slightly older children, as seen for example at Springhead Temple IV (Penn 1960, 118–22).

More speculatively, at Thurnham the solitary burial of a 4–8 month old infant (10640) in a small stone lined grave at the rear of the villa house (Fig. 5.41) might possibly be correlated with the end of domestic activity there. The child was placed in a wooden coffin, accompanied by two complete pottery vessels, a beaker and a dish, suggesting a date in the late 3rd century, the time at which use of the main house seems to have changed. The dating evidence cannot demonstrate a direct association of the two events and even if they were temporally close it would be impossible to establish any kind of causal relationship, much less any potential ritual aspect to the association. Nevertheless, the unusual positioning of the burial at this time might have been significant in terms of the sequence of development of the site.

Unusual late Roman deposits were encountered in the well (11010) probably constructed in the 2nd century adjacent to the 14-post building at Thurnham. The fills included two lower rubble deposits overlain by organic-rich layers with a series of slender hazel stakes inserted around the interior circumference of the well in successive tiers as it infilled. One of the stakes produced a radiocarbon date of cal AD 250–540 (GU-9077; Allen and Lawrence 2006). The lower rubble deposit included the remains of two roe deer (*Capreolus capreolus*); a complete adult male and the partial remains of a juvenile less than 12 months old that was almost certainly originally complete. Also present were the remains of a near-complete female tawny owl (*Strix aluco*), several antler fragments from red deer (*Cervus elaphus*), the right side of a large male pig skull that had been purposely split in half and a mandible possibly from the same animal displaying cut marks consistent with the removal of the head from the carcass. Above the rubble infills the sequence of waterlogged deposits consisted almost entirely of organic remains, but a red deer antler and skull fragment and a pig mandible, reminiscent of the larger faunal assemblage, were present.

The combination of the faunal assemblage and the rapid rubble backfill, and the absence of typical domestic rubbish, allows comparison with 'unusual' deposits relatively widely encountered in Roman wells, particularly in the Late Roman period, and recognised as functioning beyond the normal confines of domestic use. A well-known parallel is the sequence within a well at Brislington villa, Avon, '….some tons of coarse building material, evidently the remains of the villa ….(overlay)…. a large collection of faunal remains, mostly ox skulls….' (Barker 1901). At Bays Meadow, Droitwich, 4th-century

Figure 5.41 Thurnham: 3rd-century infant burial 10640

well fills included most of a red deer skeleton (Barfield 2006, 123). Poulton and Scott (1993) identify such sequences as representing specifically votive or religious deposits and entertain the idea that the primary function of such wells was actually ritual, particularly when they occurred as one of a pair (ibid., 124). This interpretation could apply at Thurnham, the well being located away from the main domestic areas and being complemented by another well (12370) adjacent to the aisled building (and thus some distance away), in an area of continuing 4th century activity. Alternatively, and perhaps more likely in view of its position, well 11010 was originally functionally linked to the adjacent 14-post building, but was then subject to change of use in the Late Roman period.

A general scarcity of Late Roman evidence for ritual activity on HS1 sites is unsurprising in view of the lack of contemporary settlement, but the latest feature at Bower Road, a pit (242) dated AD 370–400, was assigned to this category on the basis of its finds assemblage, again, specifically, the animal bone, since a majority of its other contents may perhaps have comprised domestic rubbish. In addition to pottery, the lower fill of the pit contained fragments of a blue/green glass conical beaker of 4th-century date and a fragment of a glass bead or ring. Other small finds included nails, unidentified iron fragments, flints and fragments of fired clay and tile. The animal bone assemblage included several skulls and partial articulated skeletons of juvenile animals. A wide range of skeletal elements and species was present, including cattle, sheep/goat, pig, horse, red deer and domestic fowl. Some fragments had butchery marks. This unusual assemblage is suggestive of ritual deposition, a suggestion supported by the presence of a fragment of burnt human bone from the upper fill and an unburnt fragment of a human mandible from the lower fill. The mandible is that of an adult male and did not appear weathered or abraded, suggesting that it was not redeposited. A cut mark on the left angle of the ramus was probably made to green bone, but it is not possible to ascertain whether this was before or after death. A further fragment of unburnt human bone in good condition, a femoral head from an adult individual, conceivably the one represented by the jaw in pit 242, came from a layer 45m distant.

The association of human remains with special deposits of animal bones (and other finds) of the type already discussed is again a relatively common one, and increasingly recognised as having ritual significance (Esmonde Cleary 2000). Such ritual deposition seems to have been particularly common in 4th-century contexts. The Bower Road pit could possibly represent a terminal deposit made upon the final abandonment of the site. Except at Thurnham and Bower Road, however, special deposits of animal remains are relatively rare in HS1 sites of the Late Iron Age and Roman periods. Isolated animal burials need not necessarily have had special significance, but the burial of a mature adult horse at Northumberland Bottom (East of Downs Road), for example, was clearly made with some care (Fig. 5.42) and may represent a ritual act rather than simple disposal of an inconvenient animal corpse.

Figure 5.42 West of Northumberland Bottom: burial of adult horse, Late Iron Age or Early Roman

A well-recognised phenomenon in the region, that of ritual shafts, reflects practices probably related to the placing of special deposits in wells and pits. The limited depth of excavation of a number of potentially deep pit- or well-like features on HS1 sites, however, generally precludes identification of any potential ritual character, since the distinctive deposits that define the character of these features are often (though by no means exclusively) found towards their bases. This is particularly unfortunate in the case of a large circular feature (10415) at Pepper Hill, situated immediately east of the cemetery and separated from it only by the intervening holloway (see Fig. 5.44). The feature was 8m in diameter and at least 4m deep; engineering restrictions prevented full excavation. The lowest hand-excavated deposit yielded two fragments of an unburnt human long bone, but there were few finds from the upper fills. A little 1st–2nd century pottery was present and a coin of AD 322–325 from the top fill indicates that the infilling process continued at least into the early 4th century. It is impossible to say if the feature was dug before or after the establishment of the adjacent road early in the Roman period. Equally a ritual function cannot be proven but it can be accepted for analogous features

elsewhere in Kent (and further afield), of broadly similar date, although Webster (1997) is rightly more cautious about attribution of a certain Iron Age date than is Wait (1985). None of the examples from Kent is demonstrably Late Iron Age in origin, although continuous use of these shafts from the Late Iron Age into the Roman period is at least possible, and perhaps likely.

The Pepper Hill shaft is wider than other recorded examples from Kent, and very substantially wider than most, the nearest in size being an example from Greenhithe, which was *c* 10.65m deep and up to 7m in diameter (Gatrill 1880; Webster 1997, 142). This example, like some of the others, was described as a 'dene hole' in origin, but such an explanation is unlikely at Pepper Hill since, although the solid geology is chalk, the superficial deposits were substantial and chalk was not encountered in the 4m depth of the feature excavated, although gravel and brickearth could have been extracted. Even if a utilitarian origin is possible, the features at sites such as Aylesford, Bekesbourne, Crayford, Deal, Greenhithe, Northfleet and Warbank, Keston (Webster 1997, 141–3; for Keston, Philp *et al*. 1999, 19–35) are all characterised by the presence of special deposits, most typically involving animal remains, although deposits of pottery and human remains are also common. A direct association with cemetery sites is indicated at Aylesford (Evans 1890, 320), and at Mill Hill, Deal (Parfitt and Green 1987; Parfitt 1995, 156), supporting the likely interpretation of the Pepper Hill feature. The Aylesford and Deal examples are amongst those perhaps most likely to have originated in the Late Iron Age on the basis of the dates of the associated cemeteries. At Deal, however, dated finds were of Early Roman date while the shaft at Aylesford had no associated artefacts. A date for the latter in the Late Iron Age (Wait 1985, 322) is plausible but is based purely on the cemetery association and is strictly unproven.

Further examples of features of this kind were examined in the course of the HS1 Section 2 work at Springhead (Andrews *et al*. 2011). These included a certain ritual shaft some 4.5m deep, the fills of which contained skeletal remains of at least 20 dogs, several buried with their chains, a number of near-complete pots, a human skull, a group of animal skulls and a cow placed in the bottom of the shaft, as well as other material more typical of domestic debris. A minimum of five other pits were also considered to be similar features on the basis of their physical characteristics (ie relatively deep and narrow) and also, in some cases, their contents (such as dog and other animal burials and/or large deposits of pottery) and location, for example in a pit alignment within the sanctuary complex.

Overall, Thurnham displays a striking typological and chronological range of evidence for religious activity, including limited evidence from human burial. Does this indicate that the site had a special character, or should these features be regarded as typical, but simply of types not always routinely recovered—and indeed, as in the case of the possible wayside shrine, of types which would in many cases be easily susceptible to post-deposition dispersal? Regardless of the interpretation of the concentric building, it is likely that the construction of rural temples generally was often related to villa estates (Bird 2004b, 79), their owners being the individuals with the necessary resources and the social impetus to provide suitable meeting places for gods and men. Villas could clearly contain more modest household shrines, generally difficult to recognise in the archaeological record (rooms at Eccles and Farningham, for example, have been interpreted as shrines (Smith 1997, 289–90)), but more substantial provision for cult activities is probably represented by the cellars found at a number of sites (Perring 1989). There is a notable concentration of these in north Kent (ibid., 280), at Lullingstone, Otford, Chalk, Burham, Hartlip, Faversham, South Street (Whitstable), Rodmersham and Richborough (ibid., 296–8 with references). At all of these except Richborough, Perring suggests a villa context, even in the absence of a main house, as at Burham and Chalk (ibid., 281), and at four of the five rural examples where evidence is available for their date of construction a late 1st century date is likely or possible. In this respect there is comparability with other temples such as Lullingstone, but use of the cellars seems to continue much later. A contrasting tradition of religious observance is therefore indicated, though as with 'estate' temples this could have involved the wider community since access to the cellars is 'usually from a public space' (ibid., 283), and in a number of cases exclusively so, as in a later Roman context at Barton Court Farm in Oxfordshire (Miles 1986, 14) and in the second (late 2nd century) phase at Lullingstone (Meates 1979, 31–2).

Burials

The HS1 sites produced a variety of evidence for Late Iron Age and Roman burial. The most substantial component of this, the large cemetery at Pepper Hill, was adjacent and probably related to the small town at Springhead and will therefore be discussed in part in the context of reporting on HS1 Section 2 work there (Andrews *et al.* 2011). The Pepper Hill evidence is also important for understanding the nature of burial practice at rural settlements and in relation to wider questions about the character of society in the region, however, and will be drawn on here in that context.

The majority of burials encountered at sites other than Pepper Hill were cremations (an estimated 35 from 11 separate locations on 8 sites, as opposed to 5 inhumations (including 3 neonates) from 3 sites). This is partly a function of the chronological profile of the HS1 sites, in which Early Roman features are much more numerous than those of Late Roman date, although the evidence from Pepper Hill and elsewhere makes it clear that inhumation was also a very important rite in the Early Roman period (below). A complicating factor in assessing the relative importance of cremation and inhumation burials is the generally poor preservation of human bone, except when cremated, as a consequence of

acidic soil conditions. In situations where only scattered burials were present it is possible that some unaccompanied inhumation burials escaped detection partly through the failure of the skeletal material to survive. The number of such features should have been small, however, with the result that the overall ratio of cremation to inhumation burials is unlikely to have been significantly affected.

A concise summary of the burial evidence from Pepper Hill (Biddulph 2006a) is presented in Table 5.7. The numbers of burials certainly or probably of Late Iron Age or Roman date from other sites are summarised in Table 5.8, the sites being arranged in geographical sequence from the north-west end of HS1 Section 1.

The numbers are not large, but they demonstrate the common association of burials with Late Iron Age and Early Roman settlement, albeit that the exact nature of the association is not always clear. In some cases the groups can be categorised as a small cemetery. This was particularly the case at Saltwood Tunnel, where ten cremation burials (eight closely-spaced and two further removed) were placed within a small enclosed area located at a trackway junction, although it is possible that these burials were at some distance from contemporary settlement (Fig. 5.43). Even here, however, it is unlikely that the enclosure was specifically intended to contain the cemetery. No other examples of contemporary enclosure were identified, but small discrete groups

Table 5.7 Pepper Hill; quantification of funerary feature type by period

Phase	*Inhumation burials*	*Cremation burials*	*Cenotaph/disturbed cremation burials*	*Busta*	*Pyre sites*	*Other funerary related features*	*TOTAL*
Middle Iron Age	1						1
Late Iron Age–Early/Middle Roman	193	92	17	6	13	7	328
Middle Roman	43	34				2	79
Middle/Late–Late Roman	17	7	1				25
Roman uncertain	95	12	8	1	3	8	127
TOTAL	349	145	26	7	16	17	560

Table 5.8 Late Iron Age and Roman burials from sites other than Pepper Hill

Site	*Date*	*Inhumation burials*	*Cremation burials*	*Disarticulated & ex situ bone*	*Comment*
Northumberland Bottom	LIA/ERB	2 neonates	1 unurned, 1 urned	2 adults	
White Horse Stone	Roman			1 fragment	probably redeposited IA
Thurnham	*c* AD 120	1 neonate			probable villa foundation deposit
	late 3rd century	4–8 month infant			in coffin in stone lined cist
Snarkhurst Wood	LIA/ERB		1 unurned, ?1 urned		pedestal urn in unexcavated feature
Chapel Mill	LIA/ERB		2 unurned		
Leda Cottages?	LIA/ERB			1 redeposited cremation	
Tutt Hill	LIA/ERB			cremated fragments	
Beechbrook Wood	ERB		6 urned		in south part of site, 5 form a group
	ERB		?2 unurned		in north part of site; poss redeposited pyre debris
	?Late Roman		1 unurned		?auxiliary vessel 120–220, C14 date 220–420
Boys Hall	LIA/ERB		3 unurned, 2 urned		2 unurned cremations have associated pottery vessels
Bower Road	MRB		1 urned		
	4th century			in 2 contexts	
Little Stock Farm	Roman uncertain		?1 unurned		C14 date 80–330
Saltwood Tunnel	LIA/ERB		1 unurned, 9 urned		'western group' 'eastern group'
	LIA/ERB		4 unurned		
	4th century	1 adult			

of burials were present at several sites and the significance of their locations must have been clearly understood even without formal definition by features such a ditches. A group of four unurned cremation burials north of Bronze Age barrow 10082 at Saltwood (and only *c* 100m east of the cemetery group already mentioned) may have formed such a cluster. Much tighter groups were seen at Boys Hall Balancing Pond and Beechbrook Wood, each with five cremation burials. The Boys Hall group lies within an area of intensive activity, with Late Iron Age–Early Roman features located *c* 70m to the west in the HS1 watching brief (URS 2000a) and some 120m to the north in earlier work (Booth and Everson 1994), and a dense complex of Middle and Late Iron Age features located less than 100m to the east (Anker and Biddulph 2011). The Beechbrook Wood group, in the southern part of the site, lay immediately outside an enclosure ditch, which may have gone out of use at about the time the burials were put in place (Fig. 5.43). Elsewhere the precise significance of the location of individual burials is uncertain. The use of formal and apparently less formal burial locations in relatively close proximity, however, is seen very clearly in the roadside settlement at Westhawk Farm, Ashford. Here some 11 cremation and eight inhumation burials lay within a small ditched cemetery in a classic settlement margin location. Elsewhere, however, a further eight cremation and two inhumation burials were recovered from no less than seven separate locations within and towards the margins of the settlement, most of these burials being contemporary with the use of the cemetery. There were probably very specific reasons why these scattered burials were placed as they were, but it is clear that there was no overriding compulsion to use a single defined burial place. Such a situation can probably be assumed to have been typical in a rural settlement context; while location could have been related to family groupings, or issues such as the status of the deceased, this cannot usually be determined in individual instances, and other factors could have been important.

The small groups of burials that seem to be typical of the HS1 sites are characteristic of the region and period (eg Hill 2007, 28), and also of northern France in the Late Iron Age (Haselgrove 2007, 499). A number of small rural cemeteries are known from the region, particularly from the south of the county. That at Cheriton, near Folkestone, for example, appears closely comparable to the Saltwood cemetery in a number of respects; its approximate size (nine recorded groups plus an uncertain number of others indicated by disturbed pottery), its pre-conquest to 2nd century date range and the presence of brooches (Tester and Bing 1949). More recent cemetery finds include one from the low Weald, at Ulcombe (Aldridge 2005, 176–9). By contrast, cremated human bone recovered from a number of Late Iron Age to Early Roman pits at Dartford Football Club does not appear to represent formal cremation burials, though these may still have been special deposits (Devaney and Stansbie 2011, 250, 276).

The most spectacular recent discovery of Early Roman cremation burials in Kent is very closely relevant to HS1, because it involves a group of burials directly associated with the enclosed settlement at Northum-

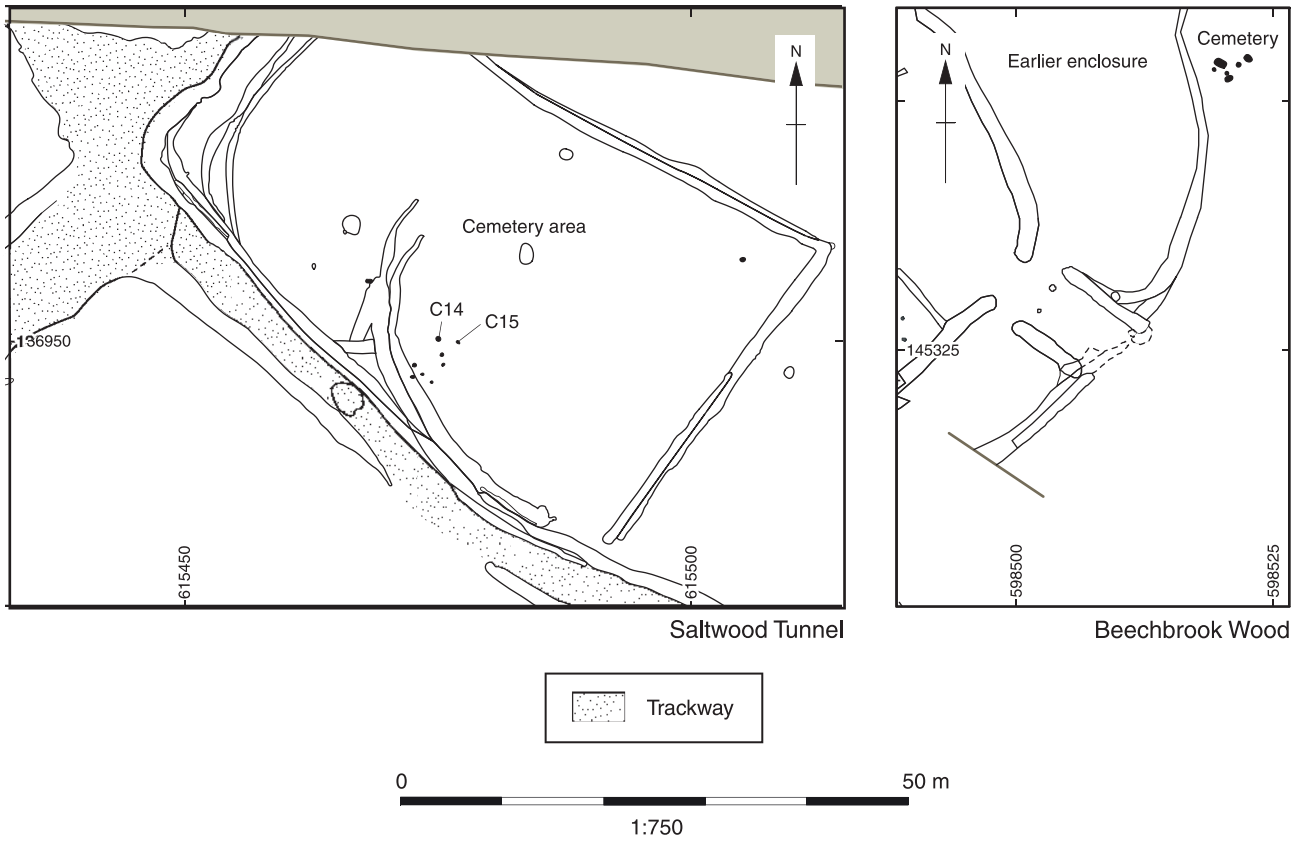


Figure 5.43 Comparative plans of rural cremation cemeteries: Beechbrook Wood and Saltwood Tunnel

berland Bottom west of Wrotham Road (see Fig. 5.16). These were discovered in the course of work on a new stretch of the A2 in 2007, lying within further ditched components of the enclosure complex, barely 100m north of the HS1 trace (Allen *et al.* forthcoming). The earliest and largest of these burials was an isolated one, placed in a pit 2.4m square and 0.7m deep. Associated goods included a table on which were placed 13 pottery vessels with four further vessels below, a gaming board, three bronze vessels (a patera, ewer and large decorated bowl, the latter containing a further pottery vessel), a brooch (perhaps securing a bag which had contained the cremated remains) and the head and forelegs of a pig. This burial, dated *c* AD 50–65, may only have been enclosed after it was put in place.

Seven more burials were contained within a smaller square-ditched enclosure at the north-western corner of the settlement. Two of these were also high-status cremation burials in pits *c* 1m square, but of very similar date to the first burial. One contained a bronze patera and jug, a folding board with bronze hinges, a small bronze-bound box with multiple compartments and a bronze spatula on top and a bronze-sheathed stone palette next to the box. There were fourteen pots, again including fine dishes, cups and beakers, two flagons and a Drag 29 bowl. Pig bones were present and again the cremated remains were found with an unburnt brooch.

The second elaborate burial in the group of seven contained the cremated remains of a woman. An adjacent brooch perhaps again suggests that the bones were in a bag, but nails and bronze fittings indicate that the bag lay within a wooden box occupying the full width of the grave. Two ceramic platters placed on edge along the line of the nails probably leant up against the edge of the box. Other goods included three further pottery vessels, a square bronze mirror with a patterned leather backing, a wooden casket decorated with bronze plates, drop handles and rings, and a glass perfume or ointment bottle. These burials and two more cremation burials in the same group are all dated *c* AD 50–70. A further cremation burial is not so well dated, while two inhumation burials in the same groups were rather later, one being associated with a 3rd century coin.

Like most of A2 Tollgate burials just described, the great majority of the dated burials from the minor HS1 sites are of the Late Iron Age to Early Roman period. Of the burials with associated ceramic material only one—the late 3rd century infant inhumation from Thurnham discussed above—certainly postdated the late 2nd century. The only adult inhumation outside Pepper Hill, from Saltwood, was dated to the 4th century. More problematic was an isolated cremation burial (1344) from Beechbrook Wood, associated with 1st and 2nd century pottery but with a radiocarbon date of cal AD 220–420 (NZA 20051). Here it may be safest to assume that, since it is not clear that any of the fragmentary pottery represented either an urn or grave goods, the sherds were residual within the fill, although it is also possible that, as has been clearly demonstrated at Pepper Hill and elsewhere (see now Wallace 2006), pottery vessels, not just of samian ware, could be quite old when placed in graves. A solitary cremation burial from Little Stock Farm also had a radiocarbon date (cal AD 80–330, NZA-19917) suggesting that it was at least of Middle Roman date.

The preponderance of cremation burial in the Early Roman HS1 sites is clear. This was clearly an important rite in the late pre-Roman Iron Age of Kent, as is demonstrated by the cemeteries of Aylesford and Swarling (Evans 1890; Bushe-Fox 1925), to name but the most obvious examples, and its chronology and origins in southern Britain in the 1st century BC have been reviewed concisely by Fitzpatrick (1997, 208–11). The rite, however, may have an even longer history as a cremation burial from the A2 Pepper Hill works is firmly dated by radiocarbon to the Middle Iron Age (Allen *et al.* forthcoming). In its post-conquest manifestation, the tradition then becomes subsumed in 'mainstream' north-west provincial Roman (but also pre-Roman) practice (eg Van Doorselaer 2001, 9). Inhumation burial, however, was also an established tradition in the region in the Late Iron Age. This is best demonstrated at Mill Hill, Deal, where the earliest extended inhumation, probably of the early 2nd century BC, introduced 'a rite that remained the norm for inhumations here for the rest of the Iron Age and into the Roman period' (Parfitt 1995, 155), and was more common than cremation at Deal. Elsewhere in the county, inhumations positively assigned to the Late Iron Age rather than a less precise Late Iron Age–Early Roman date are relatively rare, the best examples probably being those from Highsted, Sittingbourne, with 20 inhumation and 6 cremation burials (Kelly 1978, 267; Thompson 1982, 820–1), while isolated cases are listed by Parfitt (1995, 157). The most significant recent examples are the pair of burials with weapons from Brisley Farm, Ashford (Johnson 2002). The wider context is considered by Philpott (1991, 55–6), although much of his subsequent discussion relates to the 'introduction' of inhumation from the continent, particularly from the mid 2nd century AD onwards (ibid., 57–8). Further afield, early inhumation burials occur in south Essex at sites such as Mucking and North Stifford (Going 1993, 19; Wilkinson 1988, 37). Seventeen Late Iron Age or Early Roman inhumation graves were encountered at the King Harry Lane cemetery, Verulamium, some, like many of those at Pepper Hill, unfurnished (Stead and Rigby 1989, 81), and other Early Roman inhumation graves have been found at Baldock, though again accompanied by many more cremation burials (Frere 1984, 304).

At Pepper Hill a single prone burial of an adult male was dated by radiocarbon to 350–40 cal BC (KIA-23946), but appears to be chronologically isolated, so its relevance to the later cemetery is uncertain. Inhumation burial was, however, a major component of the Pepper Hill cemetery from its earliest post-conquest phase, and the same seems to have been true of the smaller cemetery at Westhawk Farm (above), although close dating of the earliest graves there is difficult. There seems little doubt, therefore, that the apparently simultaneous appearance

of both traditions in early post-conquest cemeteries in Kent reflects their derivation from ongoing indigenous practice. At Pepper Hill the importance of inhumation was maintained and it may have become the dominant rite in the Late Roman period if the majority of the undated inhumation burials were of that date. Precise figures are not available for Ospringe, the only other substantial Roman cemetery in the area, but of a total of some 387 burials, 'the great majority' contained cremations (Whiting *et al*. 1931, 4, 6). Further work on this site by Malcolm Lyne (pers. comm.) has shown that none of the pottery associated with inhumation burials dates before the middle of the 2nd century AD, so Ospringe appears to be in strong contrast to Pepper Hill, conforming to the more widely recognised pattern of 'introduction' of inhumation burial from the later 2nd century onwards.

First-century AD inhumation burials are recognised to the west, for example in the east London cemetery (Barber and Bowsher 2000, 300). Unfortunately the date range of the cemetery period 1 (AD 40–197) potentially encompasses burials both in the early native tradition and from the mid–late 2nd century onwards which could represent either a survival of that tradition or the 'reintroduction' of inhumation, and it is not clear how many of each category is present. A few of the east London inhumations clearly predate the late 1st century, however (eg B435, dated AD 40–80; ibid., 193–5), although they are presumably a minority of the *c* 68 inhumation burials notionally assigned to Period 1 (ibid., 12, table 4). Isolated early inhumation burials are also known from the Tower of London (Parnell 1985, 5, 7) and Southwark (Dean and Hammerson 1980). A wider survey of Greater London reviews the same evidence but adds no further examples (Perring and Brigham 2000, 148). Nevertheless, the Kent evidence fully supports the conclusion that the eastern London cemetery possibly 'reflects a pre-Roman inhumation tradition in the London region' (Barber and Bowsher 2000, 300). Two early or mid 2nd century crouched inhumation burials at the Stratford Market Depot site, West Ham (Hiller and Wilkinson 2005, 17–20), may reflect the survival of an Iron Age tradition also seen in an Early Roman context (burials 11386 and 12047) at Pepper Hill.

These differences must have implications for the understanding of the communities from which the burial population derived. In Kent the distinction does not appear to correlate with the character of associated settlement, however, since Ospringe and Springhead would usually be regarded as of similar type, and are relatively close (*c* 40km apart). It is unfortunate in this respect that there is little burial evidence from Rochester. Equally, it is curious that the rural evidence, where pre-conquest traditions would be expected to be well-represented, is generally poor. With the exceptions of Deal and Highsted, the known rural cemeteries of 1st and 2nd century date are mostly dominated by cremation burials, a pattern with which the HS1 evidence is consistent, and are characteristically small, as discussed above. A recent exception, however, is the discovery of a small inhumation cemetery of seven graves containing the remains of nine individuals on the new A2 works barely 1km east of Springhead (Allen *et al*. forthcoming). These burials are not well dated, but pottery from one falls in the range AD 120–250. The group as a whole may be of Middle Roman date, but as such forms a contrast with the small HS1 cemeteries discussed above. A further contrast is indicated by a substantial cemetery some 18km west of Pepper Hill at Woolwich. Here, some 158 north-south aligned inhumation burials and perhaps 9 cremation burials formed part of a larger cemetery, apparently within a rectilinear enclosure. Unfortunately bone preservation was even worse than at Pepper Hill, and the settlement associations of the site are not clear, but the dating evidence suggests that this cemetery may be entirely of Late Roman date (Ford *et al*. 2002) and it therefore differs markedly from the combined picture given by the various HS1 cemeteries. In both date and character it seems much closer to a cemetery sample of similar size (but predominately east-west alignment) known at Dartford (Frere 1990, 363–4).

Pepper Hill: physical characteristics of the cemetery

The siting of the Pepper Hill cemetery has already been mentioned. The most striking characteristics are the relative distance from Springhead, its tightly constrained plan, adjacent to a minor road running south from Springhead, and its early (possibly pre-conquest) start date. Much of this suggests that the location of the cemetery some 500m south of Springhead itself may have had less to do with Roman urban law than with referencing sacred Iron Age features, particularly the boundary and perhaps the single early grave and the adjacent well or shaft. It also served to distance the dead from the settlement 'in time as well as space' (cf Pearce 1999, 157). Biddulph (2006a) suggests that the topographical setting might also have influenced the cemetery's location. The funerary procession, on leaving the religious centre (later 'town'), would move uphill towards the cemetery. The slope is gentle and the total rise barely 10m, but following the straight path of the holloway southwards, the cemetery would have been clearly visible on the horizon. A comparable and probably deliberately chosen setting has been noted elsewhere, for example at Brougham (Cool 2004, 463).

The cemetery extended for a distance of *c* 75m principally along a north-south axis, and measured almost 20m across its widest point (Figs 5.44 and 5.46). It was bounded on its western side by a ditch and gullies, and on the east by the slightly sinuous road. In its re-alignment along a north-south axis in the northern part of the site the road perpetuated the line of an Iron Age ditch. This may not have been accidental, as it is possible that the ditch was visible when the route was set out. The absence of burials above or west of the ditch seems to attest to the continued importance of the boundary position, if not the ditch itself, after the conquest.

Initial use of the cemetery resulted in a particularly strong concentration of features in the central area. The extent of intercutting evident at this point reveals how

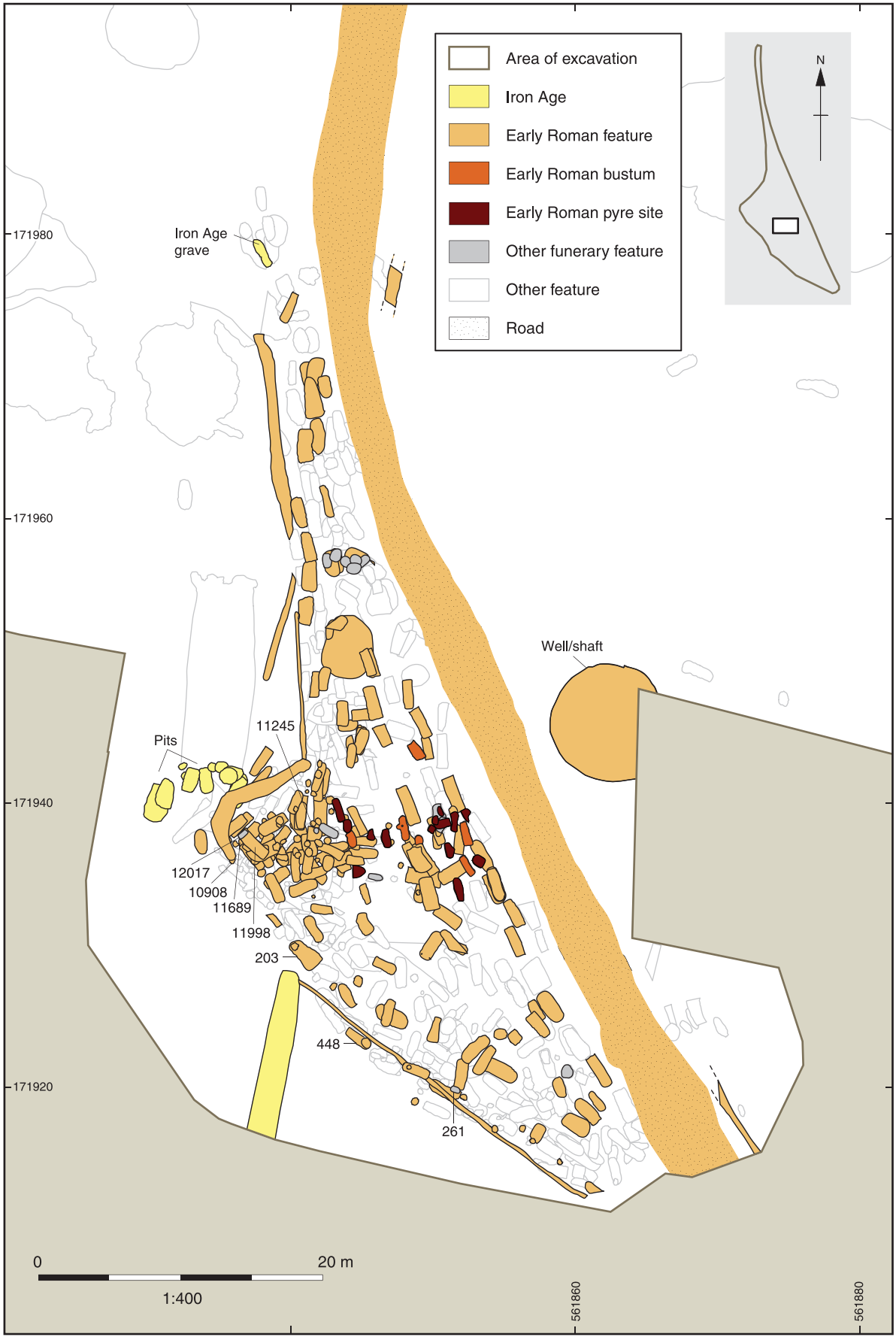


Figure 5.44 Pepper Hill: Iron Age and Early Roman phase plan

desirable this location was. The regular, almost square, shape of the concentration itself hints at the existence of an internal boundary; perhaps the area was fenced off to create a separate burial enclosure, although there is no other indication of this. This area straddled the projected line of the Iron Age ditch and it is possible that the association with an important boundary was still considered important and resulted in this concentration (Biddulph 2006a).

Middle Roman graves lay mainly in the southern part of the site, though graves of this period were identified in central and northern parts as well. Again, graves followed the alignments of the boundaries. Burials continued to be made in the central concentration at a lesser rate, but it is notable that these appeared to form a circle with two Early Roman inhumation graves (11998 and 11689) at its centre. There is no obvious factor that distinguishes these two graves as particularly noteworthy, although the fact that all the burials forming the circle contained beakers adds to the curiosity. The few dateable Late Roman graves present were in the southern and central parts of the site. Just one followed the east-west orientation favoured at many late Roman cemeteries

A series of seven *bustum* (*in situ* cremation) burials formed another coherent group in terms of rite, location and date. All were confined to the central area and, except for an undated feature, belonged to the mid to late 1st century AD. As this part of the cemetery also contained most of the defined pyre sites (eg Fig. 5.45), it can reasonably be suggested that this area was a preferred location for cremation, albeit of limited use, since the pyre sites were apparently used just once. Possible cenotaph features largely avoided the centre of the site, which argues against an association with the *busta* (see below).

Figure 5.45 Pepper Hill: probable pyre feature (10596)

No certain family burial plots such as the small enclosed group examined to the north between Pepper Hill and Springhead (Philp and Chenery 1997) were identified. However, three cremation burials (185, 1439 and 1440) found inside the cut of inhumation grave 203 were considered by the excavator to have been placed contemporaneously. This might represent the burial of family members who had died at the same time from disease (the skeletal remains perhaps derive from two adults and two children, bone from one of each occurring in burial 185), or whose cremated remains were stored above ground until all the individuals could be buried together (Witkin and Boston 2006). Similarly, inhumation grave 448 subsequently contained three cremation burials (446, 1433 and 1434) that might represent another family group, although 1434 was perhaps 50 years or more later than the other two. Other possible family groupings have been tentatively identified; some might perhaps have been symbolised by the deliberate intercutting of graves (Biddulph 2006a).

The location of certain features, and consistency of grave orientation with constant reference to boundaries, reveal a strong element of central organisation. Such planning would be expected, indeed necessary, in an urban cemetery, such as those in London (Barber and Bowsher 2000, 333), but it was clearly important here as well. One aspect of organisation might have related to the provision of clear paths in the cemetery, giving access to graves for mourners and other elements of the funeral procession. Such routes are difficult to identify at Pepper Hill. In the Early Roman phase a somewhat winding path can be traced through the length of the cemetery, and is clearest in the centre, where it separates the cluster of burials on one side and the *busta* and pyre sites on the other. Whether this describes an actual path is uncertain, but movement from the northern to southern parts of the cemetery would be expected if the procession left the road from Springhead at the north end of the cemetery where the road turned towards the south-east. The Middle Roman graves did little to alter this route, although some of the undated graves—many of which are likely to belong to the 1st or 2nd century AD—would have encroached on the path, especially at the north. It is unclear if there was ever an entrance to the cemetery on its west side. One very striking feature of the layout of the cemetery in this area, however, was the re-entrant angle formed by the boundary gullies that defined the central part of the west side. The reason for this configuration is unknown, although part of the area was occupied by a cobbled surface in the Middle Roman

Figure 5.46 Pepper Hill: Early/Mid to Late Roman phase plan

period. The fact that a very similar arrangement of re-entrant gullies was associated with the cemetery at Westhawk Farm (Booth *et al*. 2008, 125, fig. 3.62) may simply be coincidental, but the morphological similarity is striking.

Strict organisation is also suggested by the lack of significant expansion beyond the cemetery boundary, though natural obstructions might also have been responsible. Only a very few graves were dug either west of the boundary ditch or east of the road. Throughout the life of the cemetery, however, some areas remained free of graves. If all parts of the cemetery were available for burial, then given the extensive intercutting, the presence of gaps—some quite large, particularly in the centre of the site—is surprising. This suggests an extraordinarily consistent central planning regime that lasted over 200 years. But obstacles may have prevented burial too. Trees, such as evergreens which symbolised eternal life (Kreuz 2000, 50), might have punctuated the mass of the graves, although no direct evidence was found within the cemetery, in contrast to an area east of the road, where tree-holes were uncovered.

Containing the dead

Treatment of cremated and inhumed remains was variable. At Saltwood all but one of the group of ten cremation burials was placed in a ceramic container, and all five cremation burials in the southern group at Beechbrook Wood were placed in pottery vessels. Table 5.8 shows, however, that this ratio was unusually high, although groups consisting exclusively of unurned cremation burials tended to be very small. At Pepper Hill some 55% of cremation burials were contained in pottery urns (Biddulph 2006a), and their use was more frequent during the Mid Roman period compared with the earlier phase (cf Fig. 5.47).

Figure 5.47 Pepper Hill: Unurned cremation burial 1520. The cremated remains lie between vessels deposited as grave goods. Late 1st–early 2nd century AD

Cremated bone was occasionally placed in a wooden casket, one example of which (from grave 291) was decorated with copper alloy fittings and lion-headed studs, resembling those from two casket burials at Skeleton Green, Hertfordshire (Borrill 1981, 315–6). Nails from this burial also suggest the presence of a funeral bier used to carry the deceased to the place of cremation. This example adds to the casket burials known from Canterbury and Faversham (Philpott 1991, fig. 3; Partridge 1981, table XLVI), although the emphasis of the distribution of this burial type remains in Hertfordshire and Essex. Coffins had been placed in a minimum of 175 (49%) inhumation graves at Pepper Hill, in some cases indicated by the survival of a stain within the grave fill (Fig. 5.48).

Fittings were rare, and the planks or boards of most coffins had been fixed simply with iron nails. If necessary, the corners were reinforced with more nails. Some coffins at least were lidded, as is shown by nails driven vertically into the top of the long planks (Fig. 5.49). As with cremation urns the use of coffins appears to have been more popular in the 2nd and 3rd centuries compared with the 1st. It is possible that pegged coffins, which

Figure 5.48. Pepper Hill: Mid-late 1st century inhumation burial 11668. The coffin and skeleton survive largely as stains in the soil. A beaker and a dish are placed at the head end of the grave outside the coffin.

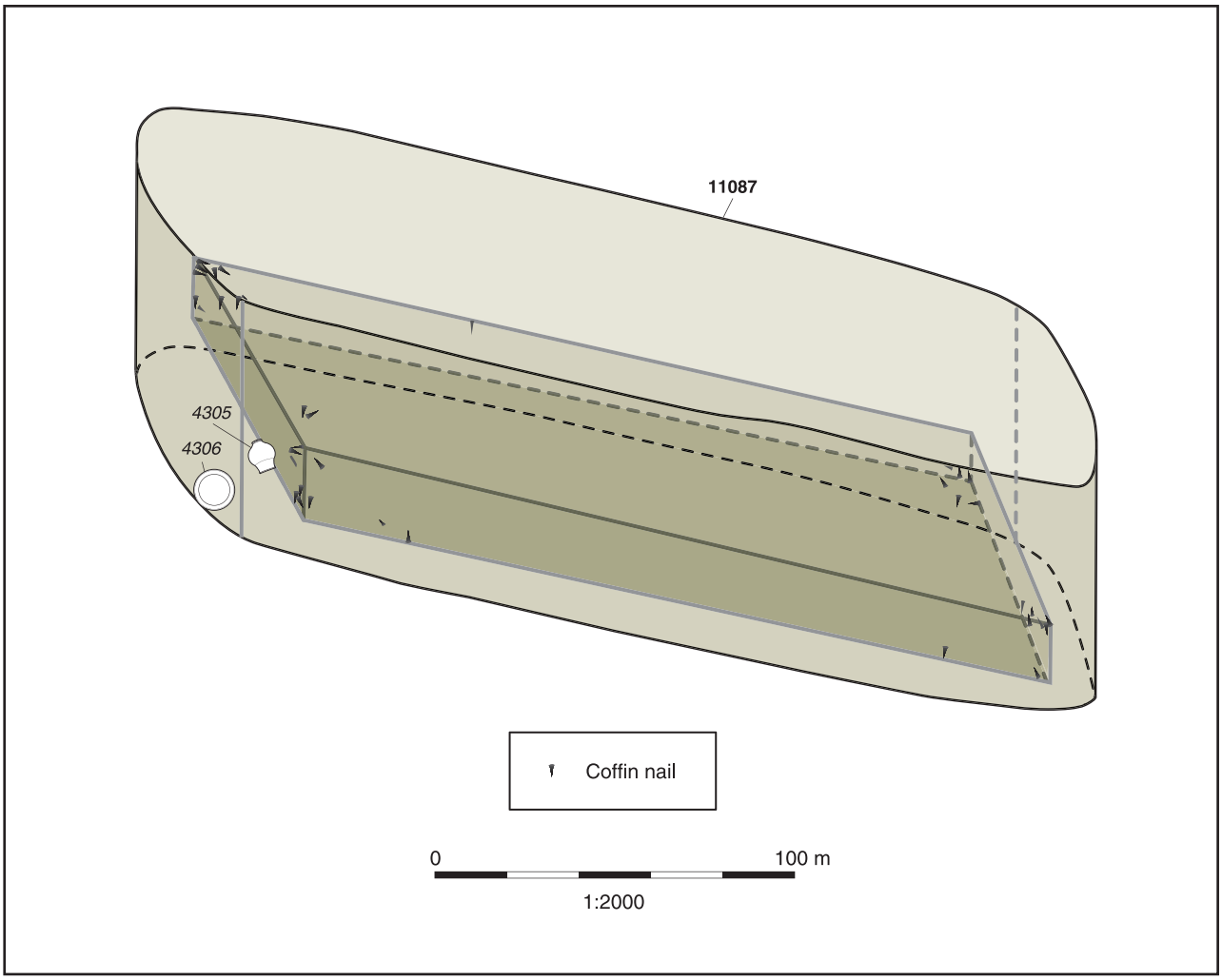


Figure 5.49 Pepper Hill: coffin reconstruction, grave 108, late 1st century AD

would have left little trace, might account for the difference, but the limited Romano-British evidence for coffins with surviving wood suggests the use of simple boards or nailed construction (eg Goodburn 2003).

A variation on the theme of containment is seen at Pepper Hill in eleven features identified as potential cenotaphs: ie features like or representative of graves but without the human remains. None contained cremated bone, but in other respects—shape, size, and content—the cuts were similar to cremation graves, and conform to the definition of cenotaphs suggested by McKinley (2000a, 42–3; 2004, 306–7). The features were quite widely distributed across the cemetery area, but six grouped together in the northern part of the site were intercutting and represent successive deposits, perhaps located in an area reserved for features of this type. Up to six of these features contained grave goods. Pottery vessels from three of them (261 (see Fig. 5.52), 11245 and 12017) were largely complete and these are the features most convincingly interpreted as cenotaphs (none was in the northern group). It seems inconceivable that later truncation could have removed all the cremated bone but spared the pottery. The fragmentary or residual nature of the items within the other features, or the lack of objects in some cases, makes their interpretation less certain. Overall these features form an intriguing group. All well-dated examples belong to the Early Roman phase and were potentially contemporary with the *busta* and pyre sites. Analogous features have been recorded occasionally at other burial sites in Britain, including Westhampnett (McKinley 1997, 71–2), King Harry Lane (Stirland 1989) and Brougham (McKinley 2004, 306–7) and there is epigraphic evidence for cenotaphs in the Roman world (Pagano 2000, 28). Their use may have been determined principally by a requirement to make a formal burial despite the absence of human remains, for example if the individual had died away from home, perhaps on the battlefield or at sea where the body could not be recovered (Toynbee 1996, 54). A military explanation would hardly have applied, however, in the case of the possible cenotaph 11245, which included a ceramic 'infant-feeder' and may therefore represent the grave of a child.

Grave goods: the afterlife, and how to get there

At Saltwood seven of the ten cremation burials in the western group had additional pottery vessels associated. More striking was the occurrence of brooches in five of

the burials in this group, two of which (burials C14 and C15) each produced a pair of brooches (Fig. 5.50). At Beechbrook Wood each of the five burials in the southern group was in a ceramic container and three had additional vessels. One grave contained a fragmentary copper alloy object, probably a pair of tweezers, but brooches were absent. At Pepper Hill brooches occurred as grave goods in only 12 burials (and as pyre goods in a further five). Inevitably this large cemetery produced a wider range of grave goods than seen elsewhere, although the material was dominated by pottery vessels (almost 70% of all grave good instances—counting multiples of individual object types as one). In total, grave goods (ie not ceramic cremation urns or coffins) were recovered from *c* 62% of cremation burials (including *busta* and cenotaph/disturbed cremations) and *c* 38% of inhumation burials. In both cases these figures exclude instances of objects of uncertain significance, such as single hobnails, which could have been incidentally incorporated in grave fills, although it is possible that some of these were deliberately deposited as representative of complete items.

Intrinsically remarkable grave goods were rare at Pepper Hill and some of the more notable material had been placed on the pyre, at an earlier stage of the burial ritual. The quantities of object types placed as pyre goods and as grave goods (catalogued and discussed in Biddulph 2006a) are summarised in Tables 5.9 and 5.10.

One mid–late 1st century AD unurned cremation burial at Pepper Hill produced a striking range of charred plant remains including flesh and pips of grapes (*Vitis vinifera*), a possible fig fruit (*Ficus carica*), lentils (*Lens culinaris*) and horse beans. At this date all except the beans are likely to have been imported, and they represent a comparatively high-status group of food offerings. No other examples of grapes and figs are known from cremation deposits in rural Kent, although a Roman *bustum* pit in London produced charred fig fruits (Giorgi 2000), while cremation deposits from the East London cemetery sites included lentils and horse

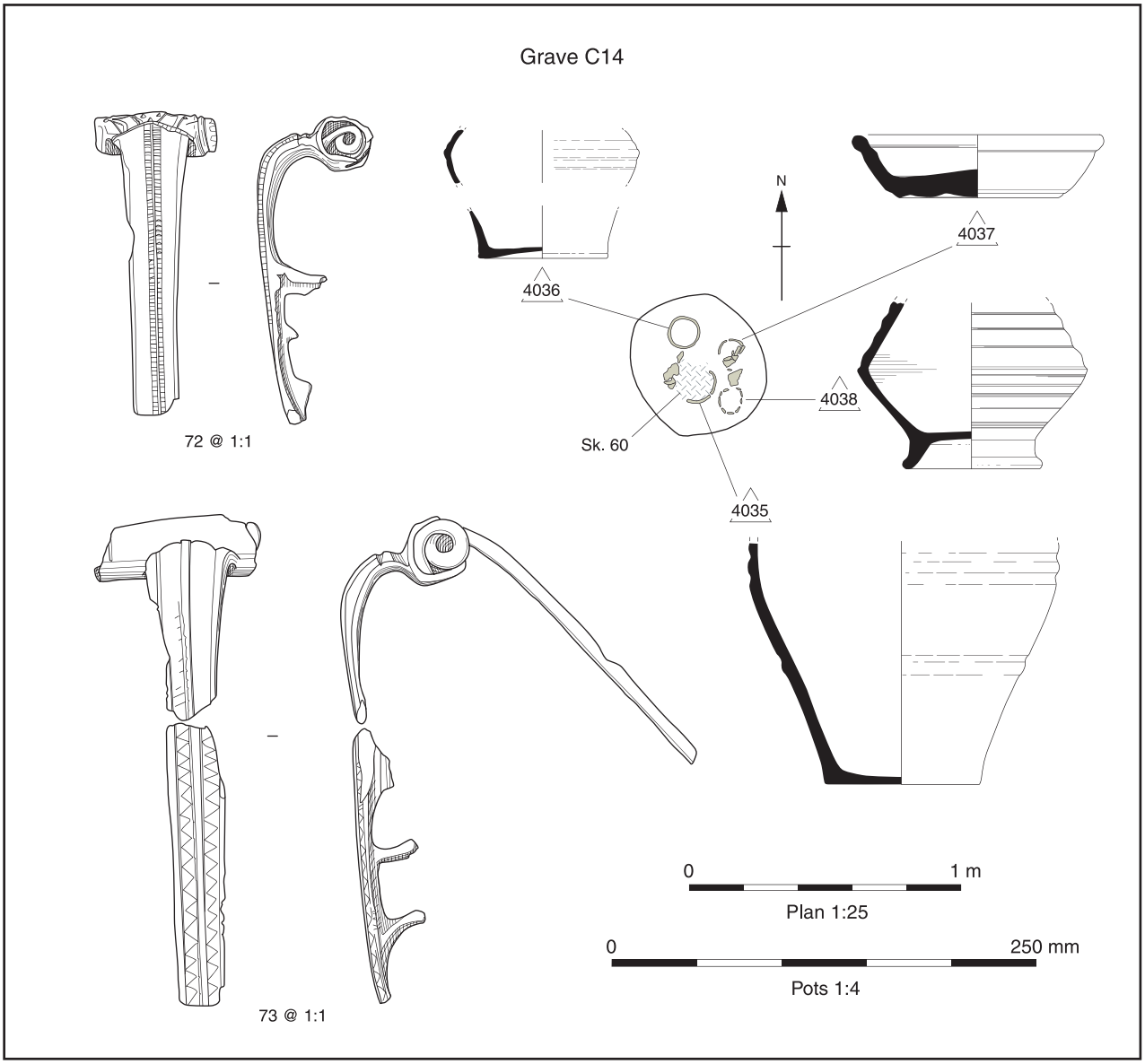


Figure 5.50 Saltwood Tunnel: cremation burial group C14, mid 1st century AD

Table 5.9 Pepper Hill, pyre goods. quantification by count of features

Pyre good	*Early Roman*	*Early-Mid Roman*	*Mid Roman*	*Mid-Late Roman*	*Roman (undated)*	*Total no. features*
Animal remains	23	9	10	1	4	47
Plant remains	1	1				2
?Bier/box	16	4	3		1	24
Wood inlay	1					1
Bead	1					1
Cu alloy brooch	5					5
Cu alloy pin	2					2
Cu alloy ring	1					1
Cu alloy object	10		5		2	17
Fe object	8	1	2		3	14
Glass object	5	2			1	7
Pottery	9	2				11
Hobnails	3				1	4
Total	85	10	20	1	12	136

Table 5.10 Pepper Hill, grave goods. quantification by count of features (all burial types)

Grave good	*Early Roman*	*Early-Mid Roman*	*Mid Roman*	*Mid-Late Roman*	*Late Roman*	*Roman (undated)*	*Total*
Animal remains		2	4			2	8
Box/casket	10	3	9			4	26
Bead/necklace	3		1	1			5
Coin			1		1		2
Bracelet	3		2				5
Brooch	9	3					12
Cu necklace			1				1
Finger ring	2		3		2		7
Mirror	1						1
Misc. Cu object	2		1				3
Pottery	123	24	71	9	4		231
Vessel glass	4	5	2				11
Shoes	4	5	10	2	1	3	25
Total	161	42	105	12	8	9	337

beans (Davis 2000). Another Early Roman cremation deposit, from Beechbrook Wood, contained a large number of grains, mostly of spelt, which may also have been votive food offerings.

As there was minimal survival of unburnt bone at Pepper Hill the animal remains there were mainly from probable pyre goods. These suggest the provision of both joints of meat and occasional complete carcasses. Young pig bones were the most common, followed by domestic fowl. Cattle and sheep/goat were only occasionally represented. There were ten instances, including one almost complete carcass, of domestic fowl and it is likely that a majority of the considerably larger number of fragments identified only as 'bird' at this site were also of domestic fowl.

Grave goods overwhelmingly comprised pottery (Table 5.10). Ancillary pottery was biased towards drinking-related forms, followed in preference by eating, then cooking or storage types (Fig. 5.51). There was no set combination of vessels represented within individual graves although the selection of vessels for cemetery use conformed to standard, funerary-related, norms. Pottery was mainly of local origin and drawn from the ceramic supply otherwise intended for domestic use. Indeed, the presence of worn or burnt vessels suggests that some, perhaps much, pottery had first seen household use. Some 'antique' grave-goods may have remained in the household for generations before burial (Biddulph 2006a).

Non-ceramic grave goods were relatively infrequent. The most common items were boxes/caskets and nailed shoes (with the implication that shoes may have been most common overall, as evidence for unnailed shoes would not have survived). Like shoes burnt on the pyre, shoes placed in the grave were associated mainly with adults, but significantly were more often deposited in the 2nd century, in contrast to the 1st century emphasis of the small number of burnt shoes (ibid.). This mirrors a trend observed elsewhere and appears to relate to changing beliefs about the afterlife (Philpott 1991, 171). The symbolic significance of footwear is discussed by van-Driel Murray (1999), who points out that 'in the case of Roman shod burials, we do not actually know the *direction* the journey was intended to take—and we merely assume it was *to* the other world because this accords with our modern perceptions.' (ibid., 132). However that may be, the present evidence suggests that from the 2nd century onwards the deceased made that

Figure 5.51 Pepper Hill: multiple pots in grave group 450

journey from the grave, even if cremated, whereas previously the journey began at the pyre. The animal bone evidence supports this view; unburnt animal bone was only recovered from 2nd century cremation graves; none was certainly deposited in earlier graves. Wherever the journey took them, the deceased need not have been provided with shoes only for practical comfort. The shoe, a highly personal item, was inextricably connected with an individual's identity. The presence of footwear in wells, shafts and other ritual places reminds us of the importance of the shoe as an acceptable personalised offering alongside coins, chickens and the like (ibid., 135–6). The scarcity of coins at Pepper Hill is notable, however.

Brooches were most common in 1st century graves; few were recovered from 2nd century or later graves (Cool 2006a). This is consistent with a trend seen at other sites in the county, including Westhawk Farm, Ashford (Cool 2008) and Canterbury (Mackreth 1995), and particularly in a HS1 context at Saltwood. Bracelets were recovered from 1st century graves, as well as from one of the late 2nd or early 3rd century AD (10520). The objects began to be deposited at a time when bracelet wearing was not popular (Cool 2006a). The three finger rings from Pepper Hill belong to 3rd or 4th century graves. One from grave 10761 lacked its intaglio; if acting as a seal, the jewel may have been bequeathed to the deceased's heir (Cool 2006a; Henig 1974, 65). Two glass unguent bottles were recovered from inhumation graves (10637 and 12038), where their use may have been motivated by concerns different from those related to cremation.

Commemoration

The backfill of grave 254 at Pepper Hill (Fig. 5.52) included broken drinking- and eating-related vessels that may have derived from a funerary feast, in addition to more typical grave goods (Fig. 5.53; Biddulph 2006a). Such grave-side commemoration at the time of the funeral could have occurred regularly during the life of the cemetery for cremated, as well as inhumed, individuals (cf Pearce 1998; Williams 2004). Evidence is, however, scarce and it seems more likely that at Pepper Hill such elaborate rites were accorded to relatively few people, possibly on the basis of status, although the practice of deliberately 'killing' or mutilating vessels, more commonly found at Pepper Hill and at other cemeteries in south eastern Britain (Biddulph 2006a; 2002, 104–5), may perhaps have been related.

It is even less clear if there were subsequent ceremonies associated with particular graves. The complete lack of any contemporary surfaces at Pepper Hill, as at so many other cemetery sites, restricts the chances of survival of indicative evidence. One relevant aspect would have been the marking of graves. At Pepper Hill, however, the evidence for this is very limited—a posthole in the centre of grave 10908 may have been such a marker, but the extent of intercutting may suggest that such markers were either rare or short-lived, and may carry with it the implication that post-funeral commemoration was also not common. Such commemoration is well attested in the classical world and is implied by some specific types of burial occasionally found in Britain—'pipe-burials' being an obvious (but rare)

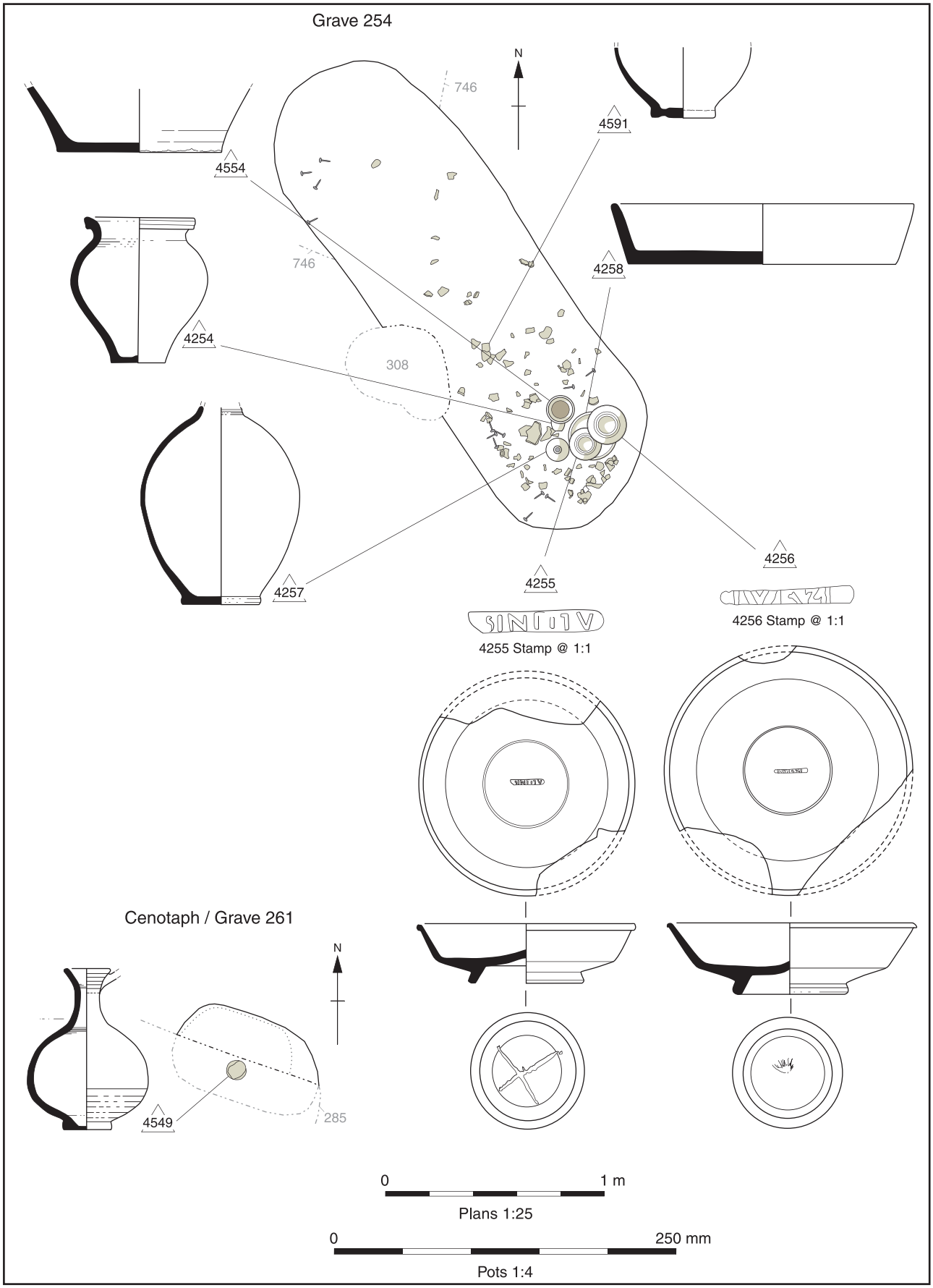


Figure 5.52 Pepper Hill: grave group 254 and 'cenotaph'/grave 261

Figure 5.53. Pepper Hill: Group of vessels in mid 2nd century inhumation grave 254. A grey ware base and inverted samian ware dishes have been used as lids. Both of the latter were damaged before use and have graffiti scratched inside their footrings

example. Long term reverence for a burial site of a rather different character is seen at Brisley Farm, Ashford, where a circular open area surrounded by cut features lay just south of the two Late Iron Age–Early Roman high status burials. The contents of the features suggest ritual activity perhaps continuing into the early 2nd century, almost certainly associated with the earlier graves (C Johnson pers. comm.). Comparable activities of a less intensive nature related to other burials in the region would very likely leave little or no archaeological trace.

The people of Pepper Hill: demography and physical characteristics

The physical condition of most of the HS1 human remains (cf Fig. 5.48) unfortunately precludes detailed analysis of questions such as demography and health. Bone survived in part only in some 79 of the 349 or so inhumation burials from Pepper Hill, and was very poorly preserved in most cases, to the extent that no age or sex determinations were possible in 33 of them. The remainder comprised, 1 infant (0.05–5 years); 5 subadults (13–18 years); 11 adults (18–25 years) including 3 females and 1 male; 2 adults (26–45 years) including 1 female; 2 adult (>45 years) males; and 25 adults (>18 years) including 2 females and 2 males.

A full cross-section of the population appears to be represented amongst the cremated remains from Pepper Hill (although only 43.1% of this population could be aged; Witkin and Boston 2006) with 16.9% immature individuals and 83.1% adults amongst the aged individuals. This compared to very similar proportion of immature individuals (17.1%) to adults (82.9%) in the admittedly small proportion of the inhumation population that could be aged. The adults spanned the age range with, as is commonly the case, most falling in the mature adult (*c* 26–45) category). Although the proportions are similar to those commonly seen in contemporaneous cremation cemeteries (McKinley 2004, 289; Witkin and Boston 2006, table 7) it is likely that the immature, particularly neonatal, individuals are under-represented, as is often the case (McKinley 2006a). This could reflect one or a combination of several preservation/recovery factors, including; first, inherent problems of fragility and the probable tendency to preferential loss/destruction due to disturbance or acidic soil conditions; secondly, potential biases attached to the cremation rite (preferential destruction or accidental exclusion from the secondary part of the rite in cases where they were cremated with an adult; where, as is commonly the case with cremation burials, less than 50% of the adult remains were collected from the pyre site for burial, the fragile remains of an infant could easily be overlooked entirely); and thirdly the known Romano-British cultural practice of commonly burying very young infants in settlement rather than cemetery contexts (eg Pearce 1999, 155), although neonates have been recovered from some cremation cemeteries (eg St. Stephen's (St. Albans) and Skeleton Green, Puckeridge, Herts; McKinley 1992; Wells 1981). There was no apparent temporal variation in the proportion of immature individuals. McKinley (2006a) suggests that a slight rise in the proportion of older adults (>45 years) amongst the cremated individuals in the later phases of the Pepper Hill cemetery may be indicative of increased longevity or possibly reflect an adherence of the older members of the population to the established mortuary rite of cremation in the face of an increased fashion for inhumation burial. Males comprised 27.6% of the cremated adults, and females 20.3%, but given that over half were thus unsexed, and that 56.9% of all cremated individuals could not be aged, these figures cannot be regarded as a reliable guide to the population as a whole.

Osteological data comparable to those from Pepper Hill are relatively scarce in Kent and tend to come from individuals or small groups mostly scattered across the northern part of the county (McKinley 2006a) (Fig. 5.54). Three larger groups comprise two from Canterbury: Cranmer House, with 53 cremation and one inhumation burial (Garrard 1987) and St Dunstan's, with 95 cremation and 23 inhumation burials (M Diack pers. comm.), and one from Clubb's Pit, Isle of Grain, with 42 inhumation and one cremation burial (Cameron 1985).

These figures underline the importance of the material from Pepper Hill, despite the problems of preservation there. The analysed human remains from Pepper Hill outnumber the total (minimum number of individuals) from the rest of the county, combining the figures recorded by Mays and Anderson (1995, 381) with those from recent analyses. The majority of the recorded remains (some 211 out of 327) are from cremation burials in line with a regional pattern identified by Mays and Anderson (1995, 365, 376; it is important to note that this survey deals with recorded or recordable human

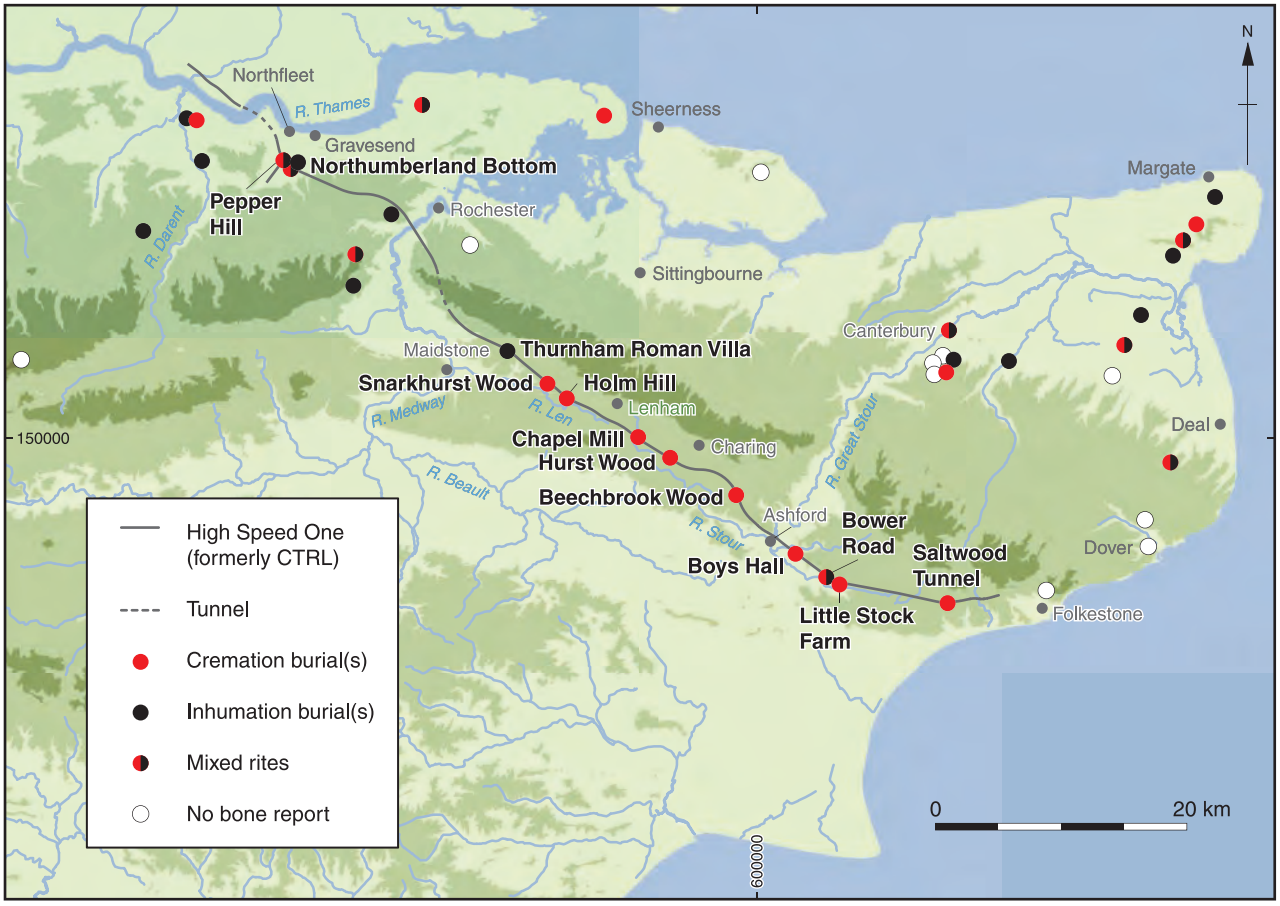


Figure 5.54 Distribution of sites from which Roman burials have been recorded against a background of drainage patterns and simplified geology (based on Mays and Anderson 1995, and Lawson and Killingray (eds) 2004)

remains, it excludes sites with very poor preservation or where unreported remains have not survived; ibid., 364). McKinley (2006a) notes that cremated remains from these sites often appear to include few immature individuals, with none from Ash (Anderson 1998), only 7.5% from Cranmer House (Garrard 1987) and 11.8% (2 out of 17) from the Thanet pipeline burial groups (McKinley 2006c). Possible reasons for this have been discussed above but it is notable that amongst the inhumation burials from the Thanet pipeline, 58.8% (10 out of 17) were immature (1–18 years). Since the cremation and inhumation rites are broadly coeval the difference may reflect cultural variation in the treatment of young individuals in this cemetery, although differential survival and recovery associated with the rites may also have been a factor (ibid.).

Lesions, mostly in adults, were recorded in the cremated remains of 46 individuals from five HS1 sites (*c* 12.4% of the period assemblage) and the unburnt bone of 12 individuals (13.9% of the period assemblage) from two sites (McKinley 2006a). Dental lesions were amongst those most commonly recorded; eleven out of eighteen inhumed individuals with (generally partial) surviving dentitions had lesions, including slight calculus in four, small carious lesion in three, *ante mortem* tooth loss in one, dental abscesses in two and slight hypoplasia in five. The HS1 figure of 2.7% for caries (based on the number of teeth, not individuals, affected), is less than the overall caries prevalence rate of 7.5% for the Romano-British period found by Roberts and Cox (2003, table 3.10; based on a sample of 39 sites), although their assemblages show wide variation and include sites with a low rate comparable to that seen here. Anderson (1995, 123) recorded a caries rate of 12.9% in the Late Iron Age assemblage from Mill Hill, Deal. The apparently low prevalence in the HS1 assemblage is likely to be misleading, however, as is probably also the case with incidences of calculus, owing to preservation factors.

Some dental disease—*ante mortem* tooth loss and an abscess—was also present in the cremated bone assemblage but most lesions here were indicative of one of the commonly recorded joint diseases or of minor, repetitive muscle/ligament trauma. Similar minor lesions were recorded in the unburnt remains of only one individual. Periosteal new bone was observed in the remains of ten cremated individuals; most lesions were seen in the tibia but there were three instances of the visceral surface of the rib being affected, indicative of a pulmonary infection, including conditions such as tuberculosis, pneumonia, pleurisy or chronic bronchitis (Roberts and Manchester 1995, 139; Roberts *et al* 1998, 56). Slight-mild lesions suggestive of anaemia were recorded in the remains of eight cremated individuals (2.1% of the period assemblage). Most of these were of *Cribra orbitalia*,

commonly thought to be indicative of an inadequate dietary intake of iron, and/or a severe intestinal parasitic infestation (Stuart-Macadam 1991, 101).

The only traumatic lesion observed was a short cut through the angle of the left ramus of a Late Roman adult male from Bower Road, mentioned above. This could be indicative of decapitation (Witkin 2006) if the blade had clipped the jaw as it was brought down on the neck. Since the mandible fragment was all that was recovered of this individual, however, the suggestion must remain tentative. Decapitated remains are relatively common within cemeteries of Late Roman date and are generally thought to represent a post-mortem process, probably for ritual reasons (eg Harman *et al.* 1981; Philpott 1991, 77–89; McKinley 1993; Boylston 2000; Taylor 2008). The significance of the isolated Bower Road fragment is difficult to assess, but it did come from a feature for which a possible ritual interpretation has been proposed (see above), which may strengthen the case for suggesting that the bone was from a decapitated individual.

Overall, the limitations of the data preclude general observations about the health of the Late Iron Age and Romano-British populations of Pepper Hill and the other HS1 sites. The incidence of some identified lesions may have been below average because of these limitations and it is inevitable that the full range of conditions afflicting the various populations is not represented (McKinley 2006a).

Society

Society at Pepper Hill/Springhead

The Pepper Hill cemetery also provides more general information about the people of Springhead. The human remains seem to suggest a fairly 'typical' population in terms of age distribution (allowing for the biases that particularly affect the presence and identification of small children), but with insufficient evidence for clear understanding of the relative numbers of males and females (and therefore of the extent to which the cemetery population really reflects the living one, given the problems of sex imbalance observed in many (mostly) Late Roman cemeteries (eg Davison 2000)). Davies (2001) has discussed the Pepper Hill cemetery in relation to the high-status walled burial enclosure at the New Barn Road roundabout but he appears to assume (ibid., 163-4) that the Pepper Hill cemetery was the only 'communal' one associated with the Springhead settlement. This seems unlikely. A very rough calculation suggests that the cemetery may reflect a population of approximately 100 individuals. Given the scale of activity revealed both by earlier excavations and by the HS1 Section 2 work a larger overall population for Springhead might be anticipated, as might further cemeteries sited alongside Watling Street and perhaps at other locations in the vicinity. Smaller groups of burials are known elsewhere, as for example at the Milbrook Garden Centre, on the same road (the so-called Temenos Road East) as Pepper Hill, but much closer to Springhead, where three cremation and three inhumation burials lay within a small ditched ?family plot and dated to AD 70–100. A further burial was located some 50m to the west (Philp and Chenery 1997, 8–12). As already mentioned, neonates and small infants were frequently excluded from formal cemeteries and could be located in apparent settlement contexts (eg Boyle and Early 1998, 33–4).

The Pepper Hill and other finds suggest a link with the pre-Roman exploitation of the area (including the religious focus of the Ebbsfleet springs) that disregards the Roman layout based largely on the alignment of Watling Street. Although it cannot be known, it is at least possible that part of the cemetery population was drawn from adjacent rural communities as well as from the small town itself.

Despite this, however, the cemetery incorporates some decidedly non-native features. The most obvious of these is the practice of *bustum* burial, which was rare in Britain. Philpott (1991, 49) suggested that, on balance, '*in situ* cremation is not typical of mainstream native practice and a continental origin is likely in the majority of cases'. Struck (1993b, 92; Abb. 1) supported this conclusion, showing that *busta* concentrated along the Rhine and the Danube (although they always formed a minority rite, even in areas where they did concentrate (ibid., 91)) and suggested that the arrival of the rite in Britain, where the majority of known examples are associated with forts and urban centres, was probably associated with the movement of auxiliaries serving in the Roman army.

Whether this association applies at Springhead is unclear, since other evidence for military activity there is exiguous (see above). Evidence from Denham (Buckinghamshire), where perhaps as many as 20 busta have been found recently (Coleman *et al.* 2004; L Coleman pers. comm.) and Bray (Berkshire), where the evidence for a further six is a little less clear (Stanley 1972; see Booth *et al.* 2010, 503–4), suggests a rather different pattern of distribution, complementary to the military one, albeit of broadly Late Roman rather than earlier date. At Pepper Hill all the *busta* except a single uncertain example dated from the mid to late 1st century AD, suggesting that whatever its social associations the rite was an intrusive one. On the other hand only one of the individuals buried in this way (10702) was male; the remainder were adult females or immature. This does not preclude a military connection (cf James 2001, 80), but the case is far from secure, although the narrow date range of the *busta* may be more in keeping with a short-lived military occupation than with other possible explanations for their presence (Biddulph 2006a).

Some of the plants (eg grapes, figs and lentils) and animals placed on the pyre may also reflect Roman provincial rather than native British practice. The exotic plant remains are paralleled in some urban contexts (particularly London) but less commonly elsewhere. Late Iron Age traditions of animal placement on the pyre are seen for example at Westhampnett, where lamb and pig were typically provided (Fitzpatrick 1997, 221). In the

Late Iron Age cemetery at King Harry Lane, however, the animal remains are dominated by pig and chicken (Davis 1989), as at Pepper Hill and as at a large number of Romano-British sites (Fay Worley pers. comm.). Pig was also found in the high status burials at the A2 Tollgate site (see above). It is unclear if the occurrences of pig and chicken at King Harry Lane represent the precocious appearance of imported continental practice or whether they indicate the early development of a native tradition that had become well-established by the time of the conquest and thence developed into a mainstream Romano-British practice. In the former case, however, the rapid adoption of a non-indigenous tradition at Springhead might carry with it the inference that a non-local component was present in the cemetery population (the association of animal bone with *busta* was examined—of the eight identified *busta* one produced pig bone and another produced fowl—the evidence is therefore insufficiently clear to advance the argument either way).

Grave goods may occasionally suggest that other people originating outside the Springhead area were buried at Pepper Hill. One grave (10362) contained a distinctive ceramic tankard in Severn Valley ware. Products from this source are exceptionally rare in south-eastern England (this is thought to be the only vessel known from east of London) and it is most unlikely that this vessel was traded. It may perhaps have been a personal possession, brought to Springhead by its owner during the later 1st century, although other explanations of its presence are of course possible. A late 2nd or early 3rd century grave (10520) contained three bracelets, a finger ring and a necklace part-made with gold-in-glass and polychrome beads, all placed unworn in the grave. Both the placement of the objects and the objects themselves, the necklace in particular, are rare in graves of this time. Gold-in-glass beads have been seen as having a military association (Boon 1977) and Hilary Cool has speculated that the individual with whom these objects were associated brought new beliefs and fashions in personal decoration, perhaps from the Danubian lands (Cool 2006a; cf Cool 2004, 387). However, other gold-in-glass beads (for example) come from graves at London (Barber and Bowsher 2000, 219), Baldock, Colchester and Verulamium (Boon 1977, 198-9), and Denham, Buckinghamshire (Cotswold Archaeology 2003). A military link seems unlikely in relation to this south-eastern distribution, leaving uncertain the question of the social connections and context of the Pepper Hill (presumed) lady.

Despite the likely presence of incomers, the great majority of the population buried at Pepper Hill were presumably of local origin, although the specific characteristics that identify this cannot be defined precisely in the archaeological record. The material remains in many inhumation graves were identical to those of cremation graves. Dining-related vessels—flagons, beakers, dishes and the like—played as significant a part in pottery-yielding inhumation graves as they did in cremation graves, and the presence of brooches and shoes, for example, suggests fairly standardised dress and beliefs in the afterlife. But the inclusion of grave goods was by no means universal, as the large proportion of unfurnished Early Roman inhumation graves confirms. Biddulph (2006a) argues that 'the rejection of goods in so many inhumation graves—and possibly more, counting the undated graves—separates the rite more completely from the cremation rite of Aylesford type-derived tradition'. Whether or not 'rejection' is what is involved, his further argument that the primacy of inhumation at Pepper Hill before AD 70 (compared with a low rate of cremation), and the presence of Iron Age burial (10404) and Early Roman crouched burials (11386 and 12047) 'identifies inhumation more convincingly as the normative, accepted, rite within the region' is important. The cremation rite as a whole, not only *busta*, may have been in large part intrusive at Springhead after AD 43. Equally, however, it may have been adopted relatively rapidly by some sections of the local community and its presence, while suggesting changes in practice, does not necessarily serve to identify an incomer component in the cemetery population. The well-dated very Early Roman cremation burials at the A2 Tollgate site certainly indicate the early adoption of the cremation rite, but by individuals thought most likely to be of local rather than intrusive origin (Allen *et al.* forthcoming). In this case, however, a continuation of local pre-conquest tradition may be indicated, as two wealthy cremation burials of Late Iron Age date, associated with pottery vessels and brooches, were found only just over 700m west of the high status Early Roman burials. There was not necessarily a direct connection between the two traditions or the communities using them, but their relative closeness suggests that possibility.

Wider issues of society, identity and status

The cemetery evidence, particularly from Pepper Hill, brings us into contact with the people of the region in the most immediate way and provides among other things hints about the diversity of the population, although it is likely that the status of those buried at Pepper Hill was broadly fairly similar (Biddulph 2006a). The contrast of status between those buried at Pepper Hill and the few individuals buried in the nearby walled cemetery perhaps in the early 3rd century (Walker 1990, 57), emphasised by Davies (2001), is extremely marked. A similar contrast is indicated in the immediate post-conquest period in relation to the settlement partly examined at Northumberland Bottom (West of Wrotham Road). Understanding of this site is transformed by the evidence of the Early Roman high status burials revealed in the A2 excavations, as described above (Allen *et al.* forthcoming). Clearly of the same date as the earliest use of Pepper Hill, some 2.3km WNW, these features show how the status of (presumably) higher-ranking members of local society (or possibly immigrants) could be expressed in burial. It is therefore particularly unfortunate that the focal area of the associated settlement remains unexamined, only its

southern and northern margins falling within the Northumberland Bottom and A2 road scheme works respectively. It is noteworthy, however, that the limited settlement evidence from both excavations provides few obvious indications that distinguish the site from its contemporaries, although the presence of a small number of large postholes located at the southern edge of the A2 site may be one such indication, and the very rectilinear form of the enclosure itself, noted above, is perhaps another. It was certainly possible for status to be displayed selectively; it need not have been demonstrated consistently across the entire spectrum of the archaeological record.

Aspects of settlement type and architecture and of the various artefact assemblages also provide generalised indications of various statuses, though understanding of identity is more problematic in these contexts. In architectural terms (see above) only Thurnham is a high-status site, evidenced by a range of buildings including successive villa-type houses, with painted wall plaster and tiled roofs in both main phases and an attached bath suite in the later phase (with the possibility that there was a detached bath building contemporary with the proto-villa). Of the remaining rural settlement sites only Bower Road contains a substantial structure of recognisable form, but even this probably did not have a tiled roof, although it may have been a subsidiary building within a complex that did contain other tiled structures. Elsewhere the complete or almost complete absence of tile (except in a recycled context at Hazells Road) is notable. The implication here is that domestic buildings with tiled roofs were the exception rather than the rule in this landscape. While Thurnham is exceptional in architectural terms (perhaps even in the Late Iron Age, as the only site with identifiable circular buildings) it is not particularly remarkable in terms of its enclosure, which in the initial phases is comparable in character with those of broadly contemporary sites such as Northumberland Bottom, Snarkhurst Wood and Leda Cottages. It may be that the use of substantial timber post stockades, seen at Thurnham from the early 2nd century and not noted on other HS1 sites, represented a change in enclosure style that was restricted to certain types of site, occurring in villa contexts elsewhere, as at Keston, but this is speculative.

The finds assemblages from most of the HS1 sites are mostly too small to shed light on aspects of site status for comparative purposes. Conversely, in the case of Saltwood Tunnel, the assemblage contains a number of interesting objects but lacks the settlement context that would allow their significance to be better understood. This is the only site apart from Thurnham to produce mirror fragments, for example (Riddler and Ager 2006). While the high-status burials from the A2 indicate something of the range of objects that could occur on some Early Roman sites in the area, Thurnham is the only one of the HS1 sites where objects and context can be fairly closely linked. Close analysis by Hilary Cool (2006b) has revealed some interesting trends. The first of these is that there was a marked upturn in the absolute quantity of objects in use in the Early Roman (proto-villa) phase; apart from some evidence for wearing of brooches in the second quarter of the 1st century AD, seen particularly in funerary contexts as at Saltwood, the material culture of the Late Iron Age phase is invisible.

As Cool (ibid.) remarks, the expansion of material culture characteristic of the Roman period in Britain does not proceed uniformly in all areas. In parts of the Gloucestershire countryside, for example, it cannot really be seen until the 2nd century (Cool in Miles *et al.* 2007) and in parts of rural northern Britain (and even in parts of the west midlands, eg Powell *et al.* 2008, 527–8) it never occurs. At Thurnham this expansion can clearly be seen in the second half of the 1st century in the contexts associated with the proto-villa. Brooch use, including of post-conquest types, continued, while the presence of hair pins and hobnails indicates changing aspects of personal appearance and dress. Counters, items of toilet equipment, household utensils, and various furniture fittings all suggest new ways of passing the time and furnishing houses. Occasional items, such as a copper alloy basin, indicate above average levels of wealth, even if such an object was perhaps not used in the way it would have been in the heartlands of the Roman world (Cool 2006b).

An assemblage such as that from Thurnham was not necessarily typical of the region, but quantified data are still very scarce here. They do exist for Westhawk Farm, Ashford, however, where the relatively large finds assemblage indicates only gradual adoption of the newly-available suite of material culture and suggests that trends in dress may have been quite conservative (Cool 2008). Such contrasting trends may indicate a more dynamic community at Thurnham in the Early Roman period, but not necessarily one that involved incomers; indeed the structural sequence implies (but does not prove) continuity of tenure. From the artefactual evidence general continuity of tradition is suggested by the Colchester Derivative brooches, for example, which are of types favoured by the Kentish population (Cool 2006b). A single item of military equipment, a stud, might indicate that a member of the family had seen service in the Roman army, supporting the idea of local elite service discussed by Black (1994). Although found in a later context, a seal-box lid from the aisled building is of 1st century type and the association of evidence for early literacy with (civilian) sites having military connections has been well demonstrated, for example in the Batavian region of the lower Rhineland (Derks and Roymans 2002). The potentially residual nature of this object underlines a striking characteristic of the Thurnham finds assemblage, which is that material contemporary with the Middle Roman phase is relatively scarce, comparing unfavourably with that from the proto-villa phase. Finds independently dated to the Late Roman period are also rare. So, for example, contexts associated with the late 3rd century smithy in the main villa house produced a mid 1st century brooch and a melon bead and a counter both of 1st–2nd century type (Cool 2006b). Such material underlines the radical transformation of site character in the Early Roman period indicated by the structural sequence.

The Thurnham small finds suggest a picture of the changing circumstances of the occupiers of the villa through time. The pottery includes material that distinguishes the site from most of its neighbours, but at levels which do not allow these distinctions to be identified quantitatively (see below). For example, fragments of at least two Italian wine amphorae were recovered, one very likely of pre-conquest date, but the numbers of sherds involved were very small, as were quantities of the Gallo-Belgic wares that might be expected to have provided the associated drinking vessels (Lyne 2006; Booth 2006b) and are seen in the A2 Tollgate graves for example; none of these need have been pre-conquest. A range of pre-Flavian imported fine ware fabrics occurred, but again in minute quantities. Developments can be seen in the pottery of the proto-villa phase, however, and there are clear indications of spatial patterning in the distribution of pottery at this time (Lyne 2006; Lawrence 2006). The assemblage from the enclosure ditch on the east side of the farmyard had a predominance of coarse cooking pots (57% of rim equivalents (REs)) with relatively few open forms (15%) and mortaria from as many as five different sources (3%). Fine wares accounted for just a quarter of the pottery. In contrast, the ditch immediately behind the proto-villa house yielded an altogether higher status assemblage: cooking pots constituted a smaller element (32%), open forms were considerably better represented (29%) and there was a much higher percentage of fine wares (45%), but no mortaria (Lyne 2006). The contrast between assemblages based on food processing activities and those dominated by fine table wares is clear. Interestingly, a lack of distinction in the Middle Roman villa phase small finds assemblages seems also to be reflected in the pottery, although this may relate in part to an absence of well-defined deposits in comparison to those associated with the proto-villa.

The ceramic evidence from across the HS1 sites provides a broader view of variations in site character. The potential of quantified pottery data to provide insight into assemblage and therefore user status has been explored elsewhere (eg Booth 1991; 2004; Evans 2001) and the specific issues related to the application of these approaches in Kent are discussed in Booth 2006b. In simple terms, a principal potential indicator of site status is thought to lie in the representation of 'fine and specialist' wares, but there is not necessarily a simple correlation between a high level of these and 'high' site status. Other factors, of chronology, function and location in relation to marketing centres or other distribution networks have to be taken into account. The complex interplay of these factors can therefore make interpretation in terms of status alone problematic. It follows that variations between assemblages of similar date and in close proximity can be interpreted in relation to status with more confidence than variations between more chronologically and spatially disparate assemblages.

Despite their geographical spread, however, the HS1 assemblages have some potential for interpretation in status-related terms. Only one assemblage, the cemetery group from Pepper Hill, is clearly of radically different character from the rest and for present purposes can be set on one side. With regard to spatial issues—and therefore to questions of access to markets—there are no idiosyncratically placed fine and specialist ware suppliers whose input would be likely to produce heavily skewed figures. Chronological aspects can be factored in; for example, work in the Thames Valley showed that the baseline representation of fine/specialist wares increased markedly in the Late Roman period, almost entirely as a result of the impact of the Oxford industry (Booth 2004, 42–4). The same pattern is seen here. At Hazells Road, the only substantially late-Roman HS1 assemblage, fine/specialist wares were more common than at any other site except Pepper Hill and the small (statistically invalid) sample from White Horse Stone. The sherds, comprising 11.3% of the assemblage, were almost entirely of Oxford colour-coated ware and mortarium fabrics. It is to be expected, therefore, that those assemblages with a significant Late Roman component would automatically have had higher fine/specialist ware levels than those occupied only in the Early Roman period, regardless of any other distinctions between them.

Leaving aside the chronological and functional anomalies (Hazells Road and Pepper Hill respectively) two or possibly three groups of sites emerge from the ranking of fine and specialist ware percentages. Whitehill Road and Tollgate have extremely low fine and specialist ware levels (0.4% of sherds in each case) while at Hockers Lane, Beechbrook Wood and Snarkhurst Wood the figures are 1.9%, 1.3% and 2.7% respectively. All these sites are exclusively early in date and their assemblages are effectively dominated by local coarse wares. The remaining sites also all had a significant Late Iron Age–Early Roman aspect but then saw continued activity into the later Roman period, though the extent of this seems always to have been at a lower level than earlier. Their fine and specialist ware levels are remarkably consistent, in a range from 4.4% at Bower Road to 7% at Northumberland Bottom with Thurnham firmly in the middle at 5.9%. (cf Fig. 5.55, for the presentation of fine and specialist ware data there in terms of REs see below). A more detailed examination of the fine and specialist ware breakdown reveals no evident distinction between the sites in these terms.

Several possible conclusions can be drawn from this. The most straightforward is that there was no significant difference in the character of this group of sites as demonstrated by their ceramic assemblages, despite readily perceived distinctions in other aspects, particularly between the villa site at Thurnham and the other rural settlements. A number of explanations are possible for the absence of the expected correlation between the 'high-status' site of Thurnham and a high fine and specialist ware level (Booth 2006b), but the main ones are that Thurnham was fundamentally similar to the other rural sites, or that the basic premise of a correlation between site status and fine and specialist ware levels is not valid in this region. If at first sight the latter conclusion is disappointing it is not without interest. It could be interpreted to indicate that most pottery types had at

least the potential to achieve an even distribution through the area and that the principal factors affecting distribution were related to the physical characteristics of the distribution mechanism. Such an interpretation perhaps suggests the early development of aspects of a market economy, a suggestion that receives some support from Holman's conclusion that one of the uses of Iron Age coinage in the region was 'for daily activities such as trade', even if only at a low level (compared to barter) at this time (Holman 2005, 42). If a market-driven distribution system did apply to pottery it might be expected that the more distantly derived fabrics would perhaps concentrate in a very limited number of principal distribution centres, but that there would otherwise be little difference in the incidence of fabrics across a range of types of site in 'rural' contexts. There are too few quantified data for this model to be tested adequately, but it receives superficial support from Westhawk Farm, where the fine and specialist ware figure was 5.1% of sherds, exactly in the range of the majority of HS1 sites and not showing any enhancement resulting from its role as a local market centre, as opposed to one of the few principal distribution centres postulated above, where such enhancement might be particularly expected.

Other villas in the Maidstone area seem to have been broadly comparable to Thurnham in the character of their assemblages. At Snodland (Seager Smith 1995) a group of 1024 sherds mainly of 2nd–3rd century date included 20 of samian ware (2%) and although sherd counts are not given for all the fine and specialist wares the total of these is unlikely to have fallen much outside the 4–7% range seen on the HS1 sites. At The Mount, Maidstone, 'Finewares, ...mostly Upchurch-type fabrics... comprise *c* 12 per cent by sherd count of the total assemblage' (Savage 1999, 114). Clearly if the fine Upchurch wares (principally fabric R16) are removed from the equation the total fine ware figure will have been low, and the fine and specialist ware representation recorded for a sample from the 1994 excavation was *c* 5.5%. This figure was based on a small REs total and a list that appears not to have included samian ware (ibid., 116–8), so comparison of percentages based on different measures is not strictly valid, but broad comparability with the figures already discussed (and cf Fig. 5.55) seems to be indicated. It is unfortunate that the pottery from the 1970s excavations (Kelly 1992) was not systematically quantified, though one mid 2nd–mid 3rd century group was analysed in terms of EVEs by Pollard (1988, 236–8). Some 3% of this group consisted of fine and specialist wares. In a subsequent note Pollard (1992, 223) remarks on 'this anachronistic situation—a well appointed property with a humble range of pottery', but the HS1 sites and the Snodland data suggest that this situation was far from being anachronistic, and that Pollard's comparanda—Springhead, Rochester and the cellar deposit at Chalk—conform to a pattern similar to that seen in the majority of rural settlements.

The figures therefore seem to suggest a reasonable degree of uniformity in supply of fine and specialist wares across this part of Kent, more or less regardless of site type. A possible inference from this is that there is little indication of socially-embedded control of the distribution of imported material, which might have been expected to produce a more distinctly varied pattern of consumption. If this was the case it may be suggested that the observed pattern reflects a fairly well-integrated market economy; though perhaps not a hugely effective one in terms of distribution of imported pottery. Such a situation would contrast with that observed in regions such as the Upper Thames, where significant site to site variations in the incidence of fine and specialist ware can be correlated with variations in social status inferred from other characteristics and, by implication, indicate control of the distribution of certain types of ceramic (and presumably other) materials (Booth 2004), particularly in the Early Roman period. By contrast, interpretation of the HS1 material in terms of a well-integrated economic system would perhaps mesh with Monaghan's view that economic rather than other factors led to the decline of the Thameside/Upchurch industries in the 3rd century AD (see above).

If pottery assemblage analysis in terms of fine and specialist wares generally sheds little light on the character of the HS1 sites and their inhabitants, what of examination in functional terms? Evans (2001) has used the ratio of jars to dishes and bowls as a means of clarifying distinctions between some major site types and also indicating regional variation in these patterns. Broadly speaking, higher ratios of open forms (bowls and dishes) to jars are associated with urban sites but, as indicated above, there is a chronological aspect as well, with a general trend, in southern Britain at least, towards increased representation of bowls and dishes on sites of all types through time—paralleling the shift in the base line level of fine and specialist wares discussed above (see also Booth 2007, 331–4). In Figure 5.55 aspects of both analyses are presented, with the percentages of fine and specialist wares recalculated in terms of REs so that the figures in both axes are based on the same measure. Reassuringly the relationships between sites based on these recalculated figures are almost all the same as those based on sherd count, even though the actual percentage figures are not identical (the RE figures enhance fine and specialist ware levels across the board).

Three main groupings can be seen—the almost exclusively early sites of Whitehill Road, Snarkhurst Wood, Tollgate and Northumberland Bottom (East of Downs Road), all with fine and specialist wares at less than 2% of REs, then the previously identified cluster of sites with fine and specialist ware levels now between 8.5% (Bower Road) and 12% (Hockers Lane). The two 'anomalous' sites, Pepper Hill and Hazells Road, have effectively identical fine and specialist ware figures at nearly 31%. The sites of the first two groups, however, show considerable variation in the percentages of open forms present, not so much in absolute numbers, but in relation to each other. In the small assemblage at Northumberland Bottom (East of Downs Road) open forms are more than twice as common as in the other sites in this early group. This may be a quirk of the assemblage

size, but it may reflect the small slightly later (late 1st–2nd century) component in this assemblage missing from the other sites. The 'middle status' group of sites also shows variation in the percentages of open forms, but only Saltwood really stands out as anomalous and this may simply be because the bowl total was boosted by two complete vessels. The exclusively early site of Hockers Lane also joins this group on the basis of a single vessel, a

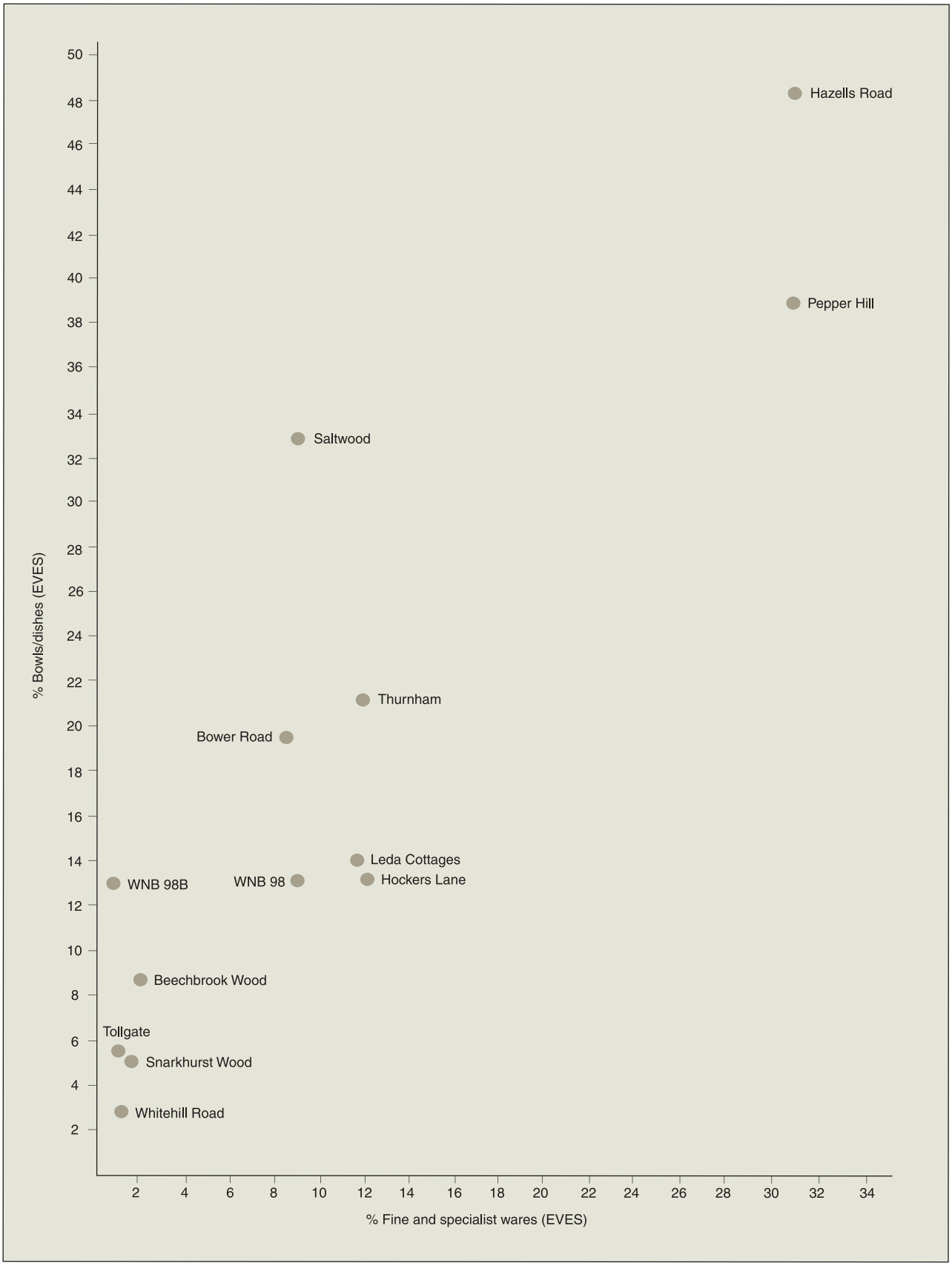


Figure 5.55 Comparison of pottery fine and specialist ware representation with incidence of bowls and dishes

Terra Rubra platter that enhances the fine and specialist ware level as well as the representation of open forms. The real significance of this vessel remains debatable.

Overall, therefore, while there is a fairly clear correlation between enhanced fine and specialist ware levels and the incidence of open vessel forms it is less certain that this has anything to do with status-based characteristics. On balance the 'status' (ie fine and specialist ware level) distinctions have been seen as chronologically based or related to specific site function, and increases in the occurrence of open forms could be seen in the same way, although relatively high representation at Thurnham and Bower Road could be significant (for Saltwood see above). This broad picture probably conceals nuances in the evidence that reflect the working of other factors. It is possible that the Terra Rubra platter at Hockers Lane is one such. The wide variety of Late Iron Age and Early Roman imported fabrics at Thurnham may constitute another. These were not numerically important—which perhaps supports a view that they do not represent normal trade—but rather a selective and still socially embedded network of distribution, which had a minimal impact on most sites in the area. It can hardly be a coincidence, therefore, that Hockers Lane lies very close to Thurnham. A direct connection between the two sites in the Late Iron Age, already postulated, seems to be supported by this evidence.

In summary, the archaeological evidence for the nature and operation of society is most useful when structural and artefactual data are of sufficient quantity and quality to be used together (and ideally correlated with the evidence from burials). Consequently the clearest picture of these aspects comes from sites such as Thurnham and Pepper Hill. At the former it may be suggested that a local land-holding (?owning) family with some connections to regional power/patronage networks (perhaps centred at Quarry Wood, Loose) in the Late Iron Age sustained or perhaps enhanced their position in the post-conquest social hierarchy. This position was underlined at an early date by the construction of a modest house of radically new character and other buildings, possibly including a temple, while one member of the family may have spent time serving in the Roman army. Concerns with management of the approach to the site and its visual impression are apparent, and regardless of the interpretation of the 'temple' involved a monumental religious aspect represented by the large upstanding post. A range of artefacts attests to changes in aspects of daily lifestyle. In the later 1st century AD this community would have stood out against its surroundings. It had links with those at broadly comparable sites, such as Eccles, whence a large quantity of building material was obtained. Indications of a relatively well-integrated regional economy suggest that this link could have been commercial, but there were probably social connections as well. Much wider ranging connections may be hinted at by the striking similarity in the developmental sequence of the main villa house with that at Boxmoor in Hertfordshire, but the nature of such connections can only be speculative.

Meanwhile, a family perhaps of similar standing at Northumberland Bottom (west of Wrotham Road) had used the provision of grave goods as a probable means of establishing pro-Roman credentials in the generation immediately following the conquest. The relatively ordinary character of the few graves assignable to the later 1st century and later might suggest that the family fortunes changed at this time, or that status display was channelled in different directions, perhaps concentrated in the unexcavated part of the settlement complex. It is notable, however, that an inhumation burial dated by a mid 3rd century coin was exactly aligned upon three of the 1st century cremation burials and indicates that their location remained known at this time.

In its 2nd century form the Thurnham villa complex appears less remarkable than previously, although it continued to develop in interesting ways. A bath suite was added to the main house, possibly replacing a free-standing block associated with the proto-villa, but was probably demolished before the time, about the mid 3rd century, when primary use of the villa house for domestic occupation seems to have ceased. Agricultural and other activities continued, but the domestic component was probably confined to estate workers in these areas.

Elsewhere, with the partial exception of the somewhat enigmatic site of Bower Road, site morphology, an absence of structural evidence, and reasonable uniformity of artefactual material argue for a society with relatively little differentiation of status as expressed by these features. A general similarity between the available evidence for rural burials and that from Pepper Hill suggests that many of the people buried at the latter site, whether they came from the nucleated settlement of Springhead or from surrounding agricultural communities, were of this same general status, although higher incidences of cremation urns and brooches at sites such as Saltwood and Beechbrook Wood might have been significant. Different identities within this group, the bulk of the population, may have been marked more or less subtly in a variety of ways.

Grave goods cast a little light on the status of groups in society at Springhead. Apart from the special case of the very young children buried beneath Springhead's temples as foundation offerings (Penn 1960, 121–2), older children were also buried in formal graves among adults. Bracelets buried alongside a sub-adult aged between 13 and 19 years might have offered protection to the deceased or symbolised a life cut short by representing social structures such as marriage that could never be fulfilled by the deceased (Martin-Kilcher 2000). A bell from an infant's grave (1438) was perhaps deposited to ward off evil spirits (Cool 2006a). Spouted vessels—so-called 'infant feeders'—were found in four graves. Their use has been the subject of much debate (eg Webster 1981; Martin 1997), but here they accompanied infant burials, certainly in one grave, and probably in a further two.

The link between grave goods and socio-economic status is complex, not to say ambiguous (Biddulph 2006b, 39–40; Philpott 1991, 228). Pepper Hill's average of 1.7

ancillary vessels per pottery-yielding grave was among the lowest in the region. Only groups from Kelveden (Rodwell 1988), London's eastern cemetery (Barber and Bowsher 2000), and Butt Road, Colchester (Crummy and Crossan 1993)—all Late Roman or with significant Late Roman components—tended to be smaller. Cemeteries with a higher proportion of 1st and 2nd century graves, such as Ospringe (Whiting *et al.* 1931), Chichester (Down 1971) and Each End, Ash (Hicks 1998), typically produced larger grave groups. Further indications of low status can be argued for Pepper Hill on negative evidence. Amphora burials, for instance, were concentrated in Kent (Philpott 1991, 25), and examples are known in north Kent at Green Street, Darenth (Wheeler 1932, 151), Cooling (Thornhill and Payne 1980, 380–2), Upchurch (Kelly 1963, 201–3), and Hoo (Philpott 1991, table A2). Their absence at Pepper Hill, despite 'wide circulation' of the form by the late Flavian-Trajanic period (Pollard 1988, 66), is therefore notable. The evidence from Ospringe (Philpott 1991, tables 5 and 6) suggests that, like samian ware, amphorae tended to be accompanied by relatively high-status objects, such as glass and mirrors, or by a greater number of pottery vessels. Similarly, an amphora burial from Each End, Ash, contained a glass goblet (Tatton Brown 1998, 157, 159–60). Lamps and cups, commonly found in high-status and urban burials, were also rare or non-existent at Pepper Hill.

Some wealthier graves can be potentially identified at Pepper Hill, however. Graves containing caskets are chief among them. Those that produced samian ware may also have been of higher status, at least in relative terms. Samian ware had a particular association with high-status burials in south-eastern England, in which the type was preferentially selected (Biddulph 2006b, 34), and it is notable that at Pepper Hill graves with samian ware averaged 2.3 vessels per grave compared with the site average of 1.7 vessels per grave. However, graves containing items such as finger rings or glass unguent bottles usually received up to two vessels, or none; a correlation between object type and status is still far from clear. Pepper Hill, as a communal cemetery, could have received burials from a cross-section of the community, including relatively wealthy individuals, as occasional higher-status items, such as the glass bead necklace from grave 10520 and casket from 291, might suggest, but it seems most unlikely that that the full spectrum of Springhead society was represented here.

The wealth and status of the deceased or mourners may have determined the method of burial as well as the character of grave goods. The *busta* are the clearest expression of this (though perhaps most important in terms of social rather than economic status), but in general cremation was a relatively expensive business, and this may have persuaded the poorest in society to opt for inhumation. Indeed, that unfurnished inhumation graves were commoner than unfurnished cremation graves seems to support this view, hinting at a generally low level of wealth for many users of the cemetery.

The potential status variation observed within the Pepper Hill cemetery therefore seems to be broadly confined within the lower tiers of local society. None of the HS1 burial evidence (except a single child burial from Thurnham, of rather uncertain status) clearly correlates with the upper part of the social range indicated by settlement sites such as the Thurnham villa. Such burials in the Early–Middle Roman period are represented at the A2 Tollgate site (equivalent to HS1 Northumberland Bottom, West of Wrotham Road), and elsewhere in the region at a number of sites which include walled enclosures and relatively monumental structures (Jessup 1959). The association between such features and villa sites is seen clearly at Keston (Philp *et al.* 1999, 45–60) and their occurrence in the Maidstone area is likely to be related to villas there. The high status walled cemetery at Springhead may have been for a group living within the confines of the settlement, but it is perhaps as likely that they were associated with a villa complex located just outside Springhead. The reuse at Hazells Road of building material consistent with such a structure may provide a clue to the existence of such a site a little to the east of the 'town'. With the exception of the Lullingstone mausoleum, however, none of the high status burials in the area is of Late Roman date. Expressions of high status in burials of this period must have taken a generally different form. Moreover, even in the Early Roman period, as the A2 Tollgate evidence might suggest, there was not necessarily a clear correlation between rich burials and ostentatious domestic structures.

Settlement pattern transformation from the 3rd cenury onwards

One of the most striking aspects of the Roman sites of HS1 Section 1, already hinted at several times, is the apparently early end date of occupation at most of them. Of the sites best dated by pottery evidence only Hazells Road can be assigned entirely to the second half of the Roman period. A number of locations; parts of Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel, saw activity in the 4th century, but in these cases, all of which were sites originally established in the Late Iron Age, this was at a reduced level in comparison with their earlier phases. While in general terms it may be perfectly reasonable to expect a degree of settlement mobility, perhaps encouraged in part by the development of nucleated local centres (eg Taylor 2001, 56–9), this is not what is seen here. Rather, the rural settlement pattern in this transect through Kent appears to be in terminal decline, for the most part by about the middle of the 3rd century AD and earlier in places. Two simple questions follow from this: is this pattern observable elsewhere within the region and how is it to be explained?

There is still a shortage of data from rural settlement sites in the region that can be used to address the first question. Relatively few such sites have been examined in the area through which the HS1 transect runs, and there is always the problem that small excavated samples will only reveal part of the development sequence of any one

site; nevertheless there are pointers. Three rural settlement sites recently examined in Headcorn and Ulcombe parishes are dated between the mid 1st and the early 3rd centuries (Aldridge 1998, 7) and at Runhams Farm, Lenham, the occupation was essentially of 1st–2nd century date, with only limited evidence of later activity (Philp 1994, 42–4). These sites all lie south and south-east of Maidstone, in the fringes of the Weald, while in Maidstone itself a site at Queen Elizabeth Square (Booth and Howard-Davis 2003) had already ceased to be occupied by the end of the 2nd century at the very latest, a pattern reflected in some of the other HS1 sites. West of Maidstone recent work on the route of the West Malling and Leybourne Bypass produced evidence for Late Iron Age–Early Roman sites characterised by well-defined ditched enclosures comparable to those of some of the HS1 settlements and with a distinctly early chronological range; there were 'no archaeological features of post-1st century AD date from the Bypass route' (Ellis 2009, 9), while at nearby Leybourne Grange settlement and other activity was confined to a similarly brief period (Biddulph 2011). Further south-east, a number of other rural settlement sites in the area east of Ashford saw either a cessation or a significant change in the character of activity in the later Roman period (K Parfitt, pers. comm.), although this cannot as yet be quantified. At Hawkinge, near Folkestone, substantial settlement evidence was principally of Late Iron Age–Early Roman date (House 2005).

Evidence from non-villa rural settlements in the more northern parts of the county is fairly limited (in particular, large scale excavation of such sites has been rare). At Bredgar near Sittingbourne, however, occupation effectively terminated within the 2nd century with minimal indications of later activity (Savage 2006, 366), while at Castle Road in Sittingbourne itself a site thought to be associated with agricultural activity was abandoned 'over a short space of time' in the mid 3rd century (Clark 2003, 34). On the Wainscott Northern Bypass, north of Rochester, activity which was probably peripheral to an unexcavated settlement also did not outlast the 3rd century, but here it was largely confined to that century rather than commencing earlier (Clark *et al*. 2009, 73). Further afield, a review of Roman settlement in Thanet showed that only two out of 21 sites for which some dating evidence was available seemed to fall in a 3rd/4th century or 4th century bracket. Rather, the evidence seems 'to indicate occupation peaking in the second century' (Perkins 2001, 46). This conclusion is broadly supported by the evidence from the recently-excavated East Kent Access Road, where intensive occupation is much more widely attested in the Late Iron Age–Early Roman period than later.

In the context of Thanet, it is notable that the villa complex at Minster 'had been largely abandoned by the end of the third century' (Holman and Parfitt 2005, 210), although there was then a significant re-occupation of the site in the 4th century, but of rather different character (ibid.). Further west, at Faversham, there was evidence of major structural alteration to the villa, dated to the early 3rd century, but a general absence of 3rd and 4th century material (for example only two significant late 3rd–4th century pottery vessels are reported, together with six coins of the same period) suggests a fundamental change in the character of the site (Philp 1968, 70–1). Elsewhere, however, both structural and finds evidence indicates continuity of activity at some north Kent villas (such as Eccles, Northfleet, Darenth and Lullingstone) well into the 4th century (Detsicas 1983, 181–2; Reece 1987 for coins including issues of the House of Theodosius at Lullingstone). At The Mount, Maidstone, activity extended into the early 4th century (Houliston 1999, 100). In contrast, at Snodland, pottery from the 1992–4 excavations was reported as 'consistently second to early mid third century AD in date and broadly corresponds with the material recovered during earlier excavations at this site' (Seager Smith 1995, 106). Again there was only a very thin scatter of 4th century coins (eg Ocock and Syddell 1967, 192–3, 216–7), but a notable individual find was a 4th century buckle of Hawkes type IVA (Webster 1967).

There are hints that the pattern of early contraction may apply to some nucleated sites as well as to rural settlements. This is seen most clearly at Westhawk Farm, Ashford. Intensively occupied in the 1st–2nd centuries, activity within the 6ha excavated sample was almost non-existent after the mid 3rd century. Coin evidence indicates some 4th century activity in the focal area of the settlement north-east of the excavated site, but this was clearly on a greatly reduced scale compared to the earlier period. Recent work at Springhead has shown that although there is evidence of 4th century occupation (also clearly seen in places in the earlier excavations; Burnham and Wacher 1990, 198) the great bulk of the artefactual material is dated to the 1st and 2nd centuries (Andrews *et al*. 2011). There is little detailed information for Rochester; structural evidence for Late Roman activity is unclear but there are substantial numbers of Late coins (Flight and Harrison 1978, 37, 44–54). At a site *c* 300m outside the east gate, however, occupation came to an end about AD 230 (Philp 2003, 213, 226). East of Rochester, at Ospringe, the situation appears quite complex. Individual areas examined did not necessarily have complete occupation sequences, but mid to late 4th century activity is certainly attested and it is possible that there were 'shifts in the concentration of settlement' (Sibun 2001, 192). Further west the status of other sites adjacent to Watling Street, like Dartford, is less certain, but here too there is more evidence for Early than Late Roman activity (eg Hutchings 2001, 117–8; Priestley-Bell and Barber 2004, 92; but see Frere 1990, 363–4), and rural sites in this area again mostly lack clear evidence of late Roman activity (eg Simmonds *et al*. 2011, 282).

Patterns of change are apparent in the southern part of the county with regard to the iron industry and some potentially related sites. For example the evidence for significant decline in the level of activity at Westhawk Farm is notably coincident with the demise of a number of iron-producing sites in the Weald to the west and

south-west (Booth *et al*. 2008), and also of non-Wealden iron-producing sites as at Wye (Detsicas 1983, 176). The former group includes the important sites of Bardown and Beauport Park, the 'closure' of which is dated between AD 220 and AD 240 (Cleere and Crossley 1985, 84–5), while at Little Farningham Farm, Cranbrook, occupation may have ceased 'by the second half of the second century' (Aldridge 2001, 155). The *Classis Britannica* fort at Dover had ceased to be occupied by the early 3rd century, a date of *c* AD 210 for its abandonment being favoured by the excavator (Philp 1981, 94–7). There is a very striking similarity between the profile of coin loss there and that at Westhawk Farm (Guest 2008). It is possible that the fleet retained an existing base at Lympne, or transferred its British operations there (Detsicas 1983, 176) up until its disappearance from records about AD 250, whenafter it may have been reorganised (Cleere 1989, 22), although Millett (2007) argues against the Dover fort having ever been a 'base' for the *Classis Britannica*. Some later formal installation is implied by the Dover 'Painted House' site, where the *mansio* buildings outlived the *Classis Britannica* fort but were superseded by the construction of the Saxon Shore fort, perhaps about AD 270 (Philp 1989, 282–3) or possibly a little later (Wilkinson 1994, 71–2).

In broader terms there is increasing evidence for differences in the chronological emphasis of settlements in eastern and western Britain as indicated by aspects such as patterns of coin loss (eg Reece 1995b). Such evidence can be taken to suggest a decline in the level of activity in a number of major settlements in eastern England before the end of the 4th century, in contrast to the situation observed further west (eg Reece 1998, 421; Moorhead 2001, 95–6). In Norfolk, however, this is not particularly apparent before the last quarter of the 4th century at the earliest (Davies and Gregory 1991, 91) and a similar pattern can be observed for Suffolk (Plouviez 1995, 74–5 and 78). At Heybridge, Essex, in contrast, peripheral areas of the settlement were largely abandoned by *c* AD 200 (Atkinson and Preston 1998, 100). Occupation of the central area continued right through to the end of the Roman period, however, and the pattern of coin loss seems generally to have followed a fairly 'normal' pattern (ibid., 105). The situation in relation to rural settlement in Essex is less clear in detail, but an impression of change and decline is presented by Going (1996, 104) and the characteristic of 'disappearance of on-site settlement in the later Roman era' (ibid.) may be of relevance in a Kentish context.

Across the English Channel there are other indications of changes in settlement in the 3rd and 4th centuries, though there is a shortage of synthesis for sites in the most closely adjacent regions of northern France. A general survey (Van Ossel and Ouzoulias 2000) suggests that there is very considerable variation in the extent of settlement decline (ie the reduction in total numbers of settlements) from area to area within the wider region of Northern Gaul (ibid., 137). In view of this variation they emphasise 'the danger of generalising from a local situation to a macro-regional scale' (ibid.). Broadly, however, the changes discussed relate to the 4th century (eg ibid., 148) and sometimes even later and, if not correlated directly, are still often in some way linked to the appearance of settlement of 'Germanic' organisation and plan (ibid., 149). A review of the burial evidence from northern Gaul presents a similar line of argument—burials attest to the survival of a dispersed rural settlement pattern in the 4th century, although the numbers of sites are reduced (Van Ossel 1993, 192–3). Neither the chronology of change in the Late Roman settlement pattern nor the 'Germanic' aspects of it match the situation in the HS1 sites, so what the evidence from the near continent seems to provide is a generalised parallel of reduction in site numbers (based on both settlement and cemetery evidence) in the Late Roman period, but apparently starting later than the decline seen on HS1 sites. Whether the two trends were driven by similar processes is impossible to say, but this does not seem particularly likely on present evidence.

Overall, therefore, the picture of a radical transformation of the rural landscape in later Roman Kent, effectively by the middle of the 3rd century, presented by the HS1 sites has widespread echoes. These occur within the county in relation to much iron production in the Weald and to pottery production in the Thameside area (Monaghan 1987, 227–30), to lower status rural settlements across a wider area and, in some cases at least, to villas and parts of major nucleated settlements. Although in some cases the chronological correspondence of these developments is quite close, this is by no means consistently true. It is therefore unlikely that the changes observed have a monocausal explanation, except perhaps of a most general nature; nevertheless the consistency of the evidence suggests that there may have been one or more common trends that underlay local transformations of the Late Roman countryside.

A major problem is to define what this countryside looked like. It is notable that, unlike the situation described by Going (1996, 104) at sites such as Mucking, there is typically no evidence for Late Roman field systems and other boundaries at the sites of the disused Late Iron Age and Early Roman settlements of HS1, or in their immediate environs. At sites where there is more direct evidence of continuing occupation, as for example at Thurnham and Bower Road, there are indications that elements of ditched enclosures may have remained in use, but such evidence is not found elsewhere, with the possible exception of Saltwood Tunnel, where the quantity of Late Roman material suggests nearby contemporary settlement, even though this was not identified within the excavated area. The extent to which the framework of the Early Roman landscape remained in place and in use is therefore unclear. Trackways at Saltwood and the Rochester-Weald road at White Horse Stone survived as working components (as is indicated by their post-Roman histories), as did the Canterbury-Weald road at Westhawk Farm, but the condition of the localised tracks associated with sites such as Northumberland Bottom, Tollgate and Leda Cottages is

not known, although at Tollgate there was apparently no evidence to suggest the continuing use of the trackways in the Late Roman period, despite evidence for heavy use of part of the system indicated by wheel ruts and secondary surfaces (Bull 2006b). The clearest indication of continued activity in the Late Roman countryside comes from Hazells Road, where the trackway was associated in the 4th century with a large 'corn-drier'. Such evidence, which would be considered commonplace in many parts of Roman Britain, stands out here for its rarity value, although a trackway and field system components of comparable Late Roman date have been examined in a Thamesside location further west at Bexley (Lakin 1999).

The extent to which Early Roman field systems survived in use is therefore uncertain. Were parts of the rural landscape disused? Evidence for woodland regeneration has been mentioned above, but appears small scale and restricted; wholesale abandonment of landscapes should have been detectable in the environmental record, but this is not seen here, or in work on sites in the Dartford area – in the latter case boundaries did not survive in the long term, but landscapes remained largely open (Simmonds *et al*. 2011, 197). Where, then, have the people gone? Could the regional settlement pattern have been reconfigured in the Late Roman period in such a way as to render the majority of earlier settlements (at least as seen in the HS1 sample) completely redundant? Does the problem reside in the specific topographical niche occupied by so much of the HS1 transect? Could the agricultural landscape have been maintained by a smaller population without significant changes in character? This seems unlikely. If estate centres were relocated in some cases, as is suggested by the radical change of character of activity in the main house at Thurnham, where did they move to? Were small- to medium-sized villas like Thurnham, and arguably The Mount (Maidstone) and Snodland, also in this area, absorbed into larger estates, resulting in continued activity on these sites but at a lower level than previously? If so, however, where were these larger centres? Do Eccles, Darenth and Lullingstone, for example, produce sufficient evidence to suggest that they saw a corresponding change of character in the Late Roman period? Perhaps the construction of a new aisled building at Darenth in the late 2nd century (Philp 1973, 124–35) should be seen in this light? There is certainly no indication of a concentration of activity in the nucleated settlements. For the most part the reverse seems to be true, and taken at face value the evidence from the Pepper Hill cemetery also suggests a declining population, in line with the indications provided by the rural settlements themselves.

The conclusion that there was at least sub-regional contraction of the rural population seems inescapable, and this must have involved some reordering of the settlement pattern. There is, however, little indication of Late Roman reorganisation of the landscape and therefore no framework within which to postulate significant transformations of rural society, although a simple view of decline within the established socio-economic framework does not seem very satisfactory either.

There are developments within the region that can be attributed to the 3rd century, but their significance in terms of broader patterns of settlement change is highly debatable. For example, the broad synchronicity of the abandonment of a large part of the Westhawk Farm settlement and a number of the most important iron producing sites in the eastern Weald, subsequent to (though not necessarily consequent upon) the abandonment of the *Classis Britannica* fort at Dover, may suggest that some reorganisation of the iron industry was a contributory factor to the 3rd century phase of site contraction and/or abandonment (Booth *et al*. 2008). In this case it is thought more likely to be the cessation of a range of support services, associated with iron production, which precipitated a major decline in the scale of activity in the settlement. The demise of Westhawk Farm as a major local centre may have had consequences for surrounding settlements, perhaps including sites such as Bower Road, for whose agricultural surplus Westhawk likely served as a major market (ibid.).

This possible scenario raises a wide range of questions about the mechanisms of such an operation. Was the cessation of iron production in the eastern Weald a gradual trend or a well-defined, sharp change? Were people impelled or induced to relocate and, if so, how and how far? Was this simply a local phenomenon or did, for example, specialist ironworkers and their dependants move out of the region altogether to other centres for their trade? Was the motive force behind these developments provided by free-market economics, local elite control, state control or some other mechanism? Whatever the answers to these questions, however, it is difficult to see that these developments would have had repercussions that extended as far as the north of the county. In other words, they may have been of importance at Westhawk Farm and perhaps at sites in the vicinity, but were at most only a contributory factor in wider changes.

Whether or not the changes in the iron industry were led by matters relating to state/military supply, other Late Roman state-sponsored developments certainly impacted on the region. Recent interpretations of the forts of the 'Saxon Shore' (eg Cotterill 1993; Allen and Fulford 1999, 177–81; Pearson 2003) have tended to minimise their significance as strictly defensive structures. As bases for ensuring secure transit of military supplies and taxes in kind, however, these were important installations, but of little immediate relevance to the local population. Unlike the building of town walls, these were not monuments which reflected the prestige or involvement of civitas elites. Nevertheless, their construction will at the least have exploited local resources of materials and presumably manpower. In view of changing perceptions of the character of the forts, however, it does not seem likely that the decline of settlement was closely related to the problem of security which the forts were traditionally thought to have been intended to address, despite a broad coincidence of the chronology of decline with the

period of construction of the Kentish sites. Pearson's (2006) view that the scale of piracy in the 3rd century is unlikely to have been such as to merit a 'defensive' system based on these forts seems plausible. In this case it is highly improbable that 3rd century raiding can be invoked as an explanation of declining settlement in Kent, particularly since there is no suggestion that abandoned sites concentrated in coastal areas.

Lympne (Cunliffe 1980) is the only 'Saxon Shore' fort in the near vicinity of HS1 sites, lying just 3.5km south of the line at Westenhanger and 4.5km south-west of Saltwood Tunnel, the nearest significant HS1 Roman site. There is no demonstrable link between the two, but it may be significant that Saltwood did produce artefactual evidence of Late Roman activity, even though its context is poorly understood (Riddler and Trevarthen 2006). The evidence includes metal finds, of which a silver pin and part of a strap-end are the most significant. The latter is of 'dart-shaped' form, with a pair of small lobes at the waisted junction with the sub-rectangular attachment tab (Riddler and Ager 2006). A rather smaller example of this form was found in the 'dark earth' layer at the Marlowe IV site, Canterbury (Ager 1987, fig. 1b; Blockley *et al*. 1995, 1029 no. 417). Several small fragments of copper alloy sheet found in the fill lying above the Iron Age grave C24 may perhaps represent a small part of a second strap-end of indeterminate form. The extent of 'military/official' associations of these objects remains the subject of debate (eg Swift 2000, 201; see also the Snodland buckle mentioned above). Equally it is uncertain if the distribution network for late imported ceramics, Argonne ware and Mayen ware, both represented at Saltwood and relatively widely distributed in East Kent (Pollard 1988, 142, 155), was articulated through sites such as Lympne or Dover, or operated in some other way. Present evidence, however, suggests that the fort at Lympne was abandoned *c* AD 350, despite a late reference in the *Notitia Dignitatum* (Reece 1989, 156–7).

In view of the general paucity of very Late Roman evidence it is unsurprising that there is little indication of the relationship, if any, between Late Roman and Early Anglo-Saxon settlement patterns. The only clear spatial association is at Saltwood Tunnel, where the Saxon cemeteries were set in the Romano-British landscape (leaving aside the question of how far this was still functioning as such). It may be no coincidence, however, that there are slight indications of Saxon activity in the vicinity of the two sites with the longest occupation sequence and also the most substantial structural evidence, namely Thurnham and Bower Road, a pattern of association seen at sites such as Darenth (Philp 1984, 84–6). The HS1 evidence is much slighter, however. At Thurnham it consists of a single sherd of possible Early Saxon character, while at Bower Road the possible association is with an isolated sunken-featured building some 600m east at Little Stock Farm (see Chapter 6). Another example of proximity is seen at Hazells Road. Very recent work on the A2 has revealed a sunken-featured building barely 150m north of the Late Roman features (Allen *et al*. forthcoming), but as this lies close to the 12th–13th century settlement excavated at East of Downs Road (Askew 2006) a later rather than an Early Saxon date seems likely.

The links between Late Roman and Anglo-Saxon settlement are therefore tenuous, but it is presumably significant that such association are not seen in the case of settlements where activity ended relatively early in the Roman period.

Overall, the HS1 evidence suggests that parts of the Kent countryside were only thinly occupied in the Late Roman period, and that the major changes in the rural settlement pattern had taken place in the period from the late 2nd to the mid 3rd century. A number of broadly synchronous trends, including decline in some major settlements and in 'industrial' areas, have been identified, but it remains unclear how closely these were related. Does this pattern represent a precocious aspect of the broad trends suggested by an 'east-west' divide in Roman Britain, or does it reflect a more individual sequence of development, specific to parts of the extreme south-east of the country? At present the evidence points to concentration, rather than agglomeration of settlement. That is to say that there is no clear indication of the expansion of individual sites, whether villa complexes or nucleated settlements, to compensate for the apparent disappearance of parts of the rural population. Ickham (Bennet *et al*. 2010), with possible connections to military/official provision (but see ibid., 321), is one site that might contradict this view, although the nature of the site makes it very difficult to estimate the real scale of Late Roman activity and, particularly and more importantly in this context, whether this was more extensive than earlier Roman occupation. Other important foci of Late Roman activity may yet emerge, but at present they remain elusive.

Conclusions

The most striking characteristic of the HS1 sites of the Late Iron Age and Roman period is the concentration of activity at these sites in the early part of the period. While it may be that the morphological characteristics of Late Iron Age settlements in the region '...have their origin in the Middle Iron Age' (Hamilton 2007, 83) the HS1 evidence suggests that there are few direct physical relationships between the settlements of the two periods. Moreover, the sheer quantity of Late Iron Age and Roman settlements seems to have been significantly greater than for the earlier period. This fact and the chronology of the relevant sites suggest, at least superficially, a substantial and broadly synchronous expansion of settlement across much of the area of the HS1 route in the later 1st century BC and into the early 1st century AD. Further work will be required to demonstrate whether this is a genuine pattern, observable across a wider area, but if the evidence for intensification of the settlement pattern is correctly understood it implies both population growth and a correspondingly higher level of

exploitation of most parts of the local landscape. Limited evidence for decline in woodland resources might reflect an increase in uptake of arable land associated with these trends. In broader terms the observed pattern appears compatible with that discussed by Hill (2007, 24), in which areas including 'large parts of Kent' (ibid.) which had seen relatively little permanent settlement in the Middle Iron Age, and may in fact have been peripheral to wider settlement patterns (see also Hill 2002, 156), were much more intensively exploited in the Late Iron Age.

Such developments may have had significant social consequences, but these are less easily identified in the archaeological record. There are few hints of social differentiation between the various excavated settlements, although in a number of cases the limited nature of the sample probably precludes identification of such distinctions. There are slight hints in the structural and ceramic evidence that the occupants of Thurnham (and perhaps a satellite at Hockers Lane) may already have been differentiated in status from their neighbours, but this only becomes tolerably clear after the Roman conquest, with the construction of the proto-villa and the appearance of a much wider range of pottery and other objects. Status display, whether or not directly related to changing social structures, could be expressed in a variety of ways, for example in burials. Conspicuous consumption in Early Roman grave good provision is not seen directly in the HS1 sites but, as revealed in recent work on the A2, sheds important light on the occupants of the Northumberland Bottom settlement at West of Wrotham Road. Unfortunately it is less clear if this demonstration of wealth was matched in other aspects of the settlement, most of which lies between the HS1 and A2 transects.

In most cases, however, there is little evidence for fundamental changes in character as settlements developed through the Late Iron Age and Early Roman periods. Regularisation of enclosure form is rare and structural evidence, with the exception of the simple four-post type interpreted as granaries, remains elusive. Perhaps more importantly, other evidence for agricultural practices (admittedly uneven in quality) suggests neither widespread intensification of production nor significant changes of emphasis in the range of crops and animals exploited. Only at Thurnham are there hints of a widely observed Romano-British trend in which cattle increased in importance at the expense of sheep/goat, and while well known developments in the technology of crop processing, such as the introduction of 'corn-drying' ovens, are seen at Thurnham and Hazell's Road, these do not seem to have been associated with malting, a typical feature of later Roman arable practice. Overall, therefore, increased exploitation of the landscape may have resulted principally from a growth in the number of settlements utilising it in the Late Iron Age and Roman periods, rather than from more intensive use of the land attached to each individual site. There may be a chronological aspect to the evidence, however, in that the clearest evidence of changing agricultural patterns is seen at sites such as Thurnham and Bower Road in the Middle to Late Roman period, whereas many of the other settlements had apparently ceased to be occupied or at least were already in decline by this time, so it is impossible to say whether they would have shown comparable patterns of development had they survived longer. Non-agricultural economic activities seem to have been of minor importance right across the region, with the possible exception of iron production at Leda Cottages, although even there the volume of production would have been significant only in local terms.

The middle echelon of a rural settlement hierarchy is seen most clearly at Thurnham and to a lesser extent at Bower Road, where important elements of the site may have lain outside the HS1 easement. Elsewhere there is little indication of variation between sites expressed in terms of differences in their artefact assemblages. Even at Thurnham, the pottery assemblage, for example, is only distinguished from those of contemporary settlements to a limited extent. After the major building programme of the first half of the 2nd century the degree of difference between Thurnham and other nearby rural settlements may have become less marked, with the potentially very significant exception that not all of these remained in occupation. After the mid 3rd century, however, there was a distinct change in site character at Thurnham when the formal domestic use of the main villa house was abandoned. This sequence reflects the wider regional pattern suggested by the HS1 and other evidence; many sites were either abandoned by this time or saw significant changes in the nature of settlement, typically resulting in a reduced level of activity.

Such developments imply far-reaching changes, but whether these were political or (more likely) socio-economic in character is unknown. The termination of a number of site sequences may concentrate around the middle of the 3rd century, but the HS1 evidence makes it clear that some rural settlements had effectively ceased to be occupied well before that time. The apparent emptying of parts of the Kent countryside was therefore an extended process and thus seems unlikely to have a monocausal explanation, although a single major, medium term trend could have been a significant factor. If such a trend was not itself a direct consequence of changes within society, its impact on local and regional society must have been very considerable. Further characterisation of these changes and consideration of their significance, both in a regional and a national context, must be a high priority in future work on Roman Kent.

The improved definition of this pattern of rural settlement development and demise has been one of the main results of the HS1 work on sites of the Roman period. While superficially some of the other results in this period appear to be negative in character, they also serve to refine characterisation of regional rural settlement, in terms of a lack of identifiable architectural traditions on lower status sites, potential conservatism in agricultural practice and so on. Conversely there is quite widespread evidence for aspects of religious practice, even if such evidence was concentrated at the relatively high status settlement of Thurnham. The diversity of this evidence is

important, as is its occasionally ephemeral nature, and can also be linked with that for burial practice. The evidence from Pepper Hill, in particular, has been critical for demonstrating the contemporaneity of Early Roman inhumation and cremation burial traditions in the region and allows speculation about the nature of the relationship between the two. The indication of a population of relatively uniform status, as suggested by the grave assemblages, is consistent with the relative homogeneity of the settlement evidence discussed above, supporting the view that the Pepper Hill cemetery could have included both town and country elements in the burial population. Nevertheless, the occurrence of burial rites which were clearly not of local origin, such as the cremations of *bustum* type, highlights the potential presence of groups of outsiders, some of whom may be much less readily identified than those associated with the *busta*. Even allowing for the loss of much vital information about the people of Pepper Hill, which could have been based on osteological examination, the unique capacity of cemetery evidence to provide a human insight into past populations has been demonstrated very clearly.

Chapter 5

The Late Iron Age and Roman periods

by Paul Booth

Introduction

The High Speed 1 (HS1) sites typically show a lack of direct association between activity of most of the 1st millennium BC and that of the end of the Iron Age and later. In contrast to this disjuncture at the end of the Middle Iron Age (see Champion, Chapter 4), almost all of the sites discussed here were occupied continuously in both Late Iron Age and Roman periods (although rarely throughout the latter), the 'dividing line' of AD 43 being, as so often in relation to 'Romano-British' rural settlements, archaeologically meaningless. These points are discussed in greater detail below, but provide the essential justification for treating the Late Iron Age and Roman as a single period, one which has produced significantly more archaeological evidence for settlement and other activity than any other comparable chronological unit (in this case, *c* 500 years) represented in the HS1 project. The term 'Roman' is generally used as a convenient shorthand for 'Late Iron Age and Romano-British' in a purely chronological sense; more precise terminology is used elsewhere when required.

Traditional views of Roman Kent have seen it as, amongst other things, the focus of the Claudian invasion of Britain, the seat of the *Classis Britannica*, and a homeland of rich villas, particularly in the north-west of the county. The HS1 Section 1 fieldwork has produced relatively little evidence that has a direct bearing on these topics, but much that informs understanding of wider aspects of rural settlement (for the location of the HS1 sites and others mentioned in this chapter, see Fig. 5.1). There have been several syntheses of the evidence for Roman Kent as a whole, varying widely in scale and approach. The survey in Volume 3 of the *Victoria County History* (Wheeler 1932) was itself a composite work of two generations. It was initiated by Haverfield before the First World War, his contributions being completed after his death by Margerie Taylor (Freeman 2007, 380). It was then revised for publication by Wheeler, with significant additions by him and R F Jessup. The emphasis of this and another more recent substantial survey by Detsicas (1983) was on presentation of the evidence for Roman settlement within an historical framework and from a Romano-centric perspective. This is unsurprising given Haverfield's clearly defined views on Romanisation; 'Almost every feature in Romano-British life was Roman' (Wheeler 1932, 5) may be taken as a typical example—a view from which Wheeler himself presumably did not dissent significantly (for comments on the extent to which Haverfield 'recycled' some of the introductory text of his VCH contributions see Freeman 2007, 311). The pervading influence of Haverfield's perspective can be seen as far as Detsicas' survey and the brief review by Blagg (1982), and the essence of his definition of Romanisation (though not the acceptance of its importance) has survived into some recent work on Kent (eg Andrews 2001). A rather different approach was followed by Williams (2003, 221) and particularly in the most recent overview, that of Millett (2007).

In recent years concepts of 'Romanisation' (broadly that the Roman conquest entailed a 'civilising mission', manifested archaeologically in material culture from pottery to building types, the superiority and therefore desirability of which in relation to what had preceded them was uncontested) have been subject to extensive critique, deconstruction and redefinition (*inter alia*, Barrett 1997; Freeman 1993; 1997; Grahame 1998; Greene 2002; Hanson 1994; Hill 2001; Keay and Terrenato 2001; Mattingly 1997; 2006, 14–16; Millet 1990; Webster and Cooper 1996; Woolf 1998; Hingley 2005 for an overview with copious further references). Many different perspectives have emerged, including a view that the term 'Romanisation' now has no usefulness at all (eg Mattingly 2002; 2004, 9). This survey does not attempt to add to the more theoretical aspects of these discussions, but hopes to present new information informed by some of the recent thinking. Undoubtedly, many material transformations did take place, but not as a result of a coherent centralised policy of imposition of 'Roman' cultural values. Equally, a simple desire by the British to emulate (in the interests of sustaining their social and/or political positions) their new masters, whose cultural 'superiority' was manifest and undisputed, is likely to have been rare. Current thinking emphasises the existence of complex patterns of interactions between the wide variety of identities labelled 'Roman' and 'British', whose interests may have been variously conflicting, convergent or completely separate, with variation in all these possible combinations in the course of time.

The durability of the Romanisation paradigm means that the focus of interest in most reviews of Roman Kent, including to a considerable extent that of Millett, has centred very much on higher order (ie more 'Romanised') settlements: forts, towns and villas. Detsicas' (1983, 84)

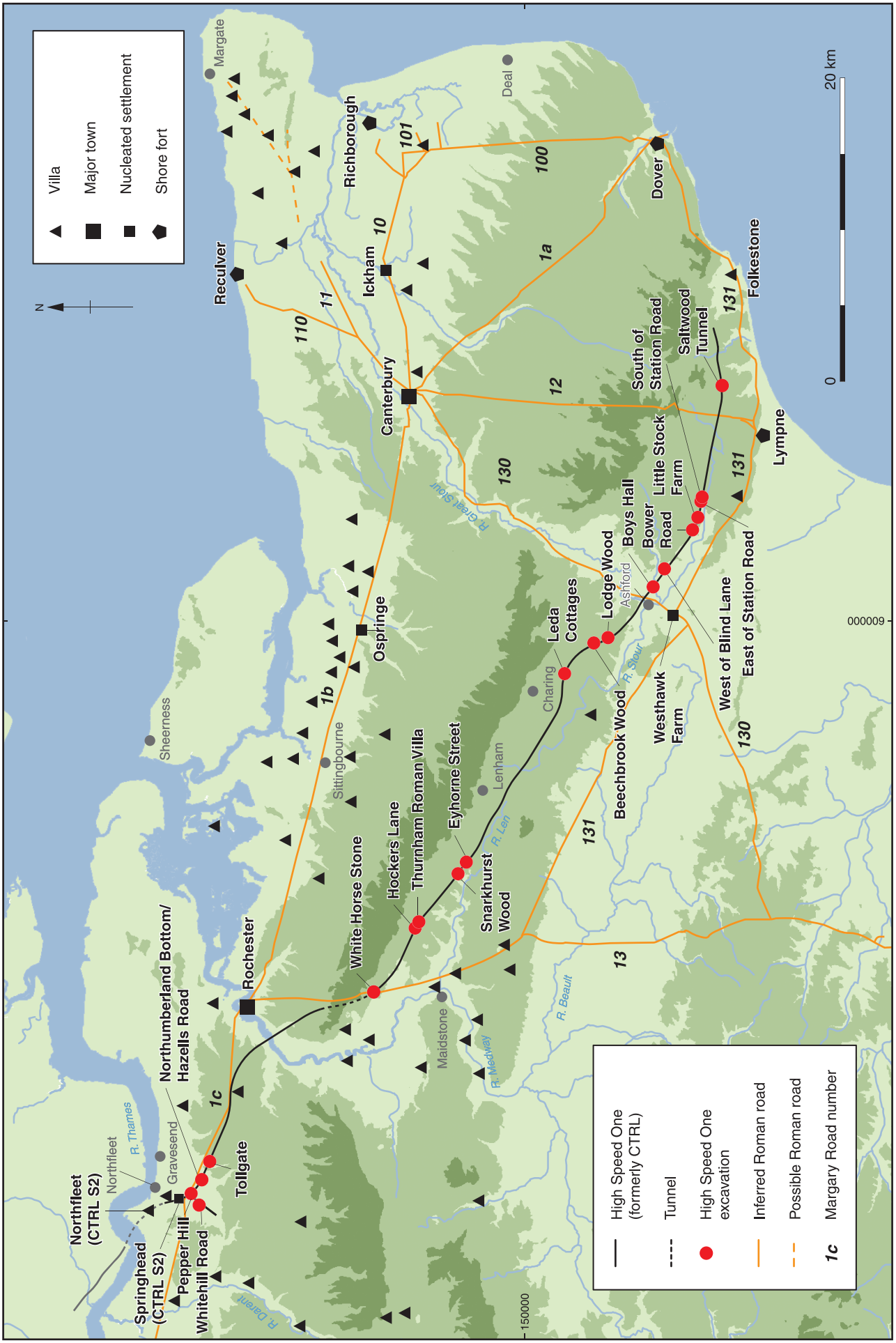


Figure 5.1 Map of Roman Kent showing HS1 principal sites (background detail partly based on Andrews 2004, 21 and Bennett *et al.* 2010, fig. 1)

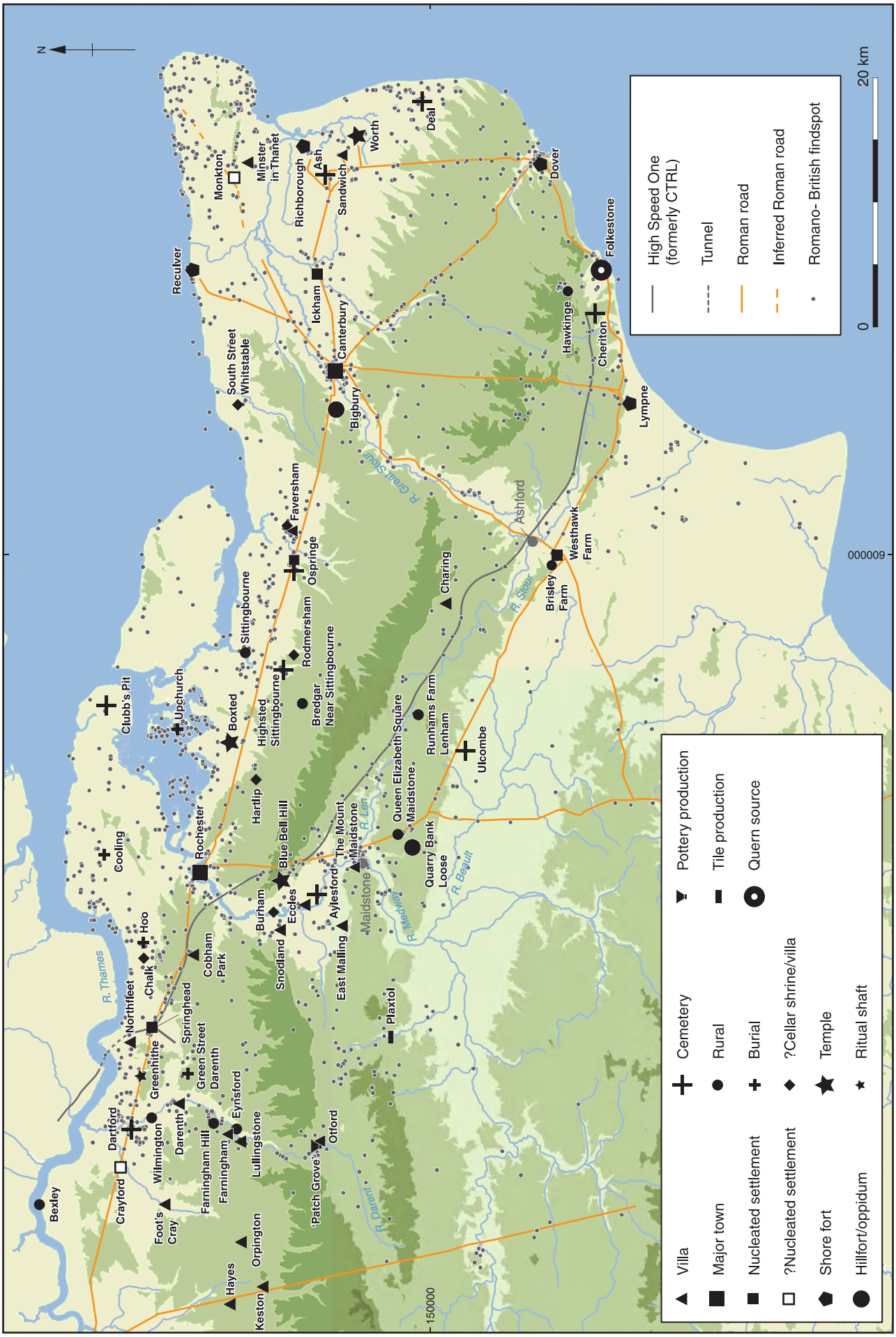


Figure 5.2 Map of Roman Kent showing places named in the text and general distribution of Roman findspots (based on Andrews 2004, 24)

four stage classification of rural settlement ended with 'farmsteads, usually with round huts and ditched enclosures', to which he devoted a single page. This simplistic characterisation has been retained even more recently (eg Andrews 2004, 20). In part this bias resulted from a lack of relevant evidence in comparison with the volume of material available for the main buildings of villa complexes (but not for their economic basis, evidence for which is largely lacking), but it also reflected perceptions of the importance of the lower order sites. It is only with the growth of systematic development-led archaeological programmes that this imbalance has begun to be redressed. An aspect of this is seen in relation to the distribution of Roman sites in Kent. Detsicas' (1983, 34) map of Roman Kent shows the south-western part of the county effectively empty of anything except occasional indications of iron-working. A more recent map (Andrews 2004, 24; cf Fig. 5.2) shows more sites in this area (a good number of those in the Chart Hills zone were identified in HS1 work), but still shows a heavy concentration of sites on the north Kent coastal plain and in east Kent. These distribution patterns may reflect some aspects of Romano-British reality (including a notable apparent absence of settlement on the North Downs), but the increase in the number of sites plotted away from the major concentration (and from subsidiary ones such as the Darent and Medway valleys) may indicate the existence of other realities, particularly involving the widespread distribution of settlements which were not focused on stone-built structures.

The Late Iron Age and Roman evidence recovered in HS1 Section 1 exemplifies these trends. Examination of a large part of the already-known villa complex at Thurnham was the only component of HS1 which involved stone-founded Roman structures, apart from some poorly-preserved foundation fragments at Bower Road. By contrast, parts of perhaps eleven other rural settlement sites were excavated—figures probably reasonably representative of the relative numbers of these types of site—mostly falling within Detsicas' definition of 'farmsteads' and mostly of Late Iron Age to Early Roman date. The definition of 'settlement' here is problematic since many sites were only very partially impacted and sampled. Systematic criteria for identification of site character have therefore not been established, but usually the existence of settlement is felt to require the presence of a variety of feature types (ie not just ditches) and reasonable quantities of 'domestic' material (a criterion which would not necessarily be valid outside southern Britain)—in this case generally more than *c* 250 sherds of pottery. Of the 13 probable settlement sites (including Thurnham and Bower Road) all but two (Lodge Wood and Blind Lane, both slightly uncertain) were defined as principal sites in the main programme of HS1 site reporting. A further five principal sites were considered not to represent settlement directly, although four probably lay close to settlement (the fifth was the cemetery at Pepper Hill, see below). Late Iron Age and/or Roman features and finds came from a minimum of 13 further locations not included in the principal site reporting programme. One of these was a small cemetery at Boys Hall, Sevington (but see further below), while for the remainder the evidence was insufficient (on the criteria given above) to allow confident attribution to the settlement category. These sites, as well as many of the definite settlements, included elements of roads or trackways and field systems, though the relationship of such features to some of the settlements is unclear. One of these minor roads, close to the Roman 'small town' of Springhead, proved to have a major cemetery (Pepper Hill) alongside it, an unexpected and extremely important discovery. The data from this site can be set alongside the evidence from elsewhere on the route for burials of individuals or small groups of people in association with rural settlements.

The main emphases of the HS1 evidence are therefore largely complementary to those of previous studies of Roman Kent, and this discussion will attempt to concentrate on these aspects—rural settlement, economy and society in particular. An attempt will be made to understand the use of the landscape by farming and (perhaps) other communities, not only as the location for settlements and fields, but also for the dead and for religious practices, and to understand how settlements related both to one another, to their surrounding landscapes and to the wider network of nucleated sites and major roads. These last were important in sustaining the archaeologically visible trade that is so characteristic of the Roman period. Here, however, the quantities of many classes of artefacts appear to have been relatively modest and analysis will rely heavily on ceramic evidence, the study of which has an honourable tradition in Kent (eg Monaghan 1987; Pollard 1988). The application of a uniform system for recording the HS1 pottery allows ready comparison of the evidence across the route, enabling patterns of distribution to be discerned.

The value of the HS1 project in providing a transect through the rural landscape with its various settlement types is clear. It should be remembered, however, that the transect is not a totally random one (see also Chapter 1 above). It inevitably avoids modern centres of population as far as possible, with the implication that some locations favourable to settlement in earlier periods as well as today might also have been avoided. Moreover, although divided into eight geographical units as an aid to analysis, much of the Section 1 route (some 60% on a conservative estimate) lies in a single broad topographical zone, on the Greensand belt of the Vale of Holmesdale and the Chart Hills at or towards the foot of the North Downs (Zones 4–8 of the landscape zones defined for the purposes of this project; Fig. 5.3). It is not possible to assess the precise significance that this might have had for limiting the type and number of Late Iron Age and Roman sites encountered, but the possibility that the route location did have some effect on these aspects should be borne in mind. As a single example, the Greensand belt, close to the north-eastern fringes of the low Weald, was always likely to be marginal to settlement patterns which included villas (with the obvious exception of Thurnham), and so

Figure 5.3 Thurnham: View of site looking north-east across aisled building to the North Downs

it proved, but the impression of settlement homogeneity in this area may be exaggerated because of the physical location of the transect.

Chronology

Late Iron Age and Romano-British chronology, albeit more closely-defined than that of preceding periods, still involves uncertainties and variable degrees of precision. Pottery was the principal dating tool for all of the HS1 sites of this period, and the only one for some of them (see Fig. 5.6). Indeed the definition of the 'Late Iron Age' as an entity is largely a ceramic one, since the evidence of settlement form in characterising the period is imprecise (though it does play a part) and other aspects of material culture were generally in such short supply as to add almost nothing to the wider picture. Such evidence did include occasional coins, since Iron Age coins came from four sites, of which two (Hockers Lane and Little Stock Farm) had coins exclusively of this date. The total number of Iron Age coins recovered was only six, however. Even the distribution of Roman coins was limited; they only occurred on six sites, and quantities were always quite small (see Table 5.6). Coins were therefore of little help in constructing the chronological framework of most sites, and completely irrelevant for many.

At the Pepper Hill cemetery radiocarbon dating was used in an attempt to refine the dating of particular sequences of burials in order to elucidate the overall development of the site. The close correlation of this work with the relatively detailed ceramic dating available for some of the graves is discussed in the site report (Biddulph 2006a), but it was not intended to provide an alternative to the ceramic framework. The latter was therefore applied elsewhere across the route. It is for this reason that the framework of the ceramic chronology of the area is set out here in some detail, so that the rationale for dating of individual sites can be understood. The framework rests on the traditional props of samian and other imported wares in both the Late Iron Age (very occasionally) and the Early Roman period, as well as the overall pattern of ceramic chronology for Kent developed by Pollard (1988). In addition the work of Monaghan (1987) on the products of the North Kent industries was very important, particularly at Pepper Hill.

The development of trends in supply and the introduction of new ceramic styles need not have been synchronous across the region, however. Not only might north Kent have received products of its local Roman pottery industries earlier than sites in the Folkestone area, for example, but it is probably also true to say that the chronology of local ceramic production in the Roman period is better understood in north Kent than further south, with the result that sites in the north have a chance of being more precisely dated. Close estimates of absolute chronology based on the pottery need always to be treated with caution. This is particularly the case with

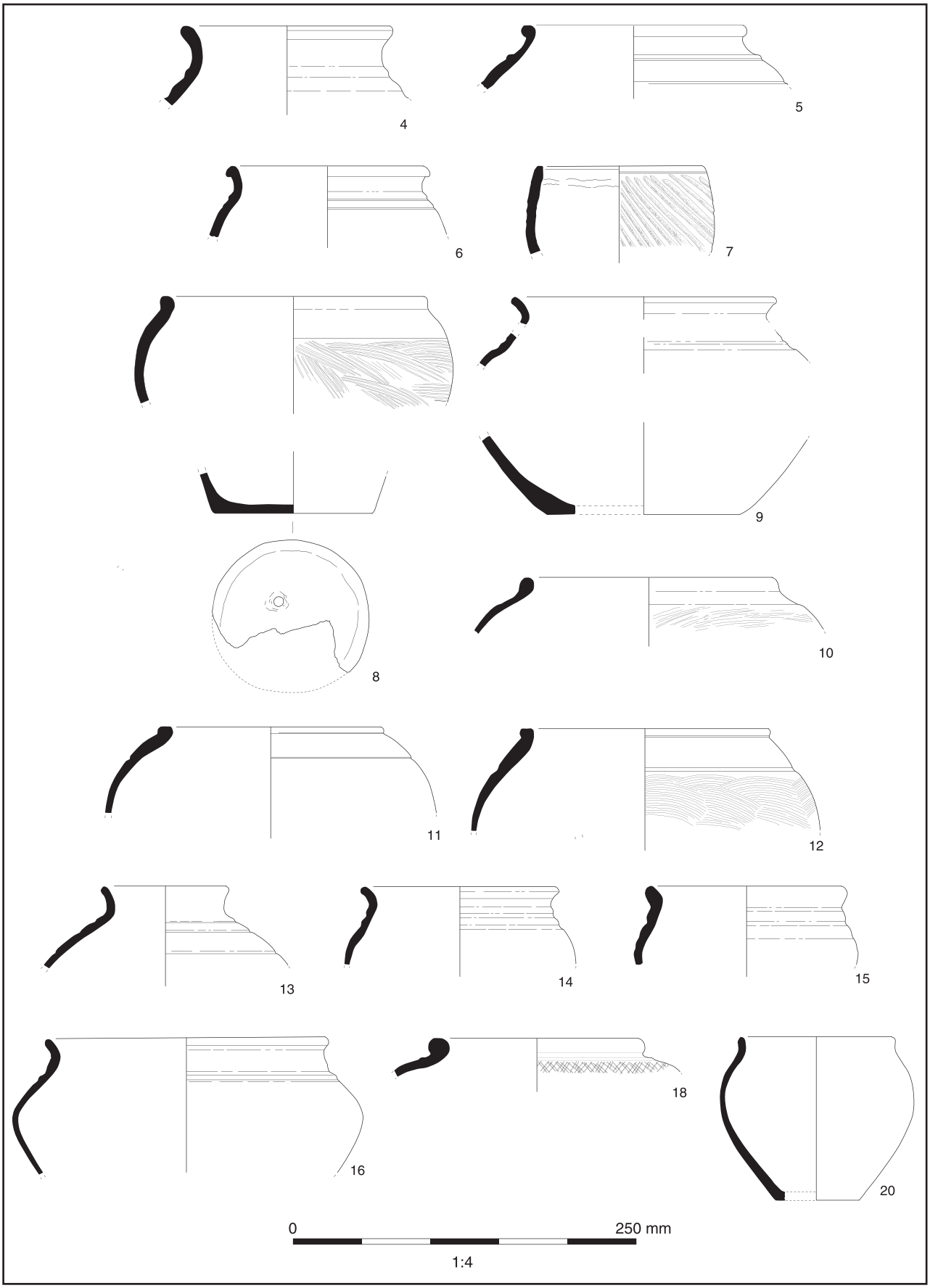


Figure 5.4 Grog-tempered 'Belgic type' pottery from Beechbrook Wood

regard to the pottery of the late pre-Roman Iron Age (see Booth 2006b). Despite the fairly regular occurrence of relatively well-dated continental pottery in pre-conquest contexts in Kent, very little such material was encountered on HS1 sites (and some of the few examples occurred residually in Roman contexts), leaving the locally produced coarse wares with no supporting framework. Pottery of 'Belgic' type (*sensu* Thompson 1982, 4) and related material was therefore the key material and chronological indicator (Fig. 5.4). The principal Late Iron Age ceramics in the region are fairly clearly identified, and consist mainly of vessels in grog and glauconite tempering traditions (although flint and shell traditions also occur), but the precise interrelationship of these remains to be elucidated and their chronological and spatial patterning may be quite complex. Sites defined as 'Late Iron Age' on ceramic criteria will have material in one or more of these traditions and could date from as early as the beginning of the 1st century BC, the date suggested by Champion (Chapter 4) on the basis of metalwork and other associations. This chronology would merit more detailed consideration than has been possible in the present chapter and may be subject to change in the light of future work. If the inception of the Late Iron Age ceramic traditions(s) of the region is placed in the early 1st century BC, however, it does not follow that all sites defined as Late Iron Age on ceramic criteria will necessarily have been established so early.

The date of the earliest appearance of the most widespread of the Late Iron Age ceramic traditions, grog-tempering, is difficult to establish precisely. The problem is exacerbated by the relative lack of independently dated assemblages with a significant Middle Iron Age as well as a Late Iron Age component. At one of the few such sites, Little Stock Farm, the latest groups appear to have been dominated by grog-tempered fabrics (cf. Morris 2006, fig. 3.9). At Beechbrook Wood, there is a radiocarbon date of 100 cal BC–130 cal AD (NZA-21220; Allen 2006) for a ditch group dominated by grog-tempered 'Belgic' pottery. This is entirely consistent with the suggested 'ceramic' date of *c* AD 25–60 for this group, but hardly helps address the issue of the earliest appearance of grog-tempered pottery in the region. At Beechbrook Wood this problem is exacerbated by the realisation that here, and at other sites in the Ashford area at least, the grog-tempered tradition was already in use in the Middle Iron Age—sites in this area cannot be assigned to the Late Iron Age simply on the basis of the presence of grog-tempered pottery fabrics alone; these have to occur in the vessel types typical of the period. In view of the evidence for the existence of distinct sub-regional Late Iron Age traditions such as the glauconite tempering of the Medway valley and a separate south-east Kent sand-tempered tradition (Thompson 1982, 14–15; Pollard 1988, 31), as well as flint-tempered and shell-tempered traditions in the northern part of the county (cf. Thompson 1982, 6–7, maps 1 and 2), the introduction or continued use of grog-tempering in the Late Iron Age need not have been synchronous across Kent (Booth 2006b; see also below). This complexity of ceramic traditions is highlighted by the recent identification of the probable use of Kentish Ragstone as temper in a distinctive group of material of mid 1st century AD date from Leybourne Grange, near West Malling (Biddulph 2011), although pottery of this type was not identified on HS1 sites.

Both grog and glauconite tempering traditions continued to be used up to and after the Roman conquest; indeed, grog-tempering in one form or another survived to the very end of the Roman period in Kent. Here as elsewhere the conquest is not reflected immediately in the ceramic record, but the Thameside industry started to develop quite early in the post-conquest period. It concentrated mainly on sand-tempered fabrics, amongst which the fine 'Upchurch' reduced ware fabric R16 (pottery fabric codes are derived from the Canterbury Archaeological Trust fabric series; for details of fabric codes and more extended discussion see Booth 2006b) is the most characteristic and also one of the earliest to appear, perhaps as early as *c* AD 50. It supplemented, rather than supplanted, the existing ceramic repertoire and it is possible that some sites saw little of this material before about AD 70, after which time it seems to have been ubiquitous, at least as far as the HS1 sites are concerned. It was particularly well-represented in the cemetery at Pepper Hill, and characteristic vessels constitute all the grave goods in the two mid-late 1st century graves from that site shown in the lower half of Figure 5.5.

Flavian to mid-2nd-century pottery assemblages are therefore characterised by the presence of fine 'Upchurch-type' grey wares, though they are far from being dominated by them. By the later 1st century, if not a little earlier, this production was augmented by both oxidised and reduced sandy wares from the Canterbury kilns. As with the Thameside products, the supply of Canterbury pottery to the HS1 sites, where it was never as common as Thameside material, spanned the early 2nd century, which seems to mark the transition from an 'Early' to a 'Middle' Roman ceramic phase. At the majority of sites the most obvious marker of this change was the appearance of Thameside BB2-type ware (fabric R14) after about AD 120.

The Thameside and Upchurch industries continued to be a significant source of pottery for the region through the first half of the 3rd century, but Canterbury coarse ware production did not significantly outlast the 2nd century (Pollard 1988, 93–7). From the end of the 2nd century onwards grog-tempered 'native coarse ware' (fabric R1; ibid., 98) was a component of many assemblages. Although it was not very common on HS1 sites, nor always easily separated from other grog-tempered fabrics, it is characteristic, alongside Thameside products, of the later part of the 'Middle Roman' ceramic phase, up to about the middle of the 3rd century.

A Late Roman ceramic phase is marked by the appearance of characteristic widely-distributed indicators such as Oxfordshire products, which may have reached the region as early as the mid 3rd century, although certain evidence of this is scarce (Pollard 1988, 121–2; cf Young 1977, 133). The most readily identifiable contem-

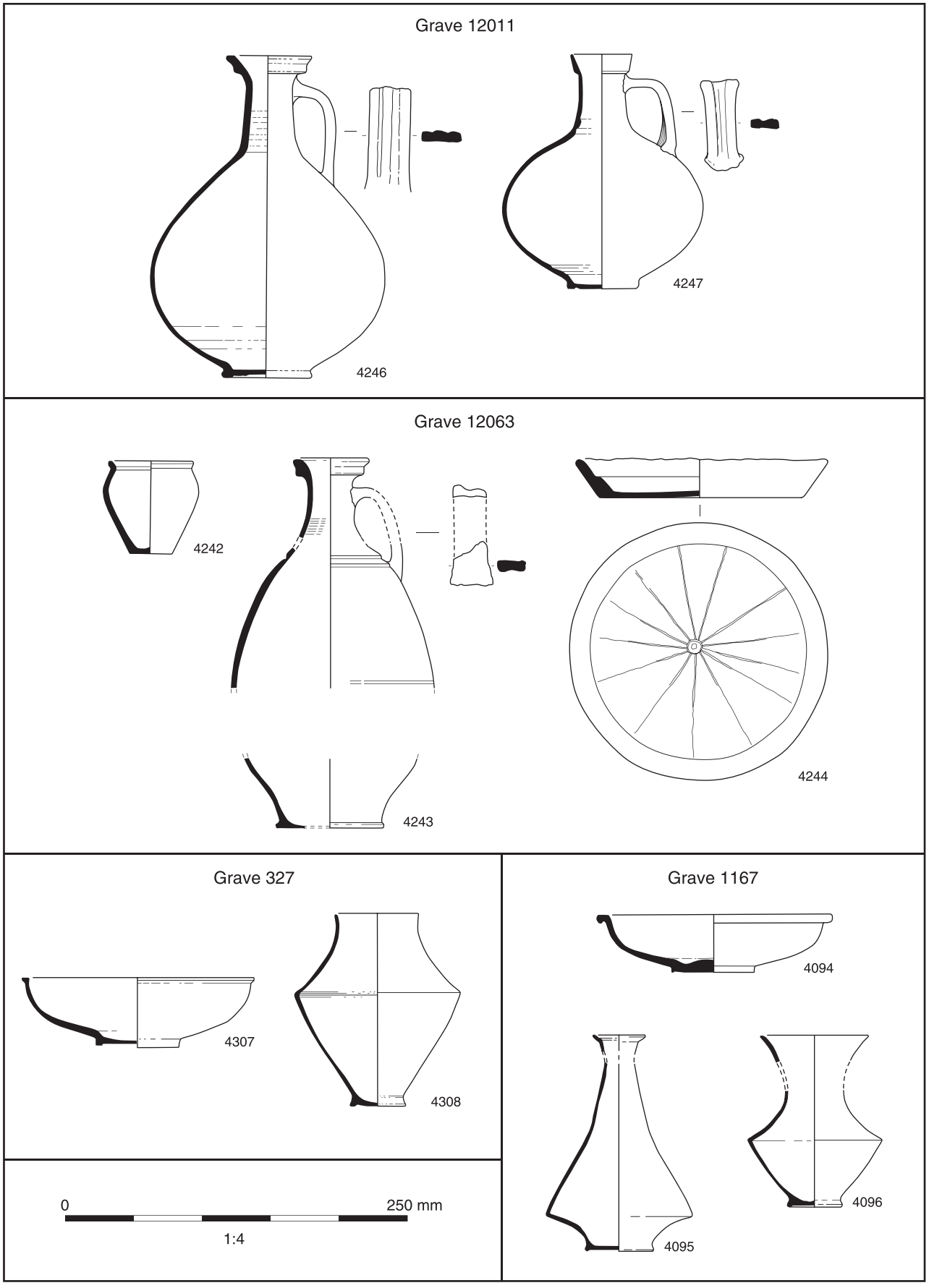


Figure 5.5 Pottery assemblages from mid 1st and mid-late 1st century graves at Pepper Hill

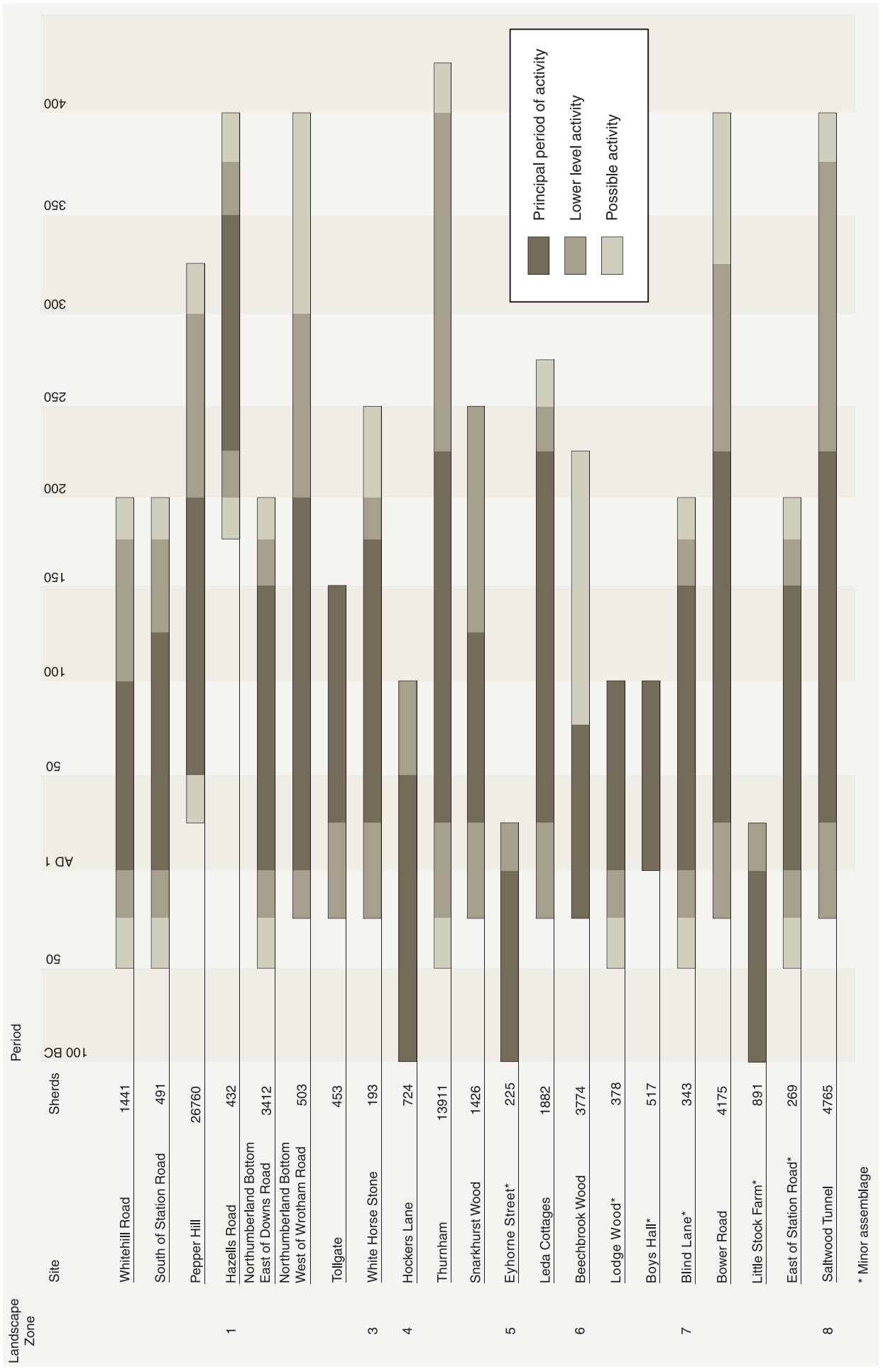


Figure 5.6 Late Iron Age–Roman ceramic chronology by site along the HS1 route

porary coarse wares are the Late Roman grog-tempered wares of the LR1 family and, to a lesser extent, sand-tempered fabrics of the LR2 group, neither of which can be assigned to a particular source area but are likely to have been produced within the county from the later 3rd century onwards. Non-local coarse wares consisted mainly of Alice Holt grey ware (fabric LR5), supplemented to a lesser extent by oxidised 'Portchester D' fabric (LR6) and other occasional fabrics. Some of these fabrics, including the local ones LR1.3–LR1.6 and the 'imported' LR6, may have belonged exclusively to the mid/late 4th to early 5th century and mark the latest identifiable stage in the evolution of the Roman pottery of the region.

The ceramic outline just discussed provides the basis for the individual site chronologies set out in Fig. 5.6. This shows a certain amount of variability in site histories within a relatively consistent broader framework, with a heavy emphasis on settlement activity in the Late Iron Age and Early Roman periods and more variable evidence for continuing activity from the mid 2nd century onwards. Assemblages were rarely large enough to allow detailed consideration of potential variability in intensity of occupation within the overall site date ranges and no such evidence (for temporary abandonment or significant reduction of settlement activity, for example) was recorded. The resulting 'broad brush' chronological frameworks may therefore fail to reflect nuances in the sequence of development of individual sites, but this could only have been achieved with substantially larger pottery assemblages, ideally supplemented by non-ceramic evidence. Generally, however, individual sites seem to have had continuous sequences of development (even where this involved significant spatial reconfiguration, as for example at Snarkhurst Wood or Bower Road). In only a single case, at Hazells Road, does the dating evidence suggest that a site may have developed in a new location, potentially as a successor to an earlier component of the local settlement pattern, now disused. The Northumberland Bottom site at East of Downs Road may have been the predecessor in this instance.

Environmental setting

Evidence for the character of the environment/landscape during the Late Iron Age and Roman periods comes from animal bones, charred and waterlogged plant remains, pollen, insects and molluscs, although some of these categories of material were only examined at a very small number of sites as a consequence of considerable variation in degree of survival. The evidence overall is reviewed by Giorgi and Stafford (2006). One of the main problems is that the environmental conditions implied by the biological remains may vary significantly over short distances (ibid.). Nevertheless a few key sites produced evidence that sheds significant light on the local/regional environment. Data include molluscan assemblages, particularly from dry-valley deposits along the Kent Plain and North Downs section of the route, a wide range of remains from Thurnham, 'waterlogged' plant remains from Parsonage Farm and pollen and macro-plant remains from East of Station Road.

The landscapes of the North Kent Plain and North Downs section of the HS1 route probably carried very little woodland by this period. Molluscan assemblages from colluvial sequences in the dry valleys of the area invariably comprise species with open-country affinities suggestive of arable and short-turfed grassland. These deposits probably resulted from soil erosion as a consequence of agricultural intensification and the practice of autumn sowing adopted in many areas during the later prehistoric and Roman periods.

On the south-west side of the Downs Road dry valley a distinct change in colluviation, marked by the presence of relatively coarse chalk inclusions, may have been of Late Iron Age or Early Roman date and may represent intensification of agricultural activity (ploughing) on the upper parts of the valley slopes. In contrast, molluscan remains from Middle to Late Iron Age features on the higher ground to the east, at Northumberland Bottom, comprised predominately shade-demanding taxa with a small open-country element indicating the persistence of some scrub or woodland environments during this period. The Late Iron Age to Early Roman assemblages, however, demonstrated more open conditions, containing mixed assemblages of open country and shade-demanding taxa. Further east again the Roman molluscan assemblages suggested the presence of established, dry open conditions, either open pasture or arable habitats in the vicinity, indicated also by the presence of colluvial deposits in the Wrotham Road dry valley. A possible exception to this pattern of open ground might, however, be suggested in landscape Zone 2, where there was a striking absence of Late Iron Age and Roman sites. Although this absence may relate in part to the presence of the closely adjacent Cobham villa, which could have dominated the local landscape to the exclusion of other settlement types, another possibility is that parts of this landscape were occupied by woodland, suggested by the presence of large tracts of historic woodland in the area today. There is, however, no direct evidence for this.

Much more certain is the fact that the molluscan assemblages from the scarp slope of the Downs at White Horse Stone generally indicated short turfed grassland and arable environments within the catchment. Molluscs from a ditched trackway of Roman date stratified within colluvial deposits in the valley bottom suggested the presence of scrub, possibly a hedge line, but in an otherwise open environment. A possible stabilisation horizon at the top of the Roman colluvium at White Horse Stone was indicated by peaks in magnetic susceptibility and shell abundance. The absence of colluviation during the post-Roman period is possibly linked to a change in land use that may have been initiated sometime in the Roman period, perhaps indicating a heavier emphasis on pastoralism.

Five kilometres south-east of White Horse Stone, at Thurnham in the Vale of Holmesdale, good environ-

mental evidence was recovered from the late Roman well. The waterlogged plant remains (including mosses), pollen, insects and molluscs all suggested a fairly consistent pattern of woodland regeneration during this period, but here it is difficult to determine the extent to which this reflects wider conditions rather than the character of the immediate vicinity of the well itself.

The insects indicated partly wooded conditions, the majority coming from a range of habitats in the surrounding landscape including woodland and grassland. Scarabaeoid beetles pointed to the presence of domestic animals. There were relatively few, mainly small, water beetles, which would have lived in the well itself.

The molluscs included both land and freshwater species, with evidence for an environment of broadleaf deciduous woodland with an abundance of shade-loving species. There were almost no dry land open country snails. Freshwater slum species reflected damp conditions; stagnant or standing water within the well or possibly puddles around it, while the presence of lush vegetation was suggested by marsh species that are found on erect vegetation such as reeds and sedges. There were also damp tolerant terrestrial molluscs.

Plant remains from the well also point to a wooded environment, with macroscopic evidence of 'large' trees, such as oak and ash as well as smaller trees including species which were both tolerant and intolerant of shade (for example holly (*Ilex aquifoilum*) and sloe respectively). There was a moderate range of ruderals, especially stinging nettle (*Urtica dioica*), suggesting human disturbance around the well, but there were few wetland plants, for example sedges (*Carex* sp.), and only occasional grassland plants. The general picture is of oak/ash (also major components of the charcoal assemblages) woodland and possible trampled areas around the well. Tree pollen was dominant (75–85%), comprising mainly ash but also with evidence for oak, lime (*Tilia* sp.) and alder (*Alnus* sp.). Shrubs (15%) were dominated by hazel. There were only small counts of herb (grass) pollen and few records for aquatic/marshland plants. Mosses from within the well probably grew on its walls (on both dry and wet areas) and on overhanging trees. *Leucodon sciuriodes*, which is often associated with ash trees, was common.

Together the evidence for woodland at Thurnham is very strong, but the picture is likely to have been skewed by the clear indications that the well was overhung by one or more ash trees, resulting in the unusual quantities of pollen of this species (which is usually underrepresented) and of other taxa closely associated with ash trees. The extent to which this distinctive environment was representative of the surroundings of the villa as a whole is therefore very uncertain.

Another very localised environment was examined at Parsonage Farm, a site with no major Roman settlement component but close to Beechbrook Wood. Here plant remains from a stream channel represented at least three discrete habitats (woodland, wetland and disturbed ground). There was less definite evidence for woodland in the (?)Late Iron Age period (compared with earlier deposits) and a brushwood platform built on or close to the stream bank at about this time was associated with wetland plants representing a relatively disturbed environment, but also showing that the channel was submerged in winter, drying out seasonally. Evidence for mixed broad-leaved woodland came from a channel fill cutting deposits that sealed the platform, but a change to wetter conditions is also suggested by the wetland plants here, indicative of water standing for all or almost all of the time. However, this particular channel was undated and may have been substantially later than the earlier deposits (and very likely not of Roman date at all). In contrast, both the pollen and waterlogged plant remains from East of Station Road, with some evidence for Late Iron Age activity, suggest a fairly open environment in the vicinity of that site.

Further light is shed on the character of the woodland environment in this period by the charcoal remains, recovered from nine sites covering all the landscape zones except the North Downs Zones 2 and 3. A range of taxa was present. The best-represented species in most of the zones were oak and ash, suggesting the widespread availability of these woodland resources. Oak was typically dominant in deposits relating to metalworking (eg at Leda Cottages, Beechbrook Wood and Thurnham), although one sample from a furnace at Leda Cottages produced a large amount of alder. The preference for oak charcoal in iron-working is matched elsewhere in the region, for example at Westhawk Farm, Ashford (Challinor 2008) and beyond (eg Figueiral 1992), but was not universal in the Wealden iron industry (Cleere and Crossley 1985, 37; Sim and Ridge 2002, 38–9).

Oak was equally the preferred fuel for cremation pyres, for example at Pepper Hill, Northumberland Bottom, Beechbrook Wood and Boys Hill Balancing Pond, although there were occasional exceptions. The assemblage from a Late Iron Age cremation pit at Chapel Mill was dominated by ash, with a little oak and also tubers (presumably for kindling), while another cremation burial from this site yielded alder/hazel charcoal. Another unusual charcoal assemblage was from a Late Iron Age cremation burial at Beechbrook Wood in which the greater part of the charcoal was from gorse/broom (*Ulex europaeus/Sarothamnus scoparius*), while hazel was also well-represented. At Pepper Hill, three unurned cremation burial groups were dominated by ash, one of the urned cremations had 30% alder charcoal and a pyre deposit had mixed oak, ash and field maple (*Acer campestre*) charcoal. Overall, however, oak was the dominant species in 36 of the 40 assemblages examined in detail at Pepper Hill (Challinor 2006) and it is clear that it was usually the fuel of choice there.

Evidence from agricultural structures shows the use of oak and ash in an oven at Thurnham and mainly ash with oak and Maloideae (hawthorn, apple, pear etc), maple and hazel in the corn drier from the same site. Ash was also the dominant charcoal in a late Roman oven from Saltwood Tunnel, together with a small amount of Prunoideae (cherries, blackthorn etc) and hazel, while in

the late Roman corn drier at Hazells Road the stokehole was full of oak but charcoal from within the structure was dominated by hazel.

The charcoal evidence suggests that there was a ready supply of oak at many HS1 sites, for example through the Roman period at Thurnham and throughout the use of the cemetery at Pepper Hill. While the wide range of other woodland taxa represented at sites such as Bower Road might suggest a scarcity of oak resulting in use of other species it is, rather, considered to indicate that locally available material was exploited and, in tandem with the widespread evidence for the use of oak elsewhere, to suggest that there was relatively little pressure on woodland resources, where present, during this period (Giorgi and Stafford 2006). The one possible exception was at Saltwood Tunnel at the south-east end of the HS1 route, where oak was widely used in the early prehistoric but ash was the main charcoal recovered from contexts of Late Iron Age–Early Roman date. A reduction in the range of taxa in the Late Roman period, and the presence of large quantities of charcoal of Rosaceae, characteristic of open, scrub woodland, suggest that there was less woodland cover at this time (ibid.).

The overall picture, though patchy, therefore suggests a landscape not vastly different from that seen today; the northern and southern coastal zones (Zones 1, perhaps 2 (for which there is very little evidence in this period) and 8) and the North Downs were therefore largely open and used for mixed agriculture, though there was probably an emphasis on pasture on the upper part of the Downs in Zone 3 and perhaps even in parts of Zone 1. Occasional woodland was encountered and some of the numerous trackways were probably lined with hedges. Elsewhere, in the Vale of Holmesdale and the Chart Hills (Zones 4–7), more woodland was in evidence, but the density of settlement, particularly in Zone 6, suggests that this may have been, at least locally, quite limited in extent. Here the fields associated with individual settlements perhaps formed substantial contiguous areas of open ground, rather than presenting a picture of localised woodland clearance around individual farmsteads—a pattern of settlement more characteristic, for example, of parts of the Weald in later periods (and perhaps also in the Roman period (Aldridge 1998), though the evidence is still slight). Generally, however, while the data suggest the ready availability of woodland resources, they are insufficient to allow firm conclusions to be drawn on the exact balance between the extent of woodland, arable and pasture in these areas.

The data also provide relatively little time depth within the Roman period. It seems almost certain that the apparent expansion of settlement in the Late Iron Age–Early Roman period would have led to increased woodland clearance at this time, but only at Saltwood are there indications that this may have resulted in a change in the character as well as simply the extent of woodland. One interesting aspect is the general scarcity of evidence for woodland management practices. The widespread availability of woodland resources suggested above may mean that there was little need for such practices, in contrast to the situation in the vicinity of major towns such as London (see eg Brigham *et al.* 1995, 39–41). In the Weald, where the demand for timber for conversion to charcoal for use in iron smelting would have been enormous, there is nevertheless no consistent picture of woodland management (Cleere and Crossley 1985, 37; Sim and Ridge 2002, 39–42) and at Westhawk Farm, close to the HS1 line, detailed analysis of charcoal associated with iron-production features provided no indication of the use of coppice material (Challinor 2008). Existing evidence therefore suggests that processes of natural regeneration may have been relied upon to maintain supply in an extensive resource. Less clear is the extent of possible specific woodland regeneration in the Late Roman period, which has been suggested at Thurnham, although the evidence there could reflect very local conditions. In broader terms regeneration must be considered a possibility in view of the apparent decline in rural settlement at this time. This is discussed further below.

Infrastructure and the pattern of major settlements

Present evidence gives little scope for establishing the existence of significant variation in site character in the Late Iron Age (for morphological variation see below), and therefore provides no basis for construction of site type hierarchies. There is equally relatively little evidence from the surrounding area through which the HS1 transect runs to provide a basis for any hierarchical framework of settlement. Overall, Kent has few obvious 'central places' in the Middle Iron Age. By the Late Iron Age hillforts remained in use in the extreme west of Kent and at Bigbury Camp near Canterbury. The latter, possibly abandoned after the invasion of Julius Caesar in 54 BC (Thompson 1983, 258–9), was probably superseded by an extensive, nucleated open settlement at Canterbury itself, characterised as an unenclosed oppidum (Blockley *et al.* 1995, 458). Other sites of broadly comparable type, and of more direct relevance for the understanding of developments in the HS1 area, are at Quarry Wood, Loose (most of the site is within the parish of Boughton Monchelsea) and perhaps at Rochester, the latter sometimes thought to have succeeded the former as a regional focus (eg Detsicas 1983, 2; Parfitt 2004a, 16). The site of Quarry Wood, just south of Maidstone, lies some 6.5km south-west of the HS1 line at Thurnham. In contrast to Canterbury it has a substantial single rampart and ditch (Kelly 1971), which probably defined one component of a larger complex, indicated by other linear earthworks (ibid., 73). Apart from the earthworks the site is only poorly known, but recent work at Furfield Quarry nearby has revealed a major rectilinear enclosure probably of Late Iron Age date (Mackinder 2005) and other features very likely forming part of the Quarry Wood oppidum complex. It is not yet clear if these discoveries will refine understanding of the chronology of the oppidum-related

features, but the occurrence of substantial Early Roman structures and features at the same site (see further below) must be significant. An apparent concentration of Iron Age coin finds in this area, including a hoard of potin coins from Thurnham (Richardson 2003), may underline the role of Quarry Wood as a local power centre. The importance of Rochester is also demonstrated by the discovery in excavation of, amongst other items, 'coin moulds' and Iron Age coins (Chaplin 1962), but the overall extent of this activity is unknown and the attribution of some other Iron Age coins to Rochester is less certain (Holman 2000, 227–8).

In the case of each of these three centres the nature of their relationships with other elements of the settlement pattern remains elusive. They may have served for example as centres of trade, although socially-controlled distribution mechanisms could have been just as important (but these might well have operated from the same locations, in which case distinguishing between these mechanisms on the basis of distribution patterns would be impossible). In commenting on the increasing similarity of Iron Age coin type ratios east of the Medway after *c* 50 BC, however, Holman (2000, 224–5) suggests that this indicates potential economic unity, implying a market function for at least some of these types. Imported pottery is amongst the few classes of material for which distribution can be demonstrated clearly, but the quantities of such material reaching HS1 sites are such that the nature of the dissemination remains speculative—though the quantities themselves might suggest that this was not through normal trade.

Subsequent to the Roman conquest two of the three possible centres were directly incorporated into the Roman infrastructure system, Canterbury and Rochester both becoming major urban centres on the line of Watling Street, although the urban character of Canterbury in the Early Roman period, in particular, is unclear and it may have been seen principally as a religious sanctuary at this time (eg Millett 2007, 158). There is no clear evidence that the Loose/Boughton Monchelsea oppidum site retained a role as a significant nucleated settlement in the Roman period (see below), but its ?focal enclosed area lay only just over 1km west of the line of the road from Rochester to the Weald, while the Furfield Quarry site was even closer to this road and would have been easily accessible from it.

The relative and absolute chronology of the pattern of major Roman roads is uncertain, but it is likely that the Watling Street route, joined at Canterbury by the road (Margary (1973) route 10) originating at Richborough (for discussion of the Richborough to Canterbury part of this route see Bennett *et al.* 2010, 328–35), was the earliest, and it was certainly the most important in strategic terms (Detsicas 1983, 33, 35). Most of the other major Roman roads ran from the two Watling Street 'hubs' of Canterbury and Rochester (see Fig. 5.1). Of these the most important in terms of the HS1 sites were Margary roads 12, 130 and 13. The first of these, Stone Street, connected Canterbury with the coastal installations at Lympne, but although intersected by the HS1 route it was not seen during work in the vicinity. Road 130 ran south-westwards from Canterbury up the Stour valley towards the Weald and would have been traversed by the HS1 route at Ashford, though the details of its course through the later town are obscure and opportunities for observation in this area were extremely limited. Road 13 ran south from Rochester, leaving the valley of the Medway to cross the North Downs, where it was almost certainly encountered (in the form of north-south aligned roadside ditches, 11–13m apart) at White Horse Stone, roughly 100m east of the alignment proposed by Margary (1973, 44) (Fig. 5.7).

Road 13 descends into the Medway Valley at Maidstone, whence it trends slightly south-eastwards before turning south again, close to the Loose/Boughton Monchelsea oppidum, a change of alignment that may be significant, to a course into the Weald, where it is met by road 130 near Benenden. The 'hypotenuse' of the approximately right-angled triangle formed by these two roads was made by road 131, Margary's Maidstone-Dover road (1973, 49–50). As Margary says, the exact course of this road between Dover and Lympne has never been established, although a likely route is shown on Figs 5.1 and 5.2. From Lympne, however, the line northwestwards is clear as far as south Ashford, where it met the line of road 130 at what is now known to be the major roadside settlement of Westhawk Farm (see below). There is no evidence for the crossroads which Margary envisaged here (ibid., 49) and it appears that the northwesterly continuation of this road towards Maidstone was from a point some distance further west along the line of road 130, in the vicinity of Stubbs Cross (Aldridge 2006, 180). Amongst other things this evidence is useful in demonstrating that the construction of road 131 was subsequent to that of road 130, which at Westhawk Farm can be seen to have been in existence perhaps as early as the mid 1st century AD (Booth *et al.* 2008).

The line of road 131 roughly mirrors the NW-SE trend of the successive topographical zones in this part of the county, but at some distance from what seem likely to have been the more extensively settled *pays* of Holmesdale and the Chart Hills. There is, however, no evidence for a major road running along these zones, although the presence of tracks linking settlements here must be considered almost certain. While it is possible that the prehistoric 'North Downs trackway' (Parfitt 2004a, 16) remained in use, this route did not link major settlements and was in character substantially different from the other principal Roman roads. It may have retained only local significance.

All the main centres of the Roman settlement pattern of Kent were linked by elements of the major road system. Canterbury, the largest, became the centre of the *civitas Cantiacorum*. It and Rochester were the only Roman towns to be defended (although the possibility that London was also part of the *civitas Cantiacorum* (Millett 1996, 35) should be remembered), but Canterbury apparently never had earthwork defences (unlike Rochester) and was not enclosed with a wall until the later 3rd century. Unfortunately, the defences are the best-

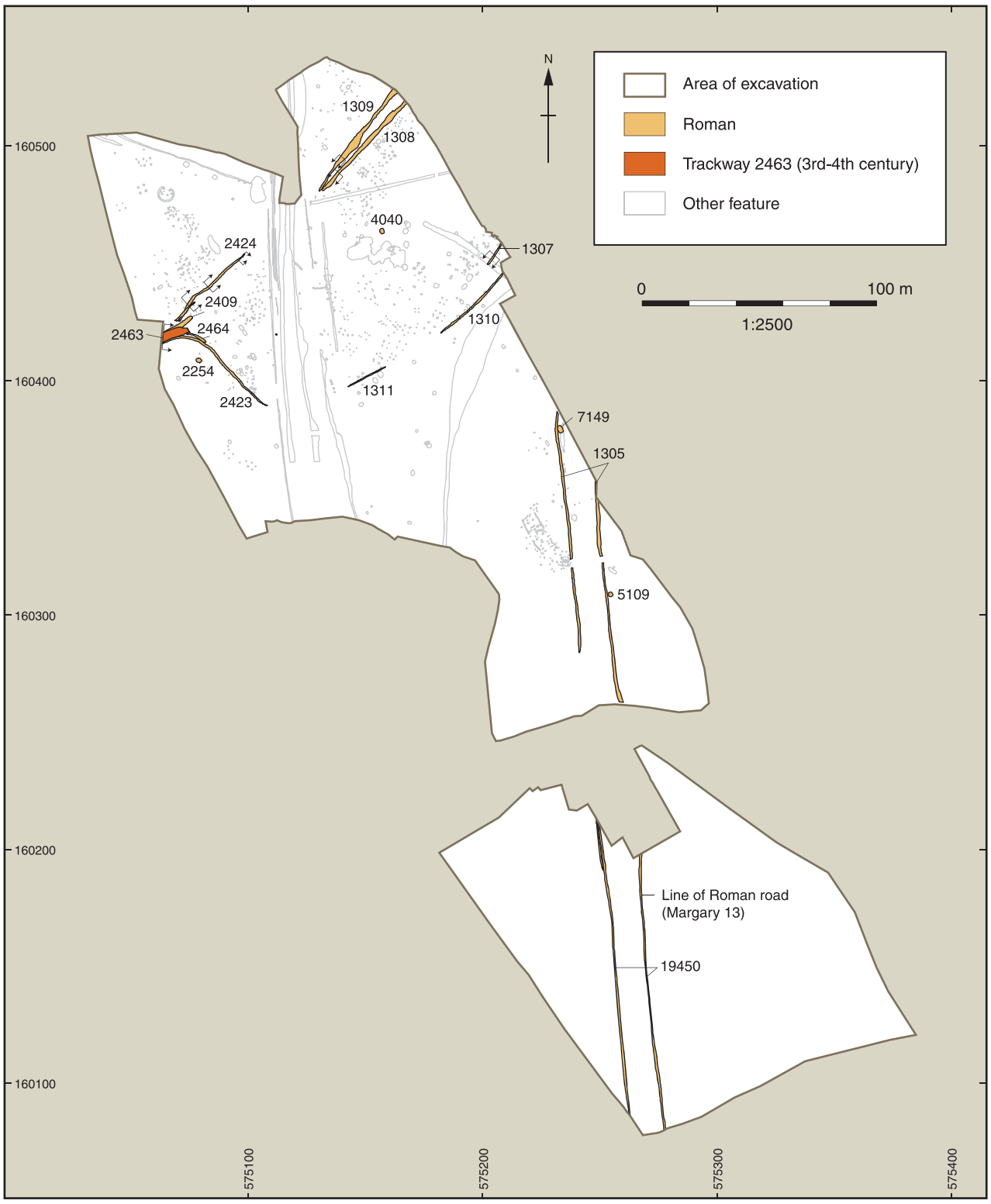


Figure 5.7 White Horse Stone: plan of Roman features, showing line of Roman Road (Margary 13)

known aspect of Roman Rochester (Ward 2004; for longer summaries of the town see Detsicas 1983, 54–9; Burnham and Wacher 1990, 76–81), although it is clear that the interior may have contained a significant density of buildings, some of them substantial. There has been much speculation about the status of Rochester. The idea that it may have served as the centre of a western pagus of the Cantiaci is plausible but, as Detsicas (1983, 38, 59) admits, not supported by any direct evidence. Burnham and Wacher's elevation of the town to the status of 'potential city' (1990, 76–81) therefore appears rather arbitrary (cf Booth 1998, 615). As a port and a major river crossing (the name *Durobrivae* means at 'bridge(s)-fort' (Rivet and Smith 1979, 347; for the bridge itself see Flight 1997)), however, it was clearly of great regional importance. Whether there was a significant perceived or

actual distinction between Rochester and other nucleated settlements along the line of Watling Street is less clear. Of these sites, named in the sources, that near Syndale Park, Ospringe, between Canterbury and Rochester, was probably the *Durolevum* of the Antonine Itinerary (Rivet and Smith 1979, 351), and extended some 400m along the line of Watling Street (its east and west limits defined by cemeteries) and at most *c* 100m south of that road line (Sibun 2001, 191). West of Rochester the site of *Vagniacis* is certainly Springhead (Rivet and Smith 1979, 485), the small town which lies close to the west end of HS1 Section 1 and formed the focus for the settlement encountered in topographical Zone 1 of the project, while *Noviomagus* (probably Crayford; Bird 2000, 156; Rivet and Smith 1979, 428), still relatively little known as a major settlement, lay some 11km further west and probably exerted little influence on the HS1 rural settlements.

This was clearly not the case with Springhead, however. Already well known for its temple complex and other structures (summarised by Burnham and Wacher (1990, 192–8) and more critically by Detsicas (1983, 60–76)), understanding of the site has been significantly enhanced by the excavation of the Pepper Hill cemetery, almost certainly directly associated with it, and by fieldwork undertaken for Section 2 of HS1 (Biddulph 2006a; OWA 2006; Andrews *et al*. 2011) (Fig. 5.8). In particular the latter has added immensely to our knowledge of the religious aspects of the site. The head of the Ebbsfleet River was enclosed on the eastern side by a substantial, curving ditch dug in the Late Iron Age and remaining open into the Early Roman period. Late Iron Age features were absent from within this area, but contemporary finds included a substantial number of coins. Running north from this feature two parallel ditches defined a trackway, possibly a 'ceremonial' or processional way close to, but not on the crest of the slope on the east side of the valley. This extended for *c* 450m and led up from the edge of the river, terminating at a point high up on the slope whence the springs and the whole of the surrounding area could have been seen. A large Late Iron Age rectilinear enclosure extended eastwards from the 'processional way' to the top of the slope and onto the adjacent plateau.

Elements of what appears to have been a large, Early Roman, sub-rectangular enclosure lying just south of the head of the Ebbsfleet have been identified on several occasions during previous investigations at Springhead. Possible components of this enclosure may have related to the curving Late Iron Age–Early Roman ditch which enclosed the area around the east side of the springs and may have formed an integral element of the Early Roman enclosure.

In the Early Roman period a metalled road, flanked by re-cut ditches, led SSE from the head of the Ebbsfleet towards the enclosure. It was subsequently buried beneath up to a metre of ?dumped deposits, upon which were small structures of late 1st to early 2nd century AD date. These were succeeded by a sanctuary complex of two main phases, the central part within an area partly defined by fence and pit lines. The earlier phase was of timber and the later and more fully-developed phase was built partly in stone. Both included a temple building facing the spring head from the south-east. A variety of ancillary structures and features, including pits with special deposits, was present. Finds indicate use of the complex into the 4th century but the majority of the structural evidence is no later than 2nd century in date.

West of the head of the Ebbsfleet, part of Watling Street, a subsidiary road heading north-west, associated property boundaries and a variety of structures, including a possible bathhouse, a further temple, a late Roman wayside shrine, timber buildings of several phases and burials were examined.

Springhead can now be seen as both more extensive and more complex than previously understood. The religious activity within the settlement is clearly polyfocal, having significant components outside the previously-known temple enclosure, and there can be little doubt that the principal importance of the settlement lies in this aspect.

The major settlements of Roman Kent lay principally on Watling Street and in coastal locations at the ends of the roads radiating from Canterbury—Reculver, Richborough, Dover and Lympne. Further west a substantial roadside settlement with an estimated area of *c* 15 hectares has now been identified at Westhawk Farm, just south-west of Ashford at the junction of Margary's roads 130 and 131. This lacks the stone buildings found in the other sites of this category, but incorporated elements of regular planning in its layout (Booth *et al*. 2008). The structural evidence included an irregular polygonal shrine (Booth 2001). Further north, Maidstone has been discussed as the possible site of a further nucleated settlement, for example by Wheeler (1932, 98–101, agnostic), Webster (1975, fig. 8, optimistic) and Detsicas (1983, 78–9, dismissive). The evidence is at best inconclusive and has been summarised most recently by Houliston (1999, 158) 'all that can be said is that there is an intensification of activity along the routes of the Medway and the main Rochester road in the Maidstone area'. In terms of the distribution of major settlement, however, Maidstone remains a plausible location for at least a modest nucleated site (Booth and Howard-Davis 2003, 26), perhaps related in some way to the nearby presence of the Late Iron Age centre at Loose/Boughton Monchelsea, and this aspect of the area merits further attention.

The major coastal sites all have an important military aspect, in the case of Richborough from the conquest period onwards, but there is little indication of significant military activity associated with any of the other towns and nucleated settlements. An early ditched enclosure at Springhead, sometimes thought to be of military origin (Penn 1965; cf Detsicas 1983, 60–2) was partly examined in HS1 Section 2 work, which does not indicate a specific military character (OWA 2006), although the suggestion of some military presence at Springhead is not inherently improbable. Military involvement in road and bridge construction (eg over the Medway at Rochester) is likely, but need not have been

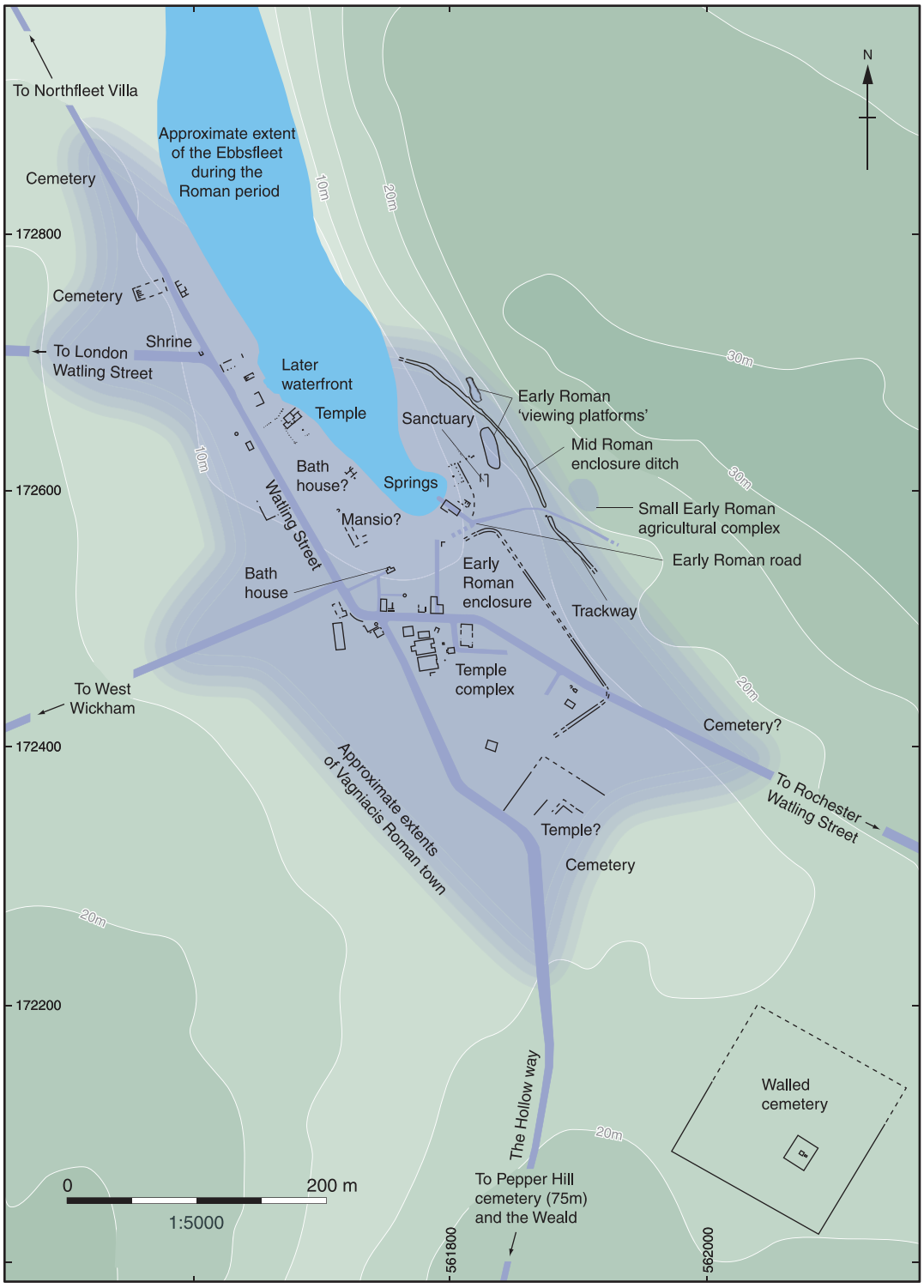


Figure 5.8 Plan of Roman Springhead (after Andrews *et al.* 2011, fig. 4.2)

long term. The impact of the military after the immediate conquest period (regardless of the location of the invasion of AD 43) may therefore have been relatively slight in many cases. It could have been felt most specifically in relation to iron production in the south-western part of the county; this is discussed further below. An alternative view, however, is that 'military control of the terminal points of the route through Kent from the Channel ports to London could have given Early Roman Kent a profoundly military character' (Mattingly 2006, 138). There is no evidence from the HS1 sites that would support such a perspective, but possible evidence of military activity close to the line of Watling Street is known a little further west, near Dartford, where a potential temporary camp has been identified (Philp and Chenery 2001; Simmonds *et al.* 2011, 76, 194–5). This is not closely dated, but can almost certainly be assigned to the 1st century AD.

The Late Iron Age and Roman settlement pattern

There was notably little connection between those HS1 sites which produced Late Iron Age (as defined above) and later pottery, and those which produced material in earlier traditions analysed as part of the later prehistoric ceramics programme. Many sites had evidence for activity of one or the other major period, but few had evidence for both, and where this did occur there was often spatial discontinuity between features assigned to the two periods, as for example at Beechbrook Wood (see below). The implication of this is that there was significant discontinuity of settlement patterns, at least at very local level, between the Middle and Late Iron Age, although occasional exceptions exist, notably a recently-excavated site at Ashford Orbital Park very close to the HS1 site of Boys Hall Moat, which has Middle and Late Iron Age but no Roman occupation (Anker and Biddulph 2011). Such sites apart, the absolute chronology of Middle to Late Iron Age settlement discontinuity is uncertain, however, for ceramic-related reasons such as a lack of closely-dated imports outlined above and because the problem has not been addressed by a concerted programme of radiocarbon dating.

The clearest example of a close but slightly indirect relationship between settlements of Middle Iron Age and Late Iron Age–Early Roman date amongst the HS1 sites is seen in the southern part of the large site at Beechbrook Wood (Fig. 5.9). Here a double-ditched oval enclosure (Enclosure 3072) assigned to the Middle Iron Age was succeeded by ditched features close by to the west and south-west, the alignments of some of which make it clear that they respected the outer enclosure ditch, although the plan is not sufficiently coherent to support the suggestion that these features should be seen as an 'extension' of the Middle Iron Age enclosure (Fig. 5.10). More interesting, in terms of the relationship between these two phases of activity, is the suggestion that the placing of a small group of Late Iron Age cremation burials close to the entrance of Enclosure 3072 was related to termination of use of the enclosure (Brady 2006a).

The proximity of and spatial relationships between the Middle Iron Age and later features here are sufficient to suggest that continuity of community may be envisaged, even though the absolute chronology of the pottery is insufficiently precise to demonstrate this. A similar situation may have existed at Little Stock Farm where Late Iron Age enclosures overlay a Middle Iron Age trackway and other features (see Fig. 5.15). In general, however, such patterns are notable for their rarity in the HS1 transect.

There is equally relatively little evidence for continuity of more extensive landscape features, some of which might have been expected to survive whatever the

Figure 5.9 Beechbrook Wood: plan of Middle Iron Age to Roman features

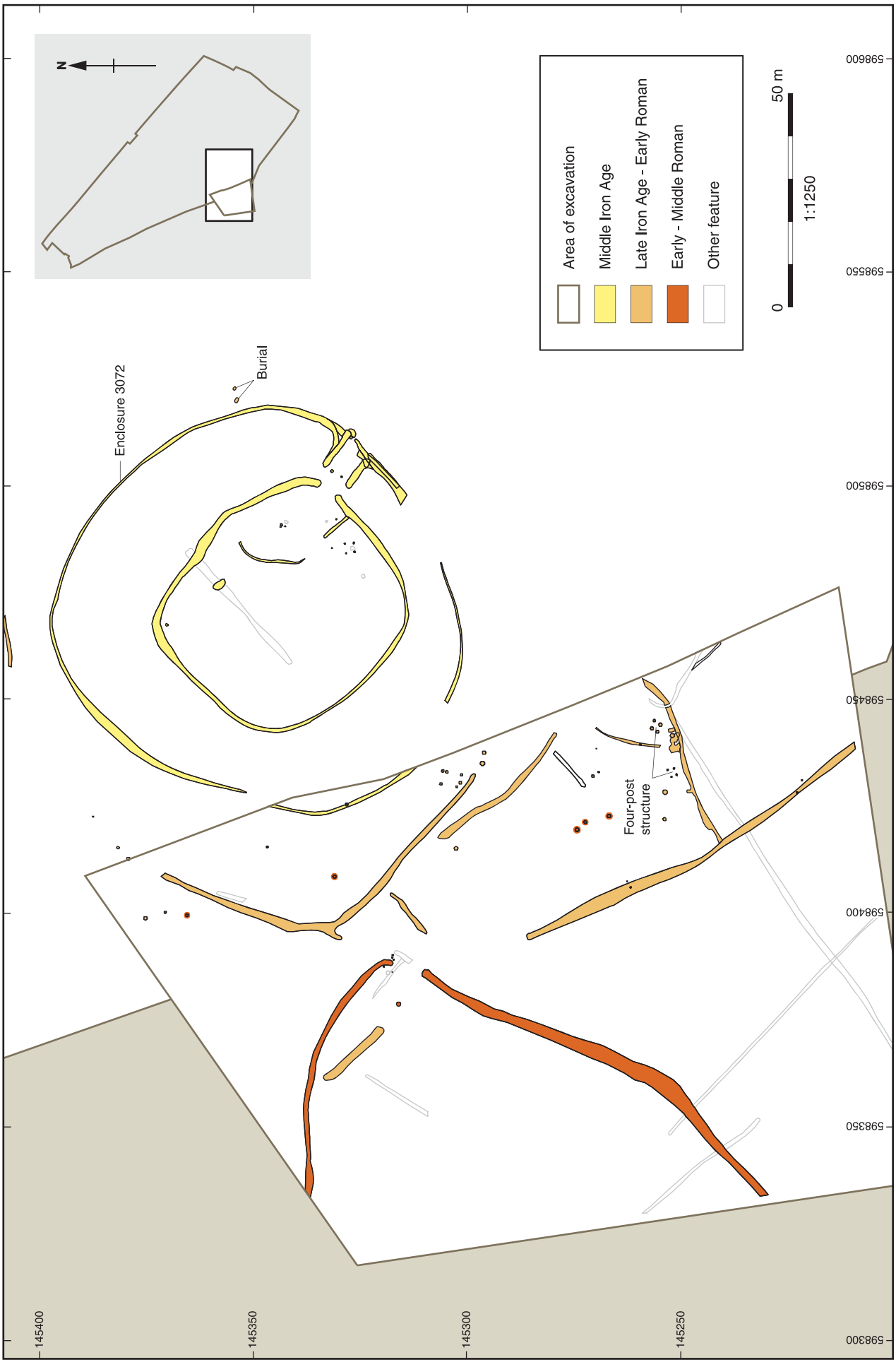


Figure 5.10 Beechbrook Wood South: plan of Middle Iron Age to Roman enclosures

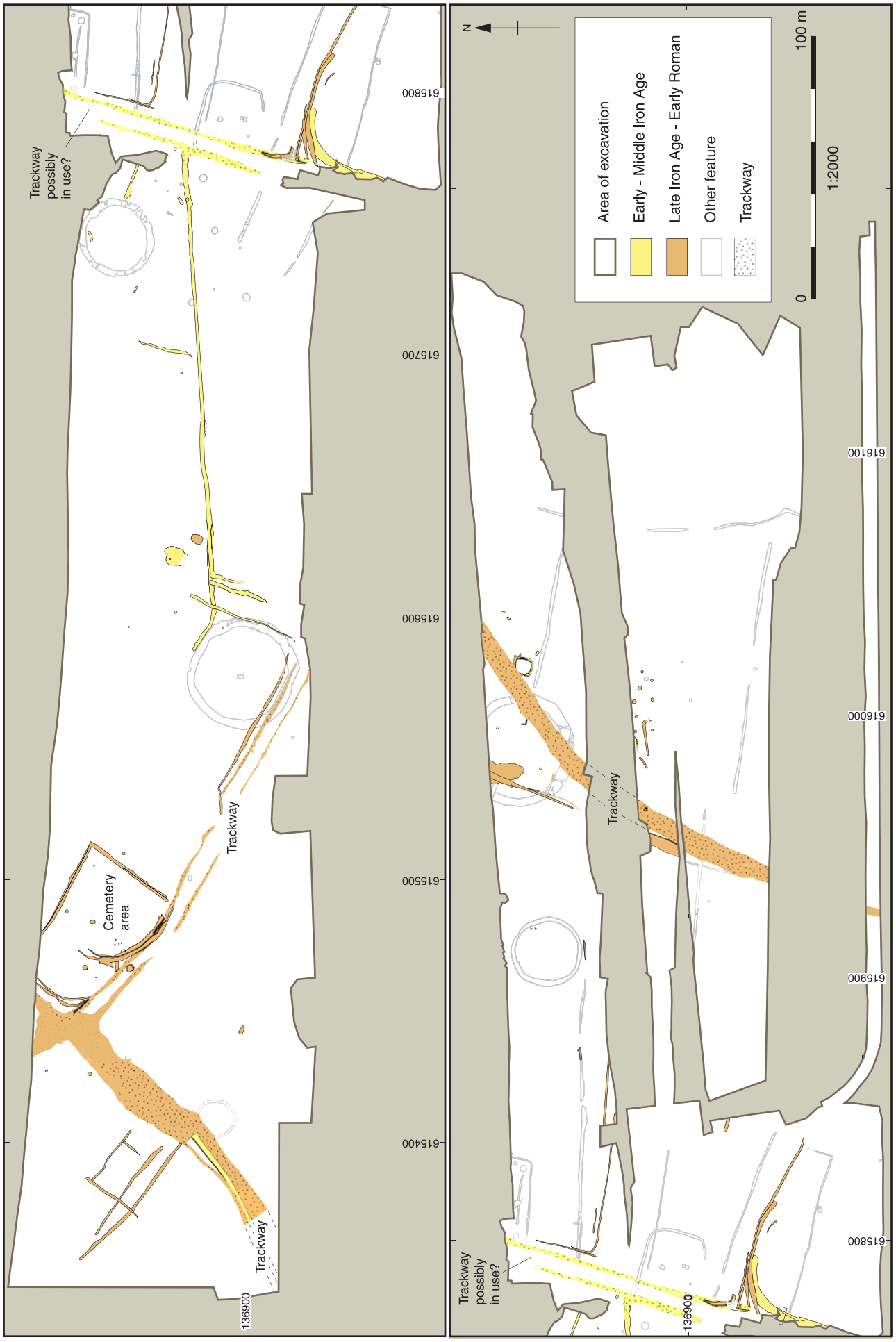


Figure 5.11 Saltwood Tunnel: overall plan of Iron Age and Roman features showing location of trackways

causes of settlement relocation may have been. At Saltwood Tunnel, three trackways, all aligned broadly NE-SW, which are thought to have originated in the Early/Middle Iron Age, all survived in use into the Roman period and one (trackway 10156, at the western end of the site) was joined by subsidiary trackways of Roman date (Fig. 5.11).

Again this pattern appears unusual, although this may be a consequence of the inherent difficulty of dating such features, some of which—while apparently of Late Iron Age and later date—might have been established earlier. On balance, however, the consistent association of many trackways with dating material and with settlement components apparently exclusively of Late Iron Age and Roman date suggests that this was indeed the time when they were put in place. Occasionally trackways relate to earlier settlement features but without any indication that the latter were maintained into the Late Iron Age or later. So for example at White Horse Stone (see Fig. 5.7), a trackway entering the site from the south-west led into an area defined by ditches which surrounded the location of the majority of the Iron Age settlement, by now long out of use, but themselves enclosed no significant Roman features. Generally, however, identification of ditched trackways as landscape features of later Iron Age and later date, rather than having earlier origins, is consistent with wider patterns discussed by Taylor (2007, eg 57–65, 113). Overall, therefore, the contrast between Middle and Late Iron Age patterns of activity may represent not discontinuity of settlement location between the two periods but rather a significant and perhaps rapid increase in the density of settlement in the later period, along the lines discussed by Hill, who sees parts of Kent as amongst those regions which 'seem to have had relatively little permanent settlement *c* 300–100 BC' (Hill 2007, 24). From a Roman perspective at least, the HS1 Section 1 evidence seems potentially consistent with this view, with an increase in density of settlement implied for the period from the early 1st century BC onwards.

As already mentioned, many HS1 sites may have grown up in the second half of the 1st century BC. At Hockers Lane, Eyhorne Street and perhaps Little Stock Farm, however, occupation probably commenced as early as the beginning of the century. This is best established in the case of Hockers Lane, where the pottery evidence was supplemented by a Class I potin coin, stratified in a ditch of the first phase (although such coins could have circulated right up to the time of the Roman conquest; Holman 2000, 208). The pottery assemblage from Eyhorne Street was smaller and less well characterised and, unusually, activity here (and also at Little Stock Farm, as at Ashford Orbital Park mentioned above) may have ceased in the 1st century AD before the Roman conquest. For the majority of the remaining sites a start date about the middle of the 1st century BC or within the second half of the century seems likely, with continuity of activity thereafter at least into the 2nd century AD in most cases. Of the 30 'locations' of Late Iron Age and/or Roman activity mentioned above (sites more than *c* 500m apart, as in the north and south parts of Beechbrook Wood, have been considered to be separate locations), pottery evidence indicates that a pre-conquest origin is likely at 27, with only Pepper Hill (effectively), Hazells Road and a minor site at Nashenden Valley being entirely of post-conquest date.

The evidence just discussed suggests a relatively dense pattern of activity, although with a total route length for HS1 Section 1 of *c* 74km (excluding the length of the North Downs Tunnel but including the 5.5km stretch through Ashford and Sevington where archaeological observation was at a minimal level) this represents only one 'site' per 2.5km (or 0.4 sites per km) in the Late Iron Age, the period with the greatest number of locations of activity.

Late Iron Age and Roman sites are listed in Table 5.1 in geographical sequence from north-west to south-east, relating them to the sub-regional landscape zones defined for the project as a whole (Zones 1–8).

Presented graphically (Fig. 5.12) it is clear that the distribution of sites across the sub-regional landscape zones was not even. The North Kent plain (Zone 1) was relatively densely occupied, with an average of 0.6 sites per km, but the area immediately west of the Medway and the higher parts of the Downs (Zones 2 and 3) had fewer sites (none at all of this period in Zone 2). Zones 4–8 all occupy a broadly similar topographical location, but closer to the foot of the Downs at the north-west (Zone 4) and moving into the southern coastal area in Zone 8. Within these zones there is, however, considerable variation in settlement density, from typically 0.2–0.3 sites per km up to 0.9 sites per km in Zone 6, north-west of Ashford (site density in the adjacent Zone 7 increases to 0.5 sites per km if the 5.5 km stretch of minimal archaeological intervention through Ashford is excluded from the calculation).

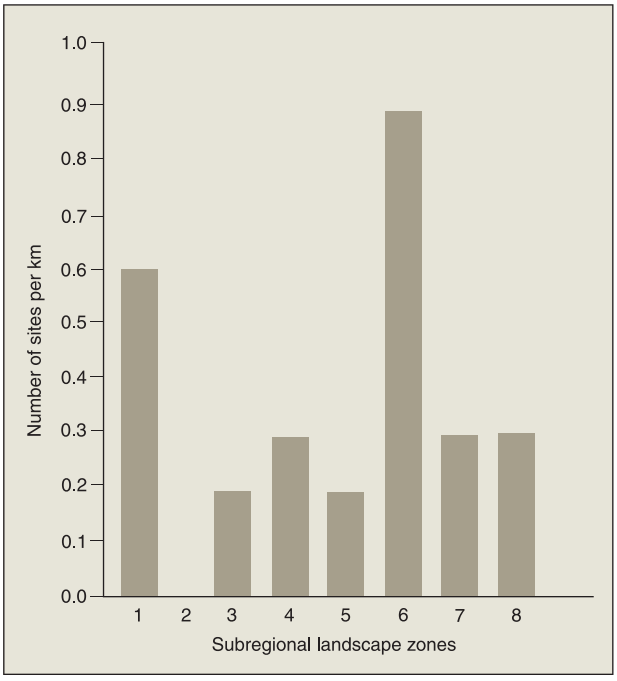


Figure 5.12 Distribution of late Iron Age and Roman sites per km by landscape zone

Table 5.1 Late Iron Age and Roman sites in landscape zone sequence

Landscape Zone	*Length (km)*	*Principal Site element*	*Minor site*	*Comments and LIA/RB Context*
1. Boundary of North Kent Plain/ North Downs dip slope (Upper Chalk/ head deposits)	11	Whitehill Road South of Station Road Pepper Hill Hazells Road Northumberland Bottom, E of Downs Road Northumberland Bottom, W of Wrotham Road Tollgate		Dominated by Springhead and the line of Watling Street. An area of relatively intensive settlement
2. North Downs dip slope (Upper Chalk/head deposits)	5	-		Villa at Cobham Park lies just to the south
3. North Downs scarp slope (Upper Chalk/head deposits)	8.5	White Horse Stone	Nashenden Valley	N-S Rochester to Weald road with probable settlement/temple complex just to the north at Blue Bell Hill and cluster of villas, including Eccles, in the Medway valley to the west
4. Wealden Greensand, Vale of Holmesdale (Gault Clay)	7	Hockers Lane Thurnham		?Oppidum complex at Quarry Wood, Loose to SSW and possible nucleated settlement at Maidstone. A number of villas and other rural settlements in the Maidstone area
5. Wealden Greensand (Lower Greensand – Folkestone and Sandgate Beds)	13	Snarkhurst Wood	Eyhorne Street Chapel Mill	Little known except for Runhams Farm, Lenham, settlement with some iron production
6. Wealden Greensand (Lower Greensand - Folkestone and Sandgate Beds)	8.5	Leda Cottages Beechbrook Wood north Beechbrook Wood south	Hurst Wood Newlands Leacon Lane Westwell Leacon Tutt Hill (Parsonage Farm) Lodge Wood	Small villa north of HS1 line at Charing (Detsicas 1975a) at north end of this zone. Notable concen tration of settlement etc in Ashford area to the south (see below)
7. Wealden Greensand (Lower Greensand - Atherfield Clay)	17.5	Bower Road Little Stock Farm	Boys Hall Blind Lane Church Lane E of Station Road	12 km excluding Ashford stretch. Extensive LIA settlement in south Ashford, including sites such as Brisley Farm. Canterbury-Weald road and road from Lympne form junction, with major roadside settlement at Westhawk Farm
8. Wealden Greensand (Lower Greensand - Folkestone and Sandgate Beds). Coastal zone	3.5	Saltwood Tunnel		Canterbury-Lympne road, coastal establishments at Lympne just to SW. Rural settlement in Folkestone area to east

These figures must be used with caution, since a variety of non-archaeological factors could have had a bearing on the visibility and location of sites as well as on wider aspects of the location of the HS1 transect in relation to settlement patterns. Nevertheless, the broad trend is illuminating. Marked concentrations of activity are seen in the northern coastal plain and in the vicinity of the valleys of the Great and East Stour in the Ashford area, while the North Downs are particularly thinly occupied. How are these broad variations to be explained? The physical characteristics of the landscape clearly played a part. The highest parts of the Downs, for example, have never been favoured locations of settlement (Lawson and Killingray 2004 passim) and the Late Iron Age and Roman periods would not be expected to show a marked contradiction of this trend, though the absence of sites in Zone 2, west of the Medway, is less easily accounted for, particularly as the villa at Cobham (Tester 1961) lay just south of the HS1 trace. The villa may have been so close, however, that there were no other settlements in the immediate vicinity. Moreover, the HS1 route is so close to the line of Watling Street over a 2km length that the presence of rural settlements would be unlikely in this stretch since such settlements do not typically front directly onto major roads.

The figures can be compared with general data on Romano-British site distribution. Data from a variety of regions in lowland Britain assembled by Millett (1990, 184) suggested a mean of 0.8 (±0.5) sites per km^2. This is quite close to a crude figure of 0.9 sites per km^2 for

England overall, obtained by dividing the total area by a notional figure of some 117,000 'possible sites' quoted by Taylor (2007, 23). The figures are of course not intended to stand up to detailed analysis, but are useful as potential indicators of order of magnitude. The HS1 data can be adjusted to bring them into line with these estimates; on the assumption that the average width of the HS1 transect was *c* 200m (perhaps a generous estimate), the figures given above (per linear km) can be multiplied by five to give numbers of sites per km^2. This could suggest figures of up to 4.5 'sites' per km^2, or densities (except in Zone 2) consistently equivalent to and in places up to five times the mean suggested by Millett, if each of the 'sites' constituted a settlement. Such figures are not impossible at a local level; the highest could suggest the presence of multiple small farmsteads each on average about 20 hectares in extent (or almost 50 acres—for comparison it may be noted that a large majority of landholders in the Weald in the 16th–early 17th century held 50 acres or (often considerably) less (Zell 1994, 22–9)) and in turn implies a densely settled landscape. Alternatively the high figures may reflect a particularly favourable topographical/environmental niche preferentially occupied by settlements and coincidentally by the HS1 transect, thus exaggerating estimates of settlement density. However, while the densities suggested around Ashford probably are high in comparison with the Wealden clays and the Downs to the south-west and north-east respectively, there is no particular reason to believe that they are not representative of the Vale of Holmesdale/Chart Hills area, and they are supported by other evidence for intensive Late Iron Age–Early Roman activity in the Ashford area (eg Johnson 2002; Philp 1991; Rady 1992; 1996).

Such a concentration of settlement, and its potential contrast with adjacent areas, suggests considerable local variation in intensity of exploitation, in part reflecting the diversity of the landscapes encountered. Such an interpretation may imply a degree of environmental determinism in relation to settlement location, although it is notable that a number of the sites close to HS1 in south-east Ashford are in low lying areas recently characterised by relatively poor drainage, so this explanation may have limited validity. The environmental picture drawn from the HS1 evidence itself does not seem to show enough variability to account for the most pronounced differences in settlement density along the route (although there are insufficient data for this to be certain). Social factors were therefore presumably also important in determining variations in settlement density and character.

Rural settlement: physical characteristics and development

Rigid categorisation of the rural settlements encountered by HS1 has not been attempted as it is unlikely to be very meaningful, particularly in view of the incomplete nature of most site plans; there is not one single complete settlement enclosure from the whole of the scheme. Distinctions can be made, however, on the basis of characteristics of overall site morphology, the form of enclosure elements, architecture and the range of social end economic contacts and practices suggested by artefactual and ecofactual evidence. A combination of these factors allows the separation of Thurnham, unsurprisingly, from most of the other sites. This is based principally on architectural criteria, however, because as will be seen there are some aspects in which Thurnham is not readily distinguished from other HS1 settlements. Bower Road is in many respects similar to Thurnham and could perhaps represent part of a villa complex, the domestic focus of which lay outside the HS1 line. Traces of the regular rectilinear site layout of Thurnham and Bower Road may also be seen in the eastern part of the Northumberland Bottom complex (west of Wrotham Road). While only the margins of this site fell within the HS1 footprint, parts of the northern side of what is fairly certainly the same enclosure complex were subsequently revealed in excavations on the line of a new route for the A2 (Allen *et al.* forthcoming) and confirm the firmly rectilinear nature of its layout. That this was probably a site of relatively high status is strongly suggested by the associated burials also discovered on the A2 (ibid.; see further below). Elsewhere, settlements appear to be characterised by layouts of enclosures and other boundaries of varying degrees of regularity and do not lend themselves to detailed typological subdivision.

Chronology and character of development from the Late Iron Age onwards

Late Iron Age settlements were not only for the most part chronologically and spatially distinct from those of the Middle Iron Age, and correspondingly chronologically continuous with Early Roman activity, but in terms of physical form and location they are rarely distinguished from the latter in any meaningful way. These Late Iron Age–Early Roman sites were generally characterised by linear features and enclosed elements, sometimes of quite irregular plan. A tendency for settlement layouts to become more regular, with enclosures laid out on more nearly rectilinear lines in their later phases, which is seen in some parts of Roman Britain (for example in some parts of the Upper Thames Valley from the early 2nd century AD; Booth *et al.* 2007, 43) and in northern France (Haselgrove 2007, 506) was not commonly observed here.

Enclosures

Enclosure is very often a dominant characteristic of both Late Iron Age and Romano-British rural settlement (eg Hingley 1989, 55–9; Taylor 2007, 24) and the HS1 sites are no exception to this, although Taylor (ibid.) notes their (apparent) relative scarcity in Kent (except for the

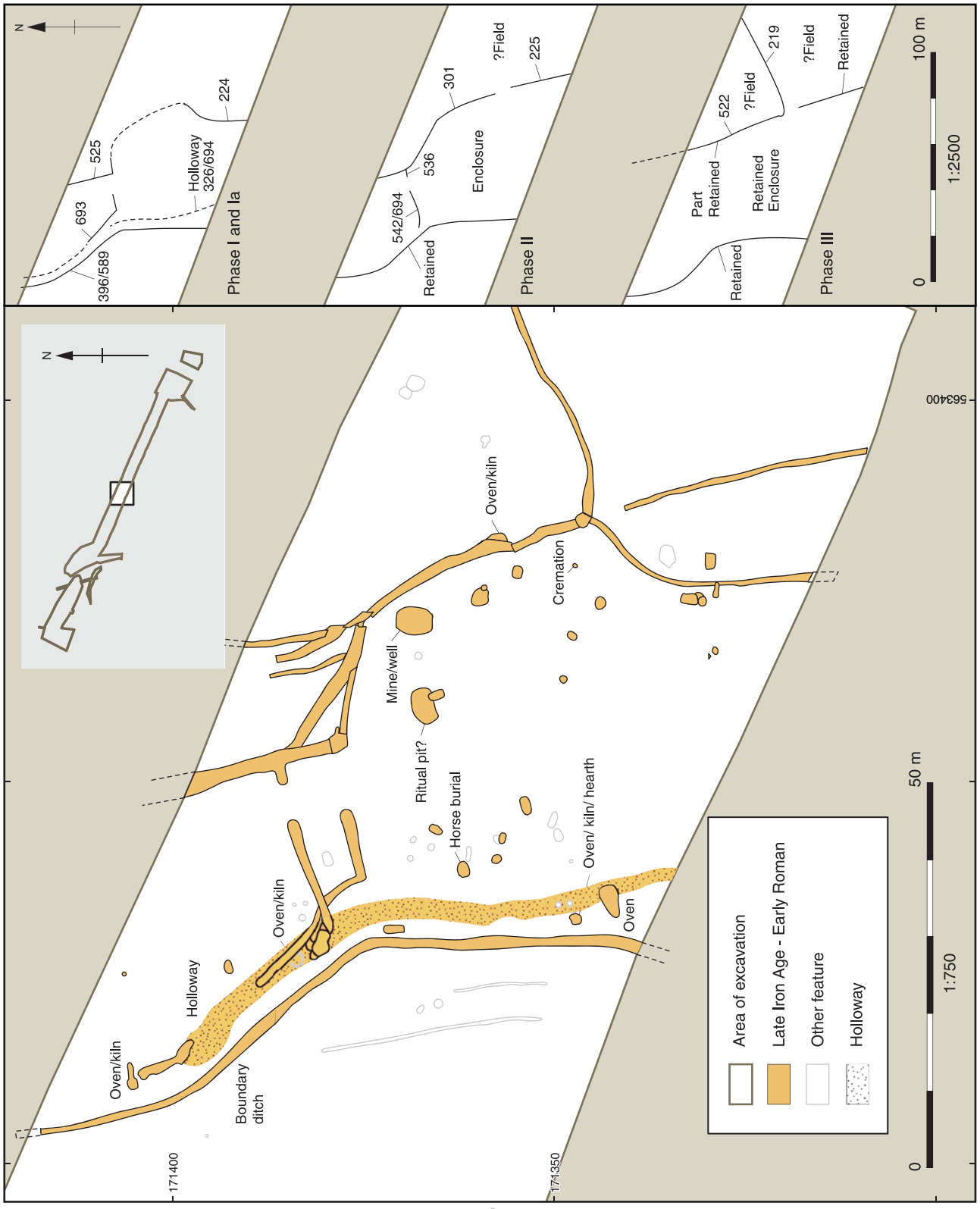


Figure 5.13 West of Northumberland Bottom (East of Downs Road): overall plan of Late Iron Age–Early Roman features and schematic representation of phase development

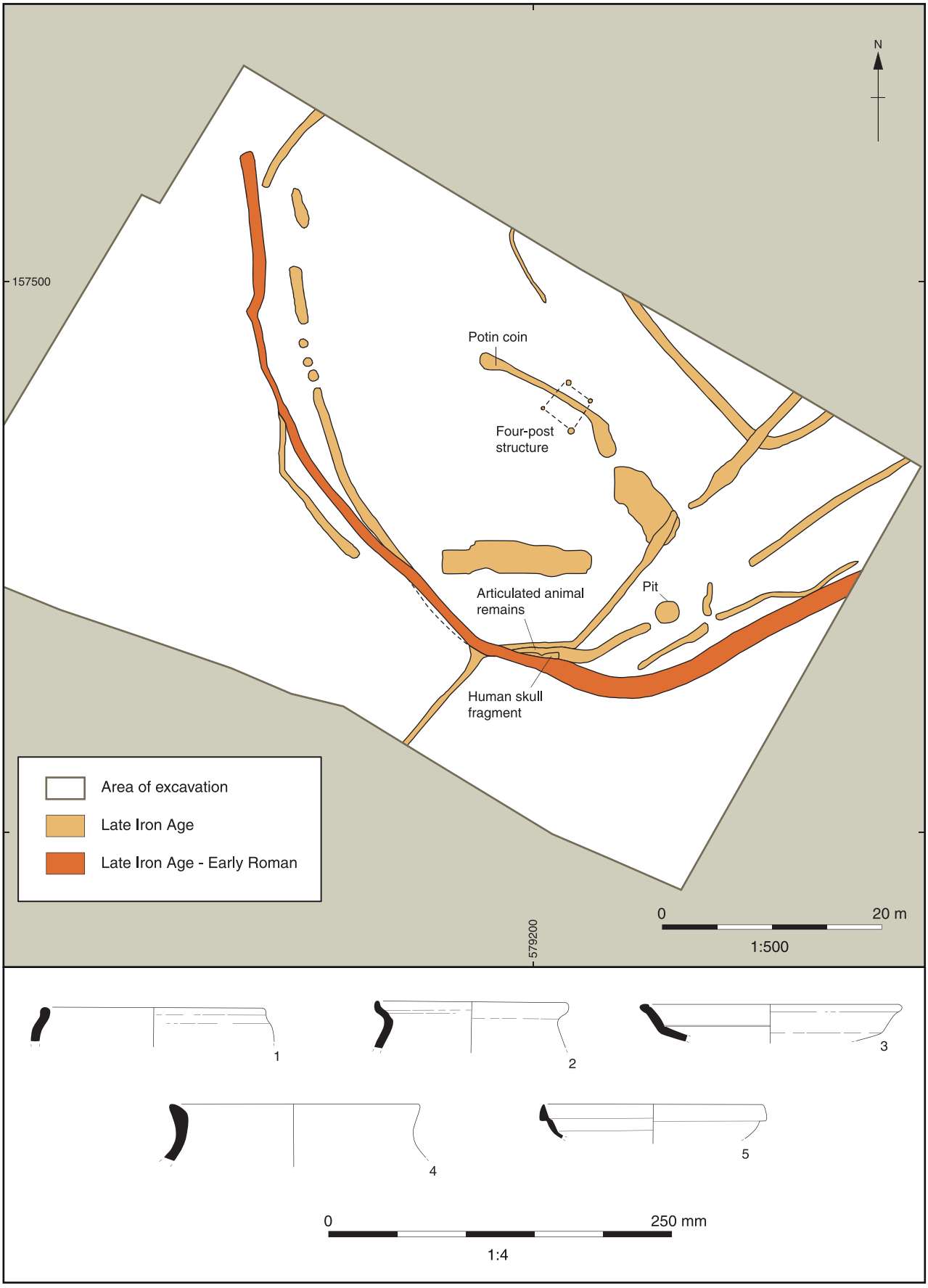


Figure 5.14 Hockers Lane: overall plan of Late Iron Age–Early Roman features and selected Late Iron Age pottery

eastern extremity of the county) and other parts of the South-East. Enclosures (of one shape and another) are a consistent feature of all the main HS1 settlements and variations in their plan constitute one of the most obvious (but not necessarily the most meaningful) ways of considering settlement form. The occasional survival of simple ditched enclosures from the Middle Iron Age into the Late Iron Age is seen at sites such as Farningham Hill (Philp 1984, 7–71), though there is still insufficient evidence from the area for it to be certain that such enclosures were typical of the Middle Iron Age. Not all Late Iron Age and later enclosures necessarily related strictly to settlement; the ditches that defined the Pepper Hill cemetery (see Fig. 5.44) are the most obvious exception, though they did not constitute a coherent enclosure form. The small rectangular enclosure at the trackway crossing at the west end of Saltwood Tunnel, which defined the cemetery there (see Fig. 5.11), whether or not this was its primary intended function, is a clearer example. The northern enclosure at Beechbrook Wood, which seems to have been associated specifically with iron production, may have been another (see Fig. 5.39).

There seem to have been two broad groupings of enclosure types, although the distinction between them is not always clearly drawn. The first group may be defined as 'irregular and evolving' and the second as sub-rectilinear and rectilinear. Sites in the first category include Northumberland Bottom (East of Downs Road) (Fig. 5.13), Hockers Lane (Fig. 5.14) and Beechbrook Wood, particularly the southern area (see Fig. 5.10), although the extent to which the features there can be defined as an enclosure at all might be questioned.

The sinuous character of the East of Downs Road site may be linked to its position on the chalk hillside and was also partly determined by the line of an adjacent trackway which may have predated the domestic site. These conditions did not apply at Hockers Lane and Beechbrook Wood, but in the southern settlement area at the latter site the location of the rather irregular linear features reflected the presence of the adjacent Iron Age enclosure. This, however, was of unusually clearly-defined concentric circular form. None of the enclosures in question was completely excavated, so little more can be said.

Sub-rectilinear and rectilinear enclosures are encountered more widely, but again the incomplete nature of site plans may render this category of limited value. At Little Stock Farm a sequence of relatively rectangular enclosures, probably entirely of Late Iron Age date, overlay a fairly rectilinear Early–Middle Iron Age arrangement of possible trackways and other linear features (Fig. 5.15; Ritchie 2006). The Late Iron Age enclosures were superseded by a track or droveway on a similar east-west alignment. Dating evidence was almost non-existent, so the timespan during which the trackway was in use is unknown, but survival at least into the Early Roman period is distinctly likely. The Little Stock Farm enclosures may have been agricultural in function rather than relating strictly to settlement, and as a result of the paucity of associated artefacts, dating of subphases of the enclosures is difficult. A comparable arrangement, in which successive stages of rectilinear enclosure can be seen clearly, is found at South of Station Road. Here only one corner of the enclosures projected into the excavated area, but it was noticeably angular in plan. An oven with associated cereal remains was set in what may have been the latest phase of the ditch, an association that is noted quite commonly in the HS1 rural settlement sites, as for example at Northumberland Bottom West of Wrotham Road (see Fig. 5.34).

Other approximately rectilinear enclosures are seen at Northumberland Bottom (West of Wrotham Road) (Fig. 5.16), Thurnham (see Figs 5.20, 5.23), Snarkhurst Wood (see Fig. 5.18) and Leda Cottages (see Fig. 5.17).

Of these, the West of Wrotham Road enclosures appear markedly rectilinear (see above). As at Downs Road to the west, one side of the enclosure lies alongside a trackway, but the regular layout appears to be much less conditioned by nuances of topography than in the former site. While only the southern edge of this enclosure system was encountered within the HS1 trace,

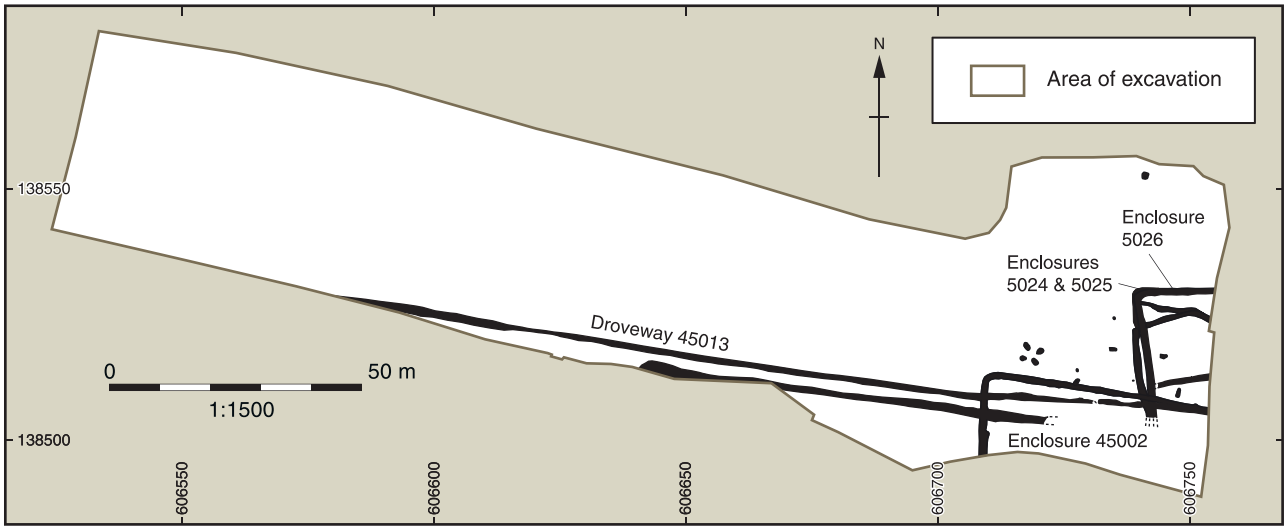


Figure 5.15 Little Stock Farm: Late Iron Age trackway and enclosures

it is clear that to the north a similarly rectilinear layout was maintained. It is likely that this was broadly the case at Thurnham, but here the definition of the north-east side of the settlement enclosure was never very clear, except in the Late Iron Age phase. It is possible, however, that in the later phases this boundary lay beyond the limit of the excavated area. This was always true of the south-western part of the enclosure, where it has been plausibly suggested that the alignment of the ditch would have lain at the break of slope at the top of the small plateau upon

Figure 5.16 West of Northumberland Bottom (West of Wrotham Road): overall plan of Roman features

which the main buildings were situated (Lawrence 2006). Also of interest at Thurnham is the relationship of the successive phases of the enclosure to what seems to have been a more extensive boundary feature to the north-west. Apparently separate from the enclosure ditch itself in the Late Iron Age phase, this feature was realigned to accommodate the proto-villa house (see Fig. 5.23) and realigned again to provide space for the Middle Roman villa (see Fig. 5.26), the foundations of the latter being carefully placed right to the bottom of the Early Roman ditch. In these phases the ditch defined the north-western limit of the occupied area and formed that side of the settlement enclosure, though it seems likely to have continued both north and south of the enclosure. It was only in the Middle Roman period that further enclosures to the east of the main villa complex reached their most developed form, surrounding a subsidiary building and defining other aspects of the approach to the villa.

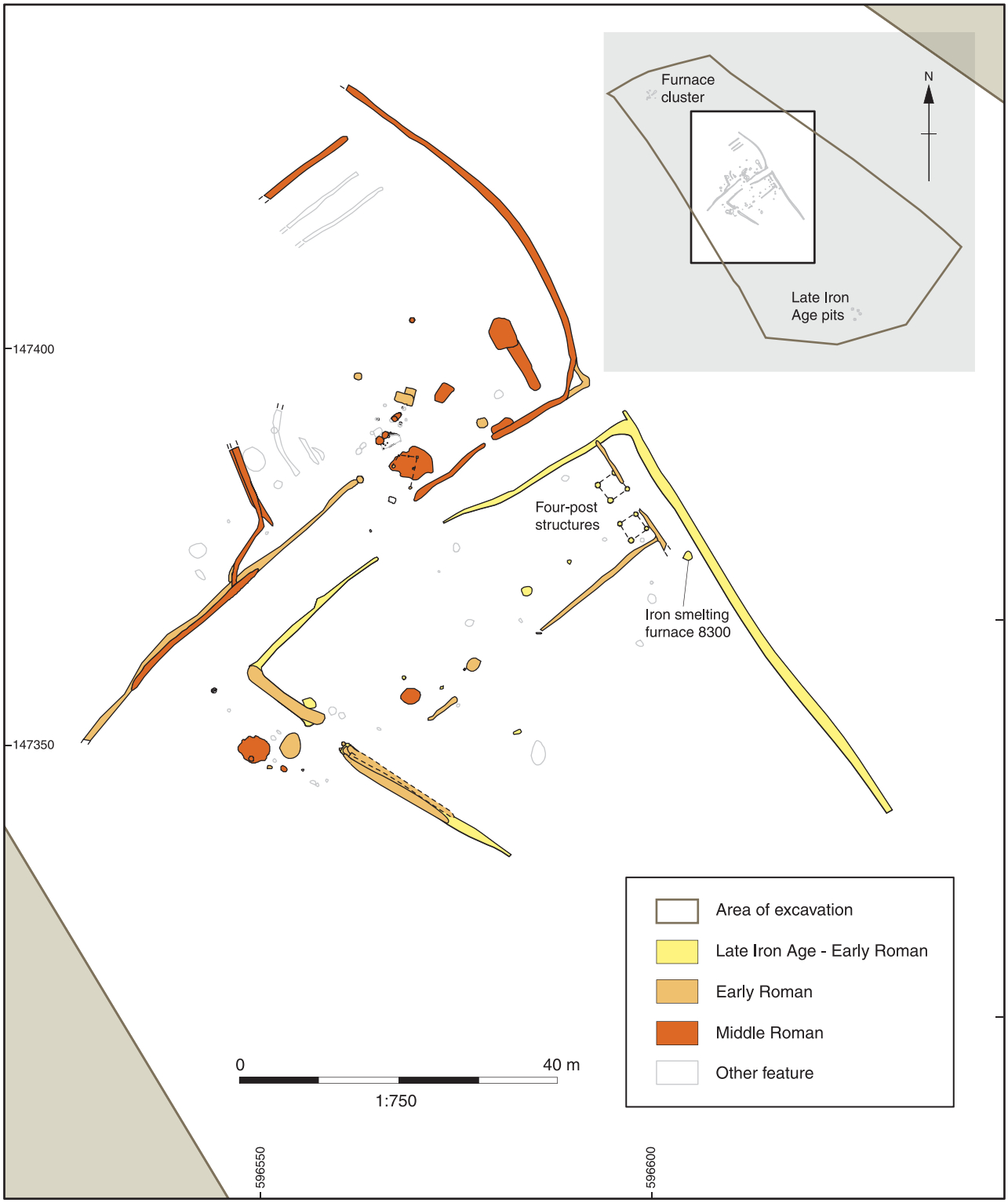


Figure 5.17 Leda Cottages: overall plan of Late Iron Age and Roman features

At both Snarkhust Wood and Leda Cottages it looks as if the Early–Middle Roman layout of principal linear features was actually less regular than that which had been in use earlier. At Leda Cottages (Fig. 5.17) the main Late Iron Age 'enclosure' was a three-sided feature with gaps in two of the sides, but no trace of the fourth (south-east) side. It is possible that this was simply a result of variable preservation, but sections excavated toward the south-east ends of the north-east and south-west sides showed that these ditches were about 0.5m deep (Diez 2006a), ie they were not becoming increasingly shallow towards their termini, so erosion does not seem a likely explanation. It is perhaps more likely that the 'missing' side of the enclosure was formed by an organic feature such as a substantial hedge or a patch of woodland which has left no distinct trace in the archaeological record. To the north, however, it is clear that the survival of linear features is very much more variable and the vagaries of the plan of the north-west 'enclosure', again separated from the original one by a trackway, are probably explained by preservation factors.

At Snarkhurst Wood (Fig. 5.18) a trackway was again an important component of the plan, but here in the Late Iron Age phase it ran into the ?principal enclosure, rather than lying alongside it. A curious feature was an arrangement of postholes between the trackway ditches just outside the point at which these ran into the enclosure. The positioning seems too precise to be coincidental, and it is possible that these features formed part of a system of control of stock movement into and out of the enclosure (Diez 2006b). As already mentioned, the later features at Snarkhurst Wood suggest less of a concern with enclosure definition than in the Late Iron Age. In particular, the well-defined trackway from the west was suppressed and the western side of the enclosure redefined with slighter ditches of more irregular layout. There is little indication of significant changes in the character of activity within the enclosure, however; four-post structures, for example, were present in both Late Iron Age and Early to Mid Roman phases.

Overall, therefore, there is little indication of systematic development of enclosure form, for example from irregular to more rectilinear plans. Such a sequence is only seen clearly at one site, Bower Road (Fig. 5.19). Here an irregular layout of Late Iron Age and Early Roman ditches was directly replaced by a much more orthogonal series of enclosure ditches and other features in the Middle Roman period (Diez 2006c). The extent to which the early features themselves formed part of settlement enclosures is uncertain, however, and it is possible that most related to an evolving sequence of trackways adjacent to settlement, rather than defining the settlement itself. Either way, the rectilinearity of the subsequent features is particularly marked and implies at least local reorganisation of the landscape in the way that was seen rather earlier, for example, at nearby Little Stock Farm.

The scale of enclosure ditches is consistently fairly modest. There is no indication that these were ever seen as defensive in character; as a broad generalisation they rarely exceeded 2m in width and 1m in depth. The emphasis of the enclosures was presumably on definition of occupation and other areas and containment/exclusion of stock. Only at Thurnham is there clear evidence for the provision of relatively substantial gateway structures, and these were almost certainly associated with status display and reinforcing the monumental aspect of the approach to the site. The potential stock control arrangements at Snarkhurst Wood (see above) were of very different character.

The incomplete nature of most of the HS1 enclosures is mirrored at other sites in the county where, even in recent relatively large scale projects, completely exposed settlement enclosures are lacking (again reflecting the largely linear character of such projects). Comparable sites include the West Malling and Leybourne Bypass, just west of Maidstone, where well-defined rectilinear ditched enclosures were dated to the Late Iron Age–Early Roman period (Ellis 2009, 9). Further enclosures of similar date and character have also recently been examined just south of there at Leybourne Grange (Biddulph 2011).

Buildings

A general lack of structural evidence is typical of the Late Iron Age and Roman settlement sites of HS1, although there is limited evidence for a variety of structural types. Four-post structures are the most significant exception to this lack, with a total of thirteen examples from six different sites assigned a Late Iron Age to Roman date range (Table 5.2). This structural tradition was well established in Kent as elsewhere in the country, with some 55 examples of Early–Middle Iron Age date at White Horse Stone alone (see Chapter 4). Two examples probably of later Middle Iron Age date were encountered on HS1 east of Downs Road (part of the Northumberland Bottom complex) and a further one of similar date was found at Beechbrook Wood; these provide the chronological link with Late Iron Age and later examples of this structural type.

The Late Iron Age and Roman four-post structures varied considerably in size, from noticeably small pre-conquest examples at Snarkhurst Wood (two *c* 1.2 x 1.5m; Diez 2006c) up to a broadly contemporary one at Hockers Lane measuring almost 3m square. The latter therefore provided five times the floor area of the Snarkhurst Wood structures, assuming that the conventional reconstruction as raised floor 'granaries' is followed. At Leda Cottages the largest assemblages of charred grain and chaff from the site came from the two four-post structures (8402 and 8403) (see Fig. 5.17). These remains indicate that cereal processing activities were taking place in the vicinity, and in addition structure 8402 produced some small weathered lava quern fragments. While suggestive, this evidence does not prove that these structures had a granary function because the grain and chaff-rich samples derived from the fills of the postholes and will generally have been

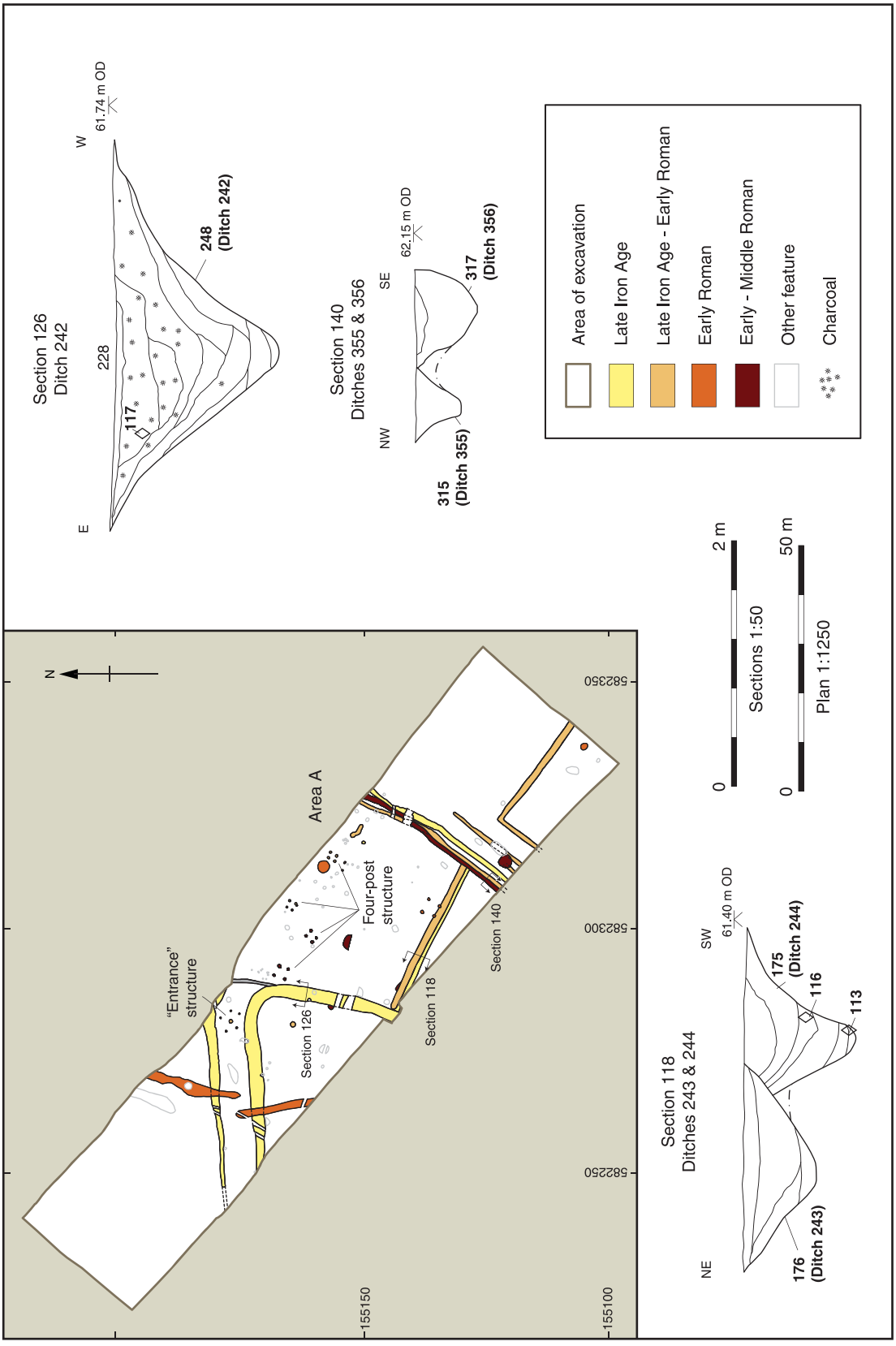


Figure 5.18. Snarkhurst Wood: overall plan of Late Iron Age and Roman features and selected sections

deposited after the disuse of the structures. Dating of the four-post structures was typically imprecise, though few are likely to have been later than the late 1st century AD. Three of the examples from Snarkhurst Wood, however, may have been in use (or even have been constructed) later than this, but they are not closely dated and could equally have been of mid–late 1st century date as later.

Only at Thurnham was there evidence for a contemporary association of four-post structures with other building types, in the Late Iron Age–Early Roman phase (perhaps *c* AD 20–60/70; Fig. 5.20).

Here one certain and one possible roundhouse were indicated by surviving lengths of drainage gully. One four-post structure lay within 2m of the incomplete gully, with the other some 10m east of it. Exact contempo-

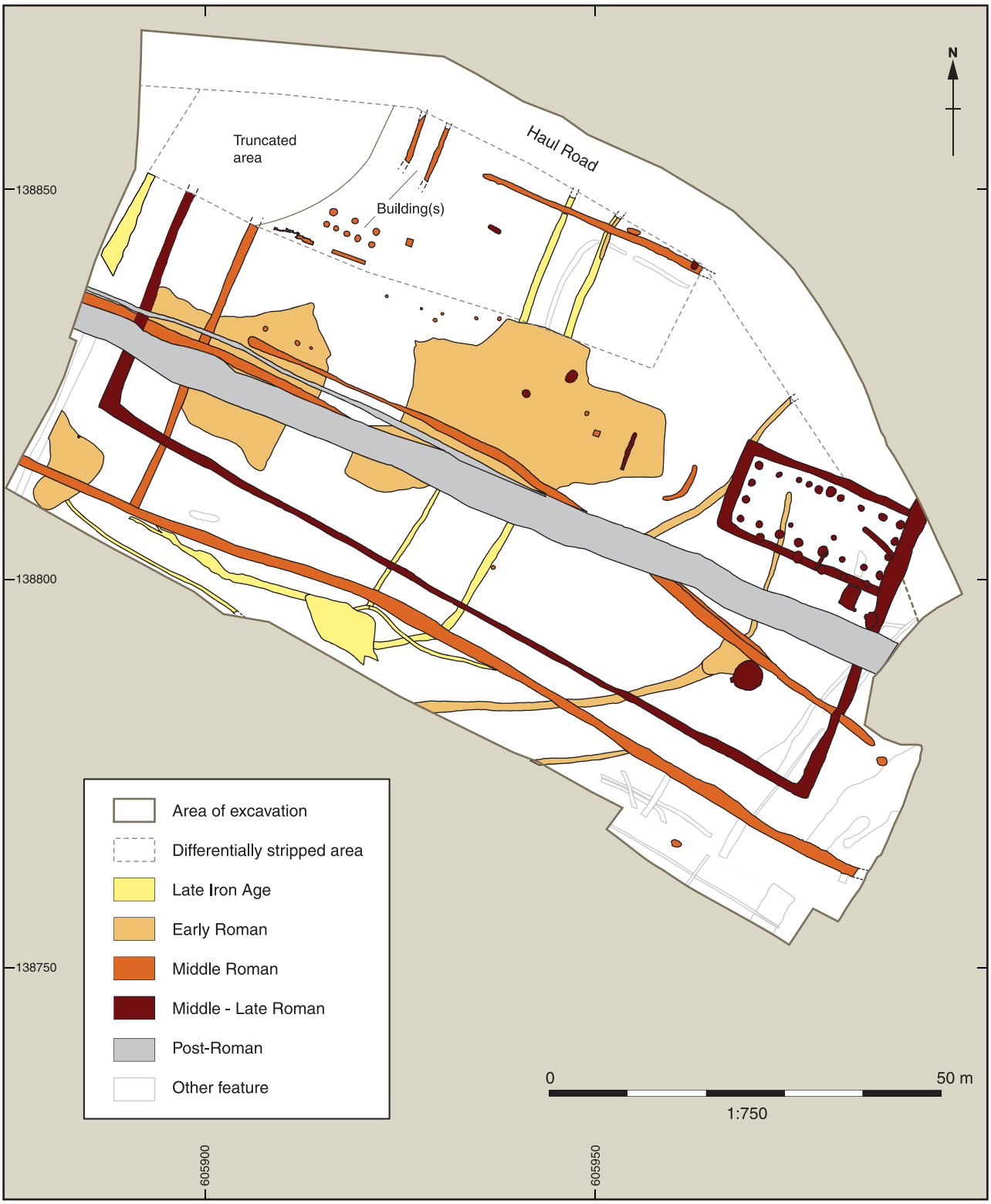


Figure 5.19 Bower Road: overall plan of Late Iron Age and Roman features

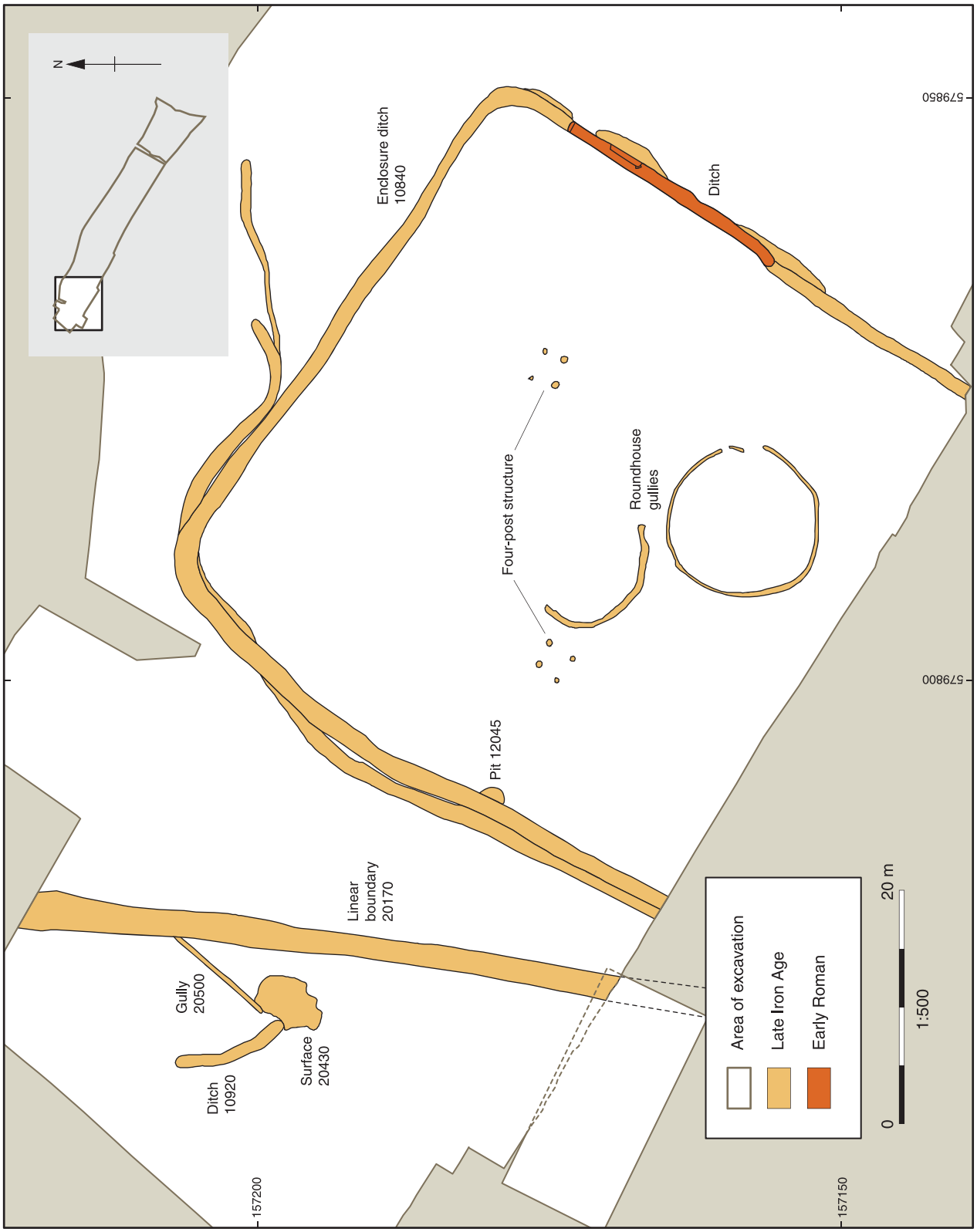


Figure 5.20 Thurnham: Late Iron Age phase plan

Table 5.2 Four-post structures, late Middle Iron Age to Early Roman

Site	Feature	Size	Date	Comment
Northumberland Bottom	group 40578	2.3m square	?late MIA	
(east of Downs Road)	group 40578	2.8m square	?late MIA	next to above
Hockers Lane	341	2.9–3m square	LIA (?50–1 BC)	
Thurnham	12710	2.5m square	LIA/ERB (?c AD 20–60)	
	12450	2.5m square	LIA/ERB (?c AD 20–60)	
Snarkhurst Wood	205	1.2 x 1.5m	LIA/ERB (50 BC–AD 30	
	204	1.2 x 1.45m	LIA/ERB (AD 30–50)	
	206	1.15 x 1.75m	E-MRB (AD 50–250)	
	207	2.12 x 2.33m	E-MRB (AD 50–250)	
	366	2.6 x 2.95m	E-MRB (AD 50–250)	
Leda Cottages	8402	1.9 x 1.5m	LIA/ERB (50 BC–AD 70)	in corner of enclosure
	8403	1.9 x 1.75m	LIA/ERB (50 BC–AD 70)	ditto - next to above
Beechbrook Wood	2203	*c* 2m square	?late MIA	Inside concentric enclosure
	6043	1.8m square	LIA/ERB (?50 BC–AD 100+)	
	6044	1.5m square	LIA/ERB (?50 BC–AD 100+)	fairly close to above, but on different alignment
Little Stock Farm	5015	2.6m square	LIA (120 BC–AD 43)	

raneity between these structures cannot be proven, but seems very likely. The better preserved penannular gully was roughly circular with an internal diameter of 12.3m and an entrance 3.5m wide facing due east. A short gully segment between the entrance terminals reduced the width to 1.6m, but it is not clear if this was a subsequent addition to restrict entry or part of an original arrangement for controlling access to the building. The feature to the north consisted of a 13m portion of gully, with an estimated internal diameter of 10m and a well-defined terminal at its eastern end, suggesting a south-east facing entrance. The gullies were of virtually identical form, both having U-shaped profiles 0.4–0.6m wide and up to 0.2m deep.

No internal structural traces or other features were associated with either of the Thurnham gullies. This, alongside the total lack of evidence for round buildings on any of the other Late Iron Age–Early Roman HS1 sites, presumably indicates something of the character of such buildings. While it is possible that domestic buildings in this period were of a totally different (non-circular) form, there is even less evidence to support this view than there is for the problematic round buildings. It is most likely, therefore, that the latter was indeed the prevailing plan form for Late Iron Age–Early Roman domestic buildings, but that the buildings were probably of above-ground construction, possibly utilising interior post-pads and an ephemeral exterior wall such as simple wattle panels, or (perhaps more likely) of mass wall (eg cob) construction (see further below).

Site preservation factors will have been crucially important in relation to the identification of such structures—ephemeral in terms of the archaeological record although potentially substantial in terms of their form as built. The continued use of the round building tradition is clear at sites such as Westhawk Farm, Ashford, where ten such structures, not necessarily all domestic buildings, were identified, entirely or in part, on the basis of the existence of gullies (Booth *et al*. 2008). The profiles and the character of their fills suggested that most if not all of these features are likely to have been for drainage around the structure rather than being wall trenches. The internal diameters of identified circular gullies, or diameters extrapolated from surviving gully segments, varied widely from *c* 7m to *c* 12m. There was no clear chronological patterning with relation to variation in gully diameter (eg an increase in size through time), and circular structures were in use through out the life of the settlement, from the early post-conquest period up to about AD 250. In one case only, arcs of stakeholes survived at three points around the perimeter of the structure and suggested the position of the wall line of a building of *c* 10m diameter, with the wall set very close to the associated drainage gully. A probable stake-supported wall construction, 7.8m in diameter and probably with a central post, was assigned to the Late Iron Age–Early Roman Period 1 at the Marlowe Car Park, Canterbury (Blockley *et al*. 1995, 33-34), while Early Roman circular buildings from Newgate Street in London included examples with wattle and daub walls, but at least one other was defined by a gully with no clear indication of the nature of the structure which it surrounded (Perring *et al*. 1991, 3–6, 101).

The best evidence for circular buildings of Early Roman date in the region therefore comes from the larger nucleated settlements, including further examples from Springhead (HS12) and Heybridge in Essex (Atkinson and Preston 1998, 94, 105). It is uncertain if the better survival sometimes found in these contexts provides a reliable guide to the nature of structures: were the majority in fact of stake and wattle and daub construction, or was cob or some other mass-walling technique widely used in this period, as has been suggested for example for the Upper Thames Valley (Allen *et al*. 1984), perhaps particularly in rural contexts? As a structural medium, cob would leave no below-ground traces. An alternative interpretation is to postulate the use of a box-frame building tradition (Bird 2000, 159). It might still

be expected, however, that provision for drainage would be needed around most buildings of these (or indeed any other) construction type, but it is notably lacking.

The apparent contrast between the incidence of circular and four-post structures in rural and nucleated settlements is seen elsewhere in Kent, for example at Keston, where one six-post and ten four-post structures were assigned to the Late Iron Age (Philp *et al*. 1991, 13, 25–9) but there was no indication of circular buildings. Likewise at Queen Elizabeth Square, Maidstone, two 'four-posters' formed the only Late Iron Age–Early Roman structural evidence (Booth and Howard-Davis 2003, 5–6, 11). At Hawkinge, near Folkestone, a recently excavated Late Iron Age–Early Roman site had at least a dozen four-post structures and additional larger posthole buildings, but only one possible circular structure, also post-built (House 2005, 1).

Apart from the substantial buildings of Thurnham and Bower Road there are slight traces of other Early Roman structural types elsewhere on HS1, particularly at Northumberland Bottom where, however, they were mostly poorly-defined. Structural features of probable mid–late 1st century date within the rectangular enclosure on the north side of the east-west Roman road west of Wrotham Road included two gullies at right angles to each other defining an area of *c* 5m x 4m, and a further comparable arrangement of gullies further east (see Fig. 5.16). In both cases these are suggested as forming structures, though the second pairing of gullies may have been directly associated with a small group of burials (Askew 2006). South of the Roman road at about the same date was another possible timber structure, consisting of a group of postholes which may have been associated with a cut hollow. Slightly later than both of these (assigned to the mid Roman phase, dated AD 120–250), and lying between them, was a feature *c* 4 m square cut into the fills of a holloway and interpreted as a sunken-featured building (see Fig. 5.16). Its details are somewhat obscure but it is broadly reminiscent of the features of comparable late 1st–2nd century date from Monkton (Bennett *et al*. 2008, 107–50, 273–7). Recent work on the East Kent Access Road in Thanet has revealed further examples of this type of structure at several different locations (K Welsh pers. comm.). The type was clearly particularly common in north-east Kent, and the apparent occurrence of occasional examples further west is of some interest. The Northumberland Bottom feature contained no other structural elements or finds that shed light upon its function. It lay between two ditches some 9m apart which cut across the line of the former holloway and could have defined the location of a building of which the sunken-feature formed a part. A further possible structure of this type was recorded in the nearby A2 works in 2007, but this is not well dated; a Late Roman or an Early Anglo-Saxon date is possible (Allen *et al*. forthcoming).

Elsewhere, even structures as ephemeral as these are scarce. There is nevertheless some evidence for the existence of a widespread tradition of posthole construction across the area, as seen for example at Westhawk Farm, where a total of eight, mostly simple, rectilinear buildings of posthole construction were found and numerous other groups of postholes could have formed parts of fence lines or of further very poorly-preserved rectilinear buildings (substantial fence lines based on individual upright posts are a regular feature of sites in the region and are often better defined than comparably built buildings; examples are seen at Thurnham, Keston and Furfield Quarry, Boughton Monchelsea (Mackinder 2005, 14), and Westhawk Farm as well as at other sites). Amongst the more substantial structures of this type are the probable aisled buildings at Furfield Quarry, Boughton Monchelsea (ibid.). The Westhawk posthole buildings included an example of what appears to be a distinct regional tradition, two more of which were excavated on HS1, at Bower Road (Fig. 5.21) and Thurnham. The type has some similarities with aisled buildings, and at Thurnham it was noted that the plan dimensions of the 'fourteen-post building' were almost exactly the same as the area defined by the nave arcade posts of the aisled building at the same site.

The characteristics of the type are carefully paired post settings (as in most aisled buildings), but these appear to define the line of the main walls, with no aisles. In addition one or two post settings of similar size to those in the long sides are found in the short sides. The function of these additional posts is unclear, but they are a distinctive component of the plan and help to distinguish these buildings from those of aisled type or of simple paired-post construction, the latter seen widely across Roman Britain, including at Keston (the South Timber Building; Philp *et al*. 1991, 55–8), alongside the type under discussion here (examples of paired-post buildings (amongst many others) occur at sites such as

Table 5.3 Paired-post structures with additional posts in short axes

Site	*Structure*	*Dimensions (m)*	*Alignment*	*Posts in long axis*	*'Inner' posts in short axis*	*Date*	*Comment*
Westhawk Farm	Structure D	*c* 14 x 7	NW-SE	5	2	150-250	
Thurnham	Building 11250	*c* 15 x 7	WNW-ESE	6	1	2C-?e 3C	
Bower Road, Smeeth	Building 550	*c* 20 x 7.5	WNW-ESE	8	2	late 2C	2 additional posts in NE side
Keston	Centre timber building	*c* 14.6 x 6.8	W-E	6	1	Period Va *c* m-l 2C	
Keston	North timber building	*c* 21.4 x 7.5 without additions	W-E	10	2	Period VI end 2C-e 4C	'corridors' added to N and W sides subsequently

Figure 5.21 Bower Road multiple post structure viewed looking WNW

Alcester (Mahany 1994, 150–1, 155), Baldock Building I (Stead and Rigby 1986, 33–4, 37) and Carmarthen (James 2003, 165)). Excavated buildings clearly conforming to the type with additional posts in the short sides appear to be few and are possibly confined to south-eastern Britain. In addition to the three examples mentioned so far there are two further ones, the Centre Timber Building and North Timber Building, at the villa site at Warbank, Keston (Philp *et al.* 1991, 59–61, 81–7). Details are given in Table 5.3 and comparative plans on Fig. 5.22.

The Thurnham building is one of the most important in this group, having a preserved *in situ* floor surface and lacking the extensive truncation of the upper deposits seen at some of the other sites. Based upon the posthole arrangement the building covers a little over 100 sq m, which is only slightly smaller than the example at Bower Road but almost identical to Westhawk Farm and the Centre Timber Building at Keston. Interestingly the floor surface at Thurnham extended beyond the south-east end wall and up to the edge of the eaves drip gully to the north-east. There is no evidence that the walls extended this far (drainage gullies set close to the postholes were a feature of the buildings both at Bower Road and Westhawk Farm), and it is quite likely that the walls comprised planking attached to the posts in a manner similar to that of a timber building excavated at Southwark (Brigham *et al.* 1995, 31–2). A scatter of iron nails along the gully and from the floor surface at Thurnham might indicate that the walls were attached in this way rather than being of (for example) wattle and daub construction. If so, the floor surface extending up to the drainage gully may have been an extra means of draining the external surface adjacent to the wall. The extension of the cobbles beyond the south-east gable end would also have created an external yard-like surface.

The buildings could have been gable-ended, although it has been tentatively suggested that the centrally-positioned gable post(s) might reflect a hipped roof construction (Booth *et al.* 2008, 376). The nature of the roofing material remains uncertain. A moderate amount of roof tile was recovered from the vicinity of the Thurnham building (though much of it may have been recycled) and the size of the posts suggests that all were capable of carrying a tiled roof. At Bower Road and Westhawk Farm, however, a general absence of tile suggests the use of organic material (shingles or thatch) and these could have been used at Thurnham as well.

This building type did not necessarily have a specific functional association, but the majority of such associations are, unsurprisingly, agricultural. Building D at Westhawk Farm fronted onto the main road through the settlement and a mixed domestic/trade-related function has been suggested in that instance (Booth *et al.* 2008, 376). At Thurnham some of the finds suggest that there was also a domestic component to its use, but its location and other associations indicate that it had a primarily agricultural function. The view that the domestic element was of relatively minor importance is

reinforced by the lack of domestic hearths or ovens within the building and by the utilitarian appearance of the surfaces and drains. The dominant evidence indicates an association with crop-processing activities, and it is quite likely that it was used for the storage of processed cereals. The comparable building at Bower Road produced convincing evidence of a similar function in relation to the storage of processed cereals, although the wider context is less clear (Diez 2006b). Again there was a lack of material suggesting significant

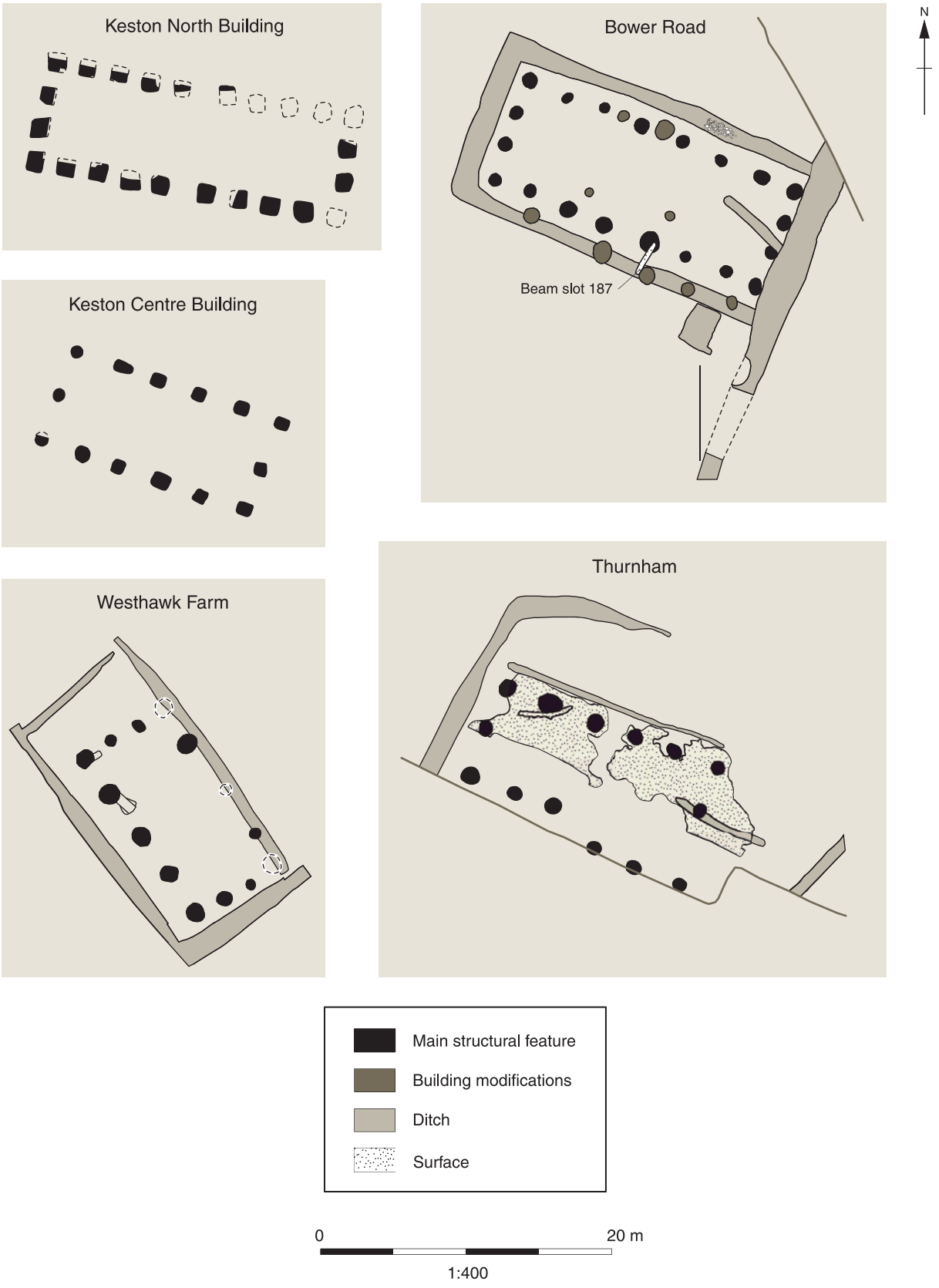


Figure 5.22 Comparative plans of '14 post' and related buildings (Thurnham, Bower Road, Westhawk Farm, Keston)

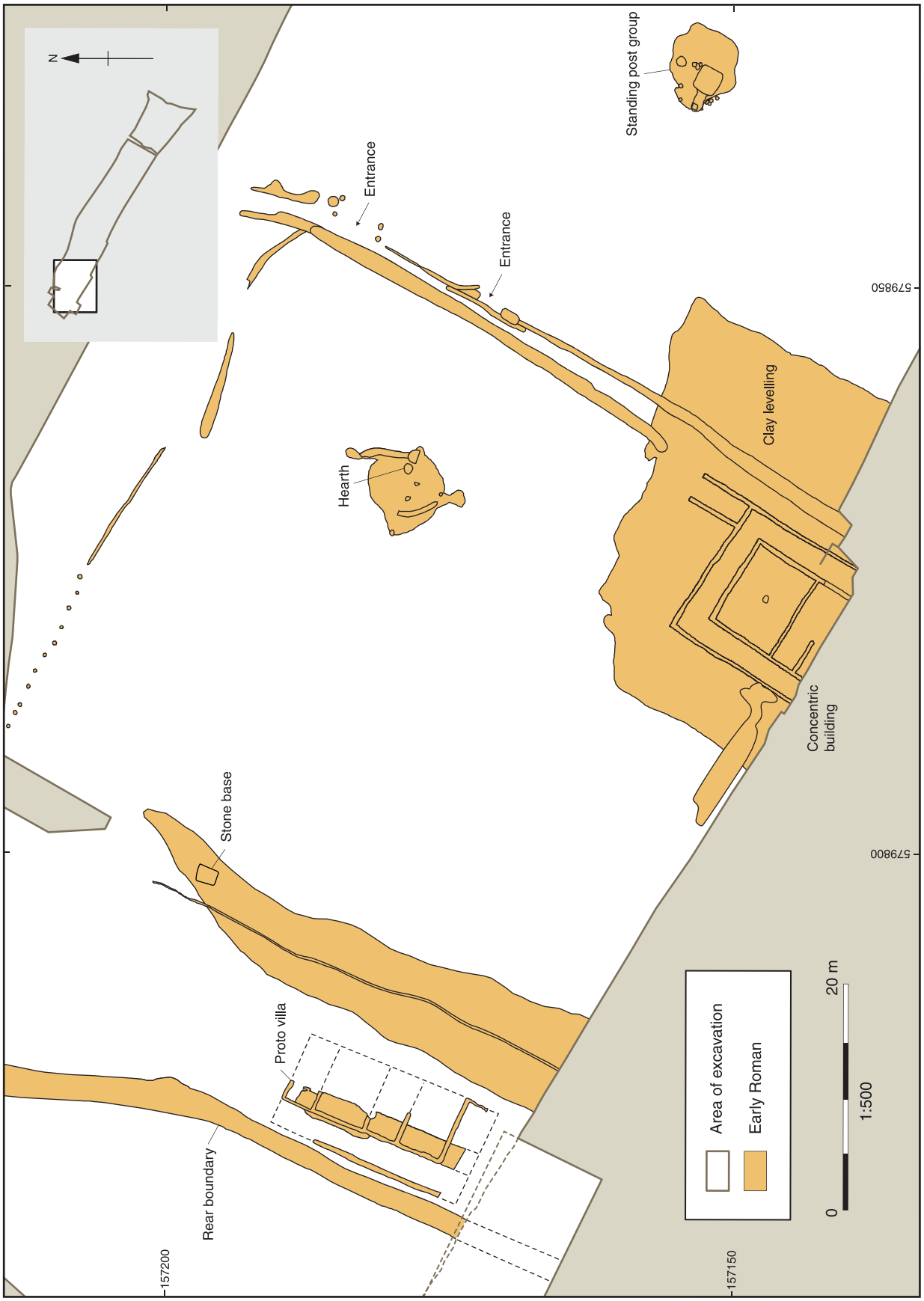


Figure 5.23 Thurnham: Early Roman ('proto-villa') phase plan

domestic activity. Agricultural functions are clearly implied by the context of the Keston buildings. The North Timber Building there, uniquely amongst the other buildings of this group, saw external additions and the insertion of corn-drying ovens in a manner very reminiscent of the development of some aisled buildings.

The Keston and Thurnham structures were clearly subsidiary to other components of their respective villa complexes. The situation at Bower Road is less clear, but the posthole building there was clearly not the only significant structure. It is particularly unfortunate that a second building, and possibly others, lay within an area of the site which was damaged by machine activity (see Fig. 5.19). Structure 686 comprised eight substantial postholes in two parallel east-west rows, five to the south and three to the north, covering an area (measured from the centre of the post-pipes) of 6.4m by 1.8m. Remnants of ragstone footings were identified in the vicinity, one roughly parallel to the southern row of posts and 2m south of it, and others perpendicular to the two rows of postholes to the east and further north (parallel and *c* 2.5m apart). The dating of all these features was very poor but their alignment corresponded well with the more securely dated Middle Roman ditches and therefore suggests broad contemporaneity with the post-structure to the south-east.

It is unclear if the wall foundations formed part of the same building as the postholes or belonged to a subsequent structure in the same location. The arrangement of posts in itself seems incomplete if considered as a free-standing structure, but it is unlikely that further comparable posts could have been completely removed without trace. The layout of the extant posts is reminiscent of an arrangement, equally 'incomplete' as the Bower Road one, found at Runhams Farm, Lenham (Philp 1994, 11–13), where it formed the only structure on the site. The wall foundations at Bower Road are equally problematic, but were so shallow that other comparable walls could have been completely removed without trace. It therefore remains uncertain if they represented one or more large structures, or perhaps a walled yard with small buildings set against it on one side.

The evidence of enclosure form, enhanced by the high-status burials found on the A2, suggests that substantial structures might have been expected within the Northumberland Bottom (West of Wrotham Road) enclosure. Hints of such structures, particularly involving a substantial posthole and probable beam-slots in the centre of the southern side of the enclosure (see above), are suggestive, as is a group of postholes located in the northern part of the enclosure in the A2 Tollgate excavations, but unfortunately the evidence is not sufficiently clear to allow further interpretation (see Fig. 5.16).

The HS1 buildings that were both the most substantial and the most readily recognised in terms of form are from the villa complex at Thurnham. It should be noted, however, that ceramic building material: bricks, roofing tiles (both tegulae and imbrices), box-flue tiles, and voussoir tiles, reused in the corn-drier structure at Hazells Road, must have derived from a building with a hypocaust heating system and perhaps with a vaulted roof. If not brought from Springhead, only just over 1km distant to the west, this material suggests the presence of a substantial building, perhaps of villa type, close to the HS1 site in this area.

The plans of the main houses and the aisled building at Thurnham are quite conventional. The principal Early Roman domestic building, the 'proto-villa', was probably constructed as early as *c* AD 60–70 (Lawrence 2006) (Figs 5.23–4). It was located at the rear of the settlement space, rather than towards its centre as had been the case with the earlier roundhouses, and had a south-easterly frontal aspect, contrasting with the roughly east-facing alignment of the entrance of the better-preserved of the two Late Iron Age roundhouses. The general south-eastern aspect of the site was shared by a large number of villas in northern Gaul, where Haselgrove (1995, 73–4) argues that these alignments were related to pre-Roman patterns, as was also the case at Thurnham (see also the prevailing alignment of the multiple-post structures in Fig. 5.22). The Thurnham building was of a rectilinear form totally new to the site, but it was not much larger than its predecessor; including the possible rear corridor its ground plan occupied roughly 113 sq m, while a roundhouse of 11.5m diameter within gully 12500 would have covered roughly 104 sq m. It is of course impossible to be certain if the proto-villa had more than one storey, but if it did not the differences between it and its likely predecessor were more to do with external appearance and the organisation and presentation of internal space than with a significant increase in the scale of the accommodation.

A further aspect of the site worth consideration is the possible provision of a bath-house in this period. There is no direct evidence for such a structure, but it is suggested by the presence of tiles, particularly box-flue tiles and voussoirs, in red-brown fabric 3226, thought by Betts (2006) to date to the period *c* AD 70–100. A piece of the former was stratified beneath the Middle Roman aisled building, while the voussoirs came from late 3rd century deposits in Room F in the main villa. They may have been taken there after the demolition of the bath component at the south-west end of the main house, but that was not built until after the mid 2nd century at the earliest, by which time it is likely that tiles in fabric 3226 were already old. Possible half box-flue tiles also occurred in Eccles fabric 2454 (this fabric/form combination was a pre-Flavian phenomenon in London, Betts 2006), and bricks, presumably from a hypocaust, occurred in both Eccles fabric and in fabric 3226. As there is no evidence for a heated room or rooms in the proto-villa the most likely source of all this material may therefore be an early detached bath-house. Such buildings are found at a number of sites such as Gadebridge Park, dated *c* AD 75, and Gorhambury, in the 2nd century (Neal *et al.* 1990, 48–9). In a Kentish context potential detached or isolated bath houses were discussed by Detsicas (1983, 139–44), but the setting and

Figure 5.24 Thurnham. The foundations of the proto-villa beneath the corridor wall of the later house, looking WNW

chronology of a number of these are unclear. Examples at Hayes and Foot's Cray (ibid., 140–1 and 118, fig. 24) may be valid analogies, although both are dated to the 2nd century rather than earlier. A more certain example occurs at Minster-in-Thanet, where a small building 9.55 x 7.15m was built closely adjacent to the villa house in the late 1st or early 2nd century (Parfitt 2004b, 33) and may suggest what could have occurred at Thurnham. However small, such a building would have been a significant addition to the site layout and perhaps alters the perception of the importance of the domestic components. It would presumably have been located in the south-western part of the enclosure. If this interpretation is correct, the fact that baths were not added to the Middle Roman villa until the later 2nd century might suggest that a detached bath-house outlived the associated proto-villa structure.

The Middle Roman house completely replaced the proto-villa in the early 2nd century (Figs 5.25 and 5.26). Combination of the evidence from the present excavation with the ground plan recovered in 1958 shows that the core of the building had a symmetrical arrangement of rooms at each end, joined at the rear by a range of slightly unequally-sized rooms. The overall size in this phase, 32m x 14.8m, is modest, but not unduly so. It is broadly comparable to buildings at Cobham (Tester 1961), Sandwich (Bennett 1978) and Lullingstone (period 1; Meates 1979, 138), for example, although much smaller than the nearby villa at Eccles (Detsicas 1963–1977a), which was probably contemporary with the proto-villa at Thurnham. The plan incorporates elements long recognised as forming a 'set' of rooms (set S5, Drury 1982, 295–8), the component here being rooms B–E, the last of these interpreted by Drury (and J T Smith (1997, 49–50)) as a 'vestibule' or 'lobby' serving a principal room (D) with paired subsidiary rooms (B and C) on the other side. The formation of the core of a domestic unit using such a room set with an additional larger room at each end, as seen here at Thurnham, has several parallels amongst Romano-British villas, for example at Little Milton, Ditchley and probably Barton Court Farm, all in Oxfordshire, the early villa at Ditches, Gloucestershire (Trow *et al.* 2009, 53–5) and at Boxmoor, Herts (Drury 1982, 295–8), while in Kent such an arrangement was incorporated into the Farningham II villa (ibid.; Meates 1973, 4). Apart from Barton Court Farm, all these examples may be assigned to the late 1st or early 2nd century (Drury 1982, 298).

The similarities between Thurnham and Boxmoor (Neal 1977, 53–110) are particularly marked (Fig. 5.27). Their central blocks, consisting of the same room 'set' (the 'vestibule' is to the right of the central room at Thurnham (as seen from the front of the building) and to the left at Boxmoor) with a larger room at each end, are respectively *c* 25.2 x 8m and 26.2 x 8m. Both had projecting two-room wings with their front walls linked by a corridor foundation. The principal difference between the two buildings is that the wing rooms at Boxmoor were wider and did not extend behind the rear of the main rooms—the back of the building being occupied by a single continuous corridor, while at Thurnham the rear 'corridor', apparently subdivided

Figure 5.25 Thurnham: view of main villa house looking SSW

from the beginning, ran between the rearward projecting wings in the same manner as the front corridor.

The significance in a domestic context of the room sets identified by Drury remains debatable, but he rejected (1982, 299) the idea that they indicate the unit system of villa occupation as advocated by Smith (1978; 1997). Neither addressed in detail the question of the function of the two smaller rooms (although Smith (1997, 50) again uses the term 'lobby' in this context), or considered the question of the relationship of any of these rooms to possible upper floors—a concept dismissed more or less out of hand by Smith (ibid., 128–9). At Thurnham the very solid construction of the core part of the building and its internal walls certainly indicate a more substantial superstructure for this part of the building than for the wings and corridors, and may suggest that it had an upper storey. It seems likely that the slighter outer foundations supported a lean-to style of construction with a tiled roof, effectively enveloping the core.

The Thurnham sequence is one of very few from Kent to show probably continuous progression from Late Iron Age roundhouse to Early Roman proto-villa to more substantial 2nd-century villa house. Such sequences may have been relatively common in the region, but cannot usually be demonstrated. Iron Age occupation and two pre-villa buildings were present at Eccles (Detsicas 1983, 120). The latter were already substantial structures with stone foundations, one interpreted as a granary (Detsicas 1989, 87–8). Buildings at Orpington, Farningham II and East Malling, for example, superseded pre-Roman activity (Detsicas 1983, 86, 88, 94), though the nature of the associations is unclear, and at Otford a building first occupied at about the end of the 1st century 'succeeded an earlier round hut' (ibid., 90). At Keston, however, where there was clearly continuity of activity from the Late Iron Age onwards, there are no certain domestic structures assigned to the early phases.

A notable feature of the Thurnham sequence is the continuity not only of the general location of the principal domestic structures but also of significant elements of the associated enclosure. In particular, the position of the south-east side of the Late Iron Age enclosure, once established, was retained throughout the life of the site. The corresponding north-west side was realigned in successive periods, but without fundamental alteration of the character of the enclosure. The successive houses, proto-villa and 2nd century house (the latter more than four times the plan size of the proto-villa), occupied a position towards the rear of the enclosure characteristic of such buildings in relation to associated

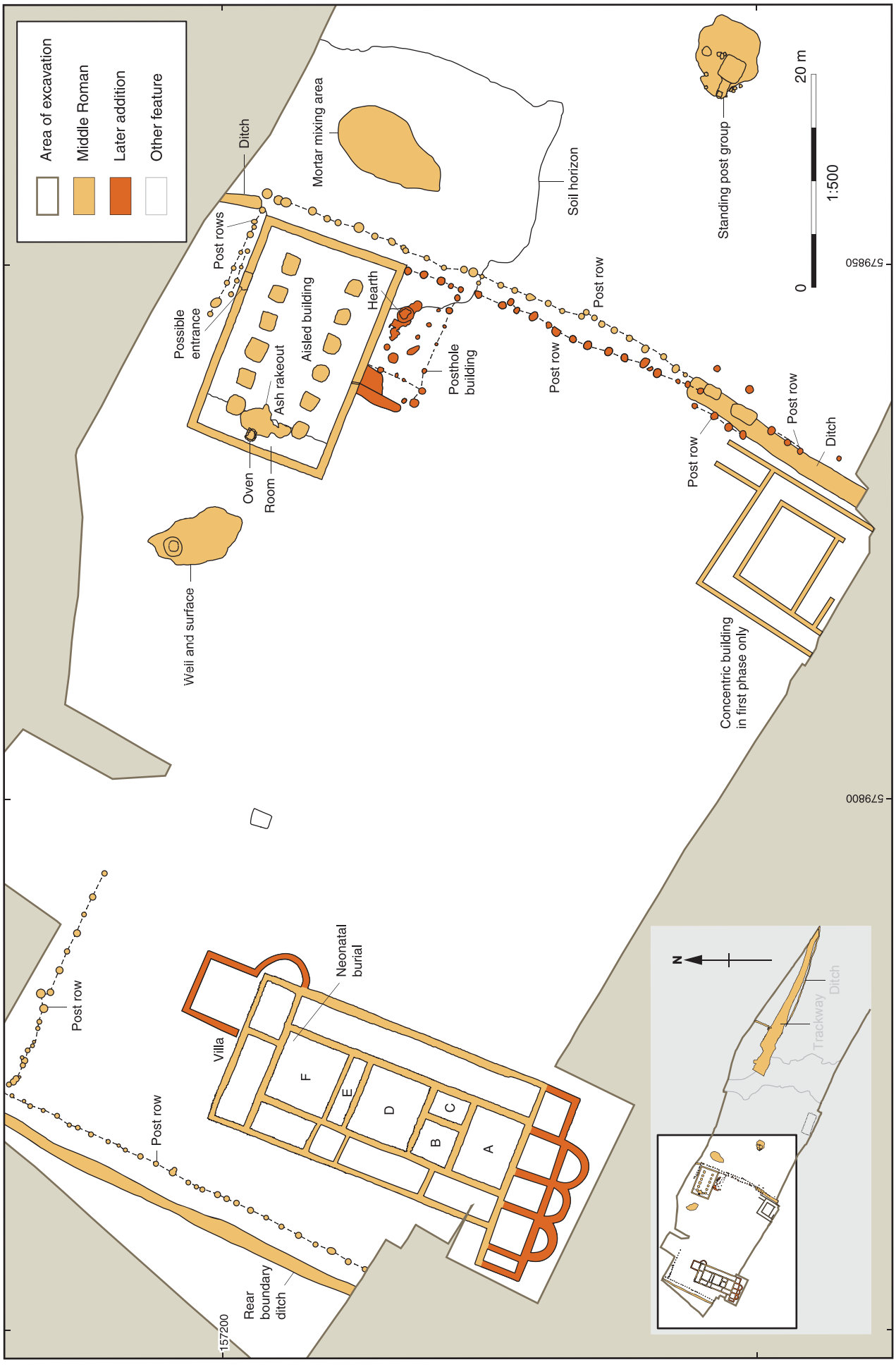


Figure 5.26 Thurnham: Middle Roman phase plan

enclosures or (often, particularly in the later Roman period) walled courtyards, as seen in Kent at Minster in Thanet (eg Perkins 2004b, 31) and (for the later period) at Darenth (eg Philp 1984, fig. 23) and more widely elsewhere, but by no means universally adopted.

This continuity of location strongly suggests that the building identified as the 'proto-villa' at Thurnham was in fact the principal house. It was, however, substantially smaller in plan area than the approximately contemporary building lying south-east of it (see Fig. 5.23). This would probably have framed the left hand side, and been the most striking component, of the view of the visitor approaching the site from the south-east, the likely main axis of approach (allowing for the fact that there could have been other structures, perhaps including a small bathhouse, in the lost south-western part of the enclosure; the aisled building, which would have formed the corresponding right hand side of the frame, was added in the 2nd century and did not form part of the proto-villa phase). Partly on this basis, and more particularly in view of some aspects of its plan, this building was interpreted, albeit tentatively, as a Romano-Celtic temple during the

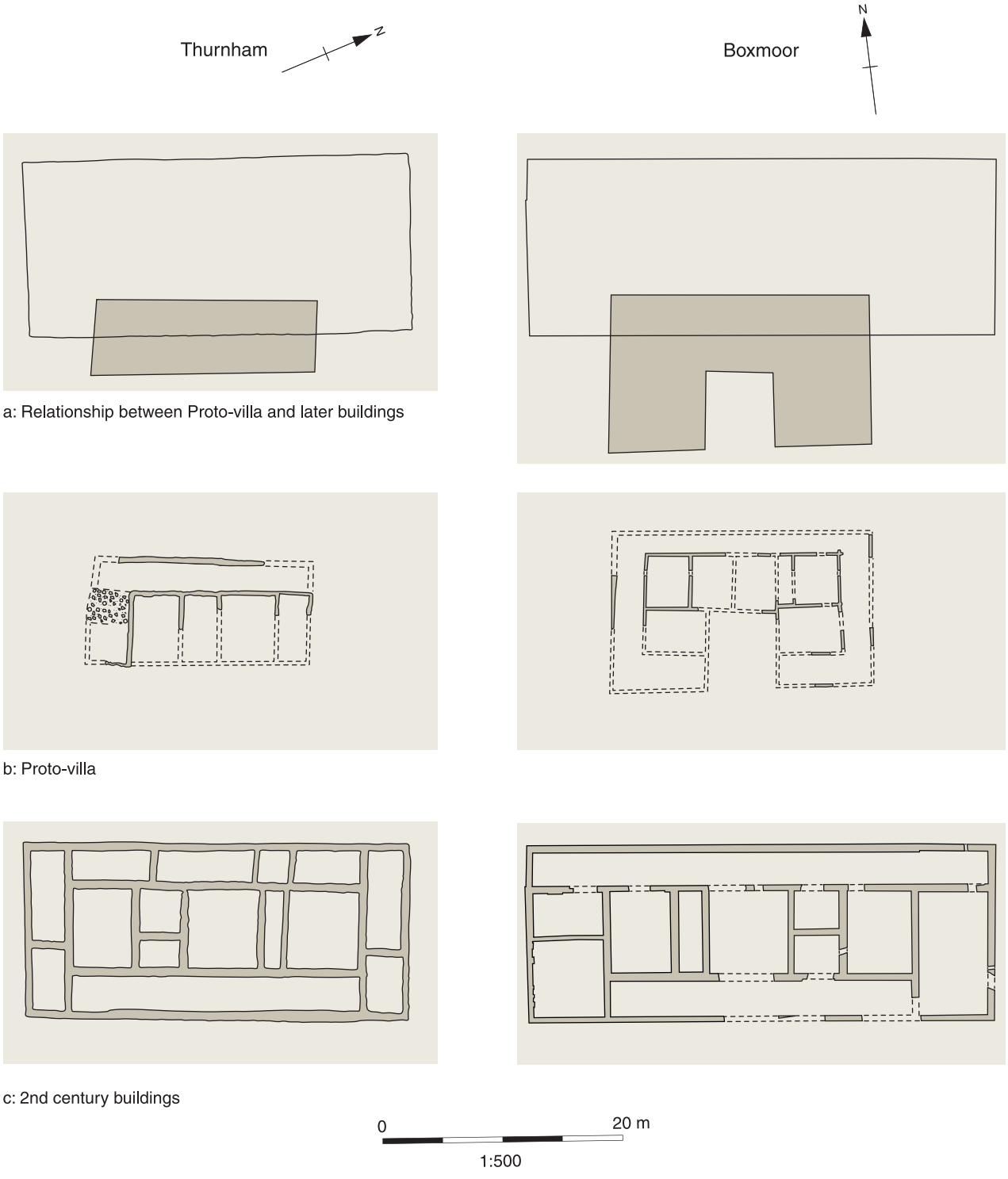


Figure 5.27 Thurnham and Boxmoor: comparative development of villa house plans

excavation, an interpretation followed in the site report (Lawrence 2006; see discussion below). This interpretation is questionable, however, because the building plan is not complete and its exact form is therefore uncertain. Moreover, recent work at Minster in Thanet has revealed a building with quite close similarities of plan to the Thurnham structure and in a broadly analogous position in relation to the main villa house and enclosure (Parfitt 2006c). This building was in turn compared by Parfitt to the South Masonry Building at Keston (ibid., 131; Philp *et al*. 1991, 120–5), both being considered domestic in function, as well as to a building at Darenth.

The Minster and Keston structures and, as far as can be seen, the Thurnham building as well, do have a number of features in common, of which the most notable are a general similarity of overall size, and the concentric nature of their plans (Fig. 5.28). The latter is one of the principal characteristics that influenced the interpretation of the Thurnham building as a temple. Whether or not this is correct, the fundamental question about concentricity is whether it is sufficiently characteristic of this group of buildings to suggest that they might have shared a similar function. Alternatively, was an enveloping 'passage' simply an architectural feature that could have been used in a variety of contexts? The apparent scarcity of such buildings in villa settings may relate to the concentration of study on the principal houses at the expense of subsidiary buildings; in the former context, however, they are rare. As J T Smith (1997, 142) says, 'A … problematic group … includes porticuses running continuously (or nearly so) around a comparatively small row-house, so that the amount of what is commonly called 'corridor' is altogether disproportionate to the amount of living space'. Occasionally the width of the 'porticus' is such that it was clearly not just a corridor, as in an example at Ovillers (Somme; ibid., 141–2), but a building at Biha -Založje (Bosnia) of very similar plan but with narrower porticus is placed by Smith in a different group (ibid., 201). A further building at Elchovo/Čatalka (Bulgaria), with a 'corridor' of intermediate width between the Ovillers and Biha -Založje examples, is of identical overall form but the central of the three rooms is wider than the flanking ones (unlike the other buildings in this group); the building does not appear to be closely dated (Henning 1994a, 484; 1994b, 163 no. 9, 175). Interestingly, the villa at Ditches, Gloucestershire, assumed a similar form in its early–mid 2nd century phase (Phase 6), when a corridor was placed around the room set discussed above (Trow *et al*. 2009, 46, 55–9).

At Minster the use of the 'corridor' as a room may be suggested by the secondary insertion of a small hypocaust into its south-west corner, and also by the widening of the 'corridor' in a later phase. Here the concentric element was compared with the later addition of a corridor encircling the main villa house (Parfitt 2006c, 131), a feature thought perhaps to be suggestive of Gallic influence (cf Black 1987, 140). In the South Masonry Building at Keston and in the main house at Minster the 'corridor' was subdivided by cross walls, with clear implications for the use of these units as rooms (it is not clear, however, if these subdivisions were secondary, whereas limited subdivision of the corridor at Ditches certainly seems to have been). Such subdivision was not seen in the first phase of Building 4 at Minster (a single later wall may have performed such a function), nor within the excavated part of the Thurnham building. It is unclear if this has functional implications or may reflect chronological factors–Thurnham and Minster Building 4 being the earliest of the group under discussion, while the South Stone Building at Keston was certainly of late Roman date. Is it possible that these, like the multiple post buildings also discussed above, represent another distinctive regional building type? Other British parallels appear scarce, but as well as Ditches include a possible example in Building B at Gadebridge Park (Neal 1974, 33–5), and in view of the occasional continental examples as well (see above) it would be unwise to claim regional uniqueness.

Minster Building 4 is interpreted as a domestic structure, and glossed as possible accommodation for the estate bailiff (Parfitt 2006c, 132). The Keston building was also interpreted as domestic in function (Philp *et al*. 1991, 124–5), and the continental examples mentioned above are all thought to have been houses, while the Ditches building was clearly the principal domestic structure on that site. Neither at Minster nor at Keston do the associated finds shed much light on functional aspects, although they are potentially more compatible with domestic than with agricultural functions (the main alternatives considered by both Parfitt and Philp). In both cases, however, the buildings were certainly or probably chronologically secondary to existing main houses, and less imposing than them in architectural terms. At Thurnham, however, the 'concentric' building was at least broadly contemporary with the proto-villa (although the dating evidence is insufficient to allow the sequence to be precisely determined either way) and, as noted above, substantially larger. If it was of the two room and central passage form of the Keston South Masonry Building, as is possible (the existing elements would allow reconstruction of the plan in this way), it would have been of very similar size and proportions to Keston and a little longer than Minster Building 4 phase 1/1a, but of the same width. Moreover, with an estimated plan area of *c* 275 sq m it would have been two and a half times the size of the proto-villa (on a minimal interpretation it is almost twice as large in area). It seems improbable that there would have been such a disparity in size between the principal dwelling and a subsidiary domestic building, which raises the whole question of the relationship between the two. It may be that the relationship was determined by relative status or function. Unfortunately there is very little material from the building or from contemporary adjacent features that sheds light on its function, whether domestic, agricultural or other. If the building had been a domestic one, identification of its occupants as (for example) of lower status than those of the proto-villa

house leaves unexplained the striking size disparity between the two buildings and the extremely prominent location of the concentric building, unless the building was slightly later than the proto-villa house and reflected a need for much more domestic accommodation at a time of rapid expansion, perhaps at the end of the Flavian period. From the early 2nd century, however, some additional domestic accommodation was certainly provided by the aisled building (Fig. 5.29), raising the question of whether the concentric

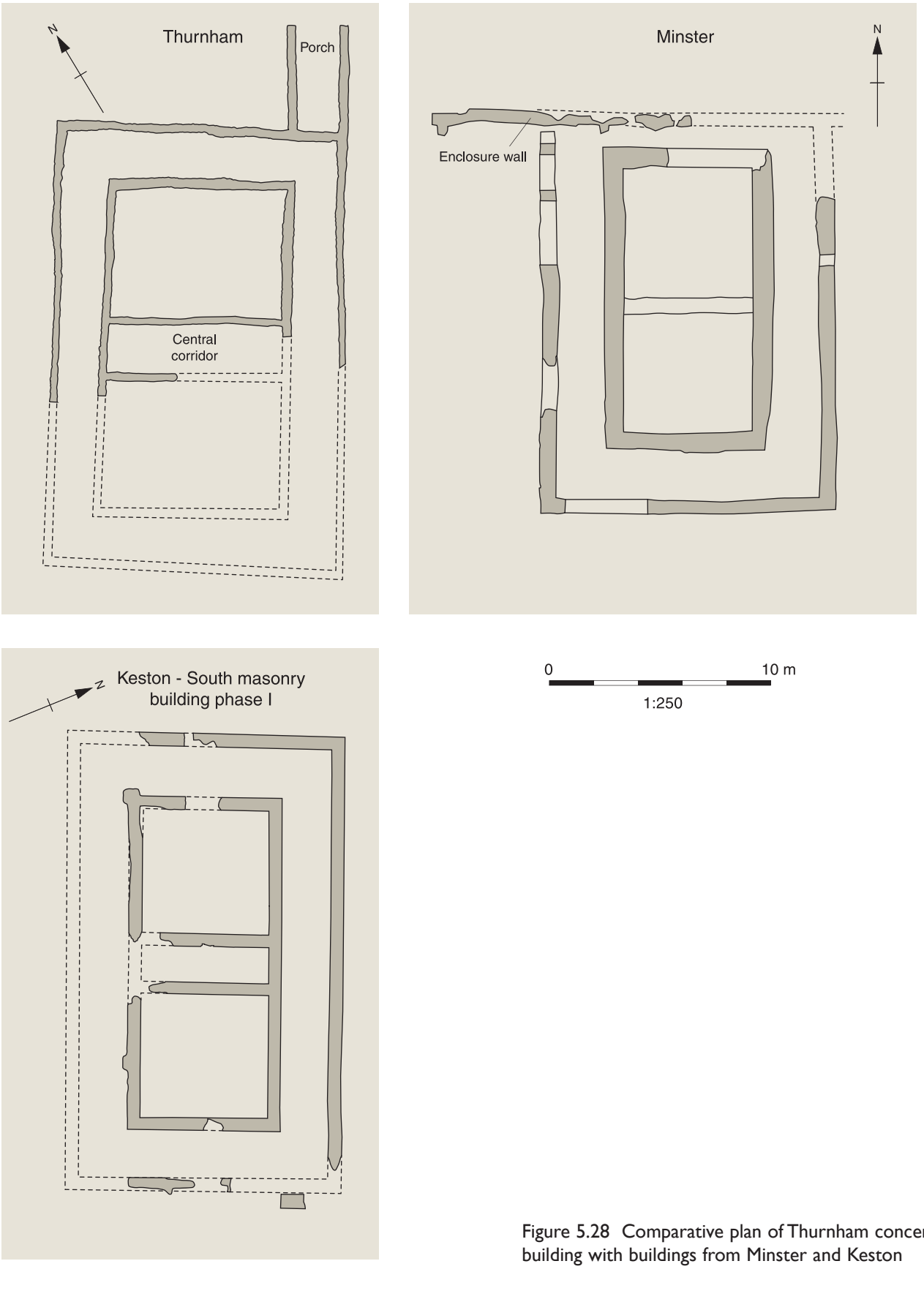


Figure 5.28 Comparative plan of Thurnham concentric building with buildings from Minster and Keston

Figure 5.29 Thurnham: view of aisled building with concentric building in background

building, which continued in use at this time, ever had a domestic function.

It is on this basis that the possibility of a religious function for the Thurnham concentric building is considered. Unfortunately, however, because of the location of the feature at the margin of the excavated area and the difficulties of reconciling the HS1 evidence with information from the previous excavation on the line of the Maidstone Bypass (now M20) in 1958 (Pirie 1960), the plan of the structure, and therefore its interpretation, is not certain (see above). Interpretation as a Romano-Celtic temple of concentric form requires some additions and other features of less typical character to be taken into account. These included the apparent subdivision of the 'cella', the alignment of the building (most unusual for a temple, given that the presence of boundary features appear to preclude the existence of an entrance in the south-east side) and arrangements for access to the building and the small 'porch' projecting from the eastern end of the north-east side, parallel to the main enclosure boundary of the villa complex.

The access questions are relevant whatever the interpretation of the building. There was one clear entrance on the north-west side of the building, presumably reflecting access from the direction of the proto-villa house. Access also seems to have been achieved from the north-east, although the interpretation of the projecting 'porch' structure on this side remains uncertain. Perhaps the most compelling argument in favour of it providing an access to the building is the way in which its open (north-east) end coincided with an opening in the adjacent enclosure boundary. The presence of a crushed tile surface against the south-east wall of the building suggests a path running between it and the enclosure boundary as far as the open end of the projecting porch, as if it was intended to minimise the visual intrusion of non-residents of the proto-villa house accessing the building. Why this should have been desirable is unknown, however, and why it was necessary to have a projecting porch at all, rather than simply an entrance into the corridor/ambulatory at its eastern corner, is unclear.

In summary the problems are: that the concentric form is neither exclusively religious nor domestic (the domestic examples are few in Britain, but may concentrate in Kent); that the Thurnham building is substantially larger than the contemporary house (which presents some problems for any interpretation); and that the incomplete plan and lack of associated finds preclude a confident attribution of the building's function. On balance, however, the morphological characteristics seem less consistent with a temple than with other types of building.

Evolution of settlement through the Roman period

The Thurnham villa has not only the most varied and distinctive range of structural types but also (and partly for this reason) one of the more readily identifiable sequences of site development in the Roman period. Indeed it is one of the very few HS1 sites that show occupation throughout the period. The development of the HS1 sites can be tracked in a number of different ways, but one of the simplest is in relation to the ceramic evidence. This has been plotted on Fig. 5.6 in terms of the relative frequency of occurrence of material (within the context of the individual site assemblages) divided into approximate quarter-century units. These are of course fairly notional—many fabrics and vessel types are not susceptible to such close dating —but the general picture is clear for most sites. Against the pottery evidence can be set that of the coinage, where present. This has its own patterns of chronological development quite separate from those of the pottery (eg Reece 1995a, 179), but these can be taken into account for comparative purposes. Activity with regard to the structural sequence cannot readily be assessed independently of these chronological indicators, but the peak periods of building activity at each site represented on Fig. 5.6 correlate with the observable ceramic peaks; ie there are no cases of significant construction activity (whether of buildings or enclosure ditches or other features) at times when ceramic deposition is at a low level in relative terms.

As already discussed, almost all the main HS1 sites were probably in existence before the Roman conquest—Hazells Road being the only certain exception to this picture, although there may have been only minimal activity at Pepper Hill at this time. Activity at Eyhorne Street might have already ceased by the time of the conquest, while at Hockers Lane it was probably at a low level by this time, and it is quite likely that this site was eclipsed, if not completely superseded, by the Late Iron Age–Early Roman developments at Thurnham. Activity within the excavated part of Hockers Lane had certainly ceased by the end of the 1st century AD at the very latest, but it is conceivable that it continued in the area to the north beyond the limits of excavation, and the same was true at Lodge Wood and Boys Hall, though both of these were minor sites, the latter represented principally by a small group of cremation burials.

Another site apparently exclusively of Late Iron Age date was Little Stock Farm. However, the much longer-lived site at Bower Road lay only 700m west of the Little Stock Farm enclosures and it is possible that these two sites had a comparable relationship to that postulated for Hockers Land and Thurnham, the one being in some way succeeded or subsumed by the other. Alternatively, the discovery of small quantities of Early Roman pottery in evaluation just east of Little Stock Farm at Park Wood Cottage may suggest settlement shift in this direction (Ritchie 2006), though the limited date range of this material could still be consistent with a partly sequential relationship with Bower Road. It is, however, even more likely that sites with limited chronological ranges had sequential relationships with other (unknown) sites lying outside the line of HS1.

Beechbrook Wood, like Lodge Wood and Boys Hall, also had an early peak, but activity there may have continued at a low level as late as the early 3rd century. Elsewhere, the phase of relatively intensive activity at settlement sites lasted at least into the early–mid 2nd century, but continued beyond this time at barely a third of them (7 of the total of 21 HS1 Section 1 sites with ceramic sequences plotted in Fig. 5.6). The sites already out of use or in terminal 'decline' by this time were all apparently lower-status rural settlement components, such as Northumberland Bottom (East of Downs Road), Hockers Lane, Snarkhurst Wood and Beechbrook Wood, or had contained elements of related features such as trackways and field systems (Whitehill Road, South of Station Road, Tollgate, Lodge Wood, Blind Land, Little Stock Farm and East of Station Road), or cemeteries (Boys Hall and Beechbrook Wood again). Some of these sites had also carried out specialised activities, particularly iron-working, as at Beechbrook Wood.

The sites surviving in the second half of the 2nd century form an interesting group. In north-west to south-east order the first is the Pepper Hill cemetery, which may have been in decline by this time, and was fairly certainly (allowing for the undated graves) decreasingly used in the 3rd century. At the easterly Northumberland Bottom site (just west of Wrotham Road) the settlement and related trackway system had already undergone considerable development (as had the system of trackways at Tollgate, 1 km further east; Fig. 5.30), including the closing off of one of the more important tracks by ditches surrounding a possible sunken-featured building (see above). The main phase of activity here seems to have continued to the end of the 2nd century, but this may not be representative of the settlement as a whole (its focus clearly lay north of the HS1 trace) as there are (unusually) hints of continuing low-level activity through both the 3rd and 4th centuries. At White Horse Stone, however, the 'main' phase of activity (probably quite restricted in time), involving a trackway and enclosures around the former location of Iron Age settlement, seems to have ended within the second half of the 2nd century.

Further south lay three of the most important HS1 settlement sites. At Thurnham and Bower Road significant construction work can be assigned to the later part of the 2nd century, but there is no such evidence for Leda Cottages, where the only identified structural evidence consisted of four-post buildings of Late Iron Age date, although occupation clearly continued at this time (Diez 2006a). At Saltwood Tunnel there was no direct evidence for settlement at all, but a number of trackways were presumably in regular use and nearby activity is indicated by a range of pottery.

Pottery evidence provides the main indication that the most intensive use of all these four sites came to an end in the first half of the 3rd century. Continuing use of buildings thereafter can be demonstrated, for example at Thurnham. Here, however, the main villa house had

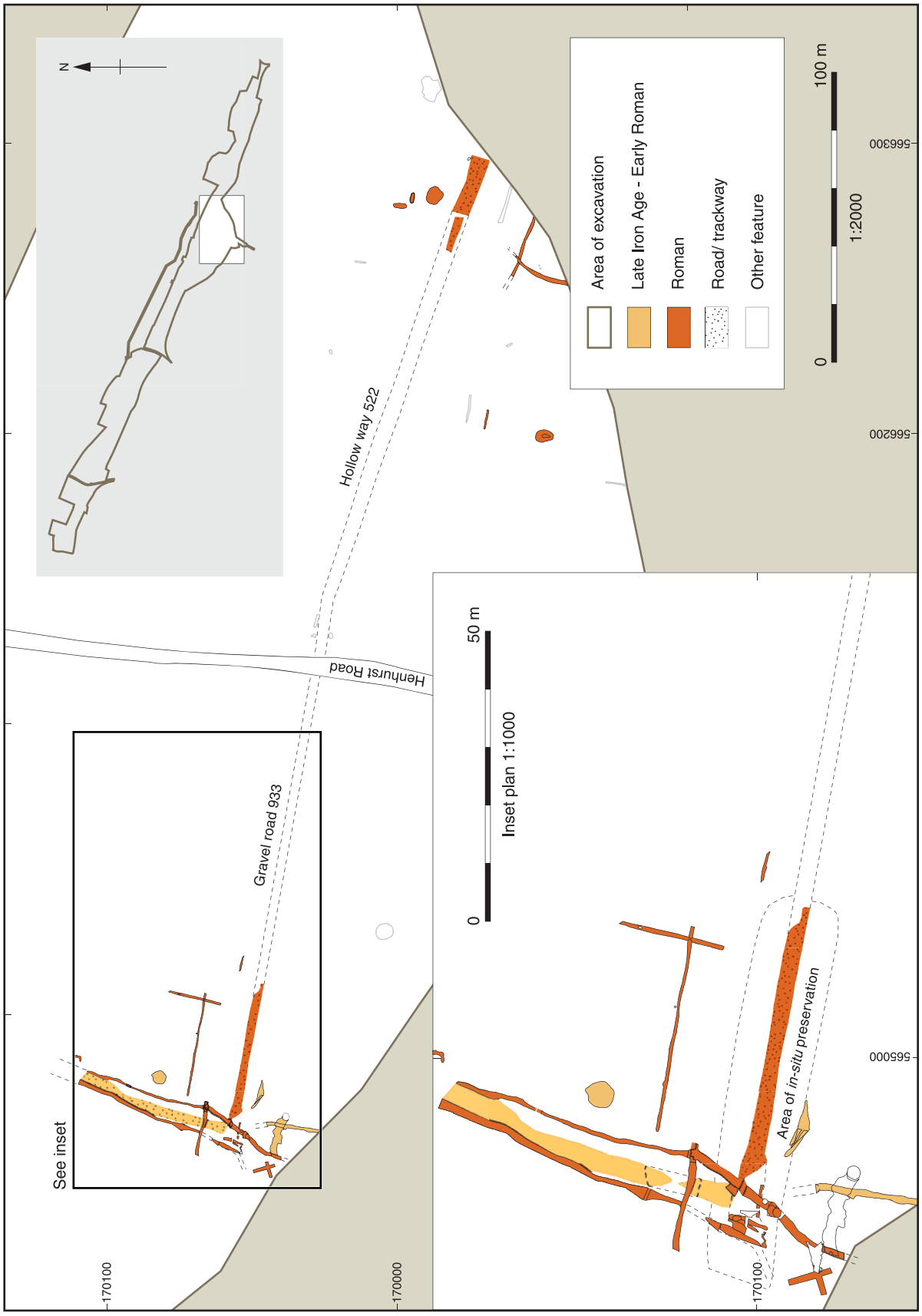


Figure 5.30 Tollgate: overall phase plan with detailed phase plan of road sequence in the western part of site

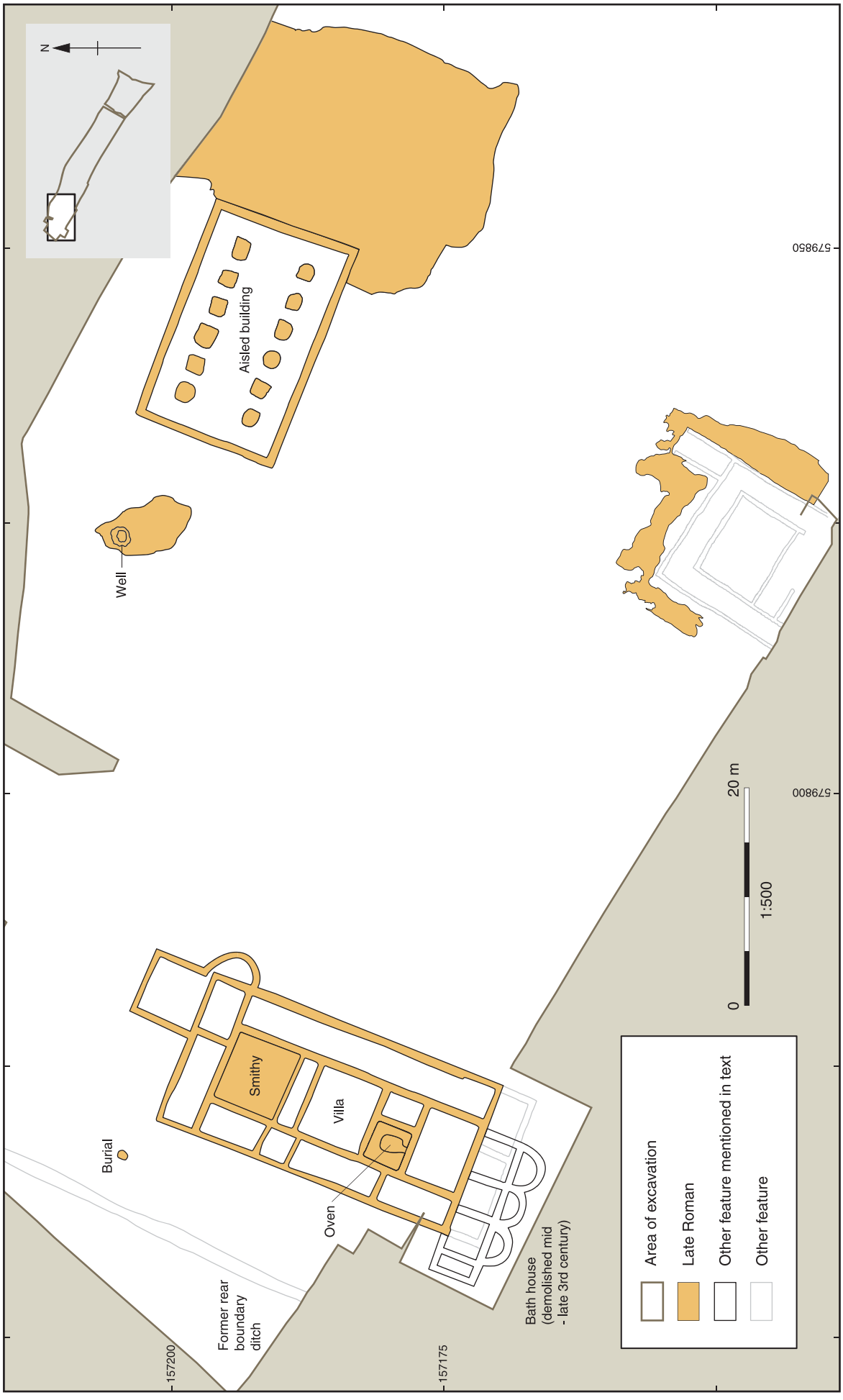


Figure 5.31 Thurnham: Late Roman phase plan

probably ceased to serve this function by the later 3rd century and the bath suite had been demolished, while the multiple-post building outside the villa enclosure may have been removed to make way for a corn-drying oven, probably leaving the aisled building as the principal domestic focus (Fig. 5.31).

At Bower Road the multi-posted structure, probably of late 2nd century date, is likely to have remained in use for much of the 3rd century, but it is uncertain how long it survived thereafter, and evidence for 4th-century activity on the site, while certainly present, is limited. At Saltwood Tunnel, Late Roman pottery and a number of individual objects constitute the main indicator of continued activity, supplemented by a single inhumation burial. Only one site, Hazells Road, was exclusively of later Roman date. Here the pottery indicates activity from the early 3rd century onwards, while a number of coins demonstrate that the site, of agricultural character, its principal feature being a large corn-drying oven located adjacent to a trackway (see Fig. 5.36), continued in use at least through the first half of the 4th century and probably at a lower level up to the end of the century. By this time contemporary activity, again only at a low level, can be suggested further east within the Northumberland Bottom complex at Wrotham Road and at Thurnham, Bower Road and Saltwood Tunnel, ie at about a quarter of all the HS1 sites where Late Iron Age and Roman activity was encountered. This pattern of Late Roman activity is discussed further below.

Rural economy

It is likely that the economy of all the HS1 settlement sites was based on agriculture. There is limited evidence for more specialised activities such as iron production (at Leda Cottages and Beechbrook Wood) and pottery production (also at Beechbrook Wood and possibly at Snarkhurst Wood), but in no case was the scale of this activity sufficient to suggest that it was more than supplementary to agriculture. Characterisation of the rural economy is problematic, however, because of the nature of the soils. On the Greensands and clays of Holmesdale and the Chart Hills, in particular, the acidic soils resulted in a generally very low level of survival of animal bone, and the preservation of charred plant remains was also adversely affected. Preservation was much better on the chalk Downs, but at some sites where chalk formed the solid geology the overlying deposits (for example, the sands, gravels and brickearth at Pepper Hill) were still acidic and resulted in very poor survival of bone.

For many sites it is difficult to determine the extent to which agricultural production rose above subsistence level. Direct evidence even for some of the most basic of domestic activities, such as cooking, is not widespread, and it is notable that the best-preserved evidence for hearths and ovens (probably, but not demonstrably, simply for baking/cooking) comes from the higher-status sites such as Thurnham and Northumberland Bottom, West of Wrotham Road (Figs 5.32–4).

Figure 5.32 Thurnham: Middle Roman oven (15280) in north-westernmost bay of aisled building

Figure 5.33 Northumberland bottom, West of Wrotham Road: well-preserved Early Roman oven in hollow beside enclosure ditch, looking east

Figure 5.34 Northumberland Bottom, West of Wrotham Road: Mid Roman oven cut into south-east corner of Early Roman enclosure ditch

Other structural evidence for agricultural activity has been partly discussed above, and relates most clearly to the storage and processing of grain, with four-post 'granaries' a recurring feature. More widely, the evidence for field systems is generally insufficiently coherent to allow their characterisation—were ditches used to define arable fields or were they principally a means of creating stock enclosures? In the absence of evidence for widespread field systems the latter may be more likely, but the linear character of the project limited the ability to define evidence for such systems. There is, however, no indication of the presence of extensive areas of field systems, whether systematically planned or not, to compare for example with those perhaps seen in parts of Essex (Going 1993, 100–1), on the Berkshire Downs (Bowden *et al*. 1993) or in South Yorkshire (Riley 1980). Equally it is not possible to tell if there may have been variation in field sizes related to factors such as subsoil type (cf Bird 2000, 164).

The only examples of ploughmarks of probable Roman date, from west of Wrotham Road in the Northumberland Bottom complex, lay adjacent to an enclosure ditch. The most likely (but speculative) interpretation of this association is that the ploughmarks lay in an arable area that was not itself closely divided by ditched boundaries, but within which small enclosures could have served a variety of purposes. Apparent traces of plough scars at right angles suggest the use of a simple ard-type plough.

The main strands of evidence for the agricultural economy of the HS1 sites are summarised in Table 5.4. Notable evidence for grain processing and or storage (though not necessarily production) has also been mapped alongside other 'economic' data on Fig. 5.35, where an attempt has been made to distinguish between this material and evidence for routine household processing and consumption of grain, which is much more widely encountered. It is assumed, however, that arable production was probably practised at all settlement sites, even where there is little or no direct evidence for this.

Plant remains

Charred plant remains were widespread but the best assemblages came from Northumberland Bottom, Thurnham, Bower Road, Little Stock Farm and Saltwood Tunnel. The range of cereals represented at each site was generally similar throughout this period, although there was much more early than later Roman evidence, and the Little Stock Farm assemblage was entirely of Late Iron Age date. Spelt wheat and to a lesser extent hulled barley were the main cereals. Emmer wheat was generally rare in the main assemblages, having been more common in the earlier Iron Age, although larger quantities were recorded at Saltwood Tunnel. Occasional free-threshing wheat grains were recovered from Pepper Hill, Northumberland Bottom, Thurnham, Little Stock Farm, Bower Road and, Saltwood Tunnel, adding to existing records for sites such as Springhead (Campbell 1998). Oat grains, again in small quantities, were found at Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Beechbrook Wood, with larger amounts at Bower Road, but it is uncertain if these derived from cultivated or wild plants.

Other plants represented in charred deposits included legumes: occasional horse beans, peas or vetch/bean/pea at Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Saltwood Tunnel, for example. The Thurnham plants included cultivated pulses, such as broad bean (*Vicia faba*) and large seeded vetch/garden pea (*Vicia* sp./*Pisum sativum)* as well as non-edible vetches/clovers (eg *Vicia sativa* and *Melilotus* sp./*Medicago* sp./*Trifolium* sp.). The latter may have been cultivated for animal fodder, possibly as part of a crop rotation system, or may just have been cereal weeds (Smith and Davis 2006). Carrot (*Daucus carota*) seeds from the well at Thurnham may likewise have been from the wild rather than the cultivated species. Charred flax seeds were found at Northumberland Bottom and Thurnham, where waterlogged flax capsule fragments were also found in the Late Roman well. Wild resources were also utilised, as shown by fruit remains of sloe/blackthorn, apple, blackberry (*Rubus fruticosus*), blackberry/raspberry and hazel nut shell, again from the well at Thurnham. Charred hazel nutshell was found at seven sites and remains of sloe and *Prunus* species at Northumberland Bottom, Thurnham and Little Stock Farm. Mineralised *Rubus* seeds were identified at Bower Road.

Understanding of the way in which arable regimes operated is enhanced by consideration of the weed seeds as well as the cropped species. A wider range of weed seeds was present compared to the previous period, and they suggest that a greater variety of soil types may have been cultivated, for example at Thurnham, Little Stock Farm and Bower Road. Newly-recorded species included stinking mayweed (*Anthemis cotula*), an indicator of waterlogged loams and clay soils, which appeared on a number of sites including Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel. It was common in Late Roman samples at Hazells Road, where evidence of free-threshing wheat was also found. Bedstraw, which had been present in the previous period, also grows in clay soils and was again found at Northumberland Bottom and at Little Stock Farm. In contrast, narrow fruited corn salad (*Valerianella dentata*), associated with dry calcareous soils, was identified at Bower Road.

Weeds of acidic soils, widely present in the previous period, were again common at a number of the sites. They included sheep's sorrel and scentless mayweed at Beechbrook Wood, blinks (*Montia fontana*) and sheep's sorrel at Little Stock Farm, corn marigold (*Chrysanthemum segetum*), sheep's sorrel, scentless mayweed and wild radish (*Raphanus raphanistrum*) at Bower Road, and blinks and scentless mayweed at East of Station Road. At Little Stock Farm, Chenopodiaceae (particularly fat hen, *Chenopodium album*), associated

Table 5.4 Outline summary of evidence for agricultural economy from principal sites

Site	*Structures*	*Charred plant remains*	*Principal crops*	*?Crop processing*	*Querns*	*Animal remains*	*Principal animals*	*Comment*
Whitehill Road						Kitch 2006a	*cattle, sheep/ goat, pig	
South of Station Road		Giorgi 2006a	*spelt/emmer, barley	Y?				
Hazells Road	'corn-drier'	Davis 2006a	spelt (emmer, barley, oats)	Y	1 millstone unstratified	Kitch 2006b	*cattle, sheep/ goat, pig	millstone may not be Roman
Northumberland Bottom, E of Downs Road	2 4-post structures	Davis 2006a	spelt, emmer	Y?	7?	Kitch 2006b	*horse, cattle, sheep/goat, pig	
Northumberland Bottom, W of Wrotham Road		Davis 2006a	spelt (barley)	Y				
Tollgate		Davis 2006b	spelt	Y	1	Kitch 2006c	*sheep/goat, cattle	
Hockers Lane	4-post structure					Kitch 2006d	*sheep/goat, cattle, pig	
Thurnham	2 4-post structures multiple-post building, aisled building, 'corn-drier'	Smith and Davis 2006	spelt (barley)	Y	24?+ 2 poss millstones	Kitch 2006d	sheep/goat, cattle, pig	
Snarkhurst Wood	5 4-post structures	URS 2000b	spelt, barley					
Leda Cottages	2 4-post structures	URS 2003	spelt	Y	12?			
Beechbrook Wood	3 4-post structures	Giorgi 2006b	spelt (emmer, oats, barley)		1			CPR from cremation burial
Bower Road	multiple-post building with ?agricultural function	Stevens 2006a	spelt (oats, emmer, barley)	Y		Kitch 2006e	*cattle, sheep/ goat, pig	
Little Stock Farm	4-post structure	Stevens 2006b	barley (emmer/spelt)			Kitch 2006f	*sheep/goat, pig, cattle	
Saltwood Tunnel		Stevens 2006c	spelt, emmer, barley (pea)	Y	?	Worley and Nicholson 2006	*cattle, sheep/ goat	

Where possible the principal crop and domestic animal species are listed in order of importance, with proportionately minor presences in brackets. An asterisk (*) indicates that the sample sizes are too small for the assessment of relative importance to have any statistical validity

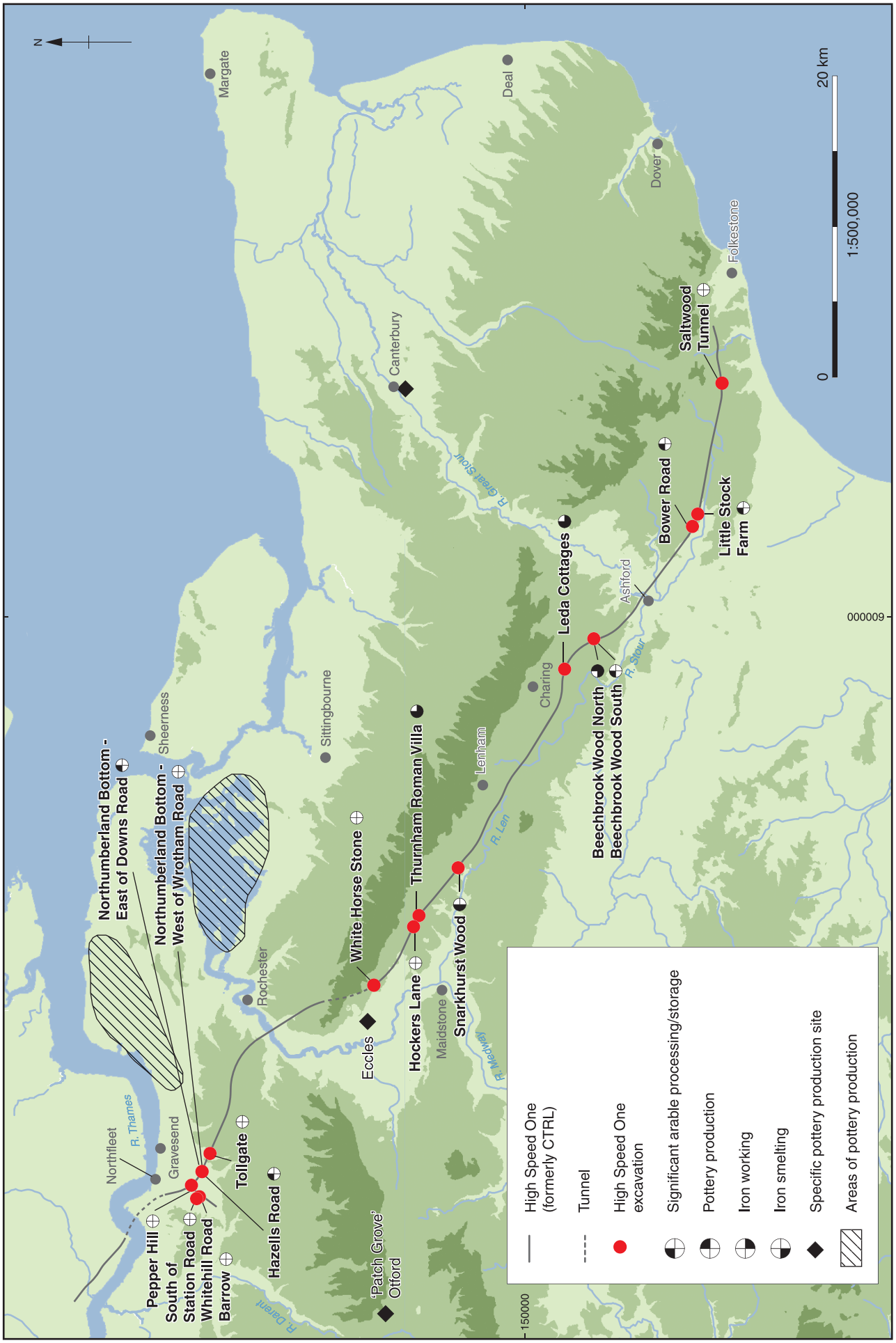


Figure 5.35 Map of principal 'economic' activities from HS1 Late Iron Age and Roman sites

with nitrogen-rich soils, declined in importance in the Late Iron Age to Roman period during which there was a corresponding increase in leguminous seeds. This may indicate a decrease in the fertility of the soils around the site, presumably as a result of over-exploitation. That the range of utilised land included wet ground is suggested by the presence of plants such as blinks and spike-rush (*Eleocharis palustris*), particularly at Thurnham and Bower Road, although their occurrence could have been quite localised.

The association of particular weeds and crops sometimes suggests the season of sowing or allows inferences about harvesting technologies to be drawn. The presence of knotgrass, black bindweed and fat hen suggests spring sowing, while corn gromwell may indicate that some crops were winter sown. Equally the presence of monocotyledon rhizomes in a 2nd–4th century deposit at Nashenden Valley might suggest that some cereals were harvested by uprooting, while an iron reaping hook from Hazells Road suggests a different method there. Better evidence is available for post-harvest processing practices since it is charred material derived from these practices which is generally recovered from excavated settlement site contexts. At the HS1 sites these remains were mostly from the final stages of crop-processing and comprise cleaned grain, chaff (from de-husking) and large weed seeds, such as bromes, characteristic of virtually cleaned grain. There was generally less evidence for the fine sievings (small weed seeds) separated at an earlier stage of crop-processing. Crop-processing debris appears to have been used as tinder or kindling in hearths and ovens. The latter were quite widely encountered and in the general absence of evidence for specialised functions for these, such as metalworking (see below), are interpreted as being used for domestic cooking activities.

Most of the grain would have been converted to flour or meal, typically by hand milling. Quern stones were recovered from five Late Iron Age and Roman settlement sites (Northumberland Bottom, Tollgate, Thurnham, Leda Cottages and Beechbrook Wood), of which only Thurnham produced two likely examples of millstones, both in Millstone Grit (a further millstone in the same stone type was an unstratified find at Northumberland Bottom and could have been of Roman or later date). In the absence of evidence for a convenient source of water power at Thurnham it is likely that the millstones there derived from an animal mill, as has been suggested at Keston (Philp *et al.* 1991, 180). The situations of the villas at The Mount, Maidstone (Kelly 1992, 228) and Lullingstone (Meates 1979, 110) are more ambiguous in this respect, and millstones there could have been either animal- or water-powered. The only unambiguous evidence for watermills of Roman date in Kent comes from the site at Ickham, near Canterbury, where there were multiple mill structures (Bennett *et al.* 2010). Either way, there seems to be a broad association of millstones with higher rather than lower status rural settlement sites, as noted for example in the Upper and Middle Thames Valley (Booth *et al.* 2007, 298). Moreover it is likely that the great majority if not all stones of Millstone Grit occurring in Kent were millstones rather than hand-powered querns (R Shaffrey, pers. comm.). So for example at Home Farm, Eynsford, three out of four stones of Millstone Grit were certainly millstones on the basis of size, while the diameter of the fourth stone could not be determined (Philp and Chenery 2002, 75–6).

An alternative use of grain, for malting, is suggested by one sample at Thurnham but is not convincingly attested elsewhere on HS1 Section 1, although there is some evidence for malting at other sites in the area such as Springhead (Campbell 1998, 37), The Mount villa, Maidstone (Robinson 1999) and Keston (Hillman 1991), and possibly at Westhawk Farm (Pelling 2008), while such evidence is prominent at the Northfleet villa, particularly in the Late Roman period (W Smith in Andrews *et al.* 2011). The relative absence of evidence for malting at the HS1 Section 1 sites is quite striking. The possibility that this reflects the chronological emphasis of the majority of sites was considered, on the basis that malting probably became more widespread in the middle and later Roman periods, after a number of the HS1 sites had gone out of use. However, the potentially relevant material at Thurnham came from a gully of mid–late 1st century date while none of the samples associated with the later 'corn-drier' (or with the large Late Roman corn-drier at Hazells Road) contained sprouted grain (Fig. 5.36). On balance it would be surprising if malting was practised at Thurnham in the Early Roman period but not later. A broadly contemporary (*c* AD 43–70) deposit at Westhawk Farm contained sprouted grains of spelt and barley but particularly also of brome grass, as well as a wide range of weeds, and its interpretation as containing material relating to the malting process also seems problematic. Unfortunately the relevant sample at Springhead was not well-dated (although associated pottery was mostly Early Roman), but the deposits indicative of malting at The Mount were dated *c* AD 175–225 (Robinson 1999, 149) and the single sample from Keston (small and therefore of slightly uncertain significance) was from a ditch with a *terminus post quem* of *c* AD 350 but containing residual as well as contemporary material (Philp *et al.* 1991, 130). The villa at Northfleet (HS1 Section 2) has produced significant assemblage of grain sprouts, providing the best evidence yet for malting (of spelt) in the area, in contexts ranging across much of the Roman period, but concentrated in the Mid/Late Roman. The material suggests malting on a substantial scale at this site.

Overall, the charred cereal remains from this period show that spelt was the principal grain with smaller amounts of hulled barley and generally only small amounts of emmer. Spelt and hulled barley are typically the main cereals found in Late Iron Age and Romano-British deposits from southern England (Greig 1991) while emmer is poorly represented (van der Veen and O'Connor 1998; Campbell 2000). It is usually assumed that emmer was no longer being extensively cultivated in southern England during this period, but the presence of reasonably high proportions of emmer in Roman samples

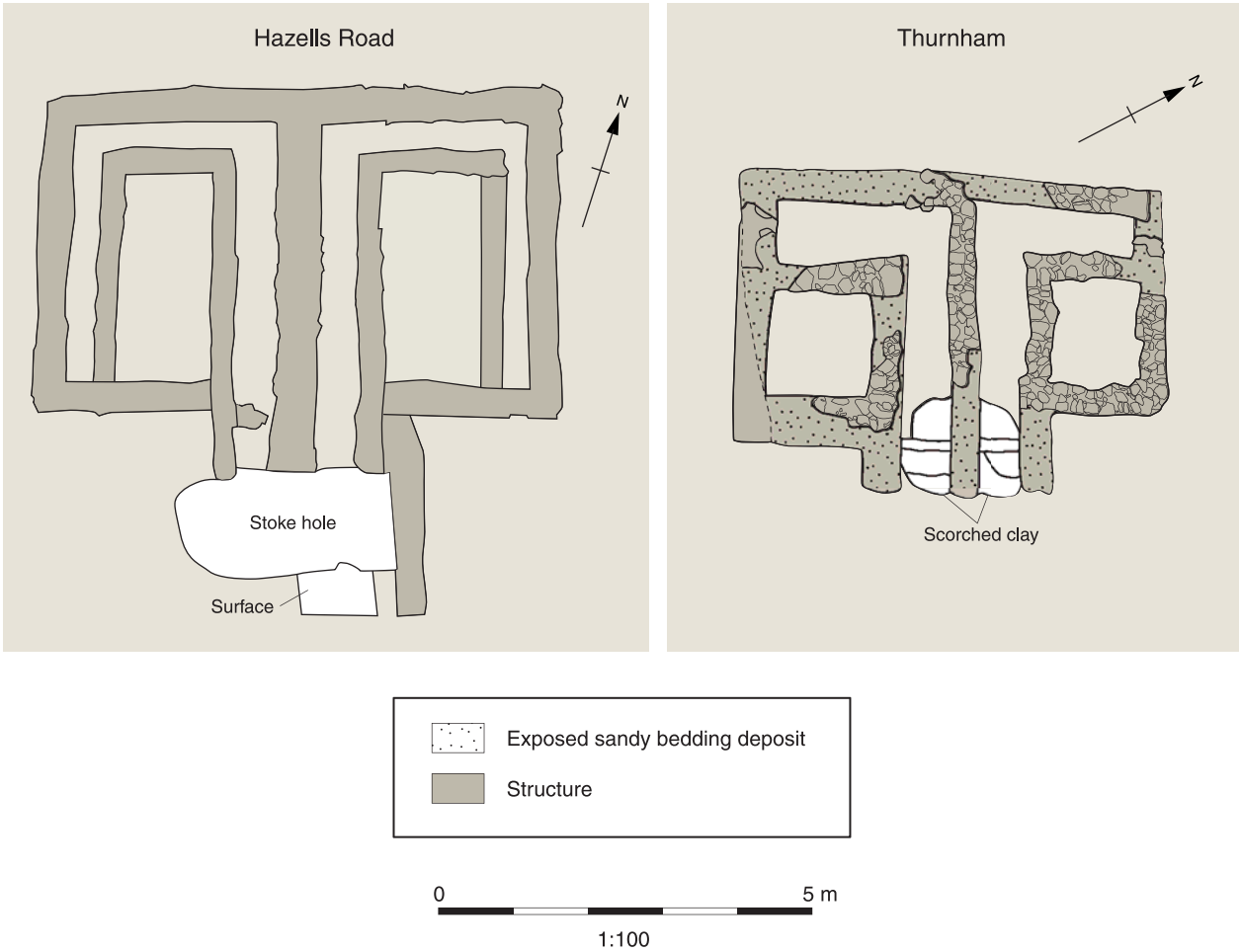


Figure 5.36 Comparative plans of corn-driers (Hazells Road, Thurnham)

from Saltwood Tunnel suggests that it may have continued to play a role in the agricultural economy in Kent. Almost equal proportions of emmer and spelt were recorded in a Late Iron Age pit at Wilmington, near Dartford, for example (Hillman 1982). Such evidence remains in the minority, however, and at Springhead (Campbell 1998, 37–9) and The Mount, Maidstone (Robinson 1999, 149) spelt was certainly or probably dominant (remains can sometimes not be identified more precisely than as spelt/emmer). At the low status settlement at Queen Elizabeth Square, Maidstone, emmer, while less common than spelt, was sufficiently frequent to suggest that it was not just a contaminant (Pelling 2003, 22) in the Late Iron Age and Early Roman periods. At Wingfield Bank, Northfleet, however, immediately east of Springhead, deposits of chaff dominated by spelt were recovered from an oven dated by radiocarbon to the Late Iron Age (Wheaton *et al*. in prep.). Variations in the proportions of these cereals may perhaps have been linked to site status, but there are still insufficient data for this to be tested rigorously.

Pulses and flax are not particularly well represented in this period and there is only limited evidence for the use of wild foods, mainly in the form of hazel nutshell. Recovery of evidence for pulses is, however, much less consistent than for cereals as there are no aspects of the various possible preparation processes (except for cooking) and reuse (for example of cereal chaff as fuel) that require contact with heat, so the occurrence of charred material will be entirely accidental, as at Queen Elizabeth Square (Pelling 2003, 22, 24), where large quantities of peas were dated to the Late Iron Age phase. Such evidence suggests that the use of such resources could have been quite widespread in the region and the absence of evidence does not necessarily represent the true picture with relation to pulses. Flax is subject to the same biases.

Animal remains

Issues of preservation are reflected in the fact that animal bone assemblages were only examined at ten sites of Late Iron Age and Roman date, in five of the eight landscape zones (1, 3, 4, 7 and 8). The largest assemblages came from Northumberland Bottom and Thurnham, but these amounted to only just over 2000 fragments and *c* 5350 fragments respectively (excluding very fragmentary material from sieved samples) and only at Thurnham are the data (barely) adequate to suggest possible changes in animal husbandry through time.

All four major domesticates, cattle, sheep/goat, pig and horse were identified at most of the sites with cattle and sheep/goat usually the best represented species, as

would be expected. Cattle were the most abundant species at the Early Roman site of Whitehill Road, at the Roman site of Bower Road and at Late Roman Hazells Road. Sheep/goat were most common at the Late Iron Age–Early Roman site of Hockers Lane while both sheep/goat and cattle were abundant at the Late Iron Age site of Little Stock Farm and the Late Iron Age–Roman site of Saltwood Tunnel. In early Roman deposits at Northumberland Bottom, horse was the best represented followed by sheep/goat, cattle and pig, but this phase sample included a large number of the horse bones from a burial with one complete fully articulated skeleton (Giorgi and Stafford 2006). All these assessments are based on very small numbers of fragments, however. Even in the case of Northumberland Bottom the total for the minimum number of individuals (MNI) in the Early Roman phase (14, of which 5 were horses), is less than half that recommended by Hambleton (1999, 39) as a minimum for meaningful discussion of differences in the relative numbers of the main species.

At Thurnham, data for MNI from the Late Iron Age to Late Roman period, although mostly from the Late Iron Age and Early Roman phases, are still not as numerous as would be wished, but appear to show sheep/goat to be predominant in the early phases (*c* 55% of a MNI total of 44), declining to *c* 35% (of a MNI total of 34) in the Middle and Late Roman period, while cattle correspondingly increased from *c* 20% to *c* 30% of MNI (Kitch 2006d). The data are too few to permit any meaningful distinction to be drawn between the Middle and Late Roman phases, although superficially the representation of cattle and sheep/goat is similar in both. The incidence of pig seems to have been fairly consistent, at about 20% of MNI, across the main periods.

The evidence for ages of animals at death provides some indication of husbandry practices at the different sites, but the lack of large datasets means that these are of a rather generalised nature. Mixed strategies are likely to have been pursued. Cattle, for example, were probably used for traction and dairy and meat products. Even where they were less numerous than sheep, cattle typically provided the majority of meat for many settlements because of their much greater body mass. It is impossible to say if this was consistently the case on the HS1 sites, but it is likely. At some sites, for example Northumberland Bottom, no evidence for butchery of sheep was recorded (with the implication that these animals may have made little or no contribution to the meat diet), but the small sample size may limit the value of this observation. Here sheep could have been particularly important for wool and perhaps dairy products, although in general they would also probably have been exploited for meat. Leather, bone and horn would have been useful by-products of cattle (evidence of horn removal, presumably for working, was found at Northumberland Bottom, Thurnham and Bower Road), but their production would rarely if ever have been a primary consideration in stock raising. Pigs were essentially raised for meat, with a few retained for breeding purposes. Horses are most likely to have been used for riding, with traction as a secondary function. There is no clear indication of inter-site variation in these broad patterns of exploitation. It is likely that animals were kept at most if not all settlements, but evidence of breeding, in the form of the presence of remains of very young animals, came from Whitehill Road (cattle and possibly sheep/goat), Thurnham villa (cattle, sheep/goat and pig) and Bower Road (cattle and sheep/goat). In contrast, the assemblage from Northumberland Bottom was notable for an absence of young animals.

Domestic fowl was the only other economic species encountered, at Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel. There were ten instances, including one almost complete carcass, of domestic fowl amongst cremated material at Pepper Hill, where these birds would have been placed on the pyre. It is likely that a majority of the considerably larger number of fragments identified only as 'bird' at this site were also of domestic fowl.

Game animals included finds of red and roe deer, represented by occasional bone remains at Hazells Road, antler at Little Stock Farm (both red and roe, respectively sawn and cut), and both at Thurnham villa and Bower Road (including sawn red deer antler). This evidence suggests that deer were hunted, but there was no indication of butchery on any of the post-cranial elements so it remains uncertain if these animals were eaten. It is clear that antler was worked at Little Stock Farm, Thurnham and Bower Road, but much of this could have been carried out using collected shed antler. Hare (*Lepus* sp.) was identified at Thurnham, but whether hunted and eaten, or occurring in some other context, is unknown.

Fish formed part of the diet at some sites. Occasional bones of cod (*Gadus morphua*) were identified at Northumberland Bottom and a few herring bones found at Pepper Hill. Fish bones at Thurnham, mostly from Early Roman contexts, included herring and flatfish (marine) and eel (*Anguilla anguilla* – marine or fresh water). Saltwood Tunnel produced the widest range of fish species, comprising large cod, haddock (*Melanogrammus aeglefinus*), herring or sprat (Clupeidae), eel and flatfish (including Pleuronectidae – plaice, flounder or dab). The Saltwood bone evidence is supplemented by a possible lead net weight and a long iron implement with a forked terminal which may have been a netting needle. A single possible pike (*Esox lucius*) vertebra was the only exclusively freshwater fish bone in the Saltwood assemblage. The presence of cod is the most unusual aspect of this material in a Romano-British context. It has been recorded as occurring only in towns (Locker 2007, 157) and is generally not common in Roman Britain, although Locker (ibid.) suggests that this need not have been because of perceived technical difficulties of deep-water fishing. The marine fish from all these sites indicate trade with settlements on the coast; their presence is most notable at Thurnham, the other sites being readily accessible from the coast.

A final feature of the evidence from Thurnham was the recovery of numerous examples of honey bee (*Apis mellifera*) in a late Roman well fill. This important and

rare find (for a recent parallel from Heathrow see Framework Archaeology 2006, 212) suggests that bee-keeping might have been practised within the villa complex.

Production and trade

The main economic activities not falling directly under the umbrella of agriculture consist of small scale production of a variety of commodities, and general patterns of trade, at a variety of scales. In both cases, but particularly the latter, the evidence of ceramics is extremely important, although caution is required in assessing the extent to which pottery evidence can really stand as proxy for the movement of other materials and goods (Greene 2005, 9–11; cf Fulford 2004, 320–1).

Pottery

Pottery production is attested directly at Beechbrook Wood, and seems likely to have been carried out at or close to Snarkhurst Wood, in both cases in the Late Iron Age or possibly (at Beechbrook Wood) into the Early Roman period. The fabrics produced were tempered with grog at Beechbrook Wood and with glauconite at Snarkhurst Wood, representing two of a number of contemporary ceramic traditions of varying character encountered in the HS1 sites in the Late Iron Age and Early Roman periods. Ceramic components of Middle Iron Age handmade character are also identified in the central part of the HS1 transect but these, including fabrics tempered with flint and/or quartz sand, mostly seem to have been contemporary with the 'Belgic' fabrics (see above) and represent yet another potting tradition (comparable with, but perhaps distinct from, one widely established across the region in the Early/Middle Iron Age (Morris 2006)), rather than a chronologically distinct phase of activity. Only at Hockers Lane is it likely that a slightly earlier ceramic tradition lay at the beginning of the sequence. There, probable saucepan-type vessels in the most common glauconite-tempered fabric (fabric B9.1) suggest continuity into the Late Iron Age of Middle Iron Age traditions which were well-established in the area around Maidstone. The Late Iron Age–Early Roman glauconitic tradition generally survived in contemporary use with 'Belgic' grog-tempered fabrics, although at Queen Elizabeth Square, Maidstone, it was suggested that their use was sequential (Biddulph 2003, 18). Its importance in the area is well known (Pollard 1988, 31) and is indicated for example by its apparent dominance of a group of pottery from Quarry Wood Camp, Loose (Kelly 1971, 78–84), which parallels its occurrence at Hockers Lane, Thurnham and Snarkhurst Wood. The exact sources of this material remain uncertain (cf Peacock and Williams 1978), although Snarkhurst Wood is one possibility, as already mentioned, on the basis of the concentration of fabric B9.1 there. An oven-like feature (Fig. 5.37) examined at this site may have been a fairly simple pottery kiln, although the interpretation is not certain.

Residual or reinvented ceramic traditions broadly of Middle Iron Age character therefore existed alongside grog-tempering, the most widespread of the Late Iron Age traditions (albeit with Middle Iron Age origins), and more localised traditions of sand-tempering in the south-eastern part of the county (Thompson 1982, 14–15; Pollard 1988, 31) and shell-tempering in the north. It was rare for a single tradition to dominate the assemblage from any one site.

These mixed assemblages of Late Iron Age and very Early Roman date thus comprised almost entirely locally or at most regionally-produced material. They were occasionally accompanied by Gallo-Belgic imports, but with the exception of two sherds of Terra Rubra (fabric B12) from Whitehill Road, Terra Rubra and Terra Nigra were confined to Thurnham and the closely adjacent site of Hockers Lane. A range of Gaulish white wares also occurred; again these being concentrated at Thurnham, where sherds of all eight early imported white ware fabrics identified on HS1 sites were found. These fabrics were slightly more widely distributed than TR and TN, occurring also at Northumberland Bottom (WNB98), Snarkhurst Wood, Beechbrook Wood, Bower Road and Saltwood. Not all of these early imports were necessarily of pre-conquest date, however, and none need have dated before the early 1st century AD. One of the few demonstrably pre-conquest pieces at Thurnham was an Arretine platter, residual in a Roman context (Booth 2006b, fig. 4.7, no. 59).

Some of the Late Iron Age sub-regional ceramic traditions survived for a short time after the Roman conquest while others, particularly the grog-tempering tradition, developed through the Roman period. The problem of identification of production sites of this material persists throughout the period and it is possible that a number of minor centres were involved at all stages. Generalised east and west Kent and in some cases east Sussex connections can be identified in relation to some particular vessels. Patch Grove ware, probably from the Otford area of north-west Kent, is one distinct grog-tempered product certainly reaching the area in the mid 1st century AD if not earlier. Another very different tradition of comparable date was the north Kent shell-tempered industry (fabric R69). Like the grog-tempered tradition, this evolved and survived well into the Roman period.

Specialised post-conquest ceramic production in the Maidstone area is indicated by the finds from Eccles, where the production of tiles in distinctive fabrics seems on the basis of pre-Boudiccan finds from London (eg Betts 2003, 108; Pringle 2002) to have been underway before the construction of the villa there (Detsicas 1983, 120). In view of the relative proximity of Eccles and Thurnham it is unsurprising that the proto-villa and concentric building at the latter, probably built by *c* AD 70 if not a little earlier, were almost entirely roofed with tiles from Eccles (Betts 2006). However, there is effectively no evidence for the presence of pottery from the same source (Detsicas 1977b), even at Thurnham. Only at Northumberland Bottom was Eccles pottery

tentatively identified, and although some of this material reached London (Davies *et al*. 1994, 36–7) its distribution is otherwise sparse (Pollard 1988, 188–9). Pottery production at Eccles may have been very short lived and perhaps, in view of the range of vessel types represented, intended for a very specific and essentially non-local market. The tiles were certainly more widely distributed, but it is notable that by the later 2nd century, the date of the only known tile kiln structure at Eccles (McWhirr 1979, 157–8), this site had ceased to supply its products to Thurnham. No Eccles products were present in the ceramic building material assemblage from Northumberland Bottom (Smith 2006a).

Sharply contrasting ceramic traditions appeared in the northern part of the county from the mid 1st century onwards. The Thameside industry (Monaghan 1987), producing mainly (but not entirely) sand-tempered fabrics, seems to have included a number of specialist products (such as Hoo-type flagons) amongst a diverse repertoire of fabrics and vessel forms. The fine 'Upchurch' reduced ware fabric R16 with its oxidised correlates such as R17 and R18.1, is particularly characteristic of the period AD 50–150. These products seem to have achieved a wide distribution quite rapidly, and unsurprisingly were an important component of early grave groups at Pepper Hill. Further afield, at Bower Road, however, it was suggested that they might not have appeared until the early Flavian period. It may therefore have taken a little while for north Kent products to reach the southern part of the county, but at Westhawk Farm, close to Bower Road, fabric R16 seems to have been firmly established well before the Flavian period (Lyne 2008).

By the late 1st century, if not a little earlier, 'Romanised' sand-tempering ceramic traditions were augmented by material from the Canterbury kilns. This included mortaria and flagons as well as standard oxidised and reduced coarse ware forms (jars and bowls), but the quantities were never large. As with the Thameside products, the supply of Canterbury pottery to the HS1 sites spanned the early 2nd century, which seems to mark the transition from an 'Early' to a 'Middle' Roman ceramic phase. For most sites the most obvious marker of this change was the appearance of Thameside BB2-type ware (fabric R14). This was seen particularly clearly in a large late 2nd–early 3rd century assemblage at Thurnham, where such wares comprised some 36% of rim equivalents (REs). BB2 amounted to 5.9% of the total sherds at Thurnham—this was the highest representation at any HS1 site, but lower figures elsewhere often reflect the cessation of site activity in the 2nd or early 3rd centuries.

A comparison of the contributions of the Thameside and Canterbury industries to the larger HS1 assemblages (over 1000 sherds) in Table 5.5 shows that the former were always dominant.

The presence of only small totals of pottery from both sources at Whitehill Road, Snarkhurst Wood and Beechbrook Wood, and to a lesser extent Northumberland Bottom, is explained by the predominantly 1st century date of activity at those sites. The domination of the Pepper Hill assemblage by Thameside products is entirely in keeping with the location and date range of the site. Canterbury products were probably always scarce in this part of the county (Pollard 1988, 68).

Table 5.5 Percentage of site sherd totals of Thameside and Canterbury products

Sites	*Fabrics*	*% Thameside products R14, R16, R16.1, R17.1, R17.2, R17.3, R18.1, R18.2, R73, R73.1, R73.2, R73.3*	*% Canterbury R4, R5, R6.1, R6.3, R9.1, R9.2, R10, R 96*	*Site sherd total*
Pepper Hill		68.9	+	26,760
Whitehill Road		5.3	-	1441
Northumberland Bottom		13.9	0.6	3412
Thurnham		28.0	2.8	13,911
Snarkhurst Wood		3.5	0.2	1426
Leda Cottages		23.8	1.3	1882
Beechbrook Wood		5.8	0.4	3775
Bower Road		11.3	6.0	4175
Saltwood		20.7	2.3	4764

A relatively high representation of Thameside products was maintained through the central and south-eastern parts of the HS1 transect. Even in the latter area these products seem to have been much more common than Canterbury ones. This may reflect a slightly greater diversity in the range of fabrics available from the Thameside industry, and in particular the importance of the fine fabric R16 which had no equivalent amongst the Canterbury products. In general the latter were more common at the south-eastern end of the route than further north-west, as would be expected given the relative proximity of this area to the source, only a little more than 20km distant. In view of this proximity the fact that Thameside products continued to outnumber Canterbury ones is all the more striking. From Thurnham south-eastwards this was in a ratio of 9:1 or greater, except at Bower Road, where the ratio was less than 2:1 and Canterbury products reached much their highest level (6%) in any HS1 assemblage. It is not certain why this was so, but a possible factor is the relative proximity of Bower Road to the route running south-west from Canterbury up the Stour valley. This suggestion might be supported by the fact that at nearby Westhawk Farm, lying astride this road, Canterbury products amounted to 5.4% of the total sherds, a very similar figure to that at Bower Road (Lyne 2008). Why the ratio of Canterbury to Thameside products at Saltwood should not have been similar to the Bower Road figure is unclear, however.

Canterbury coarse ware production does not seem to have significantly outlasted the 2nd century (Pollard 1988, 93–7). In contrast the Thameside and Upchurch industries continued to be a significant source of pottery for the region through the first half of the 3rd century, but production declined sharply thereafter, probably for economic reasons, although these are poorly understood (Monaghan 1987, 227–30). From the end of the 2nd

century onwards 'native coarse ware' (fabric R1; Pollard 1988, 98), a Middle Roman development of the grog-tempered tradition, was a component of many assemblages, but was not particularly important in numerical terms, being best-represented at Saltwood and Bower Road. A further development of this tradition from the late 3rd century, the grog-tempered wares of the LR1 family ('Late Roman grog-tempered ware'; ibid., 129), constitute the most readily identifiable local/regional late Roman coarse wares (at Thurnham, LR1 fabrics comprised 46% of all sherds from one of the latest groups; Booth 2006b, fig. 4.10, nos 127–133), supplemented to a lesser extent by sand-tempered fabrics of the LR2 group. Neither group can be assigned to a particular source area. Equally, because it cannot be demonstrated that each derived from a single source, the character of production that they represent is unclear. It may have remained at a small-scale local level throughout the later Roman period, although this would be in contrast to broader Romano-British trends, which tend towards some concentration of production in fewer centres than in the 1st–2nd centuries.

This trend is reflected in the gradually increasing quantities of extra-regional coarse wares recorded on HS1 sites. These were only ever of any significance in the Late Roman period, and were therefore only encountered at a few sites. Alice Holt grey ware (fabric LR5) was the most important of these wares, supplemented to a lesser extent by oxidised 'Portchester D' fabric (LR6, whether or not this derived from the Overwey (Surrey) kilns) and other occasional fabrics. Some of these last fabrics, and also some local ones (LR1.3–LR1.6) and the 'imported' LR6, may have belonged exclusively to the mid/late 4th to early 5th century and mark the latest identifiable stage in the evolution of the pottery supply to the region. The occurrence of relatively high proportions of Oxford wares (12.7% of sherds in a late group from Thurnham, for example) is consistent with this development. At Hazells Road, the only overall site assemblage assignable to the later Roman period, Oxford wares comprised 8.6% of the total sherds and the Alice Holt and related fabrics (LR5, LR5.1 and LR6) amounted to 26.2% (38.1% by weight). Late Roman grog-tempered ware (fabric LR1) accounted for 7.4% of sherds but 'native coarse ware' (fabric R1) was more common, perhaps supporting Pollard's suggestion (ibid., 126) that the latter might have continued in production into the 4th century. A coarse grey/black sandy ware (fabric R100), perhaps a Thameside product, was another important component of the assemblage, as it was at nearby Pepper Hill. If correctly assigned, it is more likely to have related to the earliest phases of activity at Hazells Road.

Pottery imported from the continent was present on many sites, but the quantities involved rarely amounted to more than a trickle. The only continental material to occur in quantities sufficient to suggest consistent trade was samian ware and even this was never common. Only at Leda Cottages did samian ware exceed 2% of the sherd count, although at Pepper Hill samian ware comprised 11.9% of the total assemblage by vessel count (perhaps the most precise indicator of quantities in this particular assemblage), supported by a figure of 14.7% based on REs. The sources represented by both continental and extra-regional British material are uniformly consistent with the picture established by the work of Pollard (1988 *passim*) and there was a complete absence of exotica. Late Iron Age and Early and Middle Roman fine wares came mostly from north-eastern France and the Rhineland. Occasional mortaria may have derived from the same general area. Amphorae, where present at all, were also from predictable sources, dominated by southern Spanish olive-oil containers. Only the occasional early amphora fragments from Thurnham stand out as noteworthy and none of these was particularly diagnostic, though an Italian source seems likely and the fabrics are consistent with wine amphora forms such as Dressel 2–4 or perhaps (in the case of fabric B19.1) Dressel 1B. The late British colour-coated wares were supplemented by a few sherds from the Argonne region at Thurnham and Saltwood, and single sherds of Mayen ware from Hazells Road and Saltwood were the only late coarse ware imports.

Overall, therefore, the quantities of extra-regional pottery, whether British or continental in origin, were modest, and it is difficult to determine potential distribution mechanisms from their occurrence. The greatest quantity (though even here the quantitative distinction from other sites was not marked) and variety of such material came from Thurnham, by virtue both of the size of its assemblage, its chronological range and also, presumably, of its character, which may have linked the site to a different set of distribution mechanisms from those that served other settlements in the area (see further below).

Building materials and other stone products

Like pottery, building materials and other stone objects are of value for assessing trade because they can sometimes be assigned to particular source areas. Ceramic building material was relatively scarce, however, occurring in quantity only at Thurnham (Betts 2006), with smaller assemblages from Northumberland Bottom (Smith 2006a) and Bower Road (Smith 2006b), both probably consisting of recycled material, and negligible amounts elsewhere. The production of ceramic building material at Eccles has been mentioned above. This source was clearly important in the 1st century but had been superseded at sites like Thurnham by the early 2nd century at the very latest. A single fragment of Eccles tile was noted at Bower Road but it appeared to be absent at Northumberland Bottom. The distinctive cream-pink tiles characteristic of Eccles production were replaced at Thurnham principally by red roofing tiles, perhaps from the London area (fabric group 2815; Betts 2006), where they were certainly available by AD 70, with production continuing to around *c* AD 160. Tiles in this fabric group comprised almost half of the Northumberland Bottom and Bower Road groups. The latter occurrence might suggest that a London source for this material is not very likely, and a range of individual fabric types similar to

that seen in the London 2815 group is also found at Canterbury, 36km to the east of Thurnham and only 20km from Bower Road. The Canterbury tiles come from two production sites, Whitehall Gardens and St Stephen's Road, both of which seem to have been in operation during the 2nd century, the Whitehall Gardens kiln being dated to AD 130–140 (McWhirr 1979, 152–6). A further production site of early–mid 2nd century date has now been confirmed at Plaxtol, some 20km west of Thurnham (Davies 2004), but although its products occur at Lullingstone, Chalk and perhaps Darenth, and in London, (ibid., 175) the fabric does not seem to appear amongst those recorded at Thurnham and Northumberland Bottom.

Other ceramic building material was mostly unsourced. Small amounts of tile from Northumberland Bottom were in fabrics (MoL fabrics 3060 and 3023) usually assigned to the Radlett area of Hertfordshire (Smith 2006a) and a single fragment from Bower Road may have originated from the tilery at Hartfield, East Sussex (Smith 2006b). The range of the unsourced material (and even of tiles attributed to fabric group 2815) might suggest that further relatively local sources remain to be identified. One such source may have been located in the vicinity of Westhawk Farm, Ashford, where the nucleated settlement would have been a significant consumer and otherwise unsourced ceramic building material fabrics occur in some quantity (Harrison 2008, 265). Equally it seems almost certain that tile kilns would have been established in the vicinity of Springhead, for example, as has been suggested by Detsicas (1983, 65–6) and is suggested by the consistency of many of the fabrics observed there (Poole 2011). Better understanding of this source could transform understanding of the supply of ceramic building material in this part of north Kent.

The structural use of stone on HS1 sites was as restricted as that of brick and tile. This is despite the fact that Ragstone (a form of Greensand), an important building stone for the south-east and widely exploited for example in London (Marsden 1994, 80–4; Cowley 2005, 90), was quarried in the vicinity of Maidstone, perhaps both north and south of the town (Detsicas 1983, 169; Wheeler 1932, 103). The wider exploitation of this stone may have ceased before the later 3rd century on the basis of evidence from Richborough (Allen and Fulford 1999, 177, 181) but Hill (1980, 68) refers to 'a large quantity of fresh ragstone' in the context of the riverside wall at London, probably built *c* 270 (for the date, see Williams 1993, 13). If Allen and Fulford are correct then this may represent one of the last episodes of large scale exploitation of Ragstone.

Stone construction concentrated at Thurnham, the only other occurrences being enigmatic wall foundations at Bower Road and the corn drier structure at Hazells Road. Flint, which was widely available from the chalk, was generally used for foundations—poor preservation limits the extent to which it can be shown to have been employed for superstructures as well. Chalk itself was also used occasionally at Thurnham, perhaps to provide decorative contrast with other materials. Ragstone was widely used at Thurnham and also for footings at Bower Road. As the local high quality building stone its use is unsurprising. Tufa was also used at Thurnham. It is found naturally in association with Ragstone (Worssam 1963) and was presumably exploited alongside it.

Of the stones in use for non-constructional purposes quernstones provide the clearest indication of movement of materials from outside the region. Local material consisted of Greensand querns, found at Leda Cottages (1), Thurnham and Northumberland Bottom (5 each). Many of these may have derived from the known source at Folkestone (Keller 1989), but only one of the stones from Northumberland Bottom, for example, was fairly certainly from that source. Leda Cottages and Thurnham also produced querns of Hertfordshire Puddingstone (2 and 3 respectively) while Thurnham was the only site to produce Millstone Grit stones that were certainly of Roman date, including two probable millstone (rather than quern) fragments (see above). A possibly imported Triassic sandstone fragment came from Leda Cottages, while the only certainly imported stones were of Niedermendig lava. This material was relatively common at Thurnham (50 fragments from 14 contexts) but because of its tendency to fragment in adverse soil conditions, as here, it is very difficult to assess its importance in relation to the other stone types. Lava fragments also occurred at Leda Cottages and Beechbrook Wood, while a single piece from Northumberland Bottom was probably of medieval date

Highly fragmented lava was seen at Westhawk Farm where, however, this material not only dominated the fragment count but the fragments weighed more (*c* 24kg) than the stone from all the other sources combined. Amongst these, Millstone Grit and Folkestone Greensand were the most important (Roe 2008). For the northern end of the HS1 route the Section 2 excavations at Springhead provide a large and important comparative assemblage of lava (33 stones plus numerous fragments), Puddingstone (various sources, 31 stones; see Shaffrey 2007), Millstone Grit (19 stones), Greensand (12 stones), Lodsworth Greensand (4 stones) and others (4 stones) (Ruth Shaffrey pers comm). At the Marlowe Car Park sites in Canterbury, by contrast, the catalogued fragments (described as a 'representative sample') comprised 14 of Lower Greensand, 5 of Millstone Grit and 3 of lava (Garrard and Stowe 1995, 1206).

Iron production

Evidence for iron production, as opposed to iron-working (smithing) was recovered at Leda Cottages and Beechbrook Wood. At Leda Cottages this activity was represented principally by a group of four furnaces located some distance from the main settlement (Fig. 5.38), probably in use in both the Late Iron Age and Roman periods, although a further furnace was located within the primary partial enclosure (Diez 2006a).

The function of the furnaces is suggested partly by the character of the related slags. Tap slag, formed during smelting as the liquid slag is allowed to flow out contin-

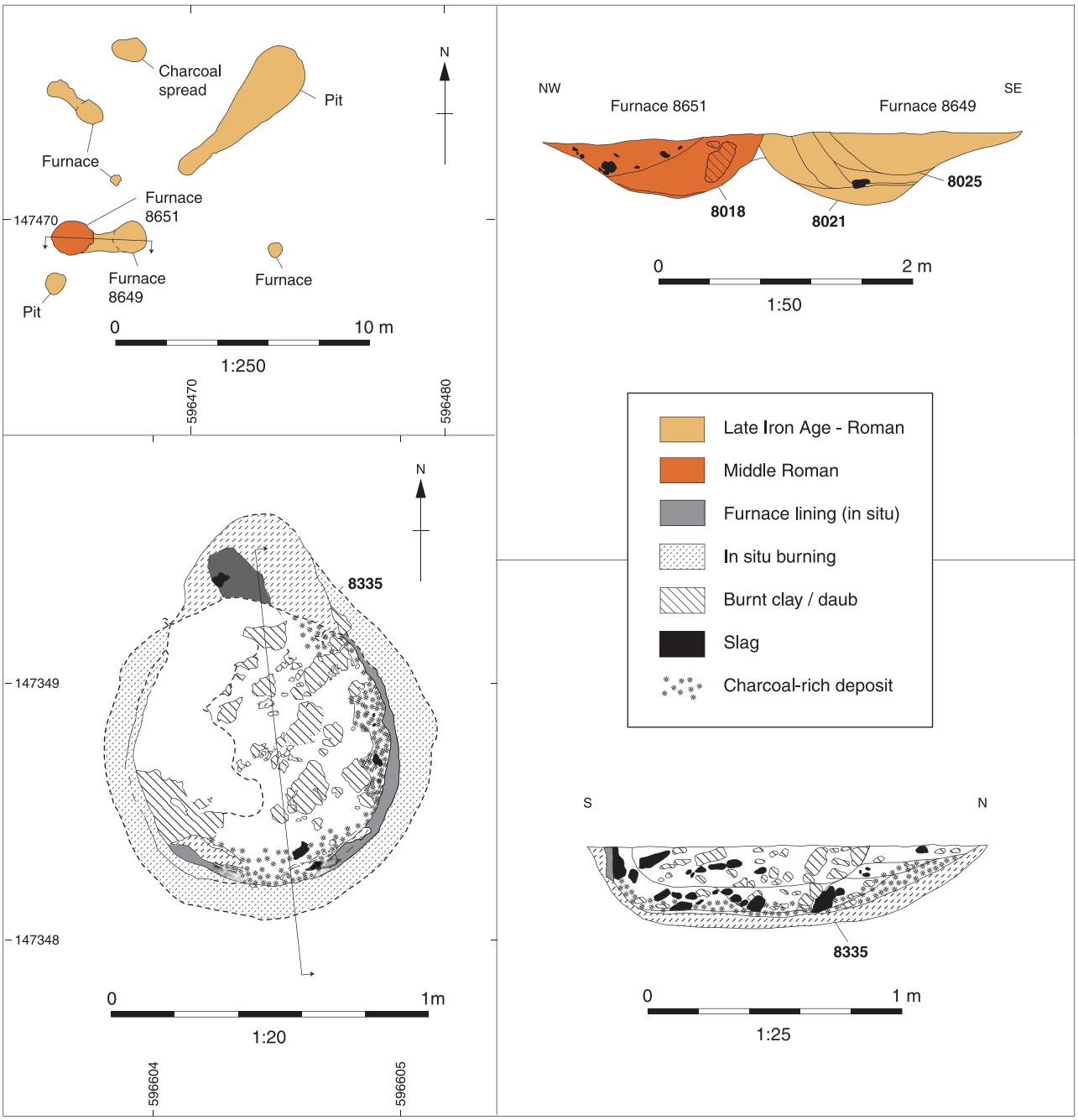


Figure 5.38 Iron smelting furnaces at Leda Cottages

uously or intermittently through a hole in the side of the furnace along a specially made channel into a hollow in the ground, was characteristic of the Roman period, but some 60kg of 'slag (pit) block' slag were also recovered. This distinctive slag would have been produced in a smelting furnace with a pit below in which the slag was allowed to collect, rather than being tapped out of the furnace. Slag blocks are common in southern Scandinavia, north Germany and Poland during the pre-Roman Iron Age and until recently examples found in England were believed to be of early Anglo-Saxon date. It is now becoming clear that slag blocks here are Iron Age in date, since several sites with Late Iron Age and Early Roman smelting but no later activity, as here, have produced them (Keys 2006a).

Slag and other metalworking debris were also found in contexts such as ditch fills associated with the settlement. It is likely that smithing activity was concentrated there, but some, presumably related to the primary smithing of blooms to remove impurities, may have occurred in the vicinity of the smelting furnaces.

At Beechbrook Wood features related to iron production, also in the Late Iron Age and Early Roman period, were concentrated in an enclosure (1022) in the northern part of the site (Fig. 5.39). Two pairs each of one large and one small hearth or furnace lay in the south-west corner of this enclosure and slag came from its ditch (Brady 2006a). In both cases only the larger of the furnaces/hearths contained smelting slag, while smithing slag was widespread, and it may be that the smaller

Figure 5.39 Beechbrook Wood north: General plan of Late Iron Age and Roman features with inset of probable iron-working enclosures

features were used only for smithing. Pits in an adjacent enclosure (1020) contained both smelting and smithing slag and may also have been associated with iron production. A possible spring lay within the latter enclosure and could have been utilised, particularly in relation to smithing. Different types of hammerscale indicate that smithing operations involved both the working of blooms and 'ordinary' secondary smithing (Keys 2006b).

The relationship of iron production to settlement at Beechbrook Wood is not clear, but it is likely that contemporary settlement lay closely adjacent to the excavated features just to the north of the area examined. A small undated posthole structure within enclosure 1022 is most likely to have been contemporary with metalworking activity and could have been a simple workshop. No evidence of iron-working was associated with the settlement area some 600 m to the south.

Elsewhere, small amounts of characteristic smelting slags (tap slag, run slag, and dense slag) were found in the Late Iron Age and Early Roman enclosure ditches at Thurnham. No hammerscale or smithing slag was present in these contexts, however (Keys 2006c).

As with pottery manufacture the scale of iron production, where present, appears to have been small and was potentially at no more than a domestic level, taking advantage of available raw materials—although surplus metal could have been traded with near neighbours, for example. This situation parallels that seen locally at sites such as Lower Runhams Farm, Lenham, where two furnaces were found (Philp 1994, 44–5), though the quantity of slag from that site was not recorded. At Westhawk Farm *c* 1.5 tonnes of smelting and smithing slag were recovered (Paynter 2008), mainly from two workshop areas, and other potential areas of iron production have been identified within the settlement on the basis of geophysical survey. Even there, however, the scale of production, if more clearly organised than at the sites discussed above, appears minor in comparison with the principal Wealden sites (Hodgkinson 1999). The Late Iron Age–Early Roman emphasis on iron production in the HS1 sites may reflect the overall chronological profile of most of these sites, but was only short-lived at Thurnham. Elsewhere, and at Lower Runhams Farm and Westhawk Farm, iron production may have continued at a low level throughout the life of these sites, parallel with, and probably with little or no reference to, the quite different exploitation of resources to the south-west (except perhaps at Westhawk Farm, where a link with the administration of Wealden iron production is tentatively proposed; Booth *et al*. 2008, 390).

Iron smithing was always widespread, but typically at a low level of intensity. With the partial exception of the smithing activities directly associated with smelting at Leda Cottages and Beechbrook Wood, much the most significant and coherent evidence came from Thurnham, where one of the main rooms of the 2nd century villa house was used as a smithy in the late 3rd century after regular domestic use of the building had ceased (see Fig. 5.31). Here, exceptionally, the scale of the evidence suggests more than occasional activity in a domestic settlement context. Perhaps smithing activities for the entire Thurnham 'estate' were concentrated here in this period.

Other aspects

A range of other crafts of varying importance would have been practised at many HS1 sites, but the evidence for these, such as non-ferrous metalworking, is largely minimal. Perhaps most importantly there is effectively no indication of textile manufacture at all. While the general absence of evidence for craft-working might be explained in part by preservation problems (such as the poor survival of bone) this cannot be the full story as there is at least limited evidence for the working of antler at Little Stock Farm, Thurnham and Bower Road (see above). The explanation for the lack of evidence of spinning and weaving remains elusive.

It is possible that salt production took place within the HS1 transect in North Kent during the Iron Age, based on the ceramic evidence of briquetage salt containers (Morris 2006). There is no such evidence for the Roman period, but trade in salt would have been very important. The main sources of supply were the North Kent marshes (Detsicas 1983, 170–1), where production may have been associated with pottery manufacture, in the Folkestone area and also in Romney Marsh. Direct evidence for the movement of salt is less common than might be expected, and the only probable briquetage fabric identified (BER15 in the Canterbury series) is a chaff-tempered one (Macpherson-Grant 1980b; Barford 1982) not assigned to a specific source by Barford (1995), but perhaps most closely associated with production in the north Kent marshes (Morris 2001, 391), although a Folkestone area source may also be possible (Lyne 2006). This fabric was widespread on HS1 sites, but generally only in very small amounts; fragments, fortunately quite distinctive, were also typically very small. The most frequent occurrences (by fragment count) were at Saltwood Tunnel and Beechbrook Wood, and tiny amounts were noted at Northumberland Bottom, Thurnham, Snarkhurst Wood, Leda Cottages and Bower Road. The quantities of briquetage recovered are such as to suggest that after production salt must have been transported in other types of container (although briquetage perhaps derived from Kentish sources (not closely defined) has been noted as far afield as Silchester (Timby and Williams 2000)). Some of these could have been of organic materials, but the use of north Kent shell-tempered jars as salt containers, found in London as well as further east, has been suggested (Perring and Brigham 2000, 154).

The dominant briquetage material recovered from north Kent sites closely adjacent to the HS1 route, however, was heavily organic-tempered. This type of material was present in several sites in the Dartford area west of Springhead, where most of it was of Late Iron Age and Early Roman date (Poole in Simmonds *et al*. 2011, 139; 232, 265), and at Springhead itself (Poole 2011). The character and quantities of material at these sites suggests secondary stages of production (away from the primary sources of brine) rather than just consump-

tion, whereas such evidence is lacking from adjacent HS1 Section 1 sites such as those at Northumberland Bottom.

The wider economy?

The limitations of the evidence relating to agriculture both for this period and earlier make assessment of developmental trends in the economy of the area in the Roman period very difficult. At the most basic level, a significantly increased number of settlements with associated fields and trackways suggests that the landscape was exploited more widely from the Late Iron Age onwards, but it is less clear if the level and character of production at individual sites were significantly different from what had been seen earlier. Changes in agricultural technology are not evident immediately. The most obvious indications of such change are the introduction of millstones and corn-driers. One of the two examples of the former at Thurnham came from a 2nd century context, while the other was Late Roman. The corn drier structures at Thurnham and Hazells Road (see Fig. 5.36) were both probably of 3rd-century date. These developments do not in themselves constitute evidence for intensification of arable production, although this may be suggested by the expansion of the range of weed seeds, some of which are indicative of the use of damp soils not previously exploited. Equally, increasing amounts of nitrogen-fixing plants suggestive of soil nutrient depletion would be consistent with over-exploitation, but the representation of such plants was never at such a level as to suggest that this was a serious problem. Animal husbandry may have seen an emphasis on sheep at some sites, but at Thurnham the balance seems to have switched in favour of cattle by the Middle Roman period. There is no indication of particular specialism in relation to either arable or pastoral production.

Other aspects of the rural economy are consistent with the agricultural evidence. Low-level pottery and iron production were supplementary activities in a long established tradition and emphasis on such production as a primary economic activity was centred at some distance from the HS1 sites, in the marshes of north Kent and in the Weald respectively. The economic networks into which the HS1 farmsteads were linked remain unclear but may have been largely local in scope. They could have been articulated through villa estates or local market centres, or both. The lack of evidence for the nature of land holding makes reconstruction of these networks particularly difficult (see further below). Equally, the general lack of Late Roman settlements, and a consequent absence of associated coinage makes it difficult to assess the extent to which sites of this period (the only time at which coins are widely found on low status rural settlements in Britain) were integrated into any level of coin-using monetary economy. Table 5.6 shows the very limited quantity of coins from HS1 sites, with comparative figures from selected sites of different types from elsewhere in Kent (for Eccles and Canterbury, Reece 1991; for Westhawk Farm, Guest 2008). The HS1 figures generally reflect the early Roman date range of the sites from which the coins derive. Only the small groups from Hazells Road and Saltwood have 'typical' rural loss patterns dominated by coins of the period from AD 330 onwards. The coin lists otherwise require no further comment here.

Belief and ritual

Religion/ritual/ceremonial activities (apart from burial)

The HS1 Section 1 sites have produced a wide range of types of evidence for Romano-British religious practice, although in terms of both quantity and variety this evidence concentrates at the villa site of Thurnham, which shows a good range from individual features up to a possible (although, on balance, unlikely) example of a temple in a villa context (see discussion above). Formal structural evidence is lacking from the other Section 1 sites. More widely, the evidence from HS1 Section 2 for religious activity at Springhead (see above) is clearly

Table 5.6 Percentage of total coin loss by broad issue period (after Reece 1973, 230)

Site	*Type*	*Issue period*				*Total coins*
		A up to 260	*B 260-294*	*C 294-330*	*D 330-402*	
Pepper Hill	Cemetery & trackway	53.8	7.7	7.7	30.8	13
Hazells Road	Rural settlement & trackway	3.4*			96.6	29
Northumberland Bottom	Rural settlement	50			50	6
Hockers Lane	Rural settlement	100*				1
Thurnham	Villa	31.4*	15.7	21.6	31.4	51
Little Stock Farm	Rural settlement	100*				2
Bower Road	Rural settlement	44.4	22.2	11.1	22.2	9
Saltwood Tunnel	Rural settlement etc				100	11
Non-HS1 sites						
Eccles	Villa	23.0	33.9	3.8	39.3	183
Westhawk Farm	Nucleated settlement	93.6	3.4	1.5	1.5	326
Canterbury	Civitas capital	9.2	42.9	3.7	44.2	3215

*Includes Iron Age coins

exceptional both in quality and quantity. It is representative of monumental aspects of religious practice which are much more typical of nucleated sites than of other settlement contexts, and seen in their most Roman form in Kent in the fragments of Corinthian capital from a likely classical temple located within a substantial temenos at Canterbury (Blagg 1984, 66–8). Two typical Romano-Celtic temples at Richborough (Bushe-Fox 1932, 34–6; for the civilian context see Millett and Wilmott 2003) and a much less regular timber shrine at Westhawk Farm (Booth 2001) and the small roadside shrine at Monkton (Bennett *et al.* 2008, 102, 107–8) illustrate the range of possible structures in other nucleated settlement contexts. Isolated or relatively isolated rural temples are also known, however, with examples in roadside contexts at the western margins of the civitas at Titsey (Graham 1936; Bird 2004a, 155–6) and Greenwich (Wheeler 1932, 116–7; Sheldon and Yule 1979; Wallower 2002a; 2002b; Brown 2002, 301–5) and in the east at Worth (Klein 1928; Lewis 1966, 170, see also Holman 2005, 8–10). Much closer to the HS1 transect the poorly-known site at Blue Bell Hill, Aylesford, roughly 1km north of White Horse Stone, is generally thought to be a probable temple complex (Detsicas 1983, 145). It too lay close to (just east of) a road line, in this case the road south from Rochester, but from the account of closely adjacent discoveries (summarised in Wheeler 1932, 104) it is possible that the site was associated with nearby settlement of some kind.

At Boxted, just over 10km ENE of Blue Bell Hill, a Romano-Celtic temple of typical plan and probable 2nd-century date was located half way between the villa and nearby Watling Street (Wilson 1973, 321–2) in such a position that it could have served both the villa community and people passing by on the road (Detsicas 1983, 145–6). Similar settings may be found elsewhere, as for example at Claydon Pike, Gloucestershire, where a simple circular shrine lay 70m east of the late villa complex facing away from it towards a nearby trackway (Miles *et al.* 2007, 181–4). A different arrangement is seen at Lullingstone, where the circular 'shrine' and the temple mausoleum were integral parts of the villa site and its layout (Meates 1979, 25, fig. 2).

Was there a distinction between temples forming part of villa complexes, as at Lullingstone (and just possibly Thurnham), and those which lay away from the settlement focus but still within the territory of the villa estate—as probably at Boxted? Temples in such contexts may have had a different trajectory of development from those situated elsewhere in the region. As it happens there are broad similarities of chronology between the Thurnham concentric building and Lullingstone, in that the circular shrine at the latter may have been constructed in the early 2nd century and dismantled by the end of the century (Meates 1979, 121), at very much the same time as the demolition of the Thurnham building. This may be a coincidence, but it is curious given that the main domestic structures at both sites continued in use at this time. It is particularly unfortunate that there is no good evidence for the disuse of the temple at Boxted. Pottery evidence, which suggests an early 2nd century construction date (Wilson 1973, 322), might indicate that the site did not outlast the 2nd century (Detsicas 1983, 145). This is speculative, but may be supported by comparable indications from the limited records of dating material from the 19th century excavations of the nearby villa (Wheeler 1932, 108–9). As already suggested, it is likely that the Boxted temple was intended to be accessed from Watling Street as well as from the villa site. In contrast to this possible chronological pattern, while there is some evidence for decline in the level of activity at Springhead from the later 2nd century it is clear that in the temenos south-west of Watling Street Temple 2, at least, continued in use into the 4th century (Detsicas 1983, 70). Temples closely linked with villas in this area may therefore have gone out of use early, but for reasons which remain obscure.

Although the situation at Lullingstone is less clear than at Boxted it is likely that temples in all these places were intended to be used by a wider population than simply the occupants of the villa sites. However it is interpreted, the considerable visual impact of the Thurnham building, indicated above, might suggest some intention to permit wider access to it, or at least a function not simply domestic in parallel to the proto-villa house. There were other striking aspects of the approach to Thurnham on the south-east, however, the most prominent of which was a setting for a large free-standing post, 0.50m in diameter, located on the slope running up to the enclosure 26m from its south-eastern boundary. This, accompanied by a further smaller standing post and several 'ancillary' posts, was erected in the proto-villa phase. The purpose of such a feature is of course difficult to determine, but the associations of comparable large posts are typically with sites or site components of a religious nature, as at Westhawk Farm (Booth 2001), Wood Lane End, Hemel Hempstead, Herts (Neal 1984) and at Ivy Chimneys (Turner 1999) and Heybridge (Atkinson and Preston 1998), both in Essex. Westhawk Farm provides a clear association between a shrine and standing post of 1st to 2nd century date, although there the two were integral. Wood Lane End had an arrangement of two free-standing posts set within the *temenos* associated with a significant religious complex (Neal 1984, see 206 figs 8 and 9 for comparison). The combination, size and spacing of these posts is closely similar to what is seen at Thurnham. Although dating evidence was lacking from Wood Lane End, the site had a Hadrianic peak and was probably active as a religious complex during the Flavian period, suggesting a close comparison in terms of date as well as structural detail (ibid.).

A further point of interest is the setting of these posts. At Thurnham the post arrangement lay outside the principal enclosure 37m from the possible temple building in a relatively elevated position. At both Ivy Chimneys and Wood Lane End the posts were also set a very similar distance from the associated temples in very visible positions but within *temene*. At Heybridge the post was actually placed in, and possibly marked, a

public area that was previously private, lying across the road from the temple complex (Atkinson and Preston 1998, 99). In the small town at Alcester, Warwickshire, a large post was sited at the edge of a gravelled area interpreted as a possible market space (Cracknell 1989, 30), and associations with religious enclosures or structures are less clear. The distinct similarities that exist between these examples and Thurnham suggest that they conform to similar principles in at least some important respects. The visual aspect and religious associations of these are generally clear. In each case the posts seem almost certain to have been significantly tall and free standing, although intimate contact with them may have been restricted, particularly at Westhawk Farm, where the uprights surrounding the main post setting might have carried screens rather than a formal roofed structure. In terms of chronology, Thurnham is the earliest well dated example although Westhawk Farm and Wood Lane End seem to be of the same late 1st to early 2nd century period and the Heybridge example appeared in the phase dated *c* AD 120–200. Ivy Chimneys is dated to the later 3rd century and so was probably later in date than the lifespan of the post at Thurnham, although this should not necessarily exclude the possibility that similar beliefs or reasoning relating to the raising of such posts were still held or governed their construction.

Few finds are ever related to these features, suggesting that they were not themselves the focus of cults or beliefs that required votive offerings. Equally, the possible temple at Thurnham itself was not distinguished by the presence of finds that shed any further light upon it, but such an absence of votive material, while relatively unusual, is paralleled exactly at Lullingstone (Meates 1979, 122), although the explanation that this was because the shrine was for the use of 'a private family' (ibid.) is not followed here. Nevertheless, a general absence of votive material is not uncommon in the context of temples closely related to villa complexes (Alex Smith pers comm) and is also seen in the shrine at Westhawk Farm (Booth 2001, 17). There is no suggestion in the admittedly summary account of the Boxted temple that this produced significant votive material.

At Thurnham the role of the large post in relation to the rest of the villa complex is uncertain. The wider associations suggest that these features served as markers—but whether they were passive signposts ('ritual centre this way') or features with other intrinsic characteristics and importance is impossible to say, though this might be suspected. Were the posts carved or otherwise decorated, for example? At Ivy Chimneys a possible association with the Rhineland tradition of Jupiter columns, more usually found in stone (Bauchhenß and Noelke 1981), was suggested (Turner and Wymer 1987, 55–7) but this was later rejected by Green (1999, 256–7). Fragments very likely from such a column come from the temple precinct at Springhead (Penn 1958; 87, 95, 108–10; 1967, 111, 113 and 123), although Blagg (1979, 229) fell short of a confident identification in the absence of supporting epigraphic evidence (he was more optimistic later; Blagg 1985, 68), but it is impossible to say if timber and stone columns could have been considered comparable.

Other markers were present in the immediate vicinity of Thurnham. The most significant of these was a possible wayside shrine, also assigned to the Early Roman period, located adjacent to the trackway approaching the villa from the south-east at the point where this met a boundary ditch at right angles. The location was marked by an isolated post, but as this was not set very deep it was thought to be relatively short, unlike the large post further north-west. Above an associated cobbled surface was a small but significant finds assemblage. It included a Colchester derivative brooch, which may have been deliberately damaged, and part of the hollow cast bronze base from a fairly large statue, recovered from the adjacent part of the silt deposit sealing the trackway.

Archaeological evidence for wayside shrines is often very difficult to identify, although they may have been quite common features, particularly at crossroads (Bird 2004b, 77). At Monkton, the shrine (mentioned above) was a 6m square sill-beam structure and contained a pit with a Cologne hunt cup in it (Bennett *et al*. 2008, 102, 107–8, 170). At Thurnham, despite the lack of structural evidence the association of trackway, boundary ditch, free-standing post and specific artefacts appears more than coincidental. It may indicate the importance of the state of transition represented by movement across the boundary; the latter probably defined the enclosures most closely associated with the villa. Such a location could have been the site of regular activity integrated within the routine cycles of daily life. If this activity involved the placement of offerings it is likely that these were simple and organic (eg flowers or foodstuffs), with more substantial items reserved for special occasions.

The occurrence of 'special' or 'placed' deposits in pits, ditches and wells can probably be seen in a similar way. Such deposits were not commonly present in HS1 sites, one possible reason for this being the often poor survival of animal bone, which characteristically comprises a large part of such deposits as identified in the archaeological record. The tradition of such deposits was certainly established in the region by the Middle Iron Age, as it was encountered in a pit of this date from West of Downs Road, in the Northumberland Bottom area (ARC 330B pit 147) and again in the same area in the course of recent work on the A2 (Tim Allen pers. comm.). Some 600–700m further east two pits in the Late Iron Age–Early Roman complex contained deposits potentially in this category. One of these was the burial of a complete articulated horse, aged 11–15.5 years in a pit (437) on the west side of the enclosure east of Downs Road. This need not have been a ritual deposit, and the only associated finds, small quantities of 1st-century pottery, may represent no more than domestic debris. However, the spinal column of the horse showed fusing of two of the lower thoracic vertebrae indicative of riding stresses and it is possible that as (perhaps) a favoured riding animal the horse was given special burial. Less

than 20m east of this feature a large pit (564) had a basal ashy fill, but its main fill contained disarticulated unburnt human bone from at least two individuals, along with two fragments of loomweights and a Colchester-type brooch.

The most striking instances of special deposits of Middle and Late Roman date come again from Thurnham. The first of these was related to the expansion of the site in the Middle Roman period. Just east of the ditch defining the limits of the crop processing area associated with the 14-post building was a curious pit and gully (10570) arrangement. The pit measured 2m by 2.5m and was 1m deep with a flat base; the V-shaped gully fed into it. A complete small Patch Grove ware storage-jar was placed centrally in the base of the pit. This had been filled with well sorted charred chaff fragments, predominantly of spelt wheat, and was accompanied by the complete lower stone of a rotary quern of Lower Greensand (probably from Folkestone), two complete *imbrices* and a large roughly-shaped block of Greensand, carefully placed in the base and leaning against the side of the pit (Fig. 5.40). A mid to late 2nd century date seems most likely for the feature.

Ritual deposition of functional querns, particularly in pits, has been identified on many Romano-British sites; these objects have a readily interpretable association with food preparation (Hill 1995, 131; Clarke 1997, 75; Shaffrey 2003, 164). This symbolism would appear to be confirmed here by the association with a storage jar and the charred residue from the final stage of cereal processing. However, the role of the roof tile is less easy to interpret, although it could represent the home. As the pit appears to have been dug at about the same time as the agricultural building was constructed its contents may have been intended as a foundation deposit to ensure the success of cereal production. The occurrence of a pot full of cereal chaff has a striking parallel in the roadside settlement at Wilcote, Oxfordshire, where a vessel filled with spelt chaff was recovered from a 2nd–3rd century feature interpreted as a clay quarry pit (Barber *et al.* 2004, 263; Pelling 2004, 331). This and associated features were also notable for containing 'an assemblage of miniature, repaired, reworked and deliberately damaged copper-alloy and iron objects, with probable votive associations' (Barber *et al.* 2004, 264), although the significance of these in relation to the chaff-filled pot was not discussed. Comparable deposits, in the sense of highly unusual combinations of artefacts, animal remains and so on, are seen at Lullingstone villa in the so called 'tannage pit', probably of late 2nd–early 3rd century date and an adjacent feature of the 4th century (Meates 1979, 106–10; Scott 1991, 116–7). Interestingly, the finds from the latter feature included large parts of two mill stones (Meates 1979, 110).

Another likely foundation deposit at Thurnham was a full term neonate burial (20431) placed in a corner of Room H at the north-east end of the early 2nd century villa house (see Fig. 5.26). The shallow grave was cut into the upper backfill of the earlier boundary ditch and sealed by the late 3rd and 4th century deposits within this room. The inhumation is most likely to represent the common practice of foundation burial associated with

Figure 5.40 Thurnham: Complete quernstone and large stone in partly excavated special deposit pit 10570

the new building. This need not necessarily represent a sacrifice, since 'a natural death may have resulted in the opportunistic use of a potential life force to ensure the longevity of the building' (Philpott 1991, 100–1). However, the existence of a marked peak in full term deaths such as this in the Roman period could be suggestive of infanticide immediately after birth and therefore potentially constitute evidence of such activity in a ritual context (Smith and Kahila 1992; Mays 1993), although Scott (1999, 89) makes the interesting point that infant sacrifice (outside the domestic context) characteristically involves slightly older children, as seen for example at Springhead Temple IV (Penn 1960, 118–22).

More speculatively, at Thurnham the solitary burial of a 4–8 month old infant (10640) in a small stone lined grave at the rear of the villa house (Fig. 5.41) might possibly be correlated with the end of domestic activity there. The child was placed in a wooden coffin, accompanied by two complete pottery vessels, a beaker and a dish, suggesting a date in the late 3rd century, the time at which use of the main house seems to have changed. The dating evidence cannot demonstrate a direct association of the two events and even if they were temporally close it would be impossible to establish any kind of causal relationship, much less any potential ritual aspect to the association. Nevertheless, the unusual positioning of the burial at this time might have been significant in terms of the sequence of development of the site.

Unusual late Roman deposits were encountered in the well (11010) probably constructed in the 2nd century adjacent to the 14-post building at Thurnham. The fills included two lower rubble deposits overlain by organic-rich layers with a series of slender hazel stakes inserted around the interior circumference of the well in successive tiers as it infilled. One of the stakes produced a radiocarbon date of cal AD 250–540 (GU-9077; Allen and Lawrence 2006). The lower rubble deposit included the remains of two roe deer (*Capreolus capreolus*); a complete adult male and the partial remains of a juvenile less than 12 months old that was almost certainly originally complete. Also present were the remains of a near-complete female tawny owl (*Strix aluco*), several antler fragments from red deer (*Cervus elaphus*), the right side of a large male pig skull that had been purposely split in half and a mandible possibly from the same animal displaying cut marks consistent with the removal of the head from the carcass. Above the rubble infills the sequence of waterlogged deposits consisted almost entirely of organic remains, but a red deer antler and skull fragment and a pig mandible, reminiscent of the larger faunal assemblage, were present.

The combination of the faunal assemblage and the rapid rubble backfill, and the absence of typical domestic rubbish, allows comparison with 'unusual' deposits relatively widely encountered in Roman wells, particularly in the Late Roman period, and recognised as functioning beyond the normal confines of domestic use. A well-known parallel is the sequence within a well at Brislington villa, Avon, '….some tons of coarse building material, evidently the remains of the villa ….(overlay)…. a large collection of faunal remains, mostly ox skulls….' (Barker 1901). At Bays Meadow, Droitwich, 4th-century

Figure 5.41 Thurnham: 3rd-century infant burial 10640

well fills included most of a red deer skeleton (Barfield 2006, 123). Poulton and Scott (1993) identify such sequences as representing specifically votive or religious deposits and entertain the idea that the primary function of such wells was actually ritual, particularly when they occurred as one of a pair (ibid., 124). This interpretation could apply at Thurnham, the well being located away from the main domestic areas and being complemented by another well (12370) adjacent to the aisled building (and thus some distance away), in an area of continuing 4th century activity. Alternatively, and perhaps more likely in view of its position, well 11010 was originally functionally linked to the adjacent 14-post building, but was then subject to change of use in the Late Roman period.

A general scarcity of Late Roman evidence for ritual activity on HS1 sites is unsurprising in view of the lack of contemporary settlement, but the latest feature at Bower Road, a pit (242) dated AD 370–400, was assigned to this category on the basis of its finds assemblage, again, specifically, the animal bone, since a majority of its other contents may perhaps have comprised domestic rubbish. In addition to pottery, the lower fill of the pit contained fragments of a blue/green glass conical beaker of 4th-century date and a fragment of a glass bead or ring. Other small finds included nails, unidentified iron fragments, flints and fragments of fired clay and tile. The animal bone assemblage included several skulls and partial articulated skeletons of juvenile animals. A wide range of skeletal elements and species was present, including cattle, sheep/goat, pig, horse, red deer and domestic fowl. Some fragments had butchery marks. This unusual assemblage is suggestive of ritual deposition, a suggestion supported by the presence of a fragment of burnt human bone from the upper fill and an unburnt fragment of a human mandible from the lower fill. The mandible is that of an adult male and did not appear weathered or abraded, suggesting that it was not redeposited. A cut mark on the left angle of the ramus was probably made to green bone, but it is not possible to ascertain whether this was before or after death. A further fragment of unburnt human bone in good condition, a femoral head from an adult individual, conceivably the one represented by the jaw in pit 242, came from a layer 45m distant.

The association of human remains with special deposits of animal bones (and other finds) of the type already discussed is again a relatively common one, and increasingly recognised as having ritual significance (Esmonde Cleary 2000). Such ritual deposition seems to have been particularly common in 4th-century contexts. The Bower Road pit could possibly represent a terminal deposit made upon the final abandonment of the site. Except at Thurnham and Bower Road, however, special deposits of animal remains are relatively rare in HS1 sites of the Late Iron Age and Roman periods. Isolated animal burials need not necessarily have had special significance, but the burial of a mature adult horse at Northumberland Bottom (East of Downs Road), for example, was clearly made with some care (Fig. 5.42) and may represent a ritual act rather than simple disposal of an inconvenient animal corpse.

Figure 5.42 West of Northumberland Bottom: burial of adult horse, Late Iron Age or Early Roman

A well-recognised phenomenon in the region, that of ritual shafts, reflects practices probably related to the placing of special deposits in wells and pits. The limited depth of excavation of a number of potentially deep pit- or well-like features on HS1 sites, however, generally precludes identification of any potential ritual character, since the distinctive deposits that define the character of these features are often (though by no means exclusively) found towards their bases. This is particularly unfortunate in the case of a large circular feature (10415) at Pepper Hill, situated immediately east of the cemetery and separated from it only by the intervening holloway (see Fig. 5.44). The feature was 8m in diameter and at least 4m deep; engineering restrictions prevented full excavation. The lowest hand-excavated deposit yielded two fragments of an unburnt human long bone, but there were few finds from the upper fills. A little 1st–2nd century pottery was present and a coin of AD 322–325 from the top fill indicates that the infilling process continued at least into the early 4th century. It is impossible to say if the feature was dug before or after the establishment of the adjacent road early in the Roman period. Equally a ritual function cannot be proven but it can be accepted for analogous features

elsewhere in Kent (and further afield), of broadly similar date, although Webster (1997) is rightly more cautious about attribution of a certain Iron Age date than is Wait (1985). None of the examples from Kent is demonstrably Late Iron Age in origin, although continuous use of these shafts from the Late Iron Age into the Roman period is at least possible, and perhaps likely.

The Pepper Hill shaft is wider than other recorded examples from Kent, and very substantially wider than most, the nearest in size being an example from Greenhithe, which was *c* 10.65m deep and up to 7m in diameter (Gatrill 1880; Webster 1997, 142). This example, like some of the others, was described as a 'dene hole' in origin, but such an explanation is unlikely at Pepper Hill since, although the solid geology is chalk, the superficial deposits were substantial and chalk was not encountered in the 4m depth of the feature excavated, although gravel and brickearth could have been extracted. Even if a utilitarian origin is possible, the features at sites such as Aylesford, Bekesbourne, Crayford, Deal, Greenhithe, Northfleet and Warbank, Keston (Webster 1997, 141–3; for Keston, Philp *et al*. 1999, 19–35) are all characterised by the presence of special deposits, most typically involving animal remains, although deposits of pottery and human remains are also common. A direct association with cemetery sites is indicated at Aylesford (Evans 1890, 320), and at Mill Hill, Deal (Parfitt and Green 1987; Parfitt 1995, 156), supporting the likely interpretation of the Pepper Hill feature. The Aylesford and Deal examples are amongst those perhaps most likely to have originated in the Late Iron Age on the basis of the dates of the associated cemeteries. At Deal, however, dated finds were of Early Roman date while the shaft at Aylesford had no associated artefacts. A date for the latter in the Late Iron Age (Wait 1985, 322) is plausible but is based purely on the cemetery association and is strictly unproven.

Further examples of features of this kind were examined in the course of the HS1 Section 2 work at Springhead (Andrews *et al*. 2011). These included a certain ritual shaft some 4.5m deep, the fills of which contained skeletal remains of at least 20 dogs, several buried with their chains, a number of near-complete pots, a human skull, a group of animal skulls and a cow placed in the bottom of the shaft, as well as other material more typical of domestic debris. A minimum of five other pits were also considered to be similar features on the basis of their physical characteristics (ie relatively deep and narrow) and also, in some cases, their contents (such as dog and other animal burials and/or large deposits of pottery) and location, for example in a pit alignment within the sanctuary complex.

Overall, Thurnham displays a striking typological and chronological range of evidence for religious activity, including limited evidence from human burial. Does this indicate that the site had a special character, or should these features be regarded as typical, but simply of types not always routinely recovered—and indeed, as in the case of the possible wayside shrine, of types which would in many cases be easily susceptible to post-deposition dispersal? Regardless of the interpretation of the concentric building, it is likely that the construction of rural temples generally was often related to villa estates (Bird 2004b, 79), their owners being the individuals with the necessary resources and the social impetus to provide suitable meeting places for gods and men. Villas could clearly contain more modest household shrines, generally difficult to recognise in the archaeological record (rooms at Eccles and Farningham, for example, have been interpreted as shrines (Smith 1997, 289–90)), but more substantial provision for cult activities is probably represented by the cellars found at a number of sites (Perring 1989). There is a notable concentration of these in north Kent (ibid., 280), at Lullingstone, Otford, Chalk, Burham, Hartlip, Faversham, South Street (Whitstable), Rodmersham and Richborough (ibid., 296–8 with references). At all of these except Richborough, Perring suggests a villa context, even in the absence of a main house, as at Burham and Chalk (ibid., 281), and at four of the five rural examples where evidence is available for their date of construction a late 1st century date is likely or possible. In this respect there is comparability with other temples such as Lullingstone, but use of the cellars seems to continue much later. A contrasting tradition of religious observance is therefore indicated, though as with 'estate' temples this could have involved the wider community since access to the cellars is 'usually from a public space' (ibid., 283), and in a number of cases exclusively so, as in a later Roman context at Barton Court Farm in Oxfordshire (Miles 1986, 14) and in the second (late 2nd century) phase at Lullingstone (Meates 1979, 31–2).

Burials

The HS1 sites produced a variety of evidence for Late Iron Age and Roman burial. The most substantial component of this, the large cemetery at Pepper Hill, was adjacent and probably related to the small town at Springhead and will therefore be discussed in part in the context of reporting on HS1 Section 2 work there (Andrews *et al*. 2011). The Pepper Hill evidence is also important for understanding the nature of burial practice at rural settlements and in relation to wider questions about the character of society in the region, however, and will be drawn on here in that context.

The majority of burials encountered at sites other than Pepper Hill were cremations (an estimated 35 from 11 separate locations on 8 sites, as opposed to 5 inhumations (including 3 neonates) from 3 sites). This is partly a function of the chronological profile of the HS1 sites, in which Early Roman features are much more numerous than those of Late Roman date, although the evidence from Pepper Hill and elsewhere makes it clear that inhumation was also a very important rite in the Early Roman period (below). A complicating factor in assessing the relative importance of cremation and inhumation burials is the generally poor preservation of human bone, except when cremated, as a consequence of

acidic soil conditions. In situations where only scattered burials were present it is possible that some unaccompanied inhumation burials escaped detection partly through the failure of the skeletal material to survive. The number of such features should have been small, however, with the result that the overall ratio of cremation to inhumation burials is unlikely to have been significantly affected.

A concise summary of the burial evidence from Pepper Hill (Biddulph 2006a) is presented in Table 5.7. The numbers of burials certainly or probably of Late Iron Age or Roman date from other sites are summarised in Table 5.8, the sites being arranged in geographical sequence from the north-west end of HS1 Section 1.

The numbers are not large, but they demonstrate the common association of burials with Late Iron Age and Early Roman settlement, albeit that the exact nature of the association is not always clear. In some cases the groups can be categorised as a small cemetery. This was particularly the case at Saltwood Tunnel, where ten cremation burials (eight closely-spaced and two further removed) were placed within a small enclosed area located at a trackway junction, although it is possible that these burials were at some distance from contemporary settlement (Fig. 5.43). Even here, however, it is unlikely that the enclosure was specifically intended to contain the cemetery. No other examples of contemporary enclosure were identified, but small discrete groups

Table 5.7 Pepper Hill; quantification of funerary feature type by period

Phase	*Inhumation burials*	*Cremation burials*	*Cenotaph/disturbed cremation burials*	*Busta*	*Pyre sites*	*Other funerary related features*	*TOTAL*
Middle Iron Age	1						1
Late Iron Age–Early/Middle Roman	193	92	17	6	13	7	328
Middle Roman	43	34				2	79
Middle/Late–Late Roman	17	7	1				25
Roman uncertain	95	12	8	1	3	8	127
TOTAL	349	145	26	7	16	17	560

Table 5.8 Late Iron Age and Roman burials from sites other than Pepper Hill

Site	*Date*	*Inhumation burials*	*Cremation burials*	*Disarticulated & ex situ bone*	*Comment*
Northumberland Bottom	LIA/ERB	2 neonates	1 unurned, 1 urned	2 adults	
White Horse Stone	Roman			1 fragment	probably redeposited IA
Thurnham	*c* AD 120	1 neonate			probable villa foundation deposit
	late 3rd century	4–8 month infant			in coffin in stone lined cist
Snarkhurst Wood	LIA/ERB		1 unurned, ?1 urned		pedestal urn in unexcavated feature
Chapel Mill	LIA/ERB		2 unurned		
Leda Cottages?	LIA/ERB			1 redeposited cremation	
Tutt Hill	LIA/ERB			cremated fragments	
Beechbrook Wood	ERB		6 urned		in south part of site, 5 form a group
	ERB		?2 unurned		in north part of site; poss redeposited pyre debris
	?Late Roman		1 unurned		?auxiliary vessel 120–220, C14 date 220–420
Boys Hall	LIA/ERB		3 unurned, 2 urned		2 unurned cremations have associated pottery vessels
Bower Road	MRB		1 urned		
	4th century			in 2 contexts	
Little Stock Farm	Roman uncertain		?1 unurned		C14 date 80–330
Saltwood Tunnel	LIA/ERB		1 unurned, 9 urned		'western group' 'eastern group'
	LIA/ERB		4 unurned		
	4th century	1 adult			

of burials were present at several sites and the significance of their locations must have been clearly understood even without formal definition by features such a ditches. A group of four unurned cremation burials north of Bronze Age barrow 10082 at Saltwood (and only *c* 100m east of the cemetery group already mentioned) may have formed such a cluster. Much tighter groups were seen at Boys Hall Balancing Pond and Beechbrook Wood, each with five cremation burials. The Boys Hall group lies within an area of intensive activity, with Late Iron Age–Early Roman features located *c* 70m to the west in the HS1 watching brief (URS 2000a) and some 120m to the north in earlier work (Booth and Everson 1994), and a dense complex of Middle and Late Iron Age features located less than 100m to the east (Anker and Biddulph 2011). The Beechbrook Wood group, in the southern part of the site, lay immediately outside an enclosure ditch, which may have gone out of use at about the time the burials were put in place (Fig. 5.43). Elsewhere the precise significance of the location of individual burials is uncertain. The use of formal and apparently less formal burial locations in relatively close proximity, however, is seen very clearly in the roadside settlement at Westhawk Farm, Ashford. Here some 11 cremation and eight inhumation burials lay within a small ditched cemetery in a classic settlement margin location. Elsewhere, however, a further eight cremation and two inhumation burials were recovered from no less than seven separate locations within and towards the margins of the settlement, most of these burials being contemporary with the use of the cemetery. There were probably very specific reasons why these scattered burials were placed as they were, but it is clear that there was no overriding compulsion to use a single defined burial place. Such a situation can probably be assumed to have been typical in a rural settlement context; while location could have been related to family groupings, or issues such as the status of the deceased, this cannot usually be determined in individual instances, and other factors could have been important.

The small groups of burials that seem to be typical of the HS1 sites are characteristic of the region and period (eg Hill 2007, 28), and also of northern France in the Late Iron Age (Haselgrove 2007, 499). A number of small rural cemeteries are known from the region, particularly from the south of the county. That at Cheriton, near Folkestone, for example, appears closely comparable to the Saltwood cemetery in a number of respects; its approximate size (nine recorded groups plus an uncertain number of others indicated by disturbed pottery), its pre-conquest to 2nd century date range and the presence of brooches (Tester and Bing 1949). More recent cemetery finds include one from the low Weald, at Ulcombe (Aldridge 2005, 176–9). By contrast, cremated human bone recovered from a number of Late Iron Age to Early Roman pits at Dartford Football Club does not appear to represent formal cremation burials, though these may still have been special deposits (Devaney and Stansbie 2011, 250, 276).

The most spectacular recent discovery of Early Roman cremation burials in Kent is very closely relevant to HS1, because it involves a group of burials directly associated with the enclosed settlement at Northum-

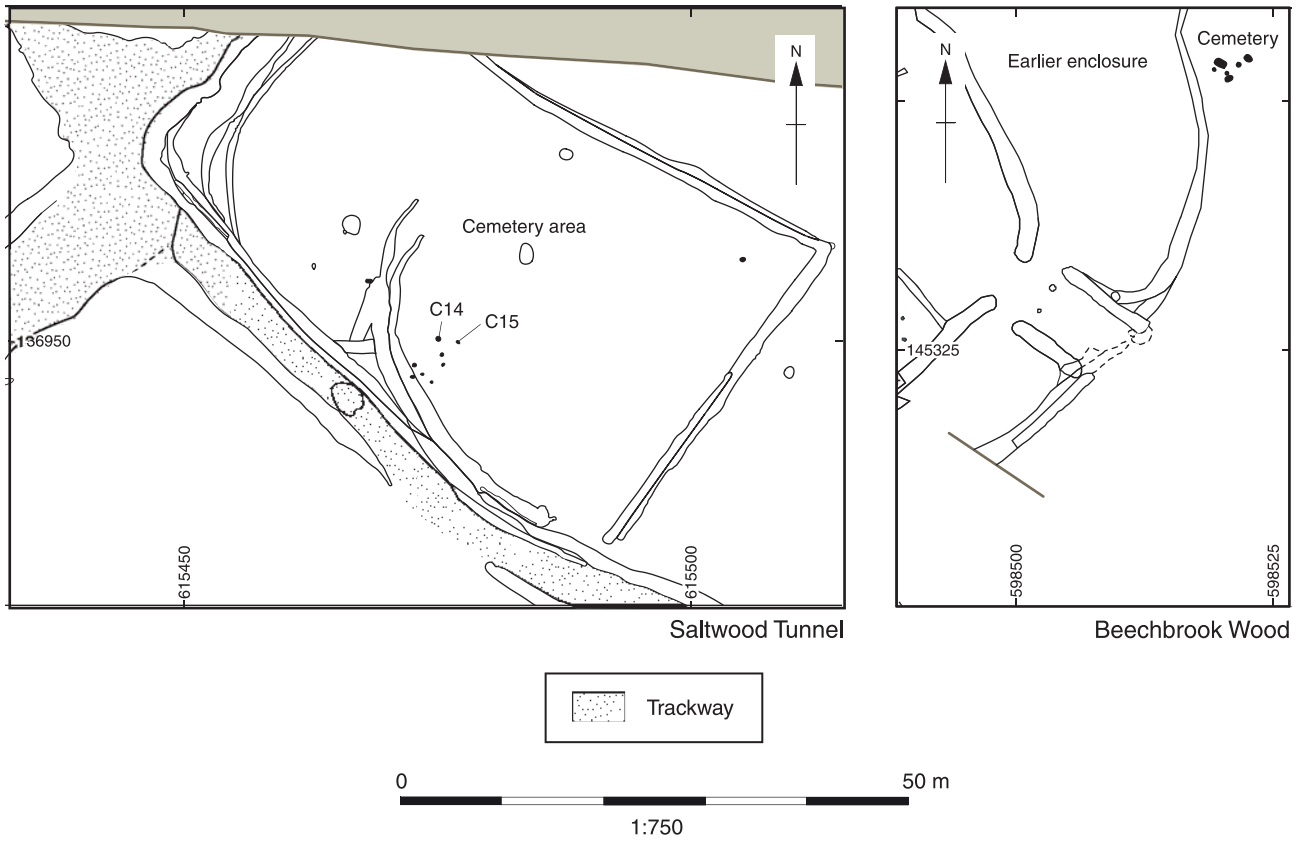


Figure 5.43 Comparative plans of rural cremation cemeteries: Beechbrook Wood and Saltwood Tunnel

berland Bottom west of Wrotham Road (see Fig. 5.16). These were discovered in the course of work on a new stretch of the A2 in 2007, lying within further ditched components of the enclosure complex, barely 100m north of the HS1 trace (Allen *et al.* forthcoming). The earliest and largest of these burials was an isolated one, placed in a pit 2.4m square and 0.7m deep. Associated goods included a table on which were placed 13 pottery vessels with four further vessels below, a gaming board, three bronze vessels (a patera, ewer and large decorated bowl, the latter containing a further pottery vessel), a brooch (perhaps securing a bag which had contained the cremated remains) and the head and forelegs of a pig. This burial, dated *c* AD 50–65, may only have been enclosed after it was put in place.

Seven more burials were contained within a smaller square-ditched enclosure at the north-western corner of the settlement. Two of these were also high-status cremation burials in pits *c* 1m square, but of very similar date to the first burial. One contained a bronze patera and jug, a folding board with bronze hinges, a small bronze-bound box with multiple compartments and a bronze spatula on top and a bronze-sheathed stone palette next to the box. There were fourteen pots, again including fine dishes, cups and beakers, two flagons and a Drag 29 bowl. Pig bones were present and again the cremated remains were found with an unburnt brooch.

The second elaborate burial in the group of seven contained the cremated remains of a woman. An adjacent brooch perhaps again suggests that the bones were in a bag, but nails and bronze fittings indicate that the bag lay within a wooden box occupying the full width of the grave. Two ceramic platters placed on edge along the line of the nails probably leant up against the edge of the box. Other goods included three further pottery vessels, a square bronze mirror with a patterned leather backing, a wooden casket decorated with bronze plates, drop handles and rings, and a glass perfume or ointment bottle. These burials and two more cremation burials in the same group are all dated *c* AD 50–70. A further cremation burial is not so well dated, while two inhumation burials in the same groups were rather later, one being associated with a 3rd century coin.

Like most of A2 Tollgate burials just described, the great majority of the dated burials from the minor HS1 sites are of the Late Iron Age to Early Roman period. Of the burials with associated ceramic material only one—the late 3rd century infant inhumation from Thurnham discussed above—certainly postdated the late 2nd century. The only adult inhumation outside Pepper Hill, from Saltwood, was dated to the 4th century. More problematic was an isolated cremation burial (1344) from Beechbrook Wood, associated with 1st and 2nd century pottery but with a radiocarbon date of cal AD 220–420 (NZA 20051). Here it may be safest to assume that, since it is not clear that any of the fragmentary pottery represented either an urn or grave goods, the sherds were residual within the fill, although it is also possible that, as has been clearly demonstrated at Pepper Hill and elsewhere (see now Wallace 2006), pottery vessels, not just of samian ware, could be quite old when placed in graves. A solitary cremation burial from Little Stock Farm also had a radiocarbon date (cal AD 80–330, NZA-19917) suggesting that it was at least of Middle Roman date.

The preponderance of cremation burial in the Early Roman HS1 sites is clear. This was clearly an important rite in the late pre-Roman Iron Age of Kent, as is demonstrated by the cemeteries of Aylesford and Swarling (Evans 1890; Bushe-Fox 1925), to name but the most obvious examples, and its chronology and origins in southern Britain in the 1st century BC have been reviewed concisely by Fitzpatrick (1997, 208–11). The rite, however, may have an even longer history as a cremation burial from the A2 Pepper Hill works is firmly dated by radiocarbon to the Middle Iron Age (Allen *et al.* forthcoming). In its post-conquest manifestation, the tradition then becomes subsumed in 'mainstream' north-west provincial Roman (but also pre-Roman) practice (eg Van Doorselaer 2001, 9). Inhumation burial, however, was also an established tradition in the region in the Late Iron Age. This is best demonstrated at Mill Hill, Deal, where the earliest extended inhumation, probably of the early 2nd century BC, introduced 'a rite that remained the norm for inhumations here for the rest of the Iron Age and into the Roman period' (Parfitt 1995, 155), and was more common than cremation at Deal. Elsewhere in the county, inhumations positively assigned to the Late Iron Age rather than a less precise Late Iron Age–Early Roman date are relatively rare, the best examples probably being those from Highsted, Sittingbourne, with 20 inhumation and 6 cremation burials (Kelly 1978, 267; Thompson 1982, 820–1), while isolated cases are listed by Parfitt (1995, 157). The most significant recent examples are the pair of burials with weapons from Brisley Farm, Ashford (Johnson 2002). The wider context is considered by Philpott (1991, 55–6), although much of his subsequent discussion relates to the 'introduction' of inhumation from the continent, particularly from the mid 2nd century AD onwards (ibid., 57–8). Further afield, early inhumation burials occur in south Essex at sites such as Mucking and North Stifford (Going 1993, 19; Wilkinson 1988, 37). Seventeen Late Iron Age or Early Roman inhumation graves were encountered at the King Harry Lane cemetery, Verulamium, some, like many of those at Pepper Hill, unfurnished (Stead and Rigby 1989, 81), and other Early Roman inhumation graves have been found at Baldock, though again accompanied by many more cremation burials (Frere 1984, 304).

At Pepper Hill a single prone burial of an adult male was dated by radiocarbon to 350–40 cal BC (KIA-23946), but appears to be chronologically isolated, so its relevance to the later cemetery is uncertain. Inhumation burial was, however, a major component of the Pepper Hill cemetery from its earliest post-conquest phase, and the same seems to have been true of the smaller cemetery at Westhawk Farm (above), although close dating of the earliest graves there is difficult. There seems little doubt, therefore, that the apparently simultaneous appearance

of both traditions in early post-conquest cemeteries in Kent reflects their derivation from ongoing indigenous practice. At Pepper Hill the importance of inhumation was maintained and it may have become the dominant rite in the Late Roman period if the majority of the undated inhumation burials were of that date. Precise figures are not available for Ospringe, the only other substantial Roman cemetery in the area, but of a total of some 387 burials, 'the great majority' contained cremations (Whiting *et al*. 1931, 4, 6). Further work on this site by Malcolm Lyne (pers. comm.) has shown that none of the pottery associated with inhumation burials dates before the middle of the 2nd century AD, so Ospringe appears to be in strong contrast to Pepper Hill, conforming to the more widely recognised pattern of 'introduction' of inhumation burial from the later 2nd century onwards.

First-century AD inhumation burials are recognised to the west, for example in the east London cemetery (Barber and Bowsher 2000, 300). Unfortunately the date range of the cemetery period 1 (AD 40–197) potentially encompasses burials both in the early native tradition and from the mid–late 2nd century onwards which could represent either a survival of that tradition or the 'reintroduction' of inhumation, and it is not clear how many of each category is present. A few of the east London inhumations clearly predate the late 1st century, however (eg B435, dated AD 40–80; ibid., 193–5), although they are presumably a minority of the *c* 68 inhumation burials notionally assigned to Period 1 (ibid., 12, table 4). Isolated early inhumation burials are also known from the Tower of London (Parnell 1985, 5, 7) and Southwark (Dean and Hammerson 1980). A wider survey of Greater London reviews the same evidence but adds no further examples (Perring and Brigham 2000, 148). Nevertheless, the Kent evidence fully supports the conclusion that the eastern London cemetery possibly 'reflects a pre-Roman inhumation tradition in the London region' (Barber and Bowsher 2000, 300). Two early or mid 2nd century crouched inhumation burials at the Stratford Market Depot site, West Ham (Hiller and Wilkinson 2005, 17–20), may reflect the survival of an Iron Age tradition also seen in an Early Roman context (burials 11386 and 12047) at Pepper Hill.

These differences must have implications for the understanding of the communities from which the burial population derived. In Kent the distinction does not appear to correlate with the character of associated settlement, however, since Ospringe and Springhead would usually be regarded as of similar type, and are relatively close (*c* 40km apart). It is unfortunate in this respect that there is little burial evidence from Rochester. Equally, it is curious that the rural evidence, where pre-conquest traditions would be expected to be well-represented, is generally poor. With the exceptions of Deal and Highsted, the known rural cemeteries of 1st and 2nd century date are mostly dominated by cremation burials, a pattern with which the HS1 evidence is consistent, and are characteristically small, as discussed above. A recent exception, however, is the discovery of a small inhumation cemetery of seven graves containing the remains of nine individuals on the new A2 works barely 1km east of Springhead (Allen *et al*. forthcoming). These burials are not well dated, but pottery from one falls in the range AD 120–250. The group as a whole may be of Middle Roman date, but as such forms a contrast with the small HS1 cemeteries discussed above. A further contrast is indicated by a substantial cemetery some 18km west of Pepper Hill at Woolwich. Here, some 158 north-south aligned inhumation burials and perhaps 9 cremation burials formed part of a larger cemetery, apparently within a rectilinear enclosure. Unfortunately bone preservation was even worse than at Pepper Hill, and the settlement associations of the site are not clear, but the dating evidence suggests that this cemetery may be entirely of Late Roman date (Ford *et al*. 2002) and it therefore differs markedly from the combined picture given by the various HS1 cemeteries. In both date and character it seems much closer to a cemetery sample of similar size (but predominately east-west alignment) known at Dartford (Frere 1990, 363–4).

Pepper Hill: physical characteristics of the cemetery

The siting of the Pepper Hill cemetery has already been mentioned. The most striking characteristics are the relative distance from Springhead, its tightly constrained plan, adjacent to a minor road running south from Springhead, and its early (possibly pre-conquest) start date. Much of this suggests that the location of the cemetery some 500m south of Springhead itself may have had less to do with Roman urban law than with referencing sacred Iron Age features, particularly the boundary and perhaps the single early grave and the adjacent well or shaft. It also served to distance the dead from the settlement 'in time as well as space' (cf Pearce 1999, 157). Biddulph (2006a) suggests that the topographical setting might also have influenced the cemetery's location. The funerary procession, on leaving the religious centre (later 'town'), would move uphill towards the cemetery. The slope is gentle and the total rise barely 10m, but following the straight path of the holloway southwards, the cemetery would have been clearly visible on the horizon. A comparable and probably deliberately chosen setting has been noted elsewhere, for example at Brougham (Cool 2004, 463).

The cemetery extended for a distance of *c* 75m principally along a north-south axis, and measured almost 20m across its widest point (Figs 5.44 and 5.46). It was bounded on its western side by a ditch and gullies, and on the east by the slightly sinuous road. In its re-alignment along a north-south axis in the northern part of the site the road perpetuated the line of an Iron Age ditch. This may not have been accidental, as it is possible that the ditch was visible when the route was set out. The absence of burials above or west of the ditch seems to attest to the continued importance of the boundary position, if not the ditch itself, after the conquest.

Initial use of the cemetery resulted in a particularly strong concentration of features in the central area. The extent of intercutting evident at this point reveals how

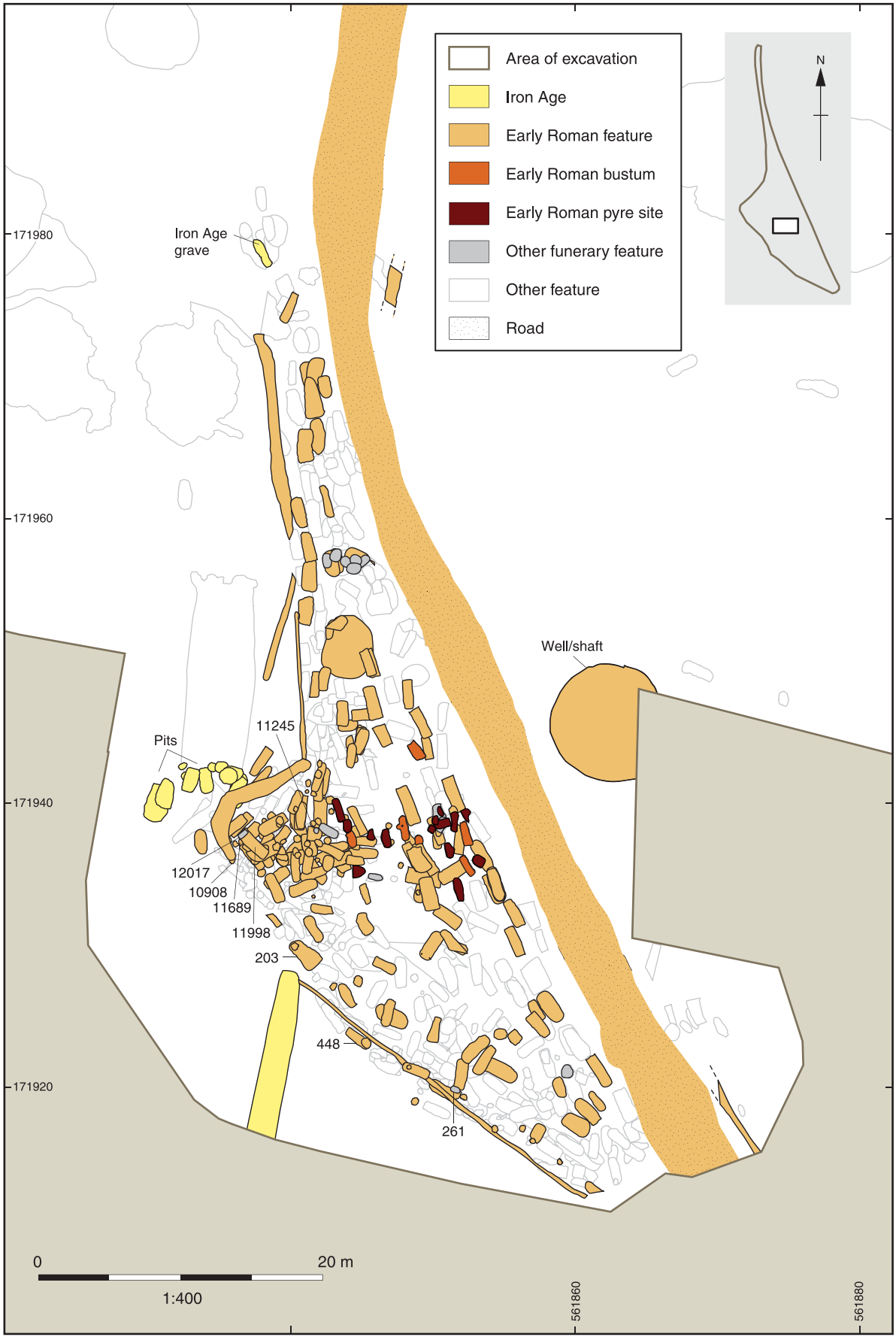


Figure 5.44 Pepper Hill: Iron Age and Early Roman phase plan

desirable this location was. The regular, almost square, shape of the concentration itself hints at the existence of an internal boundary; perhaps the area was fenced off to create a separate burial enclosure, although there is no other indication of this. This area straddled the projected line of the Iron Age ditch and it is possible that the association with an important boundary was still considered important and resulted in this concentration (Biddulph 2006a).

Middle Roman graves lay mainly in the southern part of the site, though graves of this period were identified in central and northern parts as well. Again, graves followed the alignments of the boundaries. Burials continued to be made in the central concentration at a lesser rate, but it is notable that these appeared to form a circle with two Early Roman inhumation graves (11998 and 11689) at its centre. There is no obvious factor that distinguishes these two graves as particularly noteworthy, although the fact that all the burials forming the circle contained beakers adds to the curiosity. The few dateable Late Roman graves present were in the southern and central parts of the site. Just one followed the east-west orientation favoured at many late Roman cemeteries

A series of seven *bustum* (*in situ* cremation) burials formed another coherent group in terms of rite, location and date. All were confined to the central area and, except for an undated feature, belonged to the mid to late 1st century AD. As this part of the cemetery also contained most of the defined pyre sites (eg Fig. 5.45), it can reasonably be suggested that this area was a preferred location for cremation, albeit of limited use, since the pyre sites were apparently used just once. Possible cenotaph features largely avoided the centre of the site, which argues against an association with the *busta* (see below).

Figure 5.45 Pepper Hill: probable pyre feature (10596)

No certain family burial plots such as the small enclosed group examined to the north between Pepper Hill and Springhead (Philp and Chenery 1997) were identified. However, three cremation burials (185, 1439 and 1440) found inside the cut of inhumation grave 203 were considered by the excavator to have been placed contemporaneously. This might represent the burial of family members who had died at the same time from disease (the skeletal remains perhaps derive from two adults and two children, bone from one of each occurring in burial 185), or whose cremated remains were stored above ground until all the individuals could be buried together (Witkin and Boston 2006). Similarly, inhumation grave 448 subsequently contained three cremation burials (446, 1433 and 1434) that might represent another family group, although 1434 was perhaps 50 years or more later than the other two. Other possible family groupings have been tentatively identified; some might perhaps have been symbolised by the deliberate intercutting of graves (Biddulph 2006a).

The location of certain features, and consistency of grave orientation with constant reference to boundaries, reveal a strong element of central organisation. Such planning would be expected, indeed necessary, in an urban cemetery, such as those in London (Barber and Bowsher 2000, 333), but it was clearly important here as well. One aspect of organisation might have related to the provision of clear paths in the cemetery, giving access to graves for mourners and other elements of the funeral procession. Such routes are difficult to identify at Pepper Hill. In the Early Roman phase a somewhat winding path can be traced through the length of the cemetery, and is clearest in the centre, where it separates the cluster of burials on one side and the *busta* and pyre sites on the other. Whether this describes an actual path is uncertain, but movement from the northern to southern parts of the cemetery would be expected if the procession left the road from Springhead at the north end of the cemetery where the road turned towards the south-east. The Middle Roman graves did little to alter this route, although some of the undated graves—many of which are likely to belong to the 1st or 2nd century AD—would have encroached on the path, especially at the north. It is unclear if there was ever an entrance to the cemetery on its west side. One very striking feature of the layout of the cemetery in this area, however, was the re-entrant angle formed by the boundary gullies that defined the central part of the west side. The reason for this configuration is unknown, although part of the area was occupied by a cobbled surface in the Middle Roman

Figure 5.46 Pepper Hill: Early/Mid to Late Roman phase plan

period. The fact that a very similar arrangement of re-entrant gullies was associated with the cemetery at Westhawk Farm (Booth *et al*. 2008, 125, fig. 3.62) may simply be coincidental, but the morphological similarity is striking.

Strict organisation is also suggested by the lack of significant expansion beyond the cemetery boundary, though natural obstructions might also have been responsible. Only a very few graves were dug either west of the boundary ditch or east of the road. Throughout the life of the cemetery, however, some areas remained free of graves. If all parts of the cemetery were available for burial, then given the extensive intercutting, the presence of gaps—some quite large, particularly in the centre of the site—is surprising. This suggests an extraordinarily consistent central planning regime that lasted over 200 years. But obstacles may have prevented burial too. Trees, such as evergreens which symbolised eternal life (Kreuz 2000, 50), might have punctuated the mass of the graves, although no direct evidence was found within the cemetery, in contrast to an area east of the road, where tree-holes were uncovered.

Containing the dead

Treatment of cremated and inhumed remains was variable. At Saltwood all but one of the group of ten cremation burials was placed in a ceramic container, and all five cremation burials in the southern group at Beechbrook Wood were placed in pottery vessels. Table 5.8 shows, however, that this ratio was unusually high, although groups consisting exclusively of unurned cremation burials tended to be very small. At Pepper Hill some 55% of cremation burials were contained in pottery urns (Biddulph 2006a), and their use was more frequent during the Mid Roman period compared with the earlier phase (cf Fig. 5.47).

Figure 5.47 Pepper Hill: Unurned cremation burial 1520. The cremated remains lie between vessels deposited as grave goods. Late 1st–early 2nd century AD

Cremated bone was occasionally placed in a wooden casket, one example of which (from grave 291) was decorated with copper alloy fittings and lion-headed studs, resembling those from two casket burials at Skeleton Green, Hertfordshire (Borrill 1981, 315–6). Nails from this burial also suggest the presence of a funeral bier used to carry the deceased to the place of cremation. This example adds to the casket burials known from Canterbury and Faversham (Philpott 1991, fig. 3; Partridge 1981, table XLVI), although the emphasis of the distribution of this burial type remains in Hertfordshire and Essex. Coffins had been placed in a minimum of 175 (49%) inhumation graves at Pepper Hill, in some cases indicated by the survival of a stain within the grave fill (Fig. 5.48).

Fittings were rare, and the planks or boards of most coffins had been fixed simply with iron nails. If necessary, the corners were reinforced with more nails. Some coffins at least were lidded, as is shown by nails driven vertically into the top of the long planks (Fig. 5.49). As with cremation urns the use of coffins appears to have been more popular in the 2nd and 3rd centuries compared with the 1st. It is possible that pegged coffins, which

Figure 5.48. Pepper Hill: Mid-late 1st century inhumation burial 11668. The coffin and skeleton survive largely as stains in the soil. A beaker and a dish are placed at the head end of the grave outside the coffin.

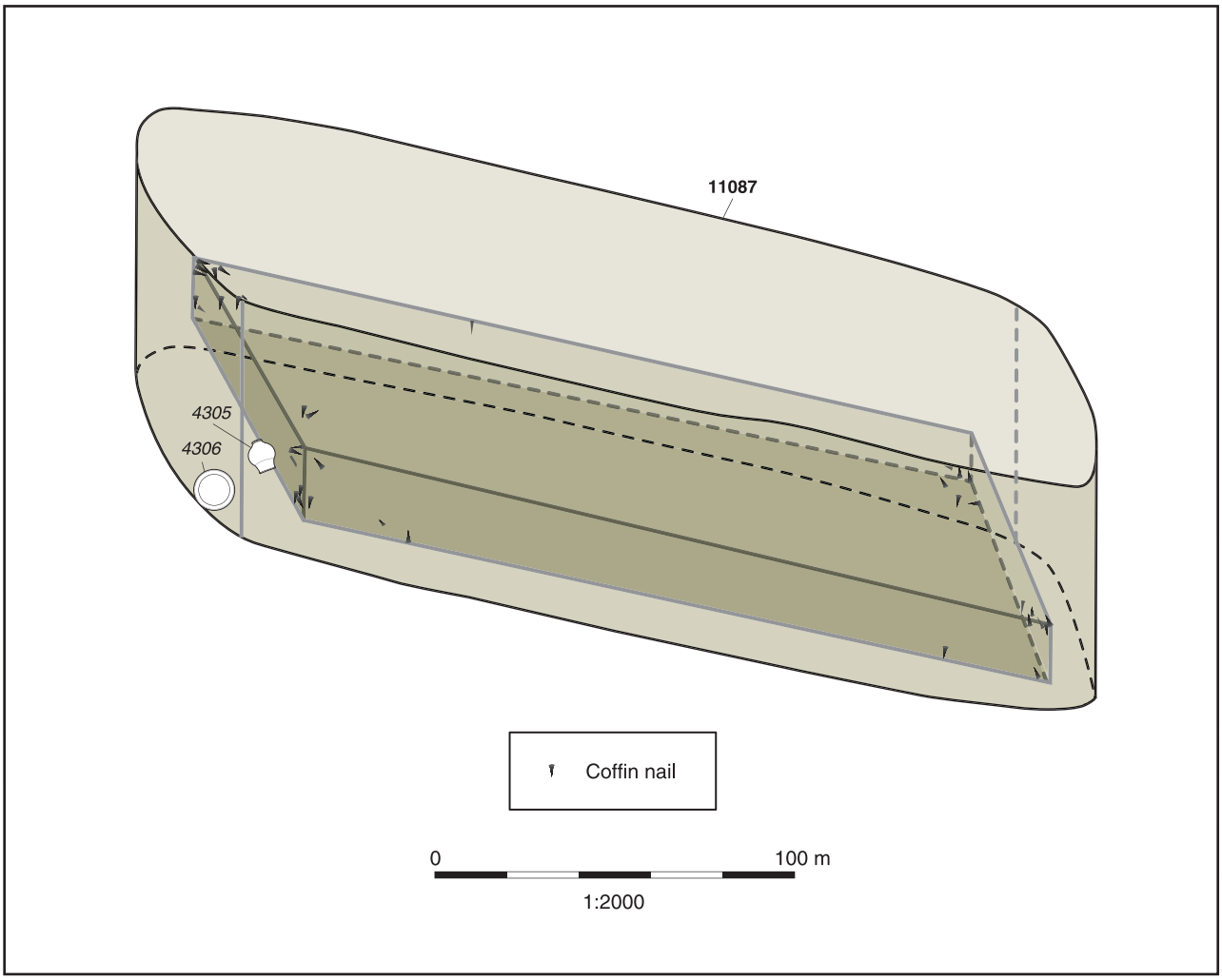


Figure 5.49 Pepper Hill: coffin reconstruction, grave 108, late 1st century AD

would have left little trace, might account for the difference, but the limited Romano-British evidence for coffins with surviving wood suggests the use of simple boards or nailed construction (eg Goodburn 2003).

A variation on the theme of containment is seen at Pepper Hill in eleven features identified as potential cenotaphs: ie features like or representative of graves but without the human remains. None contained cremated bone, but in other respects—shape, size, and content—the cuts were similar to cremation graves, and conform to the definition of cenotaphs suggested by McKinley (2000a, 42–3; 2004, 306–7). The features were quite widely distributed across the cemetery area, but six grouped together in the northern part of the site were intercutting and represent successive deposits, perhaps located in an area reserved for features of this type. Up to six of these features contained grave goods. Pottery vessels from three of them (261 (see Fig. 5.52), 11245 and 12017) were largely complete and these are the features most convincingly interpreted as cenotaphs (none was in the northern group). It seems inconceivable that later truncation could have removed all the cremated bone but spared the pottery. The fragmentary or residual nature of the items within the other features, or the lack of objects in some cases, makes their interpretation less certain. Overall these features form an intriguing group. All well-dated examples belong to the Early Roman phase and were potentially contemporary with the *busta* and pyre sites. Analogous features have been recorded occasionally at other burial sites in Britain, including Westhampnett (McKinley 1997, 71–2), King Harry Lane (Stirland 1989) and Brougham (McKinley 2004, 306–7) and there is epigraphic evidence for cenotaphs in the Roman world (Pagano 2000, 28). Their use may have been determined principally by a requirement to make a formal burial despite the absence of human remains, for example if the individual had died away from home, perhaps on the battlefield or at sea where the body could not be recovered (Toynbee 1996, 54). A military explanation would hardly have applied, however, in the case of the possible cenotaph 11245, which included a ceramic 'infant-feeder' and may therefore represent the grave of a child.

Grave goods: the afterlife, and how to get there

At Saltwood seven of the ten cremation burials in the western group had additional pottery vessels associated. More striking was the occurrence of brooches in five of

the burials in this group, two of which (burials C14 and C15) each produced a pair of brooches (Fig. 5.50). At Beechbrook Wood each of the five burials in the southern group was in a ceramic container and three had additional vessels. One grave contained a fragmentary copper alloy object, probably a pair of tweezers, but brooches were absent. At Pepper Hill brooches occurred as grave goods in only 12 burials (and as pyre goods in a further five). Inevitably this large cemetery produced a wider range of grave goods than seen elsewhere, although the material was dominated by pottery vessels (almost 70% of all grave good instances—counting multiples of individual object types as one). In total, grave goods (ie not ceramic cremation urns or coffins) were recovered from *c* 62% of cremation burials (including *busta* and cenotaph/disturbed cremations) and *c* 38% of inhumation burials. In both cases these figures exclude instances of objects of uncertain significance, such as single hobnails, which could have been incidentally incorporated in grave fills, although it is possible that some of these were deliberately deposited as representative of complete items.

Intrinsically remarkable grave goods were rare at Pepper Hill and some of the more notable material had been placed on the pyre, at an earlier stage of the burial ritual. The quantities of object types placed as pyre goods and as grave goods (catalogued and discussed in Biddulph 2006a) are summarised in Tables 5.9 and 5.10.

One mid–late 1st century AD unurned cremation burial at Pepper Hill produced a striking range of charred plant remains including flesh and pips of grapes (*Vitis vinifera*), a possible fig fruit (*Ficus carica*), lentils (*Lens culinaris*) and horse beans. At this date all except the beans are likely to have been imported, and they represent a comparatively high-status group of food offerings. No other examples of grapes and figs are known from cremation deposits in rural Kent, although a Roman *bustum* pit in London produced charred fig fruits (Giorgi 2000), while cremation deposits from the East London cemetery sites included lentils and horse

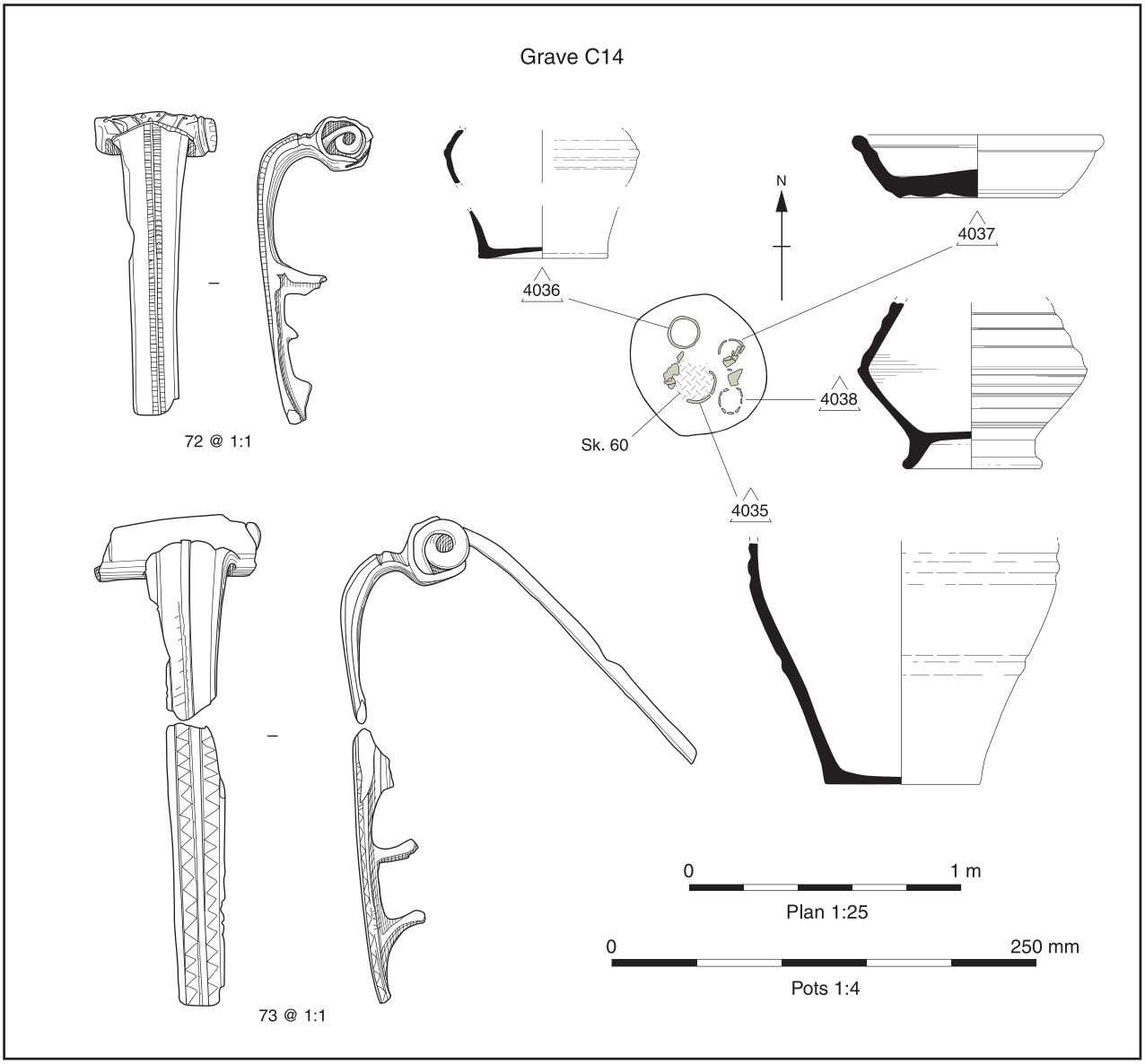


Figure 5.50 Saltwood Tunnel: cremation burial group C14, mid 1st century AD

Table 5.9 Pepper Hill, pyre goods. quantification by count of features

Pyre good	*Early Roman*	*Early-Mid Roman*	*Mid Roman*	*Mid-Late Roman*	*Roman (undated)*	*Total no. features*
Animal remains	23	9	10	1	4	47
Plant remains	1	1				2
?Bier/box	16	4	3		1	24
Wood inlay	1					1
Bead	1					1
Cu alloy brooch	5					5
Cu alloy pin	2					2
Cu alloy ring	1					1
Cu alloy object	10		5		2	17
Fe object	8	1	2		3	14
Glass object	5	2			1	7
Pottery	9	2				11
Hobnails	3				1	4
Total	85	10	20	1	12	136

Table 5.10 Pepper Hill, grave goods. quantification by count of features (all burial types)

Grave good	*Early Roman*	*Early-Mid Roman*	*Mid Roman*	*Mid-Late Roman*	*Late Roman*	*Roman (undated)*	*Total*
Animal remains		2	4			2	8
Box/casket	10	3	9			4	26
Bead/necklace	3		1	1			5
Coin			1		1		2
Bracelet	3		2				5
Brooch	9	3					12
Cu necklace			1				1
Finger ring	2		3		2		7
Mirror	1						1
Misc. Cu object	2		1				3
Pottery	123	24	71	9	4		231
Vessel glass	4	5	2				11
Shoes	4	5	10	2	1	3	25
Total	161	42	105	12	8	9	337

beans (Davis 2000). Another Early Roman cremation deposit, from Beechbrook Wood, contained a large number of grains, mostly of spelt, which may also have been votive food offerings.

As there was minimal survival of unburnt bone at Pepper Hill the animal remains there were mainly from probable pyre goods. These suggest the provision of both joints of meat and occasional complete carcasses. Young pig bones were the most common, followed by domestic fowl. Cattle and sheep/goat were only occasionally represented. There were ten instances, including one almost complete carcass, of domestic fowl and it is likely that a majority of the considerably larger number of fragments identified only as 'bird' at this site were also of domestic fowl.

Grave goods overwhelmingly comprised pottery (Table 5.10). Ancillary pottery was biased towards drinking-related forms, followed in preference by eating, then cooking or storage types (Fig. 5.51). There was no set combination of vessels represented within individual graves although the selection of vessels for cemetery use conformed to standard, funerary-related, norms. Pottery was mainly of local origin and drawn from the ceramic supply otherwise intended for domestic use. Indeed, the presence of worn or burnt vessels suggests that some, perhaps much, pottery had first seen household use. Some 'antique' grave-goods may have remained in the household for generations before burial (Biddulph 2006a).

Non-ceramic grave goods were relatively infrequent. The most common items were boxes/caskets and nailed shoes (with the implication that shoes may have been most common overall, as evidence for unnailed shoes would not have survived). Like shoes burnt on the pyre, shoes placed in the grave were associated mainly with adults, but significantly were more often deposited in the 2nd century, in contrast to the 1st century emphasis of the small number of burnt shoes (ibid.). This mirrors a trend observed elsewhere and appears to relate to changing beliefs about the afterlife (Philpott 1991, 171). The symbolic significance of footwear is discussed by van-Driel Murray (1999), who points out that 'in the case of Roman shod burials, we do not actually know the *direction* the journey was intended to take—and we merely assume it was *to* the other world because this accords with our modern perceptions.' (ibid., 132). However that may be, the present evidence suggests that from the 2nd century onwards the deceased made that

Figure 5.51 Pepper Hill: multiple pots in grave group 450

journey from the grave, even if cremated, whereas previously the journey began at the pyre. The animal bone evidence supports this view; unburnt animal bone was only recovered from 2nd century cremation graves; none was certainly deposited in earlier graves. Wherever the journey took them, the deceased need not have been provided with shoes only for practical comfort. The shoe, a highly personal item, was inextricably connected with an individual's identity. The presence of footwear in wells, shafts and other ritual places reminds us of the importance of the shoe as an acceptable personalised offering alongside coins, chickens and the like (ibid., 135–6). The scarcity of coins at Pepper Hill is notable, however.

Brooches were most common in 1st century graves; few were recovered from 2nd century or later graves (Cool 2006a). This is consistent with a trend seen at other sites in the county, including Westhawk Farm, Ashford (Cool 2008) and Canterbury (Mackreth 1995), and particularly in a HS1 context at Saltwood. Bracelets were recovered from 1st century graves, as well as from one of the late 2nd or early 3rd century AD (10520). The objects began to be deposited at a time when bracelet wearing was not popular (Cool 2006a). The three finger rings from Pepper Hill belong to 3rd or 4th century graves. One from grave 10761 lacked its intaglio; if acting as a seal, the jewel may have been bequeathed to the deceased's heir (Cool 2006a; Henig 1974, 65). Two glass unguent bottles were recovered from inhumation graves (10637 and 12038), where their use may have been motivated by concerns different from those related to cremation.

Commemoration

The backfill of grave 254 at Pepper Hill (Fig. 5.52) included broken drinking- and eating-related vessels that may have derived from a funerary feast, in addition to more typical grave goods (Fig. 5.53; Biddulph 2006a). Such grave-side commemoration at the time of the funeral could have occurred regularly during the life of the cemetery for cremated, as well as inhumed, individuals (cf Pearce 1998; Williams 2004). Evidence is, however, scarce and it seems more likely that at Pepper Hill such elaborate rites were accorded to relatively few people, possibly on the basis of status, although the practice of deliberately 'killing' or mutilating vessels, more commonly found at Pepper Hill and at other cemeteries in south eastern Britain (Biddulph 2006a; 2002, 104–5), may perhaps have been related.

It is even less clear if there were subsequent ceremonies associated with particular graves. The complete lack of any contemporary surfaces at Pepper Hill, as at so many other cemetery sites, restricts the chances of survival of indicative evidence. One relevant aspect would have been the marking of graves. At Pepper Hill, however, the evidence for this is very limited—a posthole in the centre of grave 10908 may have been such a marker, but the extent of intercutting may suggest that such markers were either rare or short-lived, and may carry with it the implication that post-funeral commemoration was also not common. Such commemoration is well attested in the classical world and is implied by some specific types of burial occasionally found in Britain—'pipe-burials' being an obvious (but rare)

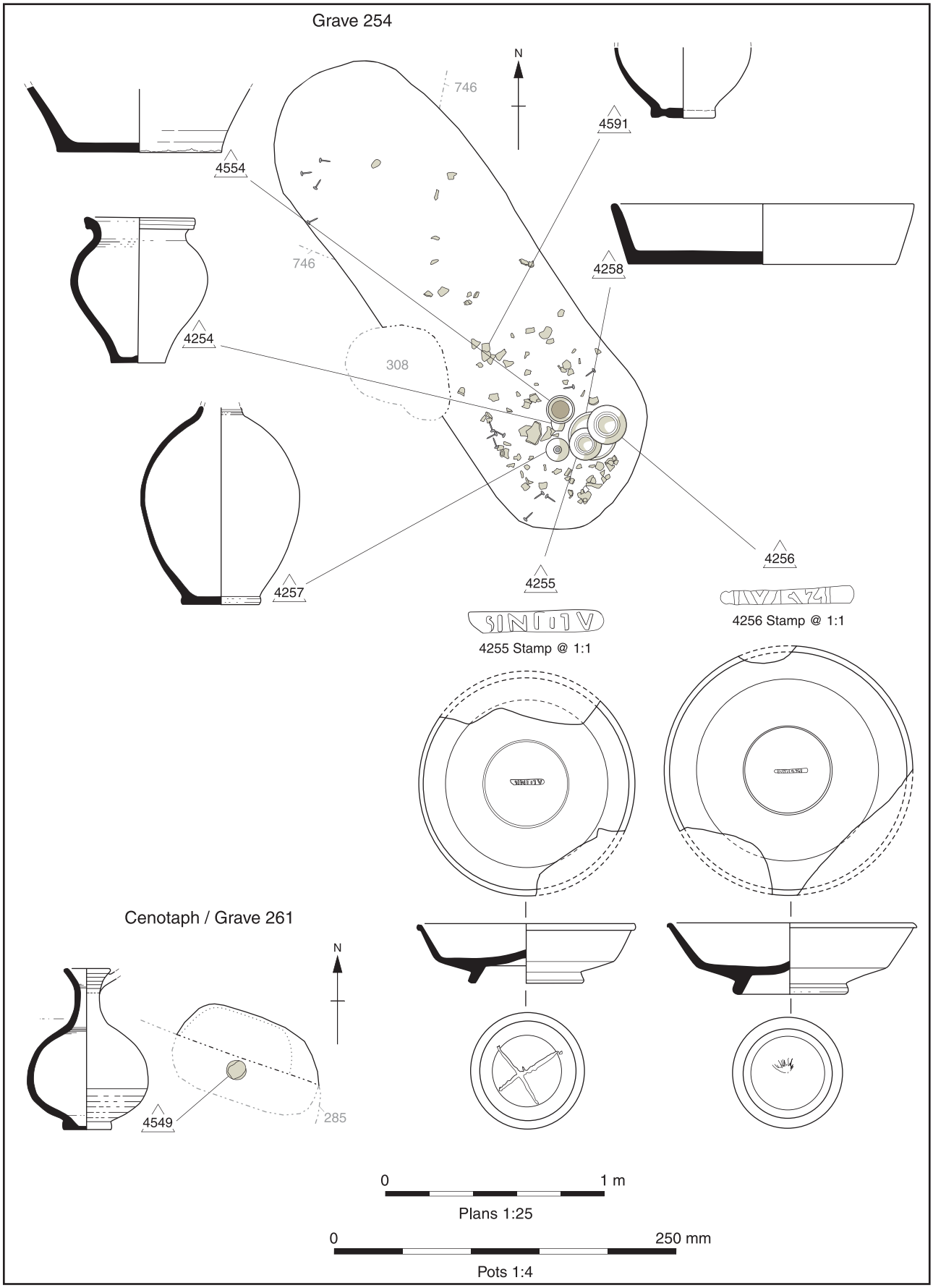


Figure 5.52 Pepper Hill: grave group 254 and 'cenotaph'/grave 261

Figure 5.53. Pepper Hill: Group of vessels in mid 2nd century inhumation grave 254. A grey ware base and inverted samian ware dishes have been used as lids. Both of the latter were damaged before use and have graffiti scratched inside their footrings

example. Long term reverence for a burial site of a rather different character is seen at Brisley Farm, Ashford, where a circular open area surrounded by cut features lay just south of the two Late Iron Age–Early Roman high status burials. The contents of the features suggest ritual activity perhaps continuing into the early 2nd century, almost certainly associated with the earlier graves (C Johnson pers. comm.). Comparable activities of a less intensive nature related to other burials in the region would very likely leave little or no archaeological trace.

The people of Pepper Hill: demography and physical characteristics

The physical condition of most of the HS1 human remains (cf Fig. 5.48) unfortunately precludes detailed analysis of questions such as demography and health. Bone survived in part only in some 79 of the 349 or so inhumation burials from Pepper Hill, and was very poorly preserved in most cases, to the extent that no age or sex determinations were possible in 33 of them. The remainder comprised, 1 infant (0.05–5 years); 5 subadults (13–18 years); 11 adults (18–25 years) including 3 females and 1 male; 2 adults (26–45 years) including 1 female; 2 adult (>45 years) males; and 25 adults (>18 years) including 2 females and 2 males.

A full cross-section of the population appears to be represented amongst the cremated remains from Pepper Hill (although only 43.1% of this population could be aged; Witkin and Boston 2006) with 16.9% immature individuals and 83.1% adults amongst the aged individuals. This compared to very similar proportion of immature individuals (17.1%) to adults (82.9%) in the admittedly small proportion of the inhumation population that could be aged. The adults spanned the age range with, as is commonly the case, most falling in the mature adult (*c* 26–45) category). Although the proportions are similar to those commonly seen in contemporaneous cremation cemeteries (McKinley 2004, 289; Witkin and Boston 2006, table 7) it is likely that the immature, particularly neonatal, individuals are under-represented, as is often the case (McKinley 2006a). This could reflect one or a combination of several preservation/recovery factors, including; first, inherent problems of fragility and the probable tendency to preferential loss/destruction due to disturbance or acidic soil conditions; secondly, potential biases attached to the cremation rite (preferential destruction or accidental exclusion from the secondary part of the rite in cases where they were cremated with an adult; where, as is commonly the case with cremation burials, less than 50% of the adult remains were collected from the pyre site for burial, the fragile remains of an infant could easily be overlooked entirely); and thirdly the known Romano-British cultural practice of commonly burying very young infants in settlement rather than cemetery contexts (eg Pearce 1999, 155), although neonates have been recovered from some cremation cemeteries (eg St. Stephen's (St. Albans) and Skeleton Green, Puckeridge, Herts; McKinley 1992; Wells 1981). There was no apparent temporal variation in the proportion of immature individuals. McKinley (2006a) suggests that a slight rise in the proportion of older adults (>45 years) amongst the cremated individuals in the later phases of the Pepper Hill cemetery may be indicative of increased longevity or possibly reflect an adherence of the older members of the population to the established mortuary rite of cremation in the face of an increased fashion for inhumation burial. Males comprised 27.6% of the cremated adults, and females 20.3%, but given that over half were thus unsexed, and that 56.9% of all cremated individuals could not be aged, these figures cannot be regarded as a reliable guide to the population as a whole.

Osteological data comparable to those from Pepper Hill are relatively scarce in Kent and tend to come from individuals or small groups mostly scattered across the northern part of the county (McKinley 2006a) (Fig. 5.54). Three larger groups comprise two from Canterbury: Cranmer House, with 53 cremation and one inhumation burial (Garrard 1987) and St Dunstan's, with 95 cremation and 23 inhumation burials (M Diack pers. comm.), and one from Clubb's Pit, Isle of Grain, with 42 inhumation and one cremation burial (Cameron 1985).

These figures underline the importance of the material from Pepper Hill, despite the problems of preservation there. The analysed human remains from Pepper Hill outnumber the total (minimum number of individuals) from the rest of the county, combining the figures recorded by Mays and Anderson (1995, 381) with those from recent analyses. The majority of the recorded remains (some 211 out of 327) are from cremation burials in line with a regional pattern identified by Mays and Anderson (1995, 365, 376; it is important to note that this survey deals with recorded or recordable human

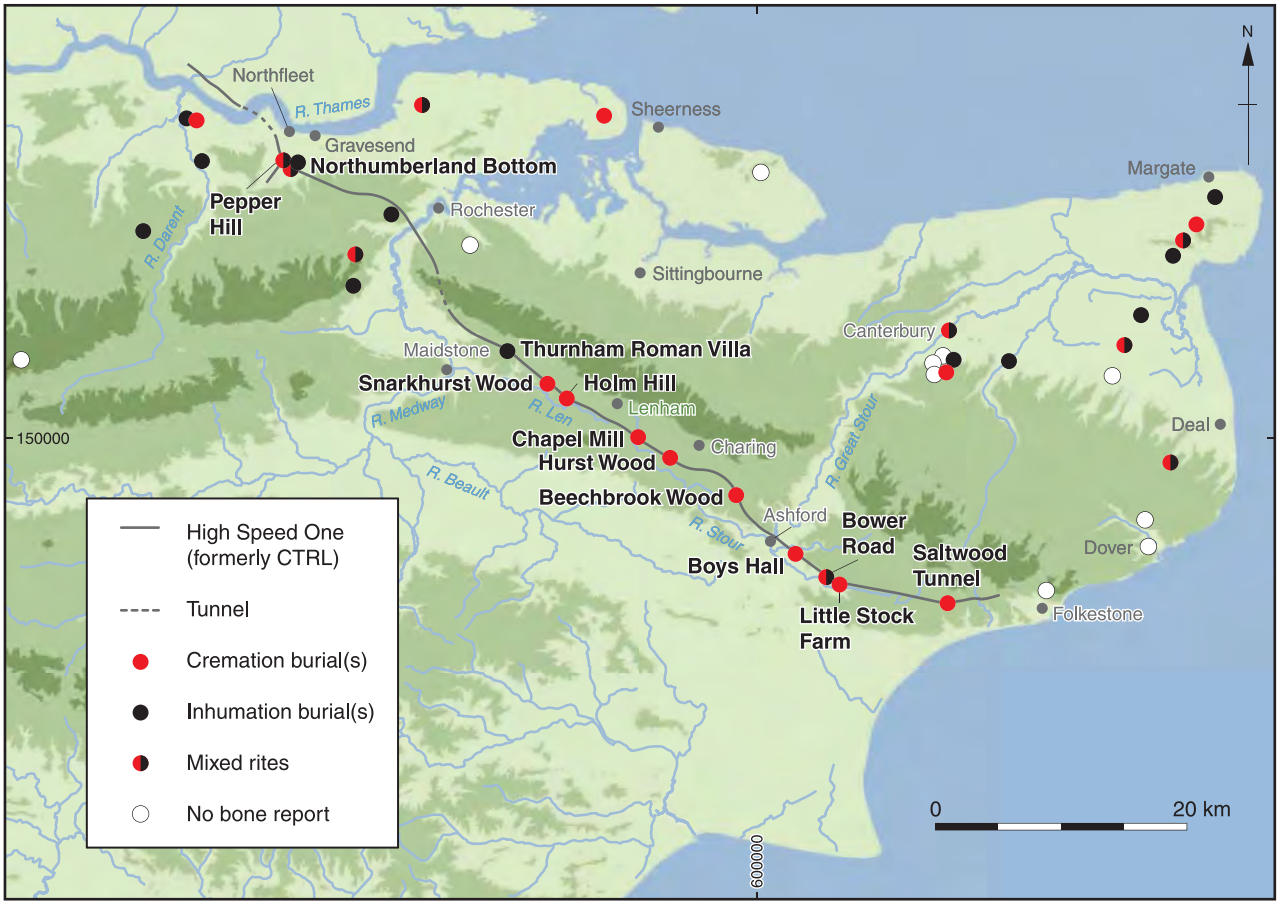


Figure 5.54 Distribution of sites from which Roman burials have been recorded against a background of drainage patterns and simplified geology (based on Mays and Anderson 1995, and Lawson and Killingray (eds) 2004)

remains, it excludes sites with very poor preservation or where unreported remains have not survived; ibid., 364). McKinley (2006a) notes that cremated remains from these sites often appear to include few immature individuals, with none from Ash (Anderson 1998), only 7.5% from Cranmer House (Garrard 1987) and 11.8% (2 out of 17) from the Thanet pipeline burial groups (McKinley 2006c). Possible reasons for this have been discussed above but it is notable that amongst the inhumation burials from the Thanet pipeline, 58.8% (10 out of 17) were immature (1–18 years). Since the cremation and inhumation rites are broadly coeval the difference may reflect cultural variation in the treatment of young individuals in this cemetery, although differential survival and recovery associated with the rites may also have been a factor (ibid.).

Lesions, mostly in adults, were recorded in the cremated remains of 46 individuals from five HS1 sites (*c* 12.4% of the period assemblage) and the unburnt bone of 12 individuals (13.9% of the period assemblage) from two sites (McKinley 2006a). Dental lesions were amongst those most commonly recorded; eleven out of eighteen inhumed individuals with (generally partial) surviving dentitions had lesions, including slight calculus in four, small carious lesion in three, *ante mortem* tooth loss in one, dental abscesses in two and slight hypoplasia in five. The HS1 figure of 2.7% for caries (based on the number of teeth, not individuals, affected), is less than the overall caries prevalence rate of 7.5% for the Romano-British period found by Roberts and Cox (2003, table 3.10; based on a sample of 39 sites), although their assemblages show wide variation and include sites with a low rate comparable to that seen here. Anderson (1995, 123) recorded a caries rate of 12.9% in the Late Iron Age assemblage from Mill Hill, Deal. The apparently low prevalence in the HS1 assemblage is likely to be misleading, however, as is probably also the case with incidences of calculus, owing to preservation factors.

Some dental disease—*ante mortem* tooth loss and an abscess—was also present in the cremated bone assemblage but most lesions here were indicative of one of the commonly recorded joint diseases or of minor, repetitive muscle/ligament trauma. Similar minor lesions were recorded in the unburnt remains of only one individual. Periosteal new bone was observed in the remains of ten cremated individuals; most lesions were seen in the tibia but there were three instances of the visceral surface of the rib being affected, indicative of a pulmonary infection, including conditions such as tuberculosis, pneumonia, pleurisy or chronic bronchitis (Roberts and Manchester 1995, 139; Roberts *et al* 1998, 56). Slight-mild lesions suggestive of anaemia were recorded in the remains of eight cremated individuals (2.1% of the period assemblage). Most of these were of *Cribra orbitalia*,

commonly thought to be indicative of an inadequate dietary intake of iron, and/or a severe intestinal parasitic infestation (Stuart-Macadam 1991, 101).

The only traumatic lesion observed was a short cut through the angle of the left ramus of a Late Roman adult male from Bower Road, mentioned above. This could be indicative of decapitation (Witkin 2006) if the blade had clipped the jaw as it was brought down on the neck. Since the mandible fragment was all that was recovered of this individual, however, the suggestion must remain tentative. Decapitated remains are relatively common within cemeteries of Late Roman date and are generally thought to represent a post-mortem process, probably for ritual reasons (eg Harman *et al.* 1981; Philpott 1991, 77–89; McKinley 1993; Boylston 2000; Taylor 2008). The significance of the isolated Bower Road fragment is difficult to assess, but it did come from a feature for which a possible ritual interpretation has been proposed (see above), which may strengthen the case for suggesting that the bone was from a decapitated individual.

Overall, the limitations of the data preclude general observations about the health of the Late Iron Age and Romano-British populations of Pepper Hill and the other HS1 sites. The incidence of some identified lesions may have been below average because of these limitations and it is inevitable that the full range of conditions afflicting the various populations is not represented (McKinley 2006a).

Society

Society at Pepper Hill/Springhead

The Pepper Hill cemetery also provides more general information about the people of Springhead. The human remains seem to suggest a fairly 'typical' population in terms of age distribution (allowing for the biases that particularly affect the presence and identification of small children), but with insufficient evidence for clear understanding of the relative numbers of males and females (and therefore of the extent to which the cemetery population really reflects the living one, given the problems of sex imbalance observed in many (mostly) Late Roman cemeteries (eg Davison 2000)). Davies (2001) has discussed the Pepper Hill cemetery in relation to the high-status walled burial enclosure at the New Barn Road roundabout but he appears to assume (ibid., 163-4) that the Pepper Hill cemetery was the only 'communal' one associated with the Springhead settlement. This seems unlikely. A very rough calculation suggests that the cemetery may reflect a population of approximately 100 individuals. Given the scale of activity revealed both by earlier excavations and by the HS1 Section 2 work a larger overall population for Springhead might be anticipated, as might further cemeteries sited alongside Watling Street and perhaps at other locations in the vicinity. Smaller groups of burials are known elsewhere, as for example at the Milbrook Garden Centre, on the same road (the so-called Temenos Road East) as Pepper Hill, but much closer to Springhead, where three cremation and three inhumation burials lay within a small ditched ?family plot and dated to AD 70–100. A further burial was located some 50m to the west (Philp and Chenery 1997, 8–12). As already mentioned, neonates and small infants were frequently excluded from formal cemeteries and could be located in apparent settlement contexts (eg Boyle and Early 1998, 33–4).

The Pepper Hill and other finds suggest a link with the pre-Roman exploitation of the area (including the religious focus of the Ebbsfleet springs) that disregards the Roman layout based largely on the alignment of Watling Street. Although it cannot be known, it is at least possible that part of the cemetery population was drawn from adjacent rural communities as well as from the small town itself.

Despite this, however, the cemetery incorporates some decidedly non-native features. The most obvious of these is the practice of *bustum* burial, which was rare in Britain. Philpott (1991, 49) suggested that, on balance, '*in situ* cremation is not typical of mainstream native practice and a continental origin is likely in the majority of cases'. Struck (1993b, 92; Abb. 1) supported this conclusion, showing that *busta* concentrated along the Rhine and the Danube (although they always formed a minority rite, even in areas where they did concentrate (ibid., 91)) and suggested that the arrival of the rite in Britain, where the majority of known examples are associated with forts and urban centres, was probably associated with the movement of auxiliaries serving in the Roman army.

Whether this association applies at Springhead is unclear, since other evidence for military activity there is exiguous (see above). Evidence from Denham (Buckinghamshire), where perhaps as many as 20 busta have been found recently (Coleman *et al.* 2004; L Coleman pers. comm.) and Bray (Berkshire), where the evidence for a further six is a little less clear (Stanley 1972; see Booth *et al.* 2010, 503–4), suggests a rather different pattern of distribution, complementary to the military one, albeit of broadly Late Roman rather than earlier date. At Pepper Hill all the *busta* except a single uncertain example dated from the mid to late 1st century AD, suggesting that whatever its social associations the rite was an intrusive one. On the other hand only one of the individuals buried in this way (10702) was male; the remainder were adult females or immature. This does not preclude a military connection (cf James 2001, 80), but the case is far from secure, although the narrow date range of the *busta* may be more in keeping with a short-lived military occupation than with other possible explanations for their presence (Biddulph 2006a).

Some of the plants (eg grapes, figs and lentils) and animals placed on the pyre may also reflect Roman provincial rather than native British practice. The exotic plant remains are paralleled in some urban contexts (particularly London) but less commonly elsewhere. Late Iron Age traditions of animal placement on the pyre are seen for example at Westhampnett, where lamb and pig were typically provided (Fitzpatrick 1997, 221). In the

Late Iron Age cemetery at King Harry Lane, however, the animal remains are dominated by pig and chicken (Davis 1989), as at Pepper Hill and as at a large number of Romano-British sites (Fay Worley pers. comm.). Pig was also found in the high status burials at the A2 Tollgate site (see above). It is unclear if the occurrences of pig and chicken at King Harry Lane represent the precocious appearance of imported continental practice or whether they indicate the early development of a native tradition that had become well-established by the time of the conquest and thence developed into a mainstream Romano-British practice. In the former case, however, the rapid adoption of a non-indigenous tradition at Springhead might carry with it the inference that a non-local component was present in the cemetery population (the association of animal bone with *busta* was examined—of the eight identified *busta* one produced pig bone and another produced fowl—the evidence is therefore insufficiently clear to advance the argument either way).

Grave goods may occasionally suggest that other people originating outside the Springhead area were buried at Pepper Hill. One grave (10362) contained a distinctive ceramic tankard in Severn Valley ware. Products from this source are exceptionally rare in south-eastern England (this is thought to be the only vessel known from east of London) and it is most unlikely that this vessel was traded. It may perhaps have been a personal possession, brought to Springhead by its owner during the later 1st century, although other explanations of its presence are of course possible. A late 2nd or early 3rd century grave (10520) contained three bracelets, a finger ring and a necklace part-made with gold-in-glass and polychrome beads, all placed unworn in the grave. Both the placement of the objects and the objects themselves, the necklace in particular, are rare in graves of this time. Gold-in-glass beads have been seen as having a military association (Boon 1977) and Hilary Cool has speculated that the individual with whom these objects were associated brought new beliefs and fashions in personal decoration, perhaps from the Danubian lands (Cool 2006a; cf Cool 2004, 387). However, other gold-in-glass beads (for example) come from graves at London (Barber and Bowsher 2000, 219), Baldock, Colchester and Verulamium (Boon 1977, 198-9), and Denham, Buckinghamshire (Cotswold Archaeology 2003). A military link seems unlikely in relation to this south-eastern distribution, leaving uncertain the question of the social connections and context of the Pepper Hill (presumed) lady.

Despite the likely presence of incomers, the great majority of the population buried at Pepper Hill were presumably of local origin, although the specific characteristics that identify this cannot be defined precisely in the archaeological record. The material remains in many inhumation graves were identical to those of cremation graves. Dining-related vessels—flagons, beakers, dishes and the like—played as significant a part in pottery-yielding inhumation graves as they did in cremation graves, and the presence of brooches and shoes, for example, suggests fairly standardised dress and beliefs in the afterlife. But the inclusion of grave goods was by no means universal, as the large proportion of unfurnished Early Roman inhumation graves confirms. Biddulph (2006a) argues that 'the rejection of goods in so many inhumation graves—and possibly more, counting the undated graves—separates the rite more completely from the cremation rite of Aylesford type-derived tradition'. Whether or not 'rejection' is what is involved, his further argument that the primacy of inhumation at Pepper Hill before AD 70 (compared with a low rate of cremation), and the presence of Iron Age burial (10404) and Early Roman crouched burials (11386 and 12047) 'identifies inhumation more convincingly as the normative, accepted, rite within the region' is important. The cremation rite as a whole, not only *busta*, may have been in large part intrusive at Springhead after AD 43. Equally, however, it may have been adopted relatively rapidly by some sections of the local community and its presence, while suggesting changes in practice, does not necessarily serve to identify an incomer component in the cemetery population. The well-dated very Early Roman cremation burials at the A2 Tollgate site certainly indicate the early adoption of the cremation rite, but by individuals thought most likely to be of local rather than intrusive origin (Allen *et al.* forthcoming). In this case, however, a continuation of local pre-conquest tradition may be indicated, as two wealthy cremation burials of Late Iron Age date, associated with pottery vessels and brooches, were found only just over 700m west of the high status Early Roman burials. There was not necessarily a direct connection between the two traditions or the communities using them, but their relative closeness suggests that possibility.

Wider issues of society, identity and status

The cemetery evidence, particularly from Pepper Hill, brings us into contact with the people of the region in the most immediate way and provides among other things hints about the diversity of the population, although it is likely that the status of those buried at Pepper Hill was broadly fairly similar (Biddulph 2006a). The contrast of status between those buried at Pepper Hill and the few individuals buried in the nearby walled cemetery perhaps in the early 3rd century (Walker 1990, 57), emphasised by Davies (2001), is extremely marked. A similar contrast is indicated in the immediate post-conquest period in relation to the settlement partly examined at Northumberland Bottom (West of Wrotham Road). Understanding of this site is transformed by the evidence of the Early Roman high status burials revealed in the A2 excavations, as described above (Allen *et al.* forthcoming). Clearly of the same date as the earliest use of Pepper Hill, some 2.3km WNW, these features show how the status of (presumably) higher-ranking members of local society (or possibly immigrants) could be expressed in burial. It is therefore particularly unfortunate that the focal area of the associated settlement remains unexamined, only its

southern and northern margins falling within the Northumberland Bottom and A2 road scheme works respectively. It is noteworthy, however, that the limited settlement evidence from both excavations provides few obvious indications that distinguish the site from its contemporaries, although the presence of a small number of large postholes located at the southern edge of the A2 site may be one such indication, and the very rectilinear form of the enclosure itself, noted above, is perhaps another. It was certainly possible for status to be displayed selectively; it need not have been demonstrated consistently across the entire spectrum of the archaeological record.

Aspects of settlement type and architecture and of the various artefact assemblages also provide generalised indications of various statuses, though understanding of identity is more problematic in these contexts. In architectural terms (see above) only Thurnham is a high-status site, evidenced by a range of buildings including successive villa-type houses, with painted wall plaster and tiled roofs in both main phases and an attached bath suite in the later phase (with the possibility that there was a detached bath building contemporary with the proto-villa). Of the remaining rural settlement sites only Bower Road contains a substantial structure of recognisable form, but even this probably did not have a tiled roof, although it may have been a subsidiary building within a complex that did contain other tiled structures. Elsewhere the complete or almost complete absence of tile (except in a recycled context at Hazells Road) is notable. The implication here is that domestic buildings with tiled roofs were the exception rather than the rule in this landscape. While Thurnham is exceptional in architectural terms (perhaps even in the Late Iron Age, as the only site with identifiable circular buildings) it is not particularly remarkable in terms of its enclosure, which in the initial phases is comparable in character with those of broadly contemporary sites such as Northumberland Bottom, Snarkhurst Wood and Leda Cottages. It may be that the use of substantial timber post stockades, seen at Thurnham from the early 2nd century and not noted on other HS1 sites, represented a change in enclosure style that was restricted to certain types of site, occurring in villa contexts elsewhere, as at Keston, but this is speculative.

The finds assemblages from most of the HS1 sites are mostly too small to shed light on aspects of site status for comparative purposes. Conversely, in the case of Saltwood Tunnel, the assemblage contains a number of interesting objects but lacks the settlement context that would allow their significance to be better understood. This is the only site apart from Thurnham to produce mirror fragments, for example (Riddler and Ager 2006). While the high-status burials from the A2 indicate something of the range of objects that could occur on some Early Roman sites in the area, Thurnham is the only one of the HS1 sites where objects and context can be fairly closely linked. Close analysis by Hilary Cool (2006b) has revealed some interesting trends. The first of these is that there was a marked upturn in the absolute quantity of objects in use in the Early Roman (proto-villa) phase; apart from some evidence for wearing of brooches in the second quarter of the 1st century AD, seen particularly in funerary contexts as at Saltwood, the material culture of the Late Iron Age phase is invisible.

As Cool (ibid.) remarks, the expansion of material culture characteristic of the Roman period in Britain does not proceed uniformly in all areas. In parts of the Gloucestershire countryside, for example, it cannot really be seen until the 2nd century (Cool in Miles *et al.* 2007) and in parts of rural northern Britain (and even in parts of the west midlands, eg Powell *et al.* 2008, 527–8) it never occurs. At Thurnham this expansion can clearly be seen in the second half of the 1st century in the contexts associated with the proto-villa. Brooch use, including of post-conquest types, continued, while the presence of hair pins and hobnails indicates changing aspects of personal appearance and dress. Counters, items of toilet equipment, household utensils, and various furniture fittings all suggest new ways of passing the time and furnishing houses. Occasional items, such as a copper alloy basin, indicate above average levels of wealth, even if such an object was perhaps not used in the way it would have been in the heartlands of the Roman world (Cool 2006b).

An assemblage such as that from Thurnham was not necessarily typical of the region, but quantified data are still very scarce here. They do exist for Westhawk Farm, Ashford, however, where the relatively large finds assemblage indicates only gradual adoption of the newly-available suite of material culture and suggests that trends in dress may have been quite conservative (Cool 2008). Such contrasting trends may indicate a more dynamic community at Thurnham in the Early Roman period, but not necessarily one that involved incomers; indeed the structural sequence implies (but does not prove) continuity of tenure. From the artefactual evidence general continuity of tradition is suggested by the Colchester Derivative brooches, for example, which are of types favoured by the Kentish population (Cool 2006b). A single item of military equipment, a stud, might indicate that a member of the family had seen service in the Roman army, supporting the idea of local elite service discussed by Black (1994). Although found in a later context, a seal-box lid from the aisled building is of 1st century type and the association of evidence for early literacy with (civilian) sites having military connections has been well demonstrated, for example in the Batavian region of the lower Rhineland (Derks and Roymans 2002). The potentially residual nature of this object underlines a striking characteristic of the Thurnham finds assemblage, which is that material contemporary with the Middle Roman phase is relatively scarce, comparing unfavourably with that from the proto-villa phase. Finds independently dated to the Late Roman period are also rare. So, for example, contexts associated with the late 3rd century smithy in the main villa house produced a mid 1st century brooch and a melon bead and a counter both of 1st–2nd century type (Cool 2006b). Such material underlines the radical transformation of site character in the Early Roman period indicated by the structural sequence.

The Thurnham small finds suggest a picture of the changing circumstances of the occupiers of the villa through time. The pottery includes material that distinguishes the site from most of its neighbours, but at levels which do not allow these distinctions to be identified quantitatively (see below). For example, fragments of at least two Italian wine amphorae were recovered, one very likely of pre-conquest date, but the numbers of sherds involved were very small, as were quantities of the Gallo-Belgic wares that might be expected to have provided the associated drinking vessels (Lyne 2006; Booth 2006b) and are seen in the A2 Tollgate graves for example; none of these need have been pre-conquest. A range of pre-Flavian imported fine ware fabrics occurred, but again in minute quantities. Developments can be seen in the pottery of the proto-villa phase, however, and there are clear indications of spatial patterning in the distribution of pottery at this time (Lyne 2006; Lawrence 2006). The assemblage from the enclosure ditch on the east side of the farmyard had a predominance of coarse cooking pots (57% of rim equivalents (REs)) with relatively few open forms (15%) and mortaria from as many as five different sources (3%). Fine wares accounted for just a quarter of the pottery. In contrast, the ditch immediately behind the proto-villa house yielded an altogether higher status assemblage: cooking pots constituted a smaller element (32%), open forms were considerably better represented (29%) and there was a much higher percentage of fine wares (45%), but no mortaria (Lyne 2006). The contrast between assemblages based on food processing activities and those dominated by fine table wares is clear. Interestingly, a lack of distinction in the Middle Roman villa phase small finds assemblages seems also to be reflected in the pottery, although this may relate in part to an absence of well-defined deposits in comparison to those associated with the proto-villa.

The ceramic evidence from across the HS1 sites provides a broader view of variations in site character. The potential of quantified pottery data to provide insight into assemblage and therefore user status has been explored elsewhere (eg Booth 1991; 2004; Evans 2001) and the specific issues related to the application of these approaches in Kent are discussed in Booth 2006b. In simple terms, a principal potential indicator of site status is thought to lie in the representation of 'fine and specialist' wares, but there is not necessarily a simple correlation between a high level of these and 'high' site status. Other factors, of chronology, function and location in relation to marketing centres or other distribution networks have to be taken into account. The complex interplay of these factors can therefore make interpretation in terms of status alone problematic. It follows that variations between assemblages of similar date and in close proximity can be interpreted in relation to status with more confidence than variations between more chronologically and spatially disparate assemblages.

Despite their geographical spread, however, the HS1 assemblages have some potential for interpretation in status-related terms. Only one assemblage, the cemetery group from Pepper Hill, is clearly of radically different character from the rest and for present purposes can be set on one side. With regard to spatial issues—and therefore to questions of access to markets—there are no idiosyncratically placed fine and specialist ware suppliers whose input would be likely to produce heavily skewed figures. Chronological aspects can be factored in; for example, work in the Thames Valley showed that the baseline representation of fine/specialist wares increased markedly in the Late Roman period, almost entirely as a result of the impact of the Oxford industry (Booth 2004, 42–4). The same pattern is seen here. At Hazells Road, the only substantially late-Roman HS1 assemblage, fine/specialist wares were more common than at any other site except Pepper Hill and the small (statistically invalid) sample from White Horse Stone. The sherds, comprising 11.3% of the assemblage, were almost entirely of Oxford colour-coated ware and mortarium fabrics. It is to be expected, therefore, that those assemblages with a significant Late Roman component would automatically have had higher fine/specialist ware levels than those occupied only in the Early Roman period, regardless of any other distinctions between them.

Leaving aside the chronological and functional anomalies (Hazells Road and Pepper Hill respectively) two or possibly three groups of sites emerge from the ranking of fine and specialist ware percentages. Whitehill Road and Tollgate have extremely low fine and specialist ware levels (0.4% of sherds in each case) while at Hockers Lane, Beechbrook Wood and Snarkhurst Wood the figures are 1.9%, 1.3% and 2.7% respectively. All these sites are exclusively early in date and their assemblages are effectively dominated by local coarse wares. The remaining sites also all had a significant Late Iron Age–Early Roman aspect but then saw continued activity into the later Roman period, though the extent of this seems always to have been at a lower level than earlier. Their fine and specialist ware levels are remarkably consistent, in a range from 4.4% at Bower Road to 7% at Northumberland Bottom with Thurnham firmly in the middle at 5.9%. (cf Fig. 5.55, for the presentation of fine and specialist ware data there in terms of REs see below). A more detailed examination of the fine and specialist ware breakdown reveals no evident distinction between the sites in these terms.

Several possible conclusions can be drawn from this. The most straightforward is that there was no significant difference in the character of this group of sites as demonstrated by their ceramic assemblages, despite readily perceived distinctions in other aspects, particularly between the villa site at Thurnham and the other rural settlements. A number of explanations are possible for the absence of the expected correlation between the 'high-status' site of Thurnham and a high fine and specialist ware level (Booth 2006b), but the main ones are that Thurnham was fundamentally similar to the other rural sites, or that the basic premise of a correlation between site status and fine and specialist ware levels is not valid in this region. If at first sight the latter conclusion is disappointing it is not without interest. It could be interpreted to indicate that most pottery types had at

least the potential to achieve an even distribution through the area and that the principal factors affecting distribution were related to the physical characteristics of the distribution mechanism. Such an interpretation perhaps suggests the early development of aspects of a market economy, a suggestion that receives some support from Holman's conclusion that one of the uses of Iron Age coinage in the region was 'for daily activities such as trade', even if only at a low level (compared to barter) at this time (Holman 2005, 42). If a market-driven distribution system did apply to pottery it might be expected that the more distantly derived fabrics would perhaps concentrate in a very limited number of principal distribution centres, but that there would otherwise be little difference in the incidence of fabrics across a range of types of site in 'rural' contexts. There are too few quantified data for this model to be tested adequately, but it receives superficial support from Westhawk Farm, where the fine and specialist ware figure was 5.1% of sherds, exactly in the range of the majority of HS1 sites and not showing any enhancement resulting from its role as a local market centre, as opposed to one of the few principal distribution centres postulated above, where such enhancement might be particularly expected.

Other villas in the Maidstone area seem to have been broadly comparable to Thurnham in the character of their assemblages. At Snodland (Seager Smith 1995) a group of 1024 sherds mainly of 2nd–3rd century date included 20 of samian ware (2%) and although sherd counts are not given for all the fine and specialist wares the total of these is unlikely to have fallen much outside the 4–7% range seen on the HS1 sites. At The Mount, Maidstone, 'Finewares, ...mostly Upchurch-type fabrics... comprise *c* 12 per cent by sherd count of the total assemblage' (Savage 1999, 114). Clearly if the fine Upchurch wares (principally fabric R16) are removed from the equation the total fine ware figure will have been low, and the fine and specialist ware representation recorded for a sample from the 1994 excavation was *c* 5.5%. This figure was based on a small REs total and a list that appears not to have included samian ware (ibid., 116–8), so comparison of percentages based on different measures is not strictly valid, but broad comparability with the figures already discussed (and cf Fig. 5.55) seems to be indicated. It is unfortunate that the pottery from the 1970s excavations (Kelly 1992) was not systematically quantified, though one mid 2nd–mid 3rd century group was analysed in terms of EVEs by Pollard (1988, 236–8). Some 3% of this group consisted of fine and specialist wares. In a subsequent note Pollard (1992, 223) remarks on 'this anachronistic situation—a well appointed property with a humble range of pottery', but the HS1 sites and the Snodland data suggest that this situation was far from being anachronistic, and that Pollard's comparanda—Springhead, Rochester and the cellar deposit at Chalk—conform to a pattern similar to that seen in the majority of rural settlements.

The figures therefore seem to suggest a reasonable degree of uniformity in supply of fine and specialist wares across this part of Kent, more or less regardless of site type. A possible inference from this is that there is little indication of socially-embedded control of the distribution of imported material, which might have been expected to produce a more distinctly varied pattern of consumption. If this was the case it may be suggested that the observed pattern reflects a fairly well-integrated market economy; though perhaps not a hugely effective one in terms of distribution of imported pottery. Such a situation would contrast with that observed in regions such as the Upper Thames, where significant site to site variations in the incidence of fine and specialist ware can be correlated with variations in social status inferred from other characteristics and, by implication, indicate control of the distribution of certain types of ceramic (and presumably other) materials (Booth 2004), particularly in the Early Roman period. By contrast, interpretation of the HS1 material in terms of a well-integrated economic system would perhaps mesh with Monaghan's view that economic rather than other factors led to the decline of the Thameside/Upchurch industries in the 3rd century AD (see above).

If pottery assemblage analysis in terms of fine and specialist wares generally sheds little light on the character of the HS1 sites and their inhabitants, what of examination in functional terms? Evans (2001) has used the ratio of jars to dishes and bowls as a means of clarifying distinctions between some major site types and also indicating regional variation in these patterns. Broadly speaking, higher ratios of open forms (bowls and dishes) to jars are associated with urban sites but, as indicated above, there is a chronological aspect as well, with a general trend, in southern Britain at least, towards increased representation of bowls and dishes on sites of all types through time—paralleling the shift in the base line level of fine and specialist wares discussed above (see also Booth 2007, 331–4). In Figure 5.55 aspects of both analyses are presented, with the percentages of fine and specialist wares recalculated in terms of REs so that the figures in both axes are based on the same measure. Reassuringly the relationships between sites based on these recalculated figures are almost all the same as those based on sherd count, even though the actual percentage figures are not identical (the RE figures enhance fine and specialist ware levels across the board).

Three main groupings can be seen—the almost exclusively early sites of Whitehill Road, Snarkhurst Wood, Tollgate and Northumberland Bottom (East of Downs Road), all with fine and specialist wares at less than 2% of REs, then the previously identified cluster of sites with fine and specialist ware levels now between 8.5% (Bower Road) and 12% (Hockers Lane). The two 'anomalous' sites, Pepper Hill and Hazells Road, have effectively identical fine and specialist ware figures at nearly 31%. The sites of the first two groups, however, show considerable variation in the percentages of open forms present, not so much in absolute numbers, but in relation to each other. In the small assemblage at Northumberland Bottom (East of Downs Road) open forms are more than twice as common as in the other sites in this early group. This may be a quirk of the assemblage

size, but it may reflect the small slightly later (late 1st–2nd century) component in this assemblage missing from the other sites. The 'middle status' group of sites also shows variation in the percentages of open forms, but only Saltwood really stands out as anomalous and this may simply be because the bowl total was boosted by two complete vessels. The exclusively early site of Hockers Lane also joins this group on the basis of a single vessel, a

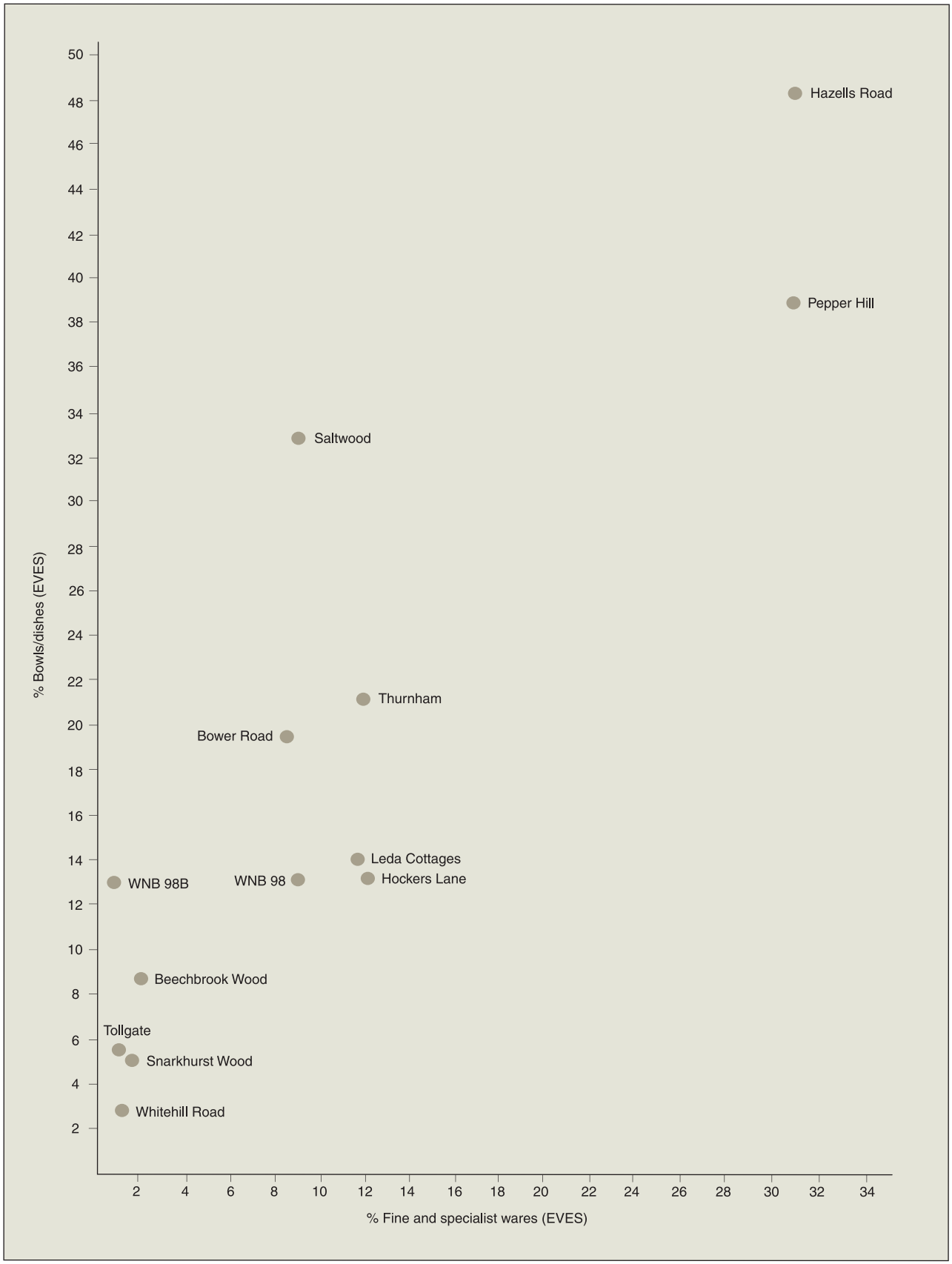


Figure 5.55 Comparison of pottery fine and specialist ware representation with incidence of bowls and dishes

Terra Rubra platter that enhances the fine and specialist ware level as well as the representation of open forms. The real significance of this vessel remains debatable.

Overall, therefore, while there is a fairly clear correlation between enhanced fine and specialist ware levels and the incidence of open vessel forms it is less certain that this has anything to do with status-based characteristics. On balance the 'status' (ie fine and specialist ware level) distinctions have been seen as chronologically based or related to specific site function, and increases in the occurrence of open forms could be seen in the same way, although relatively high representation at Thurnham and Bower Road could be significant (for Saltwood see above). This broad picture probably conceals nuances in the evidence that reflect the working of other factors. It is possible that the Terra Rubra platter at Hockers Lane is one such. The wide variety of Late Iron Age and Early Roman imported fabrics at Thurnham may constitute another. These were not numerically important—which perhaps supports a view that they do not represent normal trade—but rather a selective and still socially embedded network of distribution, which had a minimal impact on most sites in the area. It can hardly be a coincidence, therefore, that Hockers Lane lies very close to Thurnham. A direct connection between the two sites in the Late Iron Age, already postulated, seems to be supported by this evidence.

In summary, the archaeological evidence for the nature and operation of society is most useful when structural and artefactual data are of sufficient quantity and quality to be used together (and ideally correlated with the evidence from burials). Consequently the clearest picture of these aspects comes from sites such as Thurnham and Pepper Hill. At the former it may be suggested that a local land-holding (?owning) family with some connections to regional power/patronage networks (perhaps centred at Quarry Wood, Loose) in the Late Iron Age sustained or perhaps enhanced their position in the post-conquest social hierarchy. This position was underlined at an early date by the construction of a modest house of radically new character and other buildings, possibly including a temple, while one member of the family may have spent time serving in the Roman army. Concerns with management of the approach to the site and its visual impression are apparent, and regardless of the interpretation of the 'temple' involved a monumental religious aspect represented by the large upstanding post. A range of artefacts attests to changes in aspects of daily lifestyle. In the later 1st century AD this community would have stood out against its surroundings. It had links with those at broadly comparable sites, such as Eccles, whence a large quantity of building material was obtained. Indications of a relatively well-integrated regional economy suggest that this link could have been commercial, but there were probably social connections as well. Much wider ranging connections may be hinted at by the striking similarity in the developmental sequence of the main villa house with that at Boxmoor in Hertfordshire, but the nature of such connections can only be speculative.

Meanwhile, a family perhaps of similar standing at Northumberland Bottom (west of Wrotham Road) had used the provision of grave goods as a probable means of establishing pro-Roman credentials in the generation immediately following the conquest. The relatively ordinary character of the few graves assignable to the later 1st century and later might suggest that the family fortunes changed at this time, or that status display was channelled in different directions, perhaps concentrated in the unexcavated part of the settlement complex. It is notable, however, that an inhumation burial dated by a mid 3rd century coin was exactly aligned upon three of the 1st century cremation burials and indicates that their location remained known at this time.

In its 2nd century form the Thurnham villa complex appears less remarkable than previously, although it continued to develop in interesting ways. A bath suite was added to the main house, possibly replacing a free-standing block associated with the proto-villa, but was probably demolished before the time, about the mid 3rd century, when primary use of the villa house for domestic occupation seems to have ceased. Agricultural and other activities continued, but the domestic component was probably confined to estate workers in these areas.

Elsewhere, with the partial exception of the somewhat enigmatic site of Bower Road, site morphology, an absence of structural evidence, and reasonable uniformity of artefactual material argue for a society with relatively little differentiation of status as expressed by these features. A general similarity between the available evidence for rural burials and that from Pepper Hill suggests that many of the people buried at the latter site, whether they came from the nucleated settlement of Springhead or from surrounding agricultural communities, were of this same general status, although higher incidences of cremation urns and brooches at sites such as Saltwood and Beechbrook Wood might have been significant. Different identities within this group, the bulk of the population, may have been marked more or less subtly in a variety of ways.

Grave goods cast a little light on the status of groups in society at Springhead. Apart from the special case of the very young children buried beneath Springhead's temples as foundation offerings (Penn 1960, 121–2), older children were also buried in formal graves among adults. Bracelets buried alongside a sub-adult aged between 13 and 19 years might have offered protection to the deceased or symbolised a life cut short by representing social structures such as marriage that could never be fulfilled by the deceased (Martin-Kilcher 2000). A bell from an infant's grave (1438) was perhaps deposited to ward off evil spirits (Cool 2006a). Spouted vessels—so-called 'infant feeders'—were found in four graves. Their use has been the subject of much debate (eg Webster 1981; Martin 1997), but here they accompanied infant burials, certainly in one grave, and probably in a further two.

The link between grave goods and socio-economic status is complex, not to say ambiguous (Biddulph 2006b, 39–40; Philpott 1991, 228). Pepper Hill's average of 1.7

ancillary vessels per pottery-yielding grave was among the lowest in the region. Only groups from Kelveden (Rodwell 1988), London's eastern cemetery (Barber and Bowsher 2000), and Butt Road, Colchester (Crummy and Crossan 1993)—all Late Roman or with significant Late Roman components—tended to be smaller. Cemeteries with a higher proportion of 1st and 2nd century graves, such as Ospringe (Whiting *et al.* 1931), Chichester (Down 1971) and Each End, Ash (Hicks 1998), typically produced larger grave groups. Further indications of low status can be argued for Pepper Hill on negative evidence. Amphora burials, for instance, were concentrated in Kent (Philpott 1991, 25), and examples are known in north Kent at Green Street, Darenth (Wheeler 1932, 151), Cooling (Thornhill and Payne 1980, 380–2), Upchurch (Kelly 1963, 201–3), and Hoo (Philpott 1991, table A2). Their absence at Pepper Hill, despite 'wide circulation' of the form by the late Flavian-Trajanic period (Pollard 1988, 66), is therefore notable. The evidence from Ospringe (Philpott 1991, tables 5 and 6) suggests that, like samian ware, amphorae tended to be accompanied by relatively high-status objects, such as glass and mirrors, or by a greater number of pottery vessels. Similarly, an amphora burial from Each End, Ash, contained a glass goblet (Tatton Brown 1998, 157, 159–60). Lamps and cups, commonly found in high-status and urban burials, were also rare or non-existent at Pepper Hill.

Some wealthier graves can be potentially identified at Pepper Hill, however. Graves containing caskets are chief among them. Those that produced samian ware may also have been of higher status, at least in relative terms. Samian ware had a particular association with high-status burials in south-eastern England, in which the type was preferentially selected (Biddulph 2006b, 34), and it is notable that at Pepper Hill graves with samian ware averaged 2.3 vessels per grave compared with the site average of 1.7 vessels per grave. However, graves containing items such as finger rings or glass unguent bottles usually received up to two vessels, or none; a correlation between object type and status is still far from clear. Pepper Hill, as a communal cemetery, could have received burials from a cross-section of the community, including relatively wealthy individuals, as occasional higher-status items, such as the glass bead necklace from grave 10520 and casket from 291, might suggest, but it seems most unlikely that that the full spectrum of Springhead society was represented here.

The wealth and status of the deceased or mourners may have determined the method of burial as well as the character of grave goods. The *busta* are the clearest expression of this (though perhaps most important in terms of social rather than economic status), but in general cremation was a relatively expensive business, and this may have persuaded the poorest in society to opt for inhumation. Indeed, that unfurnished inhumation graves were commoner than unfurnished cremation graves seems to support this view, hinting at a generally low level of wealth for many users of the cemetery.

The potential status variation observed within the Pepper Hill cemetery therefore seems to be broadly confined within the lower tiers of local society. None of the HS1 burial evidence (except a single child burial from Thurnham, of rather uncertain status) clearly correlates with the upper part of the social range indicated by settlement sites such as the Thurnham villa. Such burials in the Early–Middle Roman period are represented at the A2 Tollgate site (equivalent to HS1 Northumberland Bottom, West of Wrotham Road), and elsewhere in the region at a number of sites which include walled enclosures and relatively monumental structures (Jessup 1959). The association between such features and villa sites is seen clearly at Keston (Philp *et al.* 1999, 45–60) and their occurrence in the Maidstone area is likely to be related to villas there. The high status walled cemetery at Springhead may have been for a group living within the confines of the settlement, but it is perhaps as likely that they were associated with a villa complex located just outside Springhead. The reuse at Hazells Road of building material consistent with such a structure may provide a clue to the existence of such a site a little to the east of the 'town'. With the exception of the Lullingstone mausoleum, however, none of the high status burials in the area is of Late Roman date. Expressions of high status in burials of this period must have taken a generally different form. Moreover, even in the Early Roman period, as the A2 Tollgate evidence might suggest, there was not necessarily a clear correlation between rich burials and ostentatious domestic structures.

Settlement pattern transformation from the 3rd cenury onwards

One of the most striking aspects of the Roman sites of HS1 Section 1, already hinted at several times, is the apparently early end date of occupation at most of them. Of the sites best dated by pottery evidence only Hazells Road can be assigned entirely to the second half of the Roman period. A number of locations; parts of Northumberland Bottom, Thurnham, Bower Road and Saltwood Tunnel, saw activity in the 4th century, but in these cases, all of which were sites originally established in the Late Iron Age, this was at a reduced level in comparison with their earlier phases. While in general terms it may be perfectly reasonable to expect a degree of settlement mobility, perhaps encouraged in part by the development of nucleated local centres (eg Taylor 2001, 56–9), this is not what is seen here. Rather, the rural settlement pattern in this transect through Kent appears to be in terminal decline, for the most part by about the middle of the 3rd century AD and earlier in places. Two simple questions follow from this: is this pattern observable elsewhere within the region and how is it to be explained?

There is still a shortage of data from rural settlement sites in the region that can be used to address the first question. Relatively few such sites have been examined in the area through which the HS1 transect runs, and there is always the problem that small excavated samples will only reveal part of the development sequence of any one

site; nevertheless there are pointers. Three rural settlement sites recently examined in Headcorn and Ulcombe parishes are dated between the mid 1st and the early 3rd centuries (Aldridge 1998, 7) and at Runhams Farm, Lenham, the occupation was essentially of 1st–2nd century date, with only limited evidence of later activity (Philp 1994, 42–4). These sites all lie south and south-east of Maidstone, in the fringes of the Weald, while in Maidstone itself a site at Queen Elizabeth Square (Booth and Howard-Davis 2003) had already ceased to be occupied by the end of the 2nd century at the very latest, a pattern reflected in some of the other HS1 sites. West of Maidstone recent work on the route of the West Malling and Leybourne Bypass produced evidence for Late Iron Age–Early Roman sites characterised by well-defined ditched enclosures comparable to those of some of the HS1 settlements and with a distinctly early chronological range; there were 'no archaeological features of post-1st century AD date from the Bypass route' (Ellis 2009, 9), while at nearby Leybourne Grange settlement and other activity was confined to a similarly brief period (Biddulph 2011). Further south-east, a number of other rural settlement sites in the area east of Ashford saw either a cessation or a significant change in the character of activity in the later Roman period (K Parfitt, pers. comm.), although this cannot as yet be quantified. At Hawkinge, near Folkestone, substantial settlement evidence was principally of Late Iron Age–Early Roman date (House 2005).

Evidence from non-villa rural settlements in the more northern parts of the county is fairly limited (in particular, large scale excavation of such sites has been rare). At Bredgar near Sittingbourne, however, occupation effectively terminated within the 2nd century with minimal indications of later activity (Savage 2006, 366), while at Castle Road in Sittingbourne itself a site thought to be associated with agricultural activity was abandoned 'over a short space of time' in the mid 3rd century (Clark 2003, 34). On the Wainscott Northern Bypass, north of Rochester, activity which was probably peripheral to an unexcavated settlement also did not outlast the 3rd century, but here it was largely confined to that century rather than commencing earlier (Clark *et al*. 2009, 73). Further afield, a review of Roman settlement in Thanet showed that only two out of 21 sites for which some dating evidence was available seemed to fall in a 3rd/4th century or 4th century bracket. Rather, the evidence seems 'to indicate occupation peaking in the second century' (Perkins 2001, 46). This conclusion is broadly supported by the evidence from the recently-excavated East Kent Access Road, where intensive occupation is much more widely attested in the Late Iron Age–Early Roman period than later.

In the context of Thanet, it is notable that the villa complex at Minster 'had been largely abandoned by the end of the third century' (Holman and Parfitt 2005, 210), although there was then a significant re-occupation of the site in the 4th century, but of rather different character (ibid.). Further west, at Faversham, there was evidence of major structural alteration to the villa, dated to the early 3rd century, but a general absence of 3rd and 4th century material (for example only two significant late 3rd–4th century pottery vessels are reported, together with six coins of the same period) suggests a fundamental change in the character of the site (Philp 1968, 70–1). Elsewhere, however, both structural and finds evidence indicates continuity of activity at some north Kent villas (such as Eccles, Northfleet, Darenth and Lullingstone) well into the 4th century (Detsicas 1983, 181–2; Reece 1987 for coins including issues of the House of Theodosius at Lullingstone). At The Mount, Maidstone, activity extended into the early 4th century (Houliston 1999, 100). In contrast, at Snodland, pottery from the 1992–4 excavations was reported as 'consistently second to early mid third century AD in date and broadly corresponds with the material recovered during earlier excavations at this site' (Seager Smith 1995, 106). Again there was only a very thin scatter of 4th century coins (eg Ocock and Syddell 1967, 192–3, 216–7), but a notable individual find was a 4th century buckle of Hawkes type IVA (Webster 1967).

There are hints that the pattern of early contraction may apply to some nucleated sites as well as to rural settlements. This is seen most clearly at Westhawk Farm, Ashford. Intensively occupied in the 1st–2nd centuries, activity within the 6ha excavated sample was almost non-existent after the mid 3rd century. Coin evidence indicates some 4th century activity in the focal area of the settlement north-east of the excavated site, but this was clearly on a greatly reduced scale compared to the earlier period. Recent work at Springhead has shown that although there is evidence of 4th century occupation (also clearly seen in places in the earlier excavations; Burnham and Wacher 1990, 198) the great bulk of the artefactual material is dated to the 1st and 2nd centuries (Andrews *et al*. 2011). There is little detailed information for Rochester; structural evidence for Late Roman activity is unclear but there are substantial numbers of Late coins (Flight and Harrison 1978, 37, 44–54). At a site *c* 300m outside the east gate, however, occupation came to an end about AD 230 (Philp 2003, 213, 226). East of Rochester, at Ospringe, the situation appears quite complex. Individual areas examined did not necessarily have complete occupation sequences, but mid to late 4th century activity is certainly attested and it is possible that there were 'shifts in the concentration of settlement' (Sibun 2001, 192). Further west the status of other sites adjacent to Watling Street, like Dartford, is less certain, but here too there is more evidence for Early than Late Roman activity (eg Hutchings 2001, 117–8; Priestley-Bell and Barber 2004, 92; but see Frere 1990, 363–4), and rural sites in this area again mostly lack clear evidence of late Roman activity (eg Simmonds *et al*. 2011, 282).

Patterns of change are apparent in the southern part of the county with regard to the iron industry and some potentially related sites. For example the evidence for significant decline in the level of activity at Westhawk Farm is notably coincident with the demise of a number of iron-producing sites in the Weald to the west and

south-west (Booth *et al*. 2008), and also of non-Wealden iron-producing sites as at Wye (Detsicas 1983, 176). The former group includes the important sites of Bardown and Beauport Park, the 'closure' of which is dated between AD 220 and AD 240 (Cleere and Crossley 1985, 84–5), while at Little Farningham Farm, Cranbrook, occupation may have ceased 'by the second half of the second century' (Aldridge 2001, 155). The *Classis Britannica* fort at Dover had ceased to be occupied by the early 3rd century, a date of *c* AD 210 for its abandonment being favoured by the excavator (Philp 1981, 94–7). There is a very striking similarity between the profile of coin loss there and that at Westhawk Farm (Guest 2008). It is possible that the fleet retained an existing base at Lympne, or transferred its British operations there (Detsicas 1983, 176) up until its disappearance from records about AD 250, whenafter it may have been reorganised (Cleere 1989, 22), although Millett (2007) argues against the Dover fort having ever been a 'base' for the *Classis Britannica*. Some later formal installation is implied by the Dover 'Painted House' site, where the *mansio* buildings outlived the *Classis Britannica* fort but were superseded by the construction of the Saxon Shore fort, perhaps about AD 270 (Philp 1989, 282–3) or possibly a little later (Wilkinson 1994, 71–2).

In broader terms there is increasing evidence for differences in the chronological emphasis of settlements in eastern and western Britain as indicated by aspects such as patterns of coin loss (eg Reece 1995b). Such evidence can be taken to suggest a decline in the level of activity in a number of major settlements in eastern England before the end of the 4th century, in contrast to the situation observed further west (eg Reece 1998, 421; Moorhead 2001, 95–6). In Norfolk, however, this is not particularly apparent before the last quarter of the 4th century at the earliest (Davies and Gregory 1991, 91) and a similar pattern can be observed for Suffolk (Plouviez 1995, 74–5 and 78). At Heybridge, Essex, in contrast, peripheral areas of the settlement were largely abandoned by *c* AD 200 (Atkinson and Preston 1998, 100). Occupation of the central area continued right through to the end of the Roman period, however, and the pattern of coin loss seems generally to have followed a fairly 'normal' pattern (ibid., 105). The situation in relation to rural settlement in Essex is less clear in detail, but an impression of change and decline is presented by Going (1996, 104) and the characteristic of 'disappearance of on-site settlement in the later Roman era' (ibid.) may be of relevance in a Kentish context.

Across the English Channel there are other indications of changes in settlement in the 3rd and 4th centuries, though there is a shortage of synthesis for sites in the most closely adjacent regions of northern France. A general survey (Van Ossel and Ouzoulias 2000) suggests that there is very considerable variation in the extent of settlement decline (ie the reduction in total numbers of settlements) from area to area within the wider region of Northern Gaul (ibid., 137). In view of this variation they emphasise 'the danger of generalising from a local situation to a macro-regional scale' (ibid.). Broadly, however, the changes discussed relate to the 4th century (eg ibid., 148) and sometimes even later and, if not correlated directly, are still often in some way linked to the appearance of settlement of 'Germanic' organisation and plan (ibid., 149). A review of the burial evidence from northern Gaul presents a similar line of argument—burials attest to the survival of a dispersed rural settlement pattern in the 4th century, although the numbers of sites are reduced (Van Ossel 1993, 192–3). Neither the chronology of change in the Late Roman settlement pattern nor the 'Germanic' aspects of it match the situation in the HS1 sites, so what the evidence from the near continent seems to provide is a generalised parallel of reduction in site numbers (based on both settlement and cemetery evidence) in the Late Roman period, but apparently starting later than the decline seen on HS1 sites. Whether the two trends were driven by similar processes is impossible to say, but this does not seem particularly likely on present evidence.

Overall, therefore, the picture of a radical transformation of the rural landscape in later Roman Kent, effectively by the middle of the 3rd century, presented by the HS1 sites has widespread echoes. These occur within the county in relation to much iron production in the Weald and to pottery production in the Thameside area (Monaghan 1987, 227–30), to lower status rural settlements across a wider area and, in some cases at least, to villas and parts of major nucleated settlements. Although in some cases the chronological correspondence of these developments is quite close, this is by no means consistently true. It is therefore unlikely that the changes observed have a monocausal explanation, except perhaps of a most general nature; nevertheless the consistency of the evidence suggests that there may have been one or more common trends that underlay local transformations of the Late Roman countryside.

A major problem is to define what this countryside looked like. It is notable that, unlike the situation described by Going (1996, 104) at sites such as Mucking, there is typically no evidence for Late Roman field systems and other boundaries at the sites of the disused Late Iron Age and Early Roman settlements of HS1, or in their immediate environs. At sites where there is more direct evidence of continuing occupation, as for example at Thurnham and Bower Road, there are indications that elements of ditched enclosures may have remained in use, but such evidence is not found elsewhere, with the possible exception of Saltwood Tunnel, where the quantity of Late Roman material suggests nearby contemporary settlement, even though this was not identified within the excavated area. The extent to which the framework of the Early Roman landscape remained in place and in use is therefore unclear. Trackways at Saltwood and the Rochester-Weald road at White Horse Stone survived as working components (as is indicated by their post-Roman histories), as did the Canterbury-Weald road at Westhawk Farm, but the condition of the localised tracks associated with sites such as Northumberland Bottom, Tollgate and Leda Cottages is

not known, although at Tollgate there was apparently no evidence to suggest the continuing use of the trackways in the Late Roman period, despite evidence for heavy use of part of the system indicated by wheel ruts and secondary surfaces (Bull 2006b). The clearest indication of continued activity in the Late Roman countryside comes from Hazells Road, where the trackway was associated in the 4th century with a large 'corn-drier'. Such evidence, which would be considered commonplace in many parts of Roman Britain, stands out here for its rarity value, although a trackway and field system components of comparable Late Roman date have been examined in a Thamesside location further west at Bexley (Lakin 1999).

The extent to which Early Roman field systems survived in use is therefore uncertain. Were parts of the rural landscape disused? Evidence for woodland regeneration has been mentioned above, but appears small scale and restricted; wholesale abandonment of landscapes should have been detectable in the environmental record, but this is not seen here, or in work on sites in the Dartford area – in the latter case boundaries did not survive in the long term, but landscapes remained largely open (Simmonds *et al*. 2011, 197). Where, then, have the people gone? Could the regional settlement pattern have been reconfigured in the Late Roman period in such a way as to render the majority of earlier settlements (at least as seen in the HS1 sample) completely redundant? Does the problem reside in the specific topographical niche occupied by so much of the HS1 transect? Could the agricultural landscape have been maintained by a smaller population without significant changes in character? This seems unlikely. If estate centres were relocated in some cases, as is suggested by the radical change of character of activity in the main house at Thurnham, where did they move to? Were small- to medium-sized villas like Thurnham, and arguably The Mount (Maidstone) and Snodland, also in this area, absorbed into larger estates, resulting in continued activity on these sites but at a lower level than previously? If so, however, where were these larger centres? Do Eccles, Darenth and Lullingstone, for example, produce sufficient evidence to suggest that they saw a corresponding change of character in the Late Roman period? Perhaps the construction of a new aisled building at Darenth in the late 2nd century (Philp 1973, 124–35) should be seen in this light? There is certainly no indication of a concentration of activity in the nucleated settlements. For the most part the reverse seems to be true, and taken at face value the evidence from the Pepper Hill cemetery also suggests a declining population, in line with the indications provided by the rural settlements themselves.

The conclusion that there was at least sub-regional contraction of the rural population seems inescapable, and this must have involved some reordering of the settlement pattern. There is, however, little indication of Late Roman reorganisation of the landscape and therefore no framework within which to postulate significant transformations of rural society, although a simple view of decline within the established socio-economic framework does not seem very satisfactory either.

There are developments within the region that can be attributed to the 3rd century, but their significance in terms of broader patterns of settlement change is highly debatable. For example, the broad synchronicity of the abandonment of a large part of the Westhawk Farm settlement and a number of the most important iron producing sites in the eastern Weald, subsequent to (though not necessarily consequent upon) the abandonment of the *Classis Britannica* fort at Dover, may suggest that some reorganisation of the iron industry was a contributory factor to the 3rd century phase of site contraction and/or abandonment (Booth *et al*. 2008). In this case it is thought more likely to be the cessation of a range of support services, associated with iron production, which precipitated a major decline in the scale of activity in the settlement. The demise of Westhawk Farm as a major local centre may have had consequences for surrounding settlements, perhaps including sites such as Bower Road, for whose agricultural surplus Westhawk likely served as a major market (ibid.).

This possible scenario raises a wide range of questions about the mechanisms of such an operation. Was the cessation of iron production in the eastern Weald a gradual trend or a well-defined, sharp change? Were people impelled or induced to relocate and, if so, how and how far? Was this simply a local phenomenon or did, for example, specialist ironworkers and their dependants move out of the region altogether to other centres for their trade? Was the motive force behind these developments provided by free-market economics, local elite control, state control or some other mechanism? Whatever the answers to these questions, however, it is difficult to see that these developments would have had repercussions that extended as far as the north of the county. In other words, they may have been of importance at Westhawk Farm and perhaps at sites in the vicinity, but were at most only a contributory factor in wider changes.

Whether or not the changes in the iron industry were led by matters relating to state/military supply, other Late Roman state-sponsored developments certainly impacted on the region. Recent interpretations of the forts of the 'Saxon Shore' (eg Cotterill 1993; Allen and Fulford 1999, 177–81; Pearson 2003) have tended to minimise their significance as strictly defensive structures. As bases for ensuring secure transit of military supplies and taxes in kind, however, these were important installations, but of little immediate relevance to the local population. Unlike the building of town walls, these were not monuments which reflected the prestige or involvement of civitas elites. Nevertheless, their construction will at the least have exploited local resources of materials and presumably manpower. In view of changing perceptions of the character of the forts, however, it does not seem likely that the decline of settlement was closely related to the problem of security which the forts were traditionally thought to have been intended to address, despite a broad coincidence of the chronology of decline with the

period of construction of the Kentish sites. Pearson's (2006) view that the scale of piracy in the 3rd century is unlikely to have been such as to merit a 'defensive' system based on these forts seems plausible. In this case it is highly improbable that 3rd century raiding can be invoked as an explanation of declining settlement in Kent, particularly since there is no suggestion that abandoned sites concentrated in coastal areas.

Lympne (Cunliffe 1980) is the only 'Saxon Shore' fort in the near vicinity of HS1 sites, lying just 3.5km south of the line at Westenhanger and 4.5km south-west of Saltwood Tunnel, the nearest significant HS1 Roman site. There is no demonstrable link between the two, but it may be significant that Saltwood did produce artefactual evidence of Late Roman activity, even though its context is poorly understood (Riddler and Trevarthen 2006). The evidence includes metal finds, of which a silver pin and part of a strap-end are the most significant. The latter is of 'dart-shaped' form, with a pair of small lobes at the waisted junction with the sub-rectangular attachment tab (Riddler and Ager 2006). A rather smaller example of this form was found in the 'dark earth' layer at the Marlowe IV site, Canterbury (Ager 1987, fig. 1b; Blockley *et al*. 1995, 1029 no. 417). Several small fragments of copper alloy sheet found in the fill lying above the Iron Age grave C24 may perhaps represent a small part of a second strap-end of indeterminate form. The extent of 'military/official' associations of these objects remains the subject of debate (eg Swift 2000, 201; see also the Snodland buckle mentioned above). Equally it is uncertain if the distribution network for late imported ceramics, Argonne ware and Mayen ware, both represented at Saltwood and relatively widely distributed in East Kent (Pollard 1988, 142, 155), was articulated through sites such as Lympne or Dover, or operated in some other way. Present evidence, however, suggests that the fort at Lympne was abandoned *c* AD 350, despite a late reference in the *Notitia Dignitatum* (Reece 1989, 156–7).

In view of the general paucity of very Late Roman evidence it is unsurprising that there is little indication of the relationship, if any, between Late Roman and Early Anglo-Saxon settlement patterns. The only clear spatial association is at Saltwood Tunnel, where the Saxon cemeteries were set in the Romano-British landscape (leaving aside the question of how far this was still functioning as such). It may be no coincidence, however, that there are slight indications of Saxon activity in the vicinity of the two sites with the longest occupation sequence and also the most substantial structural evidence, namely Thurnham and Bower Road, a pattern of association seen at sites such as Darenth (Philp 1984, 84–6). The HS1 evidence is much slighter, however. At Thurnham it consists of a single sherd of possible Early Saxon character, while at Bower Road the possible association is with an isolated sunken-featured building some 600m east at Little Stock Farm (see Chapter 6). Another example of proximity is seen at Hazells Road. Very recent work on the A2 has revealed a sunken-featured building barely 150m north of the Late Roman features (Allen *et al*. forthcoming), but as this lies close to the 12th–13th century settlement excavated at East of Downs Road (Askew 2006) a later rather than an Early Saxon date seems likely.

The links between Late Roman and Anglo-Saxon settlement are therefore tenuous, but it is presumably significant that such association are not seen in the case of settlements where activity ended relatively early in the Roman period.

Overall, the HS1 evidence suggests that parts of the Kent countryside were only thinly occupied in the Late Roman period, and that the major changes in the rural settlement pattern had taken place in the period from the late 2nd to the mid 3rd century. A number of broadly synchronous trends, including decline in some major settlements and in 'industrial' areas, have been identified, but it remains unclear how closely these were related. Does this pattern represent a precocious aspect of the broad trends suggested by an 'east-west' divide in Roman Britain, or does it reflect a more individual sequence of development, specific to parts of the extreme south-east of the country? At present the evidence points to concentration, rather than agglomeration of settlement. That is to say that there is no clear indication of the expansion of individual sites, whether villa complexes or nucleated settlements, to compensate for the apparent disappearance of parts of the rural population. Ickham (Bennet *et al*. 2010), with possible connections to military/official provision (but see ibid., 321), is one site that might contradict this view, although the nature of the site makes it very difficult to estimate the real scale of Late Roman activity and, particularly and more importantly in this context, whether this was more extensive than earlier Roman occupation. Other important foci of Late Roman activity may yet emerge, but at present they remain elusive.

Conclusions

The most striking characteristic of the HS1 sites of the Late Iron Age and Roman period is the concentration of activity at these sites in the early part of the period. While it may be that the morphological characteristics of Late Iron Age settlements in the region '...have their origin in the Middle Iron Age' (Hamilton 2007, 83) the HS1 evidence suggests that there are few direct physical relationships between the settlements of the two periods. Moreover, the sheer quantity of Late Iron Age and Roman settlements seems to have been significantly greater than for the earlier period. This fact and the chronology of the relevant sites suggest, at least superficially, a substantial and broadly synchronous expansion of settlement across much of the area of the HS1 route in the later 1st century BC and into the early 1st century AD. Further work will be required to demonstrate whether this is a genuine pattern, observable across a wider area, but if the evidence for intensification of the settlement pattern is correctly understood it implies both population growth and a correspondingly higher level of

exploitation of most parts of the local landscape. Limited evidence for decline in woodland resources might reflect an increase in uptake of arable land associated with these trends. In broader terms the observed pattern appears compatible with that discussed by Hill (2007, 24), in which areas including 'large parts of Kent' (ibid.) which had seen relatively little permanent settlement in the Middle Iron Age, and may in fact have been peripheral to wider settlement patterns (see also Hill 2002, 156), were much more intensively exploited in the Late Iron Age.

Such developments may have had significant social consequences, but these are less easily identified in the archaeological record. There are few hints of social differentiation between the various excavated settlements, although in a number of cases the limited nature of the sample probably precludes identification of such distinctions. There are slight hints in the structural and ceramic evidence that the occupants of Thurnham (and perhaps a satellite at Hockers Lane) may already have been differentiated in status from their neighbours, but this only becomes tolerably clear after the Roman conquest, with the construction of the proto-villa and the appearance of a much wider range of pottery and other objects. Status display, whether or not directly related to changing social structures, could be expressed in a variety of ways, for example in burials. Conspicuous consumption in Early Roman grave good provision is not seen directly in the HS1 sites but, as revealed in recent work on the A2, sheds important light on the occupants of the Northumberland Bottom settlement at West of Wrotham Road. Unfortunately it is less clear if this demonstration of wealth was matched in other aspects of the settlement, most of which lies between the HS1 and A2 transects.

In most cases, however, there is little evidence for fundamental changes in character as settlements developed through the Late Iron Age and Early Roman periods. Regularisation of enclosure form is rare and structural evidence, with the exception of the simple four-post type interpreted as granaries, remains elusive. Perhaps more importantly, other evidence for agricultural practices (admittedly uneven in quality) suggests neither widespread intensification of production nor significant changes of emphasis in the range of crops and animals exploited. Only at Thurnham are there hints of a widely observed Romano-British trend in which cattle increased in importance at the expense of sheep/goat, and while well known developments in the technology of crop processing, such as the introduction of 'corn-drying' ovens, are seen at Thurnham and Hazell's Road, these do not seem to have been associated with malting, a typical feature of later Roman arable practice. Overall, therefore, increased exploitation of the landscape may have resulted principally from a growth in the number of settlements utilising it in the Late Iron Age and Roman periods, rather than from more intensive use of the land attached to each individual site. There may be a chronological aspect to the evidence, however, in that the clearest evidence of changing agricultural patterns is seen at sites such as Thurnham and Bower Road in the Middle to Late Roman period, whereas many of the other settlements had apparently ceased to be occupied or at least were already in decline by this time, so it is impossible to say whether they would have shown comparable patterns of development had they survived longer. Non-agricultural economic activities seem to have been of minor importance right across the region, with the possible exception of iron production at Leda Cottages, although even there the volume of production would have been significant only in local terms.

The middle echelon of a rural settlement hierarchy is seen most clearly at Thurnham and to a lesser extent at Bower Road, where important elements of the site may have lain outside the HS1 easement. Elsewhere there is little indication of variation between sites expressed in terms of differences in their artefact assemblages. Even at Thurnham, the pottery assemblage, for example, is only distinguished from those of contemporary settlements to a limited extent. After the major building programme of the first half of the 2nd century the degree of difference between Thurnham and other nearby rural settlements may have become less marked, with the potentially very significant exception that not all of these remained in occupation. After the mid 3rd century, however, there was a distinct change in site character at Thurnham when the formal domestic use of the main villa house was abandoned. This sequence reflects the wider regional pattern suggested by the HS1 and other evidence; many sites were either abandoned by this time or saw significant changes in the nature of settlement, typically resulting in a reduced level of activity.

Such developments imply far-reaching changes, but whether these were political or (more likely) socio-economic in character is unknown. The termination of a number of site sequences may concentrate around the middle of the 3rd century, but the HS1 evidence makes it clear that some rural settlements had effectively ceased to be occupied well before that time. The apparent emptying of parts of the Kent countryside was therefore an extended process and thus seems unlikely to have a monocausal explanation, although a single major, medium term trend could have been a significant factor. If such a trend was not itself a direct consequence of changes within society, its impact on local and regional society must have been very considerable. Further characterisation of these changes and consideration of their significance, both in a regional and a national context, must be a high priority in future work on Roman Kent.

The improved definition of this pattern of rural settlement development and demise has been one of the main results of the HS1 work on sites of the Roman period. While superficially some of the other results in this period appear to be negative in character, they also serve to refine characterisation of regional rural settlement, in terms of a lack of identifiable architectural traditions on lower status sites, potential conservatism in agricultural practice and so on. Conversely there is quite widespread evidence for aspects of religious practice, even if such evidence was concentrated at the relatively high status settlement of Thurnham. The diversity of this evidence is

important, as is its occasionally ephemeral nature, and can also be linked with that for burial practice. The evidence from Pepper Hill, in particular, has been critical for demonstrating the contemporaneity of Early Roman inhumation and cremation burial traditions in the region and allows speculation about the nature of the relationship between the two. The indication of a population of relatively uniform status, as suggested by the grave assemblages, is consistent with the relative homogeneity of the settlement evidence discussed above, supporting the view that the Pepper Hill cemetery could have included both town and country elements in the burial population. Nevertheless, the occurrence of burial rites which were clearly not of local origin, such as the cremations of *bustum* type, highlights the potential presence of groups of outsiders, some of whom may be much less readily identified than those associated with the *busta*. Even allowing for the loss of much vital information about the people of Pepper Hill, which could have been based on osteological examination, the unique capacity of cemetery evidence to provide a human insight into past populations has been demonstrated very clearly.

Chapter 6

The Anglo-Saxon and Medieval periods

by Andrew Reynolds

Introduction

The High Speed 1 (HS1) project has made a significant contribution to our knowledge of Kent during the Anglo-Saxon and medieval periods. Extensive excavations and minor interventions have revealed important insights into the nature of the communities that inhabited the county in the centuries following the Roman occupation up to and after the conquest of England by the Normans in the mid 11th century. Kent itself has long held a very special place in Anglo-Saxon and medieval studies. It is by no means an overstatement to describe the county's pre-Christian archaeology as exceptional in terms of its quality and quantity, while the tenurial and agricultural history of Kent throughout the medieval period has presented generations of scholars with a challenging task in terms of understanding the origins and, in many ways peculiar, developments of early Kentish society and landscape. The evidence from the various HS1 excavations and evaluations has provided valuable insights into a series of long-standing questions regarding social structure in the early Christian centuries and the fabric of landscape across the whole medieval period (Figs 6.1–2). This chapter seeks to present that evidence against not only the Kentish background but also in a national context so that the full value of an archaeological enquiry of the scale and nature of that undertaken in advance of the HS1 can be appreciated.

Clearly, a full discussion of the Anglo-Saxon and medieval archaeology of Kent is not appropriate here and for the early medieval period up-to-date syntheses have recently been published (Brookes 2007a; Welch 2007), building considerably on earlier overviews (Hawkes 1982a; Drewett *et al.* 1988). New works focussing on the later Middle Ages are to follow in due course as part of the Kent History Project series (Sweetinburgh in prep. a and b).

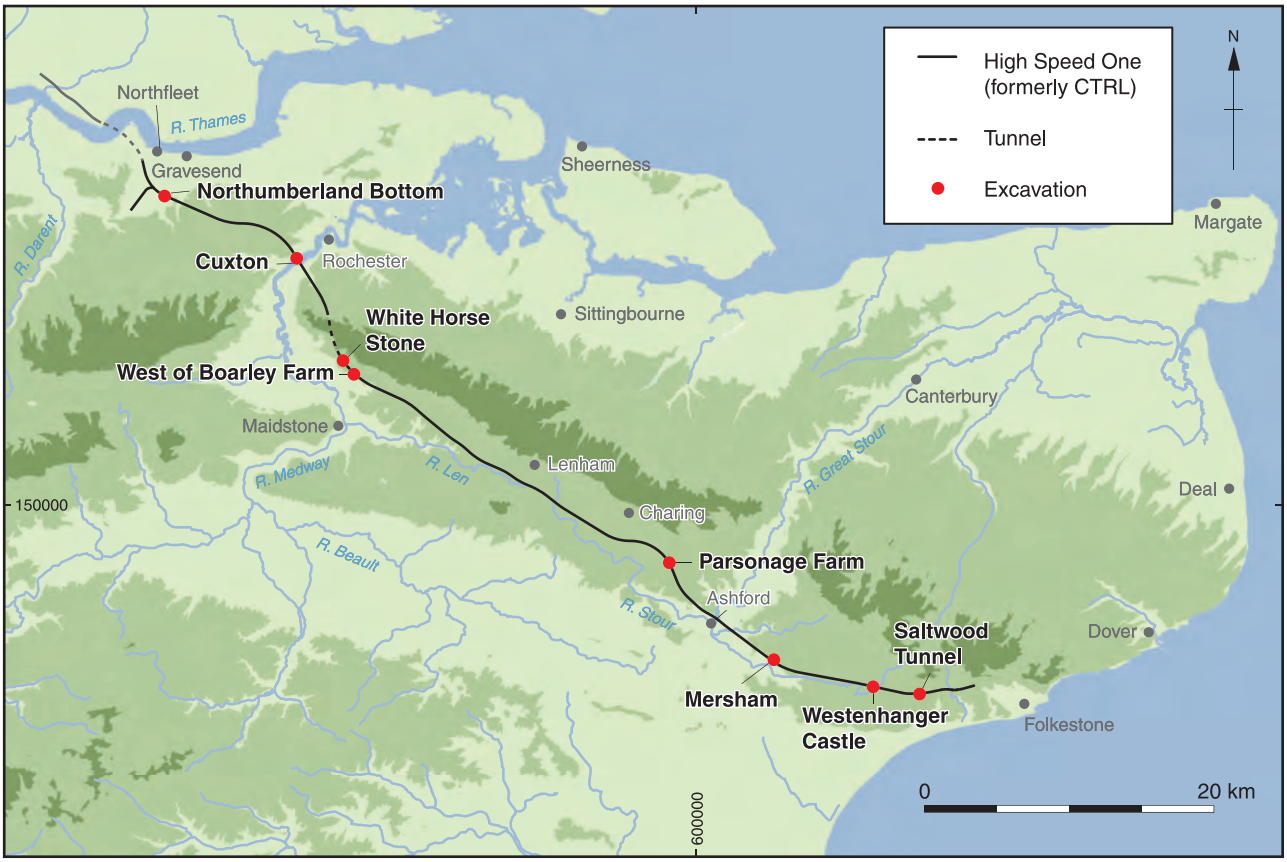


Figure 6.1 Location of major Anglo-Saxon and medieval sites along the HS1 route

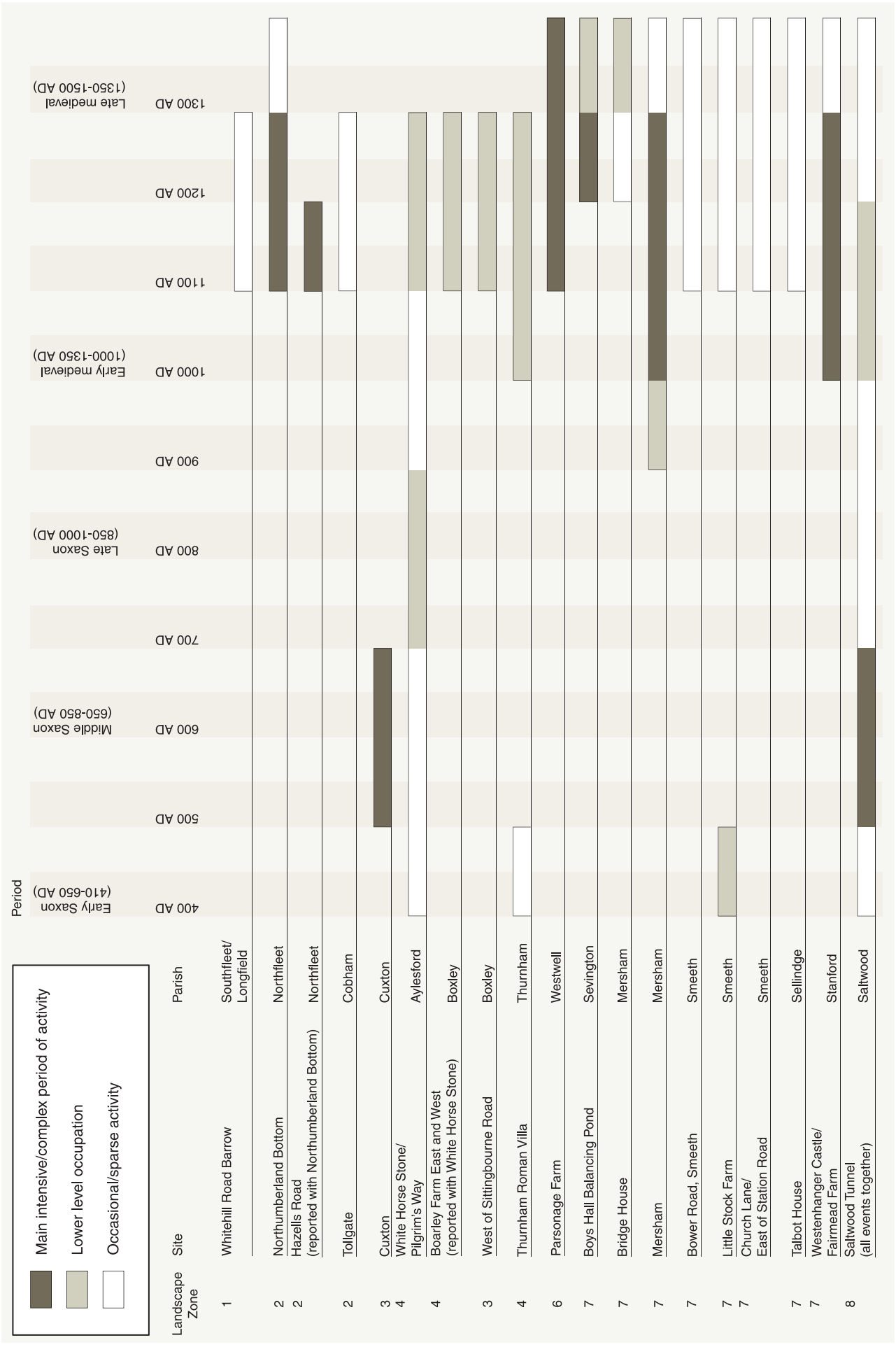


Figure 6.2 Anglo-Saxon activity along the HS1 route by site and period

Instead, an outline is provided so that the HS1 evidence can be set against what is already known and its relative importance ascertained. The finer details of the HS1 investigations are available, via the internet and the Archaeology Data Service (http://archaeologydataservice.ac.uk/archives/view/ctrl/), as a series of excavation and specialist reports prepared by the various archaeological contractors engaged with the responsibility of 'preserving by record' the sites identified along the route. It is not intended to reproduce every detail of that information here but instead to summarise relevant sites and identify key aspects of individual excavations for more detailed discussion.

Nature of sites found

One of the great advantages of the HS1 project, as noted in the introductory chapters to this volume, is that it has provided a transect through a rich archaeological landscape in a way not determined by the visibility of monuments in the manner of antiquarian enquiry (see *Archaeological Background* below) or by a focus on a particular academic question. The sites considered in this chapter, then, are not 'cherry-picked' from a mass of lesser sites but representative of a more random process of identification and subsequent excavation.

A further issue with a major bearing on the nature of the discussion presented here is that it is not possible to write an evenly balanced narrative on the basis of the HS1 discoveries with regard to either site types or chronological coverage across the Anglo-Saxon and medieval periods. The most spectacular discoveries are the Early Anglo-Saxon cemeteries at Cuxton and Saltwood and there is a solid background of prior discovery and academic synthesis against which to set these sites. Moving into the Middle and Late Anglo-Saxon periods, however, the evidence recovered from the HS1 investigations provides in some cases tantalising glimpses of site types otherwise largely unknown in the county and in other instances extensive excavation of archaeological evidence of a type rarely explored at a national level; in the latter category the large-scale investigation of the Pilgrim's Way junction with the Roman road running southwards from Rochester is a case in point. Evidence for Anglo-Saxon settlement is exceptionally rare from the HS1 excavations and this is a characteristic of the county as a whole, although more sites are known than is often acknowledged. Conversely, evidence of later medieval date from the course of the railway is related wholly to settlement and land use.

Before embarking on a consideration of the Kentish archaeological and historical background, a brief preview of the HS1 sites that will be brought back into the discussion is necessary (see Chapter 1 for a general overview of the sites on the scheme). As noted above, by far the most impressive discoveries in terms of material culture and coherence are the Early Anglo-Saxon cemeteries at Saltwood (6th–7th centuries) and Cuxton (7th century). These cemeteries, unlike so many previous discoveries, have been excavated and analysed to exceptionally high standards and have a substantial contribution to make not only to Kentish archaeology, but to national and international debate. The investigations at Saltwood and White Horse Stone in particular, have thrown new light on the structure of the landscape and the nature of early communications and administrative boundaries; the archaeology takes us into the Middle Anglo-Saxon period (*c* 650–850) in the latter case.

Remains of the Late Anglo-Saxon period (*c* 850 –1050) and later were recorded at a series of sites. At Mersham, just south of Ashford, Late Anglo-Saxon and early Norman activity was recovered in the form of evidence for metalworking activities. Further evidence for agricultural settlement of the late 11th and 12th centuries and later was recorded at Northumberland Bottom at the western end of the HS1 route, a short distance west of the Cuxton Anglo-Saxon cemetery. At Westenhanger just west of Saltwood the remains of buildings, pits and enclosure ditches dating from the late 11th century were found marking the start of a 200-year period of occupation. Higher status occupation was revealed at Parsonage Farm a few kilometres north-west of Ashford where a 12th–14th century moated manorial complex, probably initially a rectory, was partially excavated. Unlike the preceding periods considered in this book, standing structures of the Middle Ages and later were also examined but they are considered in the next chapter (see Munby, Chapter 7).

Archaeological and historical background

The nature of the transition from Roman Britain to Anglo-Saxon England is a key theme in British archaeology. The degree to which the Roman occupation determined the settlement framework of the Anglo-Saxon period has attracted particular attention, largely focussing on the survival or otherwise of rural territorial units and the possibility that certain towns continued to function as administrative centres. In Kent it has been suggested that a Roman pattern of central places lay behind the centres of units recorded from the Late Anglo-Saxon period onwards as manorial estates (Everitt 1986, 339–41; Brookes 2003, 88). A similar view based on rather different evidence has been argued for other regions of Britain, but with an emphasis on the survival of territorial units as opposed to estate centres (Bonney 1966; 1976). There are good grounds, however, for arguing that both the large grants of land made by kings for the foundation of minsters in the 7th and 8th centuries, and the smaller parcels that feature in the charters of the Late Anglo-Saxon period are wholly post-Roman creations (see, for example, Reynolds 2005, 175).

The nature of the Kentish Roman road system, however, appears to have had a strong influence on the placing of important early churches, yet continuity of occupation and settlement of individual sites from the Roman period to the 7th century need not be inferred from this situation. Indeed, the lack of evidence for occupation beyond the late 4th century, and in certain

cases the 3rd century (Millett 2007, 183), is a defining characteristic of the terminal phases of the majority of Roman sites of all types in Kent. Some have argued that Canterbury is an exception and was continuously settled through the transition period, albeit on a very much reduced scale (Bennett *et al*. 2003), although the earliest Anglo-Saxon sunken-featured buildings from within the town are dated to the second quarter of the 5th century (Blockley *et al*. 1995, 280–335). A late Roman silver hoard, including stamped ingots used as a form of pay for troops and officials, deposited outside the western walls of the city was probably buried some time between AD 410 and 420 and suggests at the least the presence of a person with continued contacts to Roman officialdom (Johns and Potter 1985; Millett 2007, 183). Similar finds from the forts of the Saxon Shore at Reculver and Richborough might suggest that these sites served as refuges for the last few officers of the Roman state in south-eastern Britain (Millett 2007, 184).

A few villas have revealed occupation in the early 5th century, for example Darenth, Lullingstone and Wingham, while several others, at Deerton Street, near Faversham, Eccles and Northfleet, show clear evidence for early medieval settlement in the form of structures and finds, but these are largely datable to the 6th and 7th centuries and do not prove continuity of settlement (Millett 2007, 184; Welch 2007, 195). If estate centres can be seen to disappear from the archaeological record, presumably owing to the collapse of the economic network of which they were once a part, there is little sense in the survival of delineated tracts of land through a period when land was very likely up for grabs. As noted previously, the main reason why Roman central places re-emerged in the post-Roman period is probably the survival of the Roman road network rather than continued administrative functions (Millett 2007, 183; Welch 2007, 194).

Introducing his chapter 'Anglo-Saxon Remains' in volume 1 of the *Victoria County History of Kent*, Reginald Smith remarked that 'The richness of the soil in this Garden of England is reflected in the splendid furniture of its Anglo-Saxon graves…' (Smith 1908, 339). Indeed, Kent's pre-Christian communities have left a particularly striking record of their burial practices and by the 6th century it is possible to chart the re-emergence of a 'complex society' again in the county. Kentish inhumation burials of the 6th–7th centuries AD are often richly furnished in comparison with other parts of the British Isles, including the neighbouring counties of Essex and Sussex, although Kent has yet to reveal its 'Sutton Hoo'. Accordingly, Anglo-Saxon Kent has long attracted attention from those with an interest in the early history of English society and culture.

From antiquarian beginnings in the second half of the 18th century up to the present, now mainly in the context of development-led archaeology, a series of rich archaeological discoveries has ensured Kent's especial importance in early medieval studies. From an archaeological perspective, important and often visually stunning Kentish material culture of the Early Anglo-Saxon period, particularly of the 6th–7th centuries, was recovered in quantity as a result of a series of barrow and cemetery excavations undertaken by the antiquarian Bryan Faussett between 1757 and 1773 (Hawkes 1990; Rhodes 1990). The sites excavated by Faussett, such as Barfriston, Chartham Down, Crundale, Gilton, near Ash and Sibertswold remain of key importance not only in Kentish terms, but nationally. Indeed, they still account for a substantial proportion of the data available for mortuary studies in south-eastern England (see for example Richardson's 2005 study where Faussett's material constitutes 10% of the cemeteries listed in appendix). While Faussett considered his finds to date from the period of Roman occupation, their cultural significance was recognised by a captain in the Royal Engineers, one James Douglas, who conducted his own excavations in the late 18th century on several Kentish cemetery sites and who dated many of Faussett's discoveries to the 6th century (Hawkes 1990). Much of the material from Faussett's excavations is now to be found in the Liverpool Museum and Art Gallery having been purchased in 1854; Douglas failed to acquire the material in the 1780s and the British Museum declined the opportunity to buy the collection in the early 1850s.

Up to the 1980s scholars focussed almost wholly on the material culture of richly furnished Early Anglo-Saxon cemeteries rather than their landscape setting or internal organisation. Notable exceptions include Sonia Hawkes' exploration of grave orientation and her consideration of the development out from a founder grave of the Kentish cemetery at Finglesham (Hawkes 1976, 1982b). New excavations were undertaken from the 1950s, particularly by Sonia Hawkes, for example at Finglesham (1959–67) and Updown, Eastry (1976), and by others at Dover Buckland (1951–2 and 1994), St Peter's, Broadstairs (1969–71) and Mill Hill, Deal (1986–9) (Hawkes and Grainger 2006; Welch forthcoming; Evison 1987; Hogarth 1973; Parfitt and Brugmann 1997). Vera Evison's consideration of graves aligned on posts at Dover Buckland marked an important new direction in mortuary archaeology of the period, together with Brian Hope-Taylor's observations on grave alignments at Yeavering in Northumberland (Evison 1987; Hope-Taylor 1977).

Over the years, a strong picture has emerged of a clear divide between the material culture of east and west Kent (Hawkes 1982a; Welch 1984, 2007). Early Anglo-Saxon cemeteries in the east of the county are much wealthier in comparison to their western counterparts and this distinction between the two halves is also reflected in the administrative divisions evident from early written sources. By the late 6th century the Kentish kingdom comprised those parts of the modern county both east and west of the River Medway. Prior to this, it appears that the early medieval kingdom was initially limited to east Kent, which may itself have corresponded to a subdivision (*pagus*) of the Roman *civitas Cantiacorum* (Detsicas 1983, 38–9). The name Kent is itself derived ultimately from the pre-Roman Iron Age name, *Cantium*, for the tribal region that encompassed Kent and probably

part of north-eastern Sussex and which described the extent of the Roman *civitas* (Welch 2007, 190). As noted above, the addition of west Kent to the early kingdom appears to have occurred in the late 6th century during the reign of King Æthelberht (see below), a situation supported by the fact that the bishopric of Rochester was set up during his reign, with the River Medway forming part of the boundary with the eastern archbishopric of Canterbury as described in a charter preserved in an 11th century gospel book in the Lambeth Palace library (Yorke 1990; Sawyer 1968, cat. no. 1564; Brooks and Kelly forthcoming no. 184). A similar process can be observed with regard to the westwards expansion of Wessex in the late 7th and early 8th centuries and the appointment of Aldhelm as bishop of Sherborne, Dorset in AD 705 (Yorke 1995; Reynolds 2006a, 508). In Wessex, it was the norm for sole kings to rule their dominions, while in Kent (and Essex) several instances of joint kingship are recorded during the 7th and 8th centuries, most notably the reign of the joint lawmakers Hlothere (673/4–685) and Eadric (685–7). When joint kingship prevailed, eastern Kent was the realm of the senior partner, further indicating that here lay the heartlands of the early kingdom (Yorke 1983, 33, table 1). The distinction between the two halves of the later county continued in the guise of separate ealdormanries (administrative districts overseen by ealdormen) into the Late Anglo-Saxon period. Indeed one of the key outcomes of the HS1 project has been to recover Early Anglo-Saxon cemeteries under modern archaeological conditions from both 'provinces'.

The Kentish royal court was the first to engage with the evangelising mission from Rome, led by St Augustine, which arrived in the kingdom in AD 597, at the instigation of Pope Gregory I (590–604), apparently one of the greatest popes in history (Mayr-Harting 1991, 51). While the king of Kent at that time, Æthelberht, already had a Christian Frankish wife, Bertha, with her own priest, Liudhard, the date of Æthelberht's conversion remains unknown (Hinton 1993, 510). Indeed, even Æthelberht's regnal dates are disputed, although Nicholas Brooks' discussion establishes a clearer view with his reign set between 580x93 and 616x18 (Brooks 1989, 67). Whatever the complexities of chronology relating to the early Kentish kingdom derived from written sources, the special character of Early Anglo-Saxon Kent is highlighted by the fact that Æthelberht was the first English king to issue written laws *c* AD 600, in the vernacular Old English as opposed to clerical Latin. The business of law-making was followed throughout the course of the 7th century by Æthelberht's successors including the joint kings Hlothere and Eadric noted above, and the rulers Eorconberht (640–664) and Wihtred (690/1–725).

Christianity was undoubtedly practised in Late Roman Kent, as evidenced spectacularly by wall paintings incorporating Chi-Rho monograms at the Lullingstone villa, part of which was apparently converted into a house-church late in the 4th century (Liversidge and Weatherhead 1987). During the greater part of the 5th and 6th centuries, however, the region is best considered as pagan with place-name evidence indicating the worship of Woden, Thor and other deities, a feature common to neighbouring counties such as Surrey and Sussex as well as further afield. While physical evidence of pagan cultic activity is lacking, the architectural legacy of the Conversion period and the apparently distinctive 'Kentish' group of churches of the 7th century has received much attention from antiquarians and architectural historians (Peers 1901; Baldwin Brown 1903, 116–26; Fernie 1983; Cambridge 1999). The architectural style of these early churches has been variously attributed to Frankish and Italian influence and further supports the theme of continental influence on early Kent, although North Adriatic and North African models have also been proposed and these regions are considered by some to provide the best parallels (Cambridge 1999). Unfortunately, the results of the HS1 project have little to add to our knowledge of the ecclesiastical landscape.

By the late 7th century archaeological evidence and documents confirm the close continental connections evident from the earlier community cemeteries. While former Roman towns and the Roman road network strongly influenced later urban development, Kent's extensive coastline and riverine networks, notably the Thames and the Medway, influenced the nature of Kentish urban settlement throughout the Middle Ages. It is an interesting factor that Kent's continuing geographical role as gateway to continental Europe has led to the archaeological discoveries considered in this chapter.

During the Middle Anglo-Saxon period, particularly the late 7th and 8th centuries, settlements trading with counterparts in the Low Countries and Francia grew up on navigable waterways not just in Kent but at other places in England, most notably London (itself under Kentish control during parts of its early history), Hamwic (Southampton), Ipswich (Suffolk) and York. A glance at the most recent published distribution map of so-called 'wic' sites, however, shows an unparalleled concentration of such places in eastern Kent, at Dover, Fordwich, Reculver, Richborough, *Sandtun*, Sandwich, Sarre and Seasalter (Cowie *et al*. 2001, 85, figure A1.1). Several of these sites, however, should not be seen as major wic-type settlements and imports should be expected on sites of a more modest status in the coastal areas of south-eastern England. While attempts to archaeologically identify the sites of the documented early Kentish emporia of Fordwich, Sandwich and Sarre have met with little success, at least their locations are broadly known from modern place-names. An important archaeological characterisation of a Middle Anglo-Saxon fishing settlement with trading links is provided by the excavations at *Sandtun*, just to the west of Folkestone, where structures and finds attest to activity there between the mid-7th and later 9th centuries (Gardiner *et al*. 2001). From a different perspective, a series of important documents, originally produced in the 8th century but surviving in later copies, record the trading privileges (remission of tolls (tax) on ships coming into ports) granted by early Kentish and Mercian kings to Kentish religious houses, including

Minster-in-Thanet, Reculver and Rochester (Kelly 1992).

In combination with the development of the wic settlements and renewed central place functions at Canterbury and Rochester, a framework of central places re-emerged across the Middle Anglo-Saxon landscape of Kent as a function of the founding of minster churches and the development of royal estate centres during the 7th and 8th centuries (Welch 2007, 189).

The *Anglo-Saxon Chronicle* describes a series of raids by, and military engagements with, the Vikings between the 9th and 11th centuries. Such activity affected both English and Continental wics, monastic sites and other settlements. Kent suffered from raids during the period of initial Viking attacks on mainland Britain in the early to mid 9th century. Sheppey and St Werbergh Abbey at Hoo were attacked in 835 and *c* 840 respectively, while Rochester and Canterbury suffered in 842, the latter again in 851 when Sandwich was raided and the Vikings overwintered for the first (documented) time in Britain on the Isle of Thanet (Lawson 2004a, 32). A series of engagements between King Alfred and Viking armies and naval forces is recorded in the later 9th century, and during the late 10th and early 11th centuries, the so-called second Viking age, Viking military activity took place deep within the county as opposed to the coastal and riverine locations that characterised the earlier phases of incursion. In the later Anglo-Saxon period coastal and inland defences were developed to repel Viking forces and a striking Kentish example is the fortified church of St Mary Castro in Dover, a building probably of later 10th century date built with its west end aligned on the Roman pharos there, access to the lighthouse being provided by a doorway high up in the west wall of the nave (Taylor and Taylor 1965, 214–7).

The *Anglo-Saxon Chronicle* is also our best source for the impact of the Norman Conquest on the county. After beating the English force at Hastings, William turned east through Kent taking a circuitous route that included Tenterden, Ashford, Dover, Canterbury, Maidstone and Rochester on his way ultimately to London (Banyard 2004, 34–5). Parts of the county appear to have been ravaged during the progress of William's invasion, but Kent faired rather favourably in comparison to the fate later suffered by large parts of northern England during William's consolidation of his power.

The Domesday Survey of 1086 reveals a denser population in east Kent than west, while the Wealden area was evidently sparsely populated as was Sheppey (Lawson 2004b, 36–7). While the pitfalls of using Domesday evidence to reconstruct population figures have long been known, a recent estimate suggests 70–75,000 people living in the county in the later 11th century (ibid.). Domesday Book and other sources such as the *Domesday Monachorum* (see below) and the *Textus Roffensis* record over 400 parish churches in Kent in the 11th century, a situation put into perspective by Tim Tatton-Brown's observation that in the 18th century the great Kentish antiquarian Hasted recorded 414 parishes in the county (Tatton-Brown 1988, 105; Hasted 1797). Clearly, local ecclesiastical provision was near-complete by the end of the 11th century. From the 12th century onwards a new wave of ecclesiastical institutions augmented the long-established old minsters and the more recent estate churches of the county and included nunneries, for example at Dartford and Davington, and friaries in urban settings, as at Canterbury and Sandwich. Another feature of the 12th and 13th centuries nationally was the proliferation of market towns and in this context Kent exhibits a similar picture to that seen in other English counties. The Domesday Survey, for example, refers to only eight towns and four non-urban markets, whereas by the mid 14th century various sources record *c* 85 markets in the county (Lawson 2004c, 50–1). Kent's population apparently recovered slowly following the mid 14th century Black Death and seems not to have recovered to the level indicated in the 1334/5 Lay Subsidy (*c* 125,000) until *c* 1600 (Lawson 2004d, 65). Kent continued to develop as a prosperous region following the Middle Ages, its proximity to the continent ensuring its significance in both economic and social terms into the modern age.

The framing of the Kentish landscape

While much preceding scholarship has focussed on Kent's relationship with continental Europe, the internal, local and regional situation also betrays a uniqueness that has in many ways defied clear explanation. Much has been made of Kent's 'peculiarly attractive' topography and a series of writers have considered the landscape of the county in terms of 'pays', or regions, described by natural resources including geology and soil types (Page 1908, xxi; Jolliffe 1933; Witney 1976; Everitt 1986). Brookes' recent reappraisal of earlier work emphasises the significance of physical geography in terms of its effect on developing territorial geography (Brookes 2007a, 36; Brookes forthcoming). A major issue with regard to the degree of 'environmental' determinism, however, is that of scale. Larger political entities are perhaps more likely to preserve their boundaries if they are defined by obstructive or distinctive topography, whereas smaller scale local units might be mapped out with regard to local ownership and agreement as much as local topography, although the latter influence evidently remains significant as exhibited by the range of local resources encompassed by small agricultural estates nationally.

Topography alone is an insufficient factor to explain the divergence of this corner of England from the social and economic trajectories experienced elsewhere, as Kent's geology, to a degree, can be followed westwards into Surrey and Sussex where patterns of landscape and agricultural exploitation bear much closer relationships to other regions of central and southern England. Significantly, as noted in the introductory chapters to this volume, the route of the railway has crossed a variety of terrain and again this aspect contrasts with the focus on downland taken by most previous students of the Kentish landscape with a few notable exceptions.

In particular, the Weald has long been neglected from the perspective of archaeological fieldwork, although its importance, notably for specialised industries such as iron-working, has long been appreciated (Gardiner 1990; Tebbutt 1982; Cleere and Crossley 1985). When archaeological finds are plotted onto a map of Kent, one is immediately struck by the lack of material from the Weald. A mapping of Anglo-Saxon finds demonstrates this issue very clearly (Fig. 6.3). Brookes' study supports Everitt's 1986 model of a colonisation of marginal lands (downland) from the so-called lowland 'Original Lands', the Foothills and Holmesdale pays of north-east and central Kent respectively, with expansion during the 6th and 7th centuries (Brookes 2007a, 100–1). Early settlement patterns reflect 'existing corridors of movement' (Roman roads, river valleys, etc.) (ibid.) and in many respects the overall distribution of Kentish settlement continued to reflect this pattern until very recently, with the Weald always sparsely populated.

While much of central and midland England developed classic open field systems of agriculture, based around nucleated villages and seigneurial or lordly residences, the pattern in Kent is different. Nucleated villages form part of the settlement pattern, although the extent of local manorial lordship is more limited, while field patterns are often more easily compared with western Britain and counties such as Devon and Cornwall in the sense that much of Kent is characterised by small enclosed fields, often in a ragged pattern suggestive of longer term and more organic origins for the framework of the landscape, even though rigid administrative arrangements were imposed upon it at varying scales and at different times throughout the medieval period.

Nearly a century ago, the agricultural historian H. L. Gray (1915) identified the plains either side of the Thames to the west of London as the region where the Kentish pattern of landscape division and management met with the classic open field systems of the midlands and the so-called 'Champion' English countryside. Roberts and Wrathmell's important national study of settlement patterns based largely on 19th century Ordnance Survey maps shows a much less dense pattern overall in Kent when compared against the midlands, although the density is comparable with Essex, Suffolk and Norfolk (Roberts and Wrathmell 2000, 22, fig. 15). Roberts and Wrathmell's study divides England into three major provinces (Northern and Western, Central and South-Eastern), with a series of subdivisions of which most of Kent (and the HS1 route) is contained within their Weald sub-Province, with a strip of land to the south of the Thames running from just west of the Isle of Thanet westwards into Surrey lying in their Thames sub-Province (ibid., 2, fig. 1). They note that nucleated settlement is '…exceptionally light but even…' in comparison to national distributions, while the predominant mode of settlement is dispersed hamlets and farmsteads, interspersed with specialised occupation associated with, for example, iron-working (ibid., 43-4).

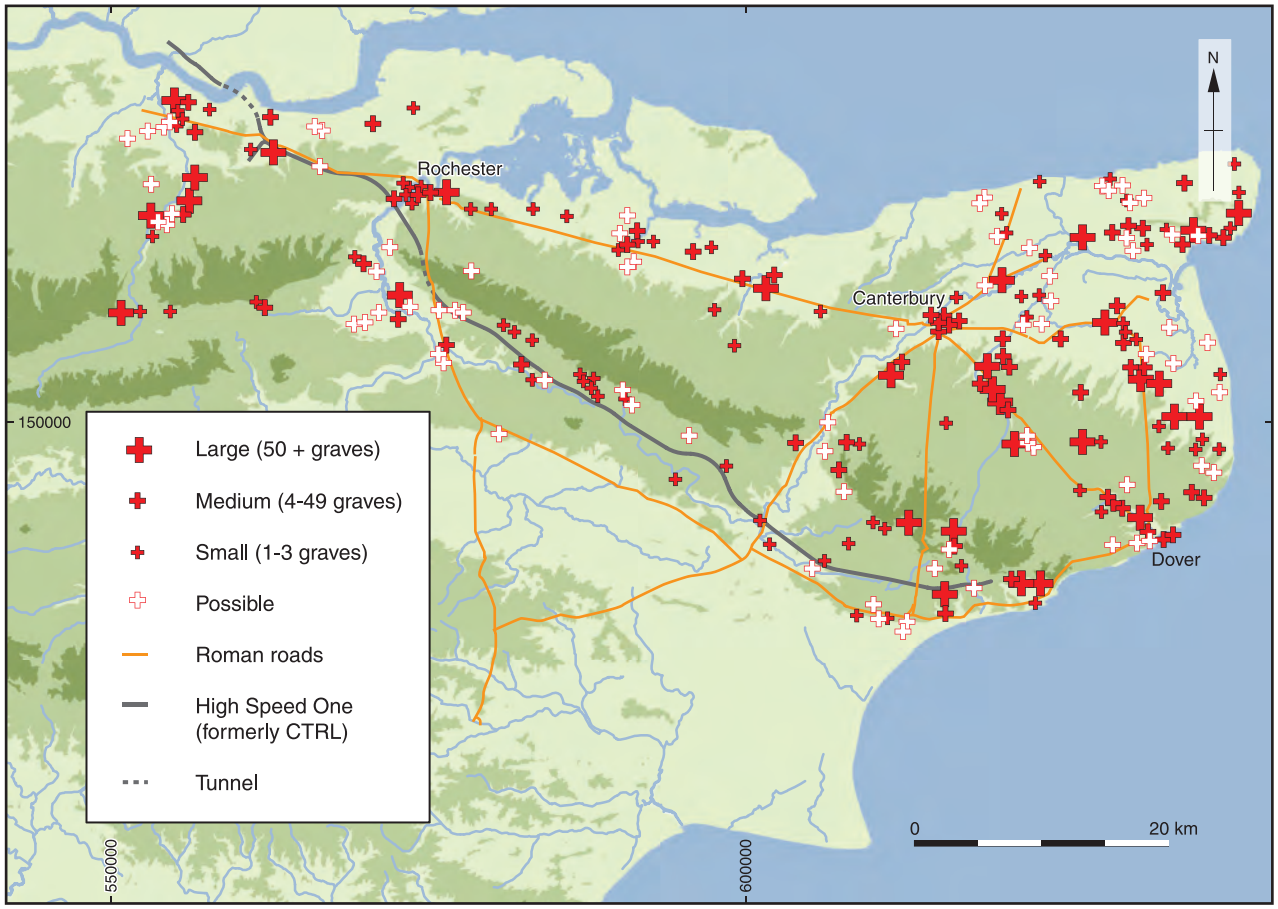


Figure 6.3 Map of Anglo-Saxon cemeteries

While this overall pattern can be charted in Kent, it is ultimately generalised and based on 19th century mapping, although there are strong indications that at least the later medieval pattern was of this nature. The paucity of deserted medieval settlements in Kent, for example, is striking when compared to the large number evident in Roberts and Wrathmell's central province as mapped in 1968 (Beresford and Hurst 1971, 66, fig. 13; Wrathmell and Roberts 2000, 2, fig. 1). The Kentish sites mapped in 1968 are largely found in the southern and eastern coastal fringes of the county and at least some of these desertions are due to environmental factors such as the coastal inundation of Romney marsh in the 13th century (Eddison 2000, 77–87). While the large-scale desertions of the midlands and central south-western England reflect a dynamic and perhaps speculative landscape of settlement in the later Middle Ages, the Kentish evidence suggests on first inspection a much more stable and thus successful situation. Again, the HS1 project has produced evidence that can contribute to this debate.

Drove-roads running roughly north-south across the natural grain of the geology and topography of the county are a further defining characteristic of the Kentish landscape. Although much debated in terms of origins, there is general agreement that these routes relate to lowland communities exploiting upland pasture far from settlements, but when does this agrarian regime begin? Indeed, a major research question is the antiquity of the Kentish pattern of land division and land use.

Administrative structures

The creation of the administrative landscape provides a key topic for study and is one that has yet to yield conclusions based upon sound evidence, although aspects of the HS1 results do allow inroads to be made into this thorny issue (see especially White Horse Stone below). One of the most significant aspects of the study of administrative arrangements is that they provide a direct and meaning ful link between the higher echelons of medieval society and local agricultural communities. The burdens placed on the lower orders by their rulers required practical mechanisms to facilitate them, and the complex intertwining of top down imposition versus bottom-up reaction finds its interface in the administrative structure of the landscape and the workings of local government.

Substantial debate has taken place nationally with regard to the antiquity of estate boundaries, or what effectively became fossilised as parish boundaries by the later 12th century (Pounds 2000, 4). The principal body of evidence that has been argued to reflect the carving up of ancient royal estates into these smaller units is the surviving corpus of Anglo-Saxon charters. These documents record the conveyance of land, often recording between which parties and for what reason the land is changing hands (usually a gift to a church or, in the Late Anglo-Saxon period a grant to a lay person or perhaps forfeiture of an estate to the king for committing an offence). The survival of these documents shows marked differences nationally with Wessex and the West Midlands exhibiting particularly high densities, while Kent has concentrations to the west of Rochester and to the east of Canterbury with a marked gap in between (Hill 1981, 22, fig. 31). In chronological terms, the majority of surviving Anglo-Saxon land grants nationally date to the central decades of the 10th century and some scholars have viewed this period as a key episode in the creation of local land units (see for example Hooke 1998). If this view is followed then there are good grounds for seeing Kent as similar to other regions of England. Overall, however, the differences far outweigh the similarities and a key issue remains to establish reliable chronologies both for boundary features and structures and for the origins of individual settlements.

Besides local estates, the administrative landscape included units of a higher order. By the Late Anglo-Saxon period groupings of local estates into what were termed hundreds had occurred. Nominally each hundred contained a hundred hides (a hide, as Bede records in his *Historia Ecclesiastica*, being a unit of land capable of supporting an extended family), although the reality was far less regular across the country. In some cases, individual hundreds might reflect the territories of Early Anglo-Saxon tribal groups, whereas others are confections of the Late Anglo-Saxon period drawn up during periods of territorial and administrative reform. Whatever their origins, by the 10th century hundreds served as self-contained supra-local units with judicial responsibilities. Courts attended by the free men of the district met at open air sites every four weeks and oversaw judicial hearings and related business. In fact, possible evidence for just such a court site, or meeting place, has been uncovered during the HS1 excavations (see Saltwood below). Wrongdoers convicted of capital offences were executed and buried on the boundaries of hundreds, while other landscape locations such as crossroads were also used for the burial outcasts (see White Horse Stone below). A yet larger administrative division below that of the shire itself is the lathe, a much-debated feature of Kentish administrative geography it need not concern us further.

The HS1 discoveries in context

The Anglo-Saxon cemeteries at Saltwood Tunnel

The Anglo-Saxon funerary landscape at Saltwood developed in a setting already much modified by human action. A series of Bronze Age barrows set on high ground a short distance inland from the south coast became set within a landscape enclosed by trackways by the early Roman period, which then attracted four Early Anglo-Saxon cemeteries (Fig. 6.4). The Saltwood Tunnel cemeteries are of particular interest for several reasons. From a more traditional perspective, they contain a wealth of hugely informative material culture that allows a series of issues relating to family and broader social

Figure 6.4 Saltwood Tunnel: overlaid on the 1st Edition OS map (6 inches to 1 mile, 1877)

structure to be approached, in addition to the nature of continental contacts and more local ones given that there are three distinct burial grounds. How were Early Anglo-Saxon communities constituted? Were there significant differences between them? Is it possible in the latest furnished cemeteries to visualise the emergence of the stratified society evident from the earliest Kentish law codes? Did early Kentish society include a significant component of Germanic migrants?

At a local level, the relationship of the burial locale to the droveways that run through the site is of considerable interest. Taking a slightly wider view, the cemeteries overlook Hythe, a place-name commonly accepted as indicating a landing or marketing place, and lie a short distance from the 7th–9th century fishing and trading settlement at *Sandtun*. We shall take each of these issues in turn.

The landscape setting

The three, or arguably four, Early Anglo-Saxon cemeteries at Saltwood developed within a long-established landscape on a south-facing hillside (Fig. 6.4). The locale is characterised by a series of pre-existing routeways traversing the 800m long (east-west) and 100m wide (north-south) excavated area, which appear to have been laid out in respect to a series of Early Bronze Age barrows (Fig. 6.5). The routeways are of especial importance as two of them still exist in the modern landscape and indeed form crossroads both within and just south of the excavated area. A ditched trackway (226) running SSW-NNE through the central part of the excavation was laid out in the Middle Iron Age with a holloway of later Iron Age or Early Roman origin (34) roughly parallel to it at the western extent of the excavation trench some 300m away. Later, but probably still within the later Iron Age or Early Roman period (see Champion, Chapter 4), another ditched trackway was laid out perpendicular to the two existing tracks and thus connected the two resulting in a crossroads (Riddler and Trevarthen 2006, 21).

Rarely can the landscape setting of an Early Anglo-Saxon cemetery be re-constructed so clearly and the reasons for locating broadly contemporary burial grounds at this locale are surely multifarious. While the Anglo-Saxons would not have had a sense of the actual antiquity of what we now know to be Bronze Age barrows, they were themselves a barrow-building society and would have identified with the principal funerary function of such monuments. Since the 1970s scholars have speculated that the 'draw' of such monuments was not simply a desire to avoid the effort of building mounds but was perhaps more likely to be driven by a process of appropriation of prominent features in the landscape, thereby laying claim to them by setting down physical associations and creating memorial associations at a local level (Shephard 1979, 47; Williams 2006, 158). Interestingly, the post-cemetery activity considered below indicates the continued importance of the site. The location of cemeteries and important burials by routeways is a phenomenon recognised across Early Anglo-Saxon

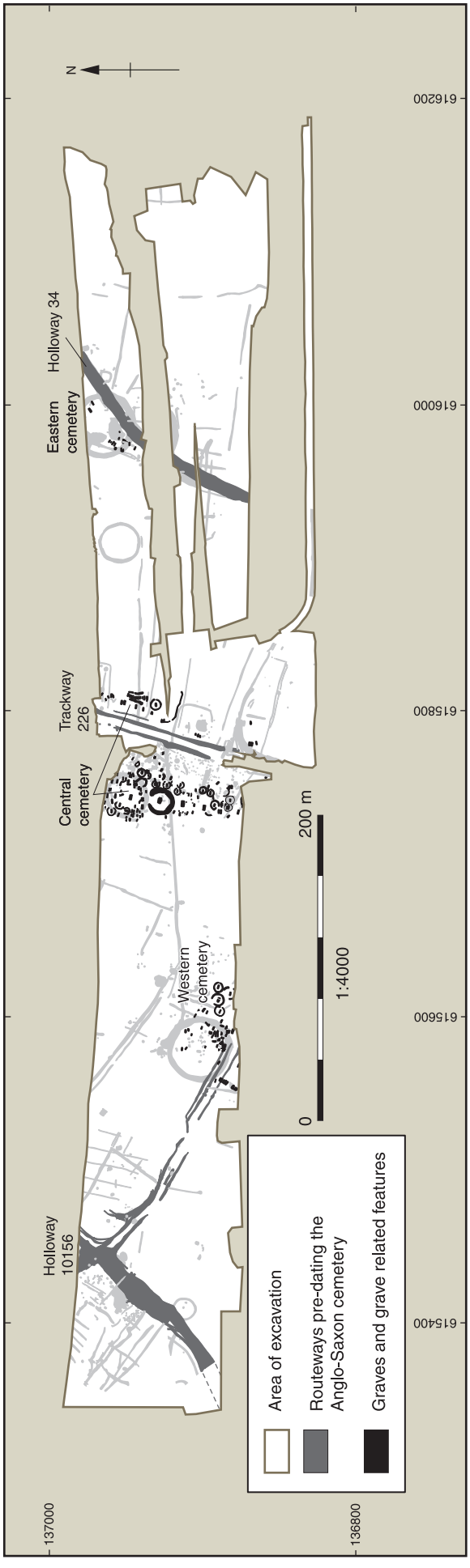


Figure 6.5 Saltwood Tunnel: routeways pre-dating the Anglo-Saxon cemetery

England and indeed continues into the Late Anglo-Saxon period in the context of what are best termed 'outcast' or 'deviant' burials (see White Horse Stone below) (Reynolds 2009). Re-using a Bronze Age barrow as a funerary location may well reflect 'appropriation', but for such a practice to have a genuine impact it must surely be visible, unless the placing of a secondary burial in an existing mound was viewed as a purely 'private' deal between the deceased and the burial feature. Locating burials by routeways, particularly crossroads achieves visibility and encourages longer-term memory. In terms of placing within the landscape, it is clear that several factors were at play and that these were very likely a mixture of ideological and practical concerns.

To find several cemeteries with a degree of chronological overlap in such close proximity is a matter of considerable interest. Are three separate communities represented or are the cemeteries those of differing ethnic background belonging broadly to the same social group? Are there other social reasons why a funerary landscape might develop in such a way? If, for example, the 'appropriation' model is followed then perhaps we should expect certain families or kin groups to develop strong dynastic associations each referencing individual existing barrows. This latter process appears to be particularly relevant at Saltwood as is discussed below.

The three cemeteries are referred to below by their geographical relationship to each other. Dating of the burials from all three cemeteries covers Riddler's Phases 2 (AD 500/510–550), 3 (AD550–590/600), 4 (AD 590/600–650), and 5–7 (AD 650–750), building on existing chronologies established for eastern Kentish cemeteries by Evison (1987) and developed by Brugmann (in Parfitt and Brugmann 1997) and Richardson (2005), although there are no Saltwood graves later than the 7th century.

The eastern cemetery

The eastern cemetery, whose extent was fully established, comprised 17 inhumation graves, 15 of which were laid out in two parallel rows to the east of a holloway (34), which itself cut the western side of the ring-ditch of an Early Bronze Age barrow; the graves lay within the area described by the ring-ditch with one exception outside to the south-west (Fig. 6.6). Two further graves lay 25m to the north-east but within the ring-ditch. Eight graves can be dated securely to the Early Anglo-Saxon period on the basis of associated grave finds, while the others lacked diagnostic attributes. Those with dating evidence fall within the 6th century as defined by Ian Riddler's scheme (Riddler 2006, 30–1), while C14 determinations for three burials confirm the range, with wider margins possible, as might

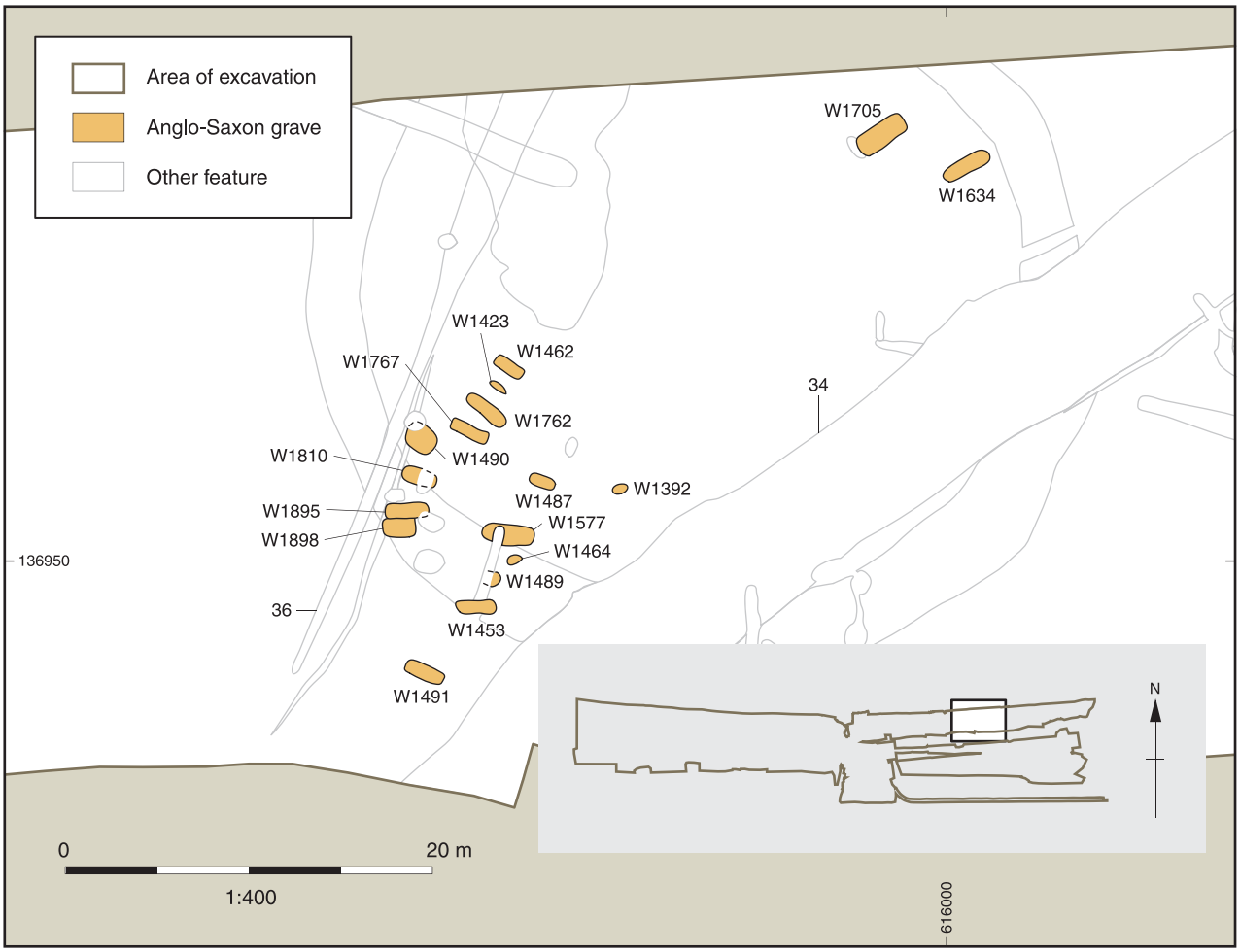


Figure 6.6 Saltwood Tunnel: Anglo-Saxon graves and grave-related features, eastern cemetery

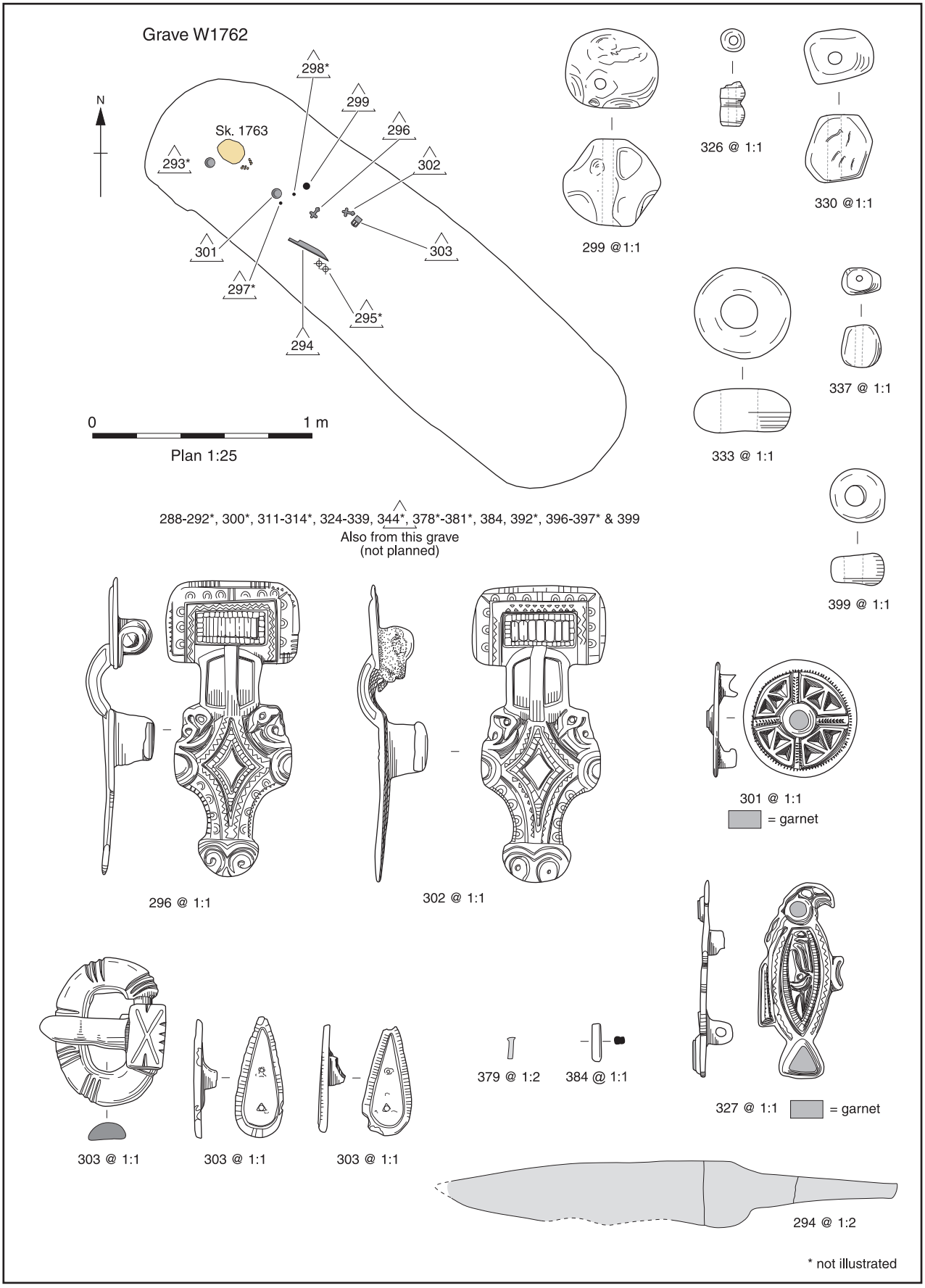


Figure 6.7 Saltwood Tunnel: eastern cemetery, grave W1762, plan and grave goods

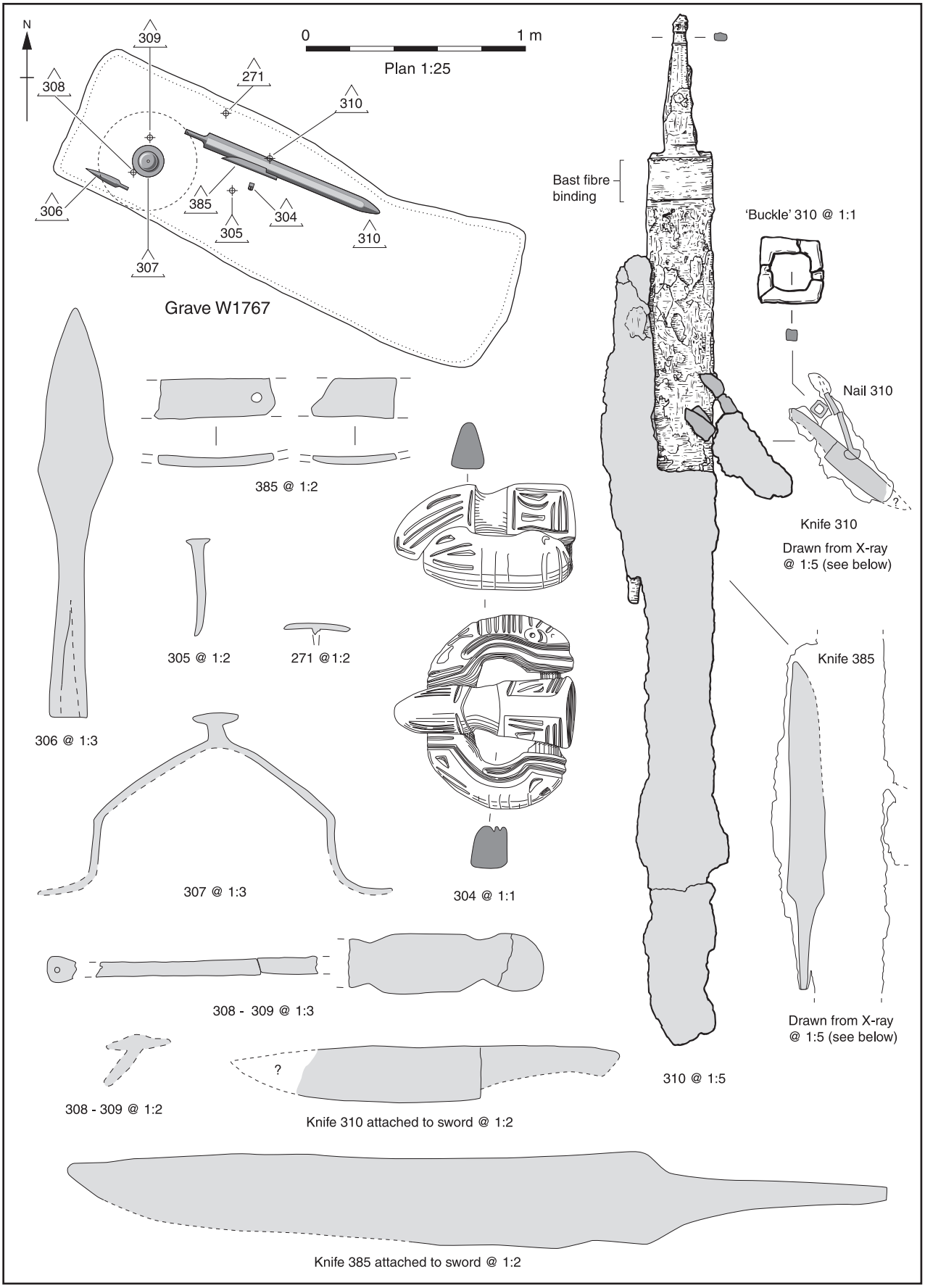


Figure 6.8 Saltwood Tunnel: eastern cemetery, grave W1767, plan and grave goods

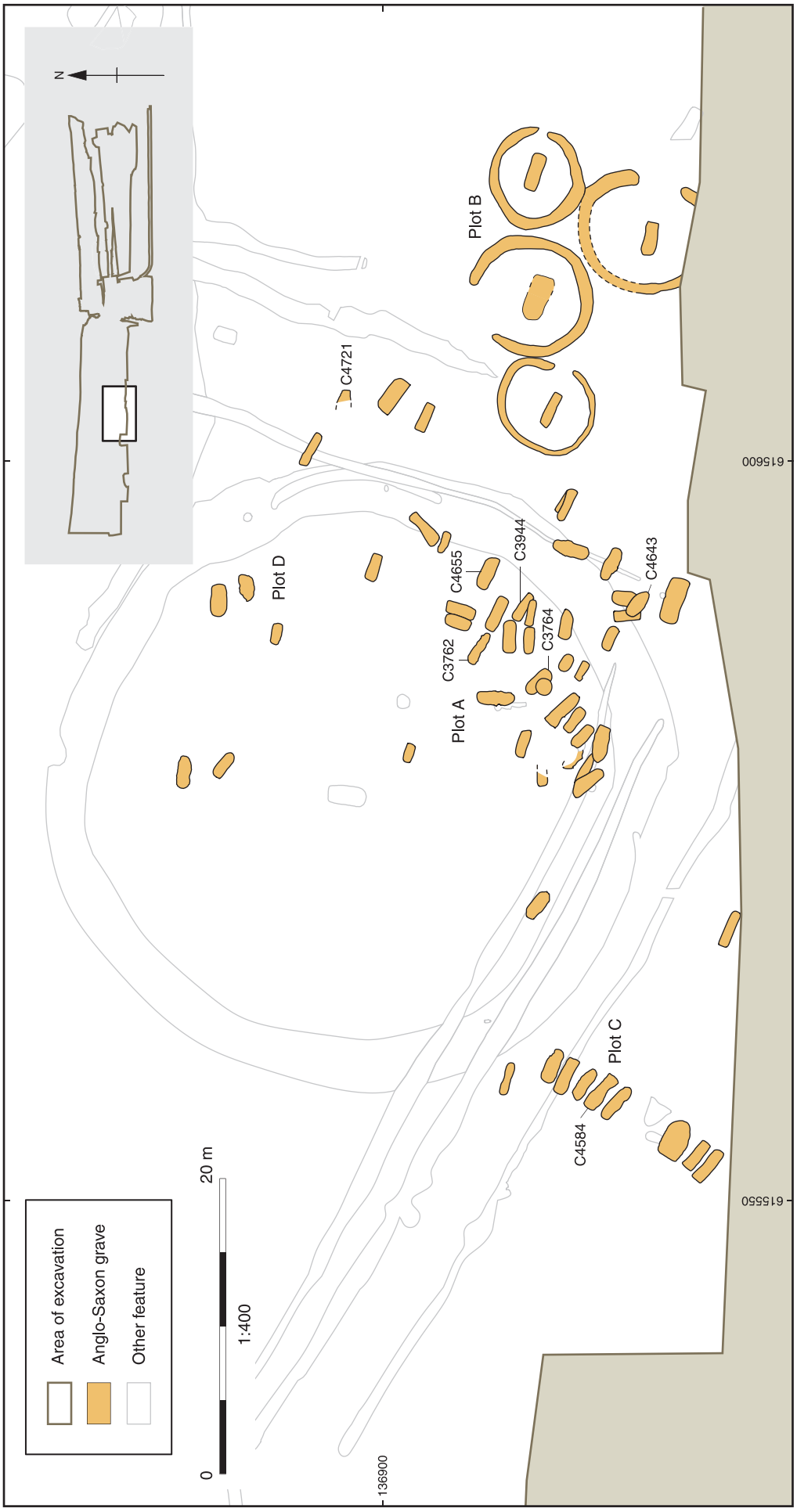


Figure 6.9 Saltwood Tunnel: Anglo-Saxon graves and grave-related features, western cemetery

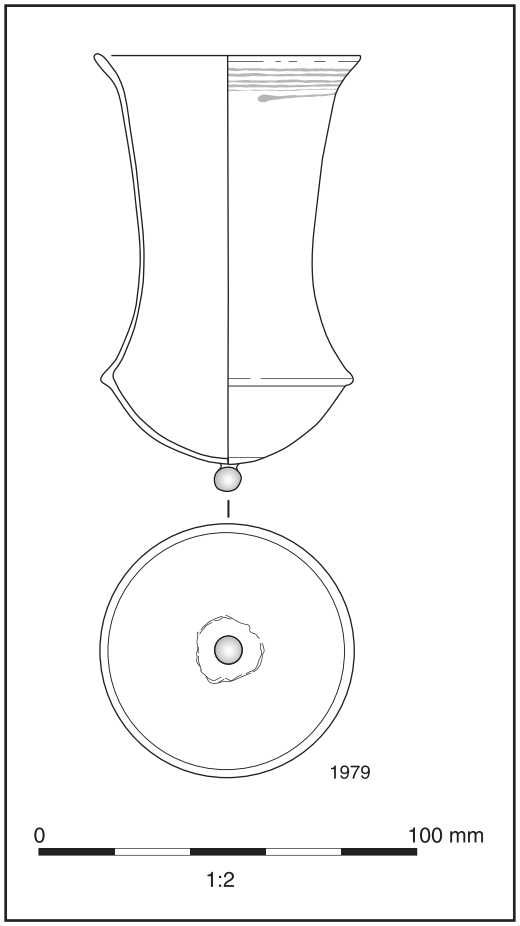


Figure 6.10 Saltwood Tunnel: glass bell beaker from grave C3764

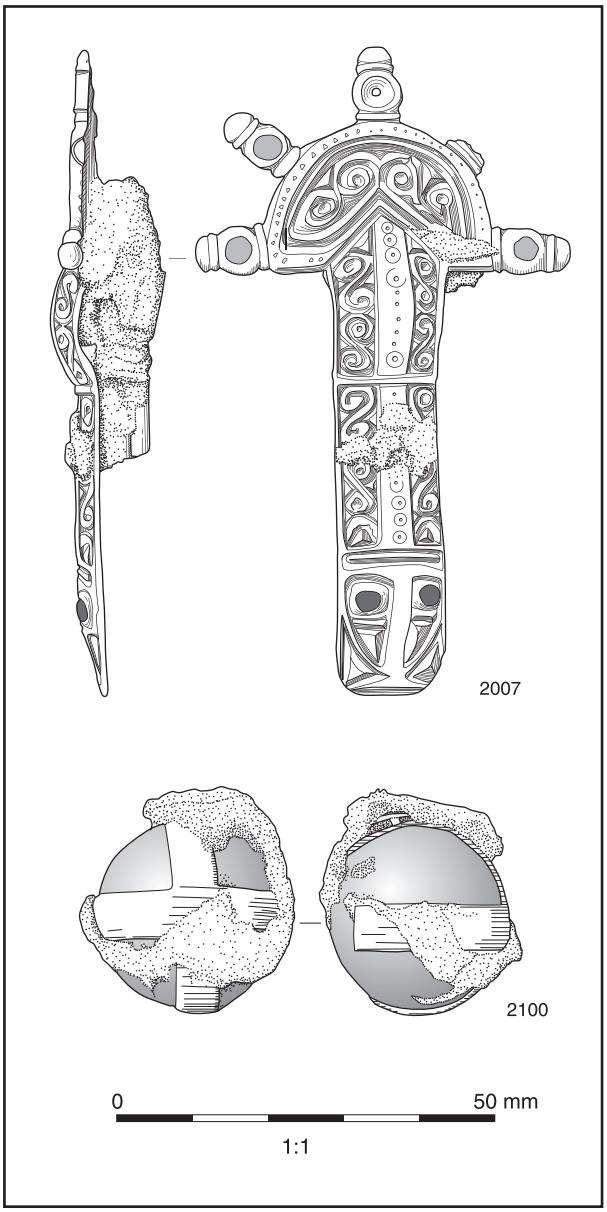


Figure 6.11 Saltwood Tunnel: copper alloy radiate-headed brooch and crystal ball amulet from grave C3762

be expected given the problems of the 6th century regarding accurate C14 dates (Allen *et al*. 2006).

Overall, bone survival was very poor. One grave (W1423) that lacked finds probably contained a child to judge by its length (less than 1m). Grave W1490 contained two juveniles, while grave W1810 contained an adult and an infant; all other graves were of individuals. Double burials are commonly found in Early Anglo-Saxon cemeteries nationally and probably reflect simultaneous deaths in small rural communities (Stoodley 2002, 121). Several graves contained either iron nails or soil stains suggesting wooden coffins. Two distinctive female graves belong to Phase 2. The first is the woman in Grave W1453 furnished with a large collection of glass and amber beads and pairs of quatrefoil and square-headed brooches, while the female buried in grave W1762 was accompanied by a pair of partially gilded copper alloy Kentish small square-headed brooches, a Frankish bird brooch and a cast disc brooch with central garnet, both of silver (Fig. 6.7). Further Frankish influence is present in a Phase 3 grave (W1767), one of two male weapon burials. This impressive burial contained an array of weapons; shield, knives and a spear, and a pattern-welded sword of possible Frankish origin, a situation indicated by the presence of a north Frankish buckle type in the grave and by the suggestion, on the basis of the upward facing knife corroded onto the side of the sword blade, that a continental fashion of carrying weapons is represented (Fig. 6.8) (Ager 2006; Gilmour 2006). Apart from the finds-rich graves already mentioned, the remainder of the burials in the eastern cemetery was relatively poor in comparison, yielding only a few objects including keys and beads. The eastern cemetery, then, appears to have started life in the first half of the 6th century with two well adorned female burials, followed soon after by two male weapon burials. The less well furnished and unfurnished burials may relate to both Phases 2 and 3 and Riddler has suggested that the burial plot may only have been in use for two generations and was out of use by the close of the 6th century (Riddler 2006, 34).

The western cemetery

The western cemetery covers Riddler's Phases 2–6, from the first half of the 6th century to the late 7th century and

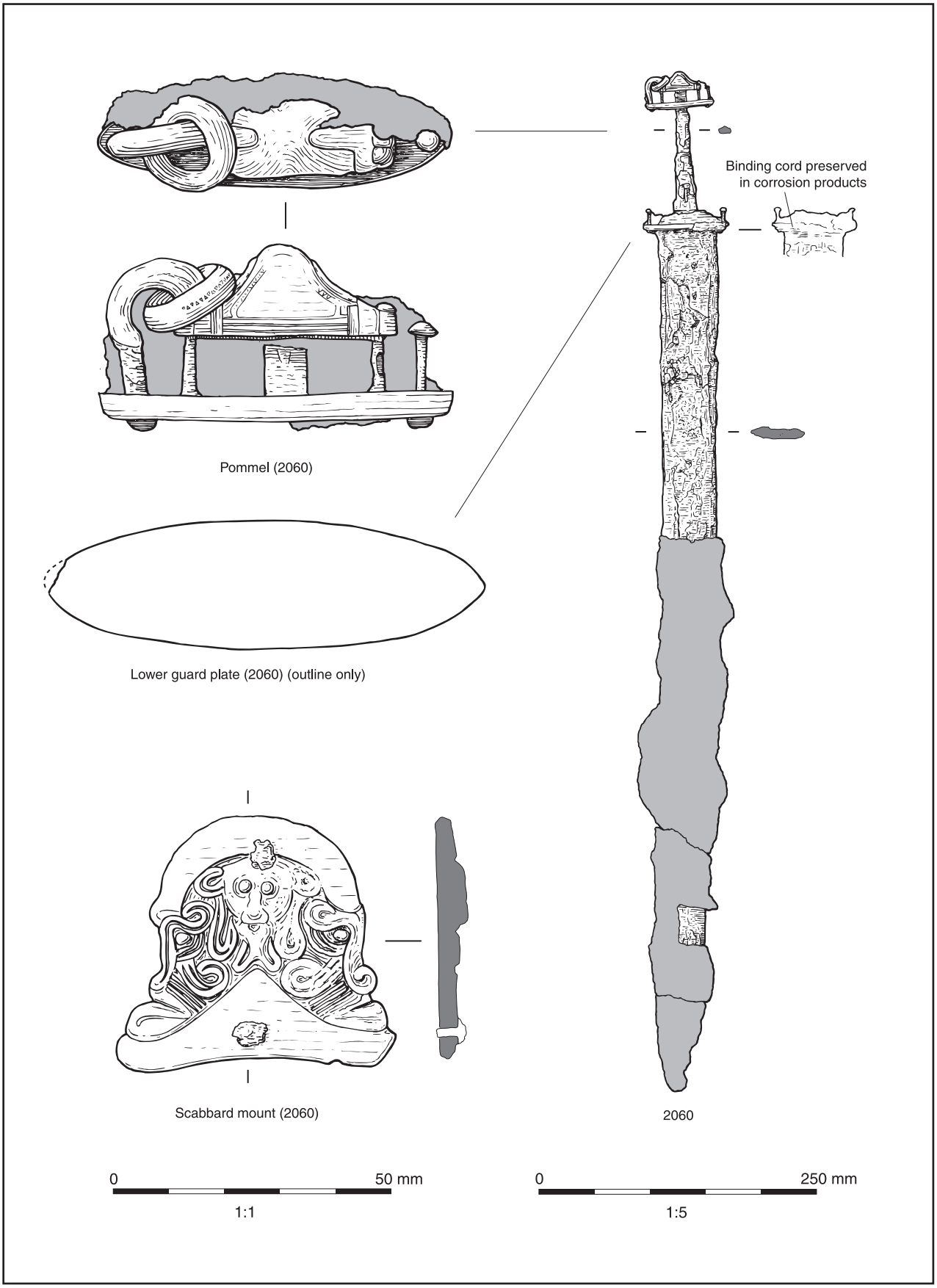


Figure 6.12 Saltwood Tunnel: iron ring sword from grave C3944

burial may have begun at about the same time as in the eastern cemetery. This burial group, like the others, was focussed on an Early Bronze Age ring-ditch at the junction of two trackways, which enclosed the former barrow on its south-western and south-eastern sides (Fig. 6.9). Fifty-nine graves were excavated which Riddler has divided into Plots A–D on the basis of a combination of their distribution in relation to the barrow and the form of the graves themselves. Plot A lay on the south-east side of the ring-ditch, both within and without, and included graves of varying orientation. Plot B comprised four graves, just to the east of Plot A, enclosed by penannular ditches, perhaps indicative of the former presence of mounds. Plot C was formed of a tidy row of nine graves arranged side-by-side running outwards from the south-western edge of the ring-ditch, while Plot D was represented by a small group of less well-organised graves within the north-eastern part of the ring-ditch. The majority of graves were orientated with the head to the north-west. The survival of human remains was poor, and sexing remained largely dependent on the presence of grave finds attributable to gender.

Several graves contained more than one burial, traces of coffins in the form of wood stains were observed in six graves, while settings of stones occurred in various positions in a number of graves, including about the head. The most distinctive graves in terms of external elaboration were the four inhumations surrounded by penannular ditches, between 15–20m in diameter, in Plot B; these are likely to date to the late 6th and 7th centuries by analogy with other Kentish cemeteries, although only a few finds, mainly of iron objects, were recovered from these graves. In three cases the causeways across the ditches faced one end of the grave within, while each of the ditches was close to its neighbour with several instances of intercutting.

With regard to dating, the earliest graves contained items potentially of late 5th century but more likely early 6th century date, including the glass bell beaker in grave C3764 (Fig. 6.10), the belt buckle in grave C4655, and the button brooch from grave C4643, all in the central part of Plot A. There are distinctive graves of (later 6th century) Phase 3, including four in close proximity, again in Plot A. Three of these were female including grave C3762, a wealthy burial equipped, among other things, with a wooden box with decorated bone and copper alloy mounts, a fine copper alloy radiate-headed brooch with garnet settings and a crystal ball in a silver cage, surely an amulet (Fig. 6.11). Four weapon burials furnished with swords also belong to this phase, including the spectacular 6th-century Kentish ring-sword, of so-called Bifrons-Gilton type after other Kentish finds, found with other objects in grave C3944 in Plot A (Fig. 6.12). Ring-swords are high-status finds and it has been suggested that the rings themselves were given to the bearers of such weapons by kings or other high-ranking persons to signify service, office and allegiance (Ager 2006, 6; Evison 1967; Steuer 1987). A fine wheel turned pottery bottle of Frankish origin dated to the first half of the 7th century, the only find from grave C4721,

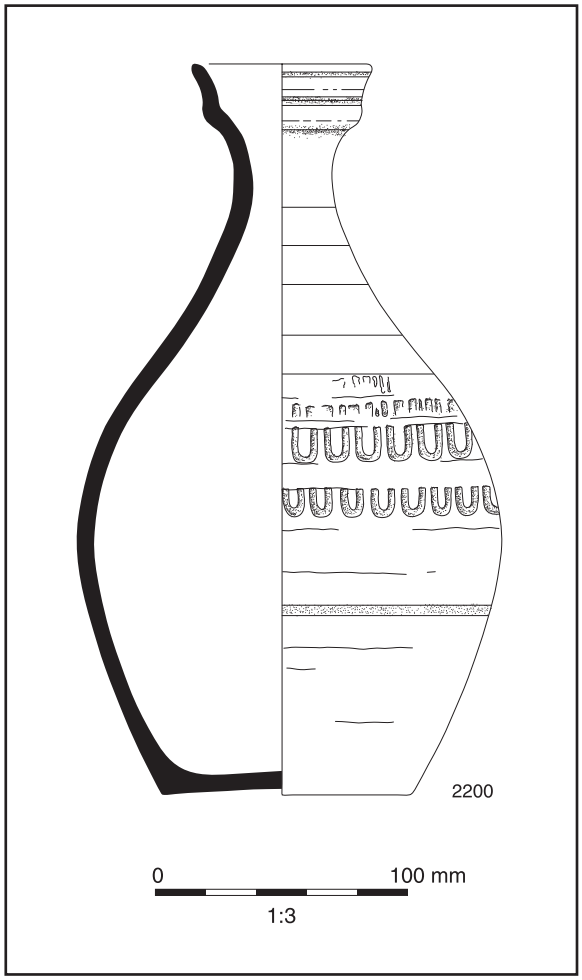


Figure 6.13 Saltwood Tunnel: wheel-turned pottery bottle from grave C4721

emphasises the continental connections identified in graves noted above from the eastern cemetery (Fig. 6.13). Among the latest datable graves is C4584 in Plot C, which contained iron hinges from a box dated AD 650–700.

The less ordered graves in Plot D contained very few finds, one a knife, another a key, and Riddler suggests, with caution, that they date to the later 7th century in comparison with similar burials from the Dover Buckland cemetery (Riddler 2006, 40 after Evison 1987). Overall, burial appears to have begun in the central Plot A and then moved outwards in all directions. The varying organisation and style of burial is strongly indicative of several family or kin traditions operating within the cemetery space.

The central cemetery

The central cemetery is the most extensive of the three burial plots; although a case is made below that within it there are two distinct burial areas. A total of 141 inhumation graves lay either side of the Middle Iron Age trackway (226). To the west of the trackway, the ring-ditch of a substantial Early Bronze Age barrow provided the focus for the majority (105) of the burials, while a smaller group (36) to the east of it is considered by some to be an extension to the western group, and thus part of

the same cemetery (Fig. 6.14) (Riddler 2006, 40). Certain features, however, suggest that part of the eastern group constitutes in its own right a discrete burial plot, an issue to which we will return below. While the limits of the burial site were very clearly reached on the western and eastern sides, a few burials no doubt remain to be discovered to the south of the main concentration of graves, and to the north on both sides of the trackway. Most of the graves were aligned with the head to the west, with a few graves in the northern part of the cemetery west of the trackway aligned with the head to the north.

The four largest graves (C1048, C1081, C6421 and C6653), all contained spectacular finds—of which more below—but significantly the graves were equidistant from each other in a line broadly parallel with the western side of the trackway. Grave C1081 was surrounded with a substantial ring-ditch (20m in diameter), while space devoid of further burials surrounded the other three burials suggesting the former presence of mounds. Postholes appear to have marked the limit of the potential mound surrounding grave C6421. At least 18 other burials were enclosed by penannular ditches (between 5–6m diameter), one of these lying at the southern end of the eastern group of burials noted above. In the majority of cases the graves within penannular ditches were aligned on the breaks in the ditches with five graves enclosed by unbroken ring-ditches. A few burials contained stones disposed variously about the grave, but usually in the head region either as 'cushions' or perhaps as settings for grave markers.

While all of the graves to the west of the trackway contained single inhumations, grave W3080 to the east, that of a juvenile, possibly male, was furnished with two sets of grave goods. Grave W1074 contained the body of an adult aged 50 or over, and the disturbed, or perhaps re-deposited, remains of a possible female aged 45 or older. This latter situation perhaps reflects the relatively common practice of burying men and women in a disrespectful fashion above an apparently normal burial (Hirst 1985; Reynolds 2009). Intercutting of graves was rare but included examples where graves surrounded by penannular ditches had been cut into by either directly superimposed inhumations (graves C6673/C6161), or by graves set to one side of the primary interment (graves C1391/C1393). This latter practice suggests family plots with later burials radiating out from a 'founder' burial, with intercutting graves perhaps creating a direct physical association with the founder. Most of the graves enclosed by ditches lay in a line 12–14 m west of the trackway but parallel to it, while a group of three lay at the north-western limit of the central cemetery. It is common to find ring-ditches clustered in Early Anglo-Saxon cemeteries, as in the western cemetery above. A parallel further afield is the extensively excavated cemetery at Spong Hill, Norfolk, where a group of four enclosed graves lay at the north-eastern edge of the largely cremation burial site (Hills *et al*. 1984, fig. 1).

Traces of coffins were recorded in 14 graves, and in a further grave (W1323), that of a person aged *c* 9–11 years, two rows of clench nails found across the body perhaps represent a lid or coffin fashioned from overlapping planks of wood, perhaps boat parts reflecting the importance of sea-travel in early Kent (Brookes 2007b, 14–15). Each of the four large, wealthy graves noted above evidently contained either coffins or timber-lined chambers.

On the basis of the exceptional range and quality of the grave finds from the central cemetery it has been possible to chart the development of the burial area with relative clarity. Riddler's careful analysis has revealed that the earliest burials are focussed on the Early Bronze Age barrow and that they can be placed within his Phase 3 (mid to late 6th century). Distinctive burials of this primary series of graves include grave C1210, which was furnished with a bracelet, finger-ring, beads, a knife and some keys, and grave C1145, a male burial furnished with a sword, shield and spear among other objects, including a buckle, possibly from a sword belt. Significantly, the copper alloy pommel of the sword is of Frankish origin, and Ager's discussion notes that it is of a geographically widespread type found mainly in the Rhineland, southern Germany and northern Italy, with relatively few examples from England and Scandinavia (Ager 2006, 5; Menghin 1983). The weapon from grave C1145 is notably shorter (at 795mm total length) than the other ten swords recovered from Saltwood graves (which range between 870–940mm): swords of this type have a late 5th to early 6th century date range in England, while swords in general may be up to a century old by the time they are deposited (Ager 2006, 2, 10).

During the late 6th to mid 7th century, the four very wealthy graves already referred to were laid out southwards from the early focus of the cemetery. The equal spacing and linear arrangement of these graves suggests an attempt, which appears to have been successful, to lay out four new plots focussed on high-status graves. It is rare to observe such careful planning of cemetery space. With reference to the grave finds, Riddler suggests that the northernmost grave (C1048) is the first of the sequence, followed by C1081 and then C6653, with the female grave C6421 the latest, and placed between the two latter male graves. On logical grounds, however, Riddler makes a strong case for a straightforward linear development from north to south, placing the graves in the following order: C1048 – C1081 – C6421 – C6653. The three male burials are surely heads of households, their associated grave assemblages are certainly indicative of a very high social rank. The man buried in grave C1048 was laid in a coffin placed inside a wooden chamber. Among the accoutrements placed with him was a sword with a low, convex-topped iron pommel of a type known from Germany, but also found closer to hand, for example at Dover, Buckland in late 6th to mid 7th century graves (Ager 2006, 4; Evison 1987). At least 17 antler gaming pieces, two shield bosses, iron harness fittings, 14 iron arrowheads, and a Frankish throwing-spear, or angon, serve to emphasise the high status of this grave. Perhaps the most remarkable find, however, was a Byzantine, or 'Coptic', copper alloy bowl of Werner's B1 type, which is

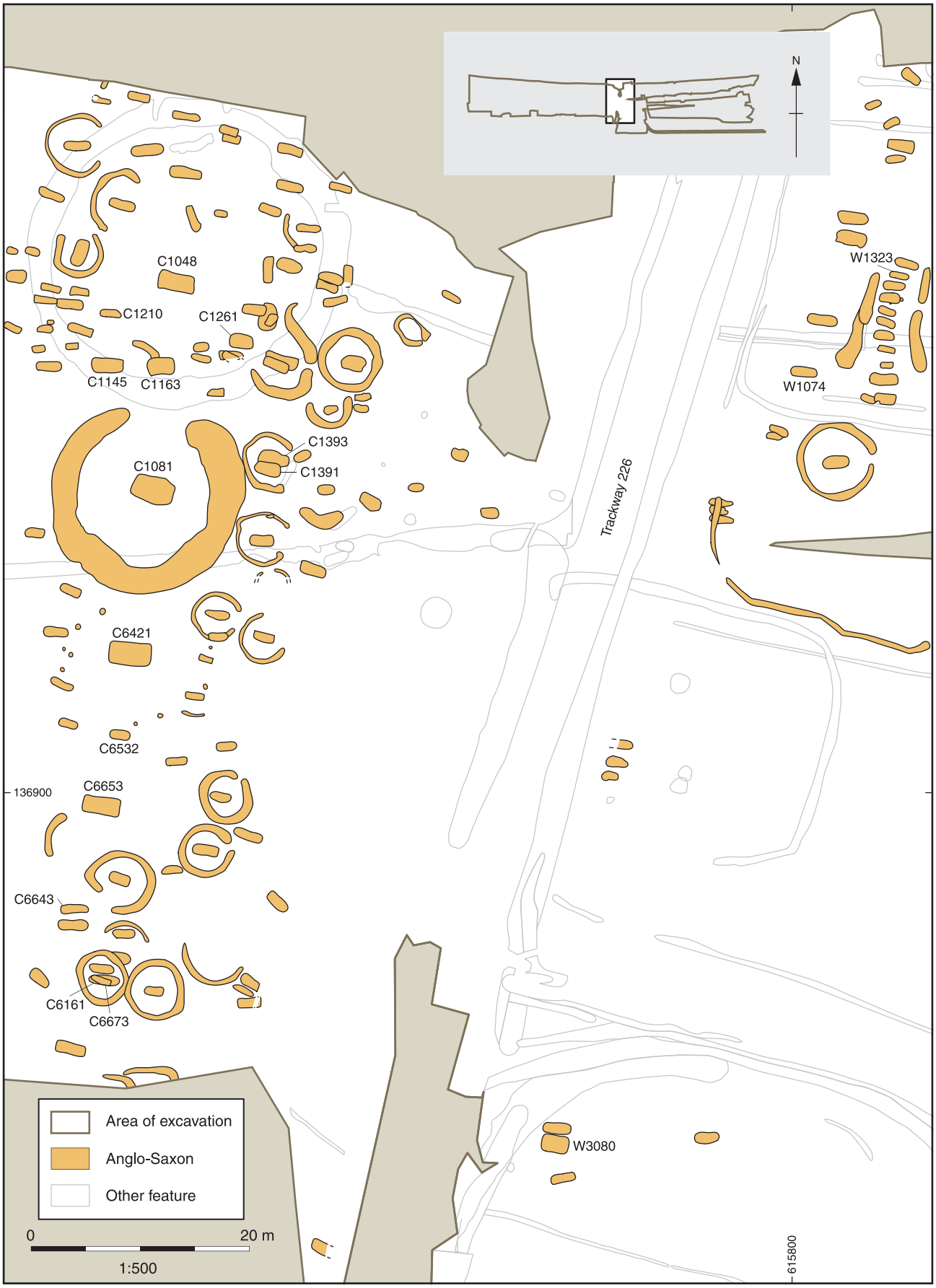


Figure 6.14 Saltwood Tunnel: Anglo-Saxon graves and grave related features, central cemetery

characteristically found in burials of late 6th and early 7th century date in south-east England, but also in the Rhineland, south-western Germany, Hungary and Italy (Fig. 6.15) (Werner 1957; Harris 2006, 1). Such bowls are known from burials of the very highest strata of Early Anglo-Saxon society, a situation well illustrated by examples from Sutton Hoo, Mound 1 and the 'princely' grave from Prittlewell (Essex) (Bruce-Mitford 1983, 732–52; Hirst *et al*., 2004).

The male grave C1081 just south of C1048 lay within by far the largest penannular ditch and contained a similar array of finds; it also comprised a coffin placed within a wooden chamber (Fig. 6.16). A further B1 Coptic bowl underscores the status of the individual, while iron horse gear, two shield bosses, a Frankish angon, and a sword with a fine decorated pommel indicate a man of parallel rank to that buried in grave C1048. The sword is a further continental import with applied niello inlaid silver decoration and is dated to the late 6th or early 7th century (Ager 2006, 5).

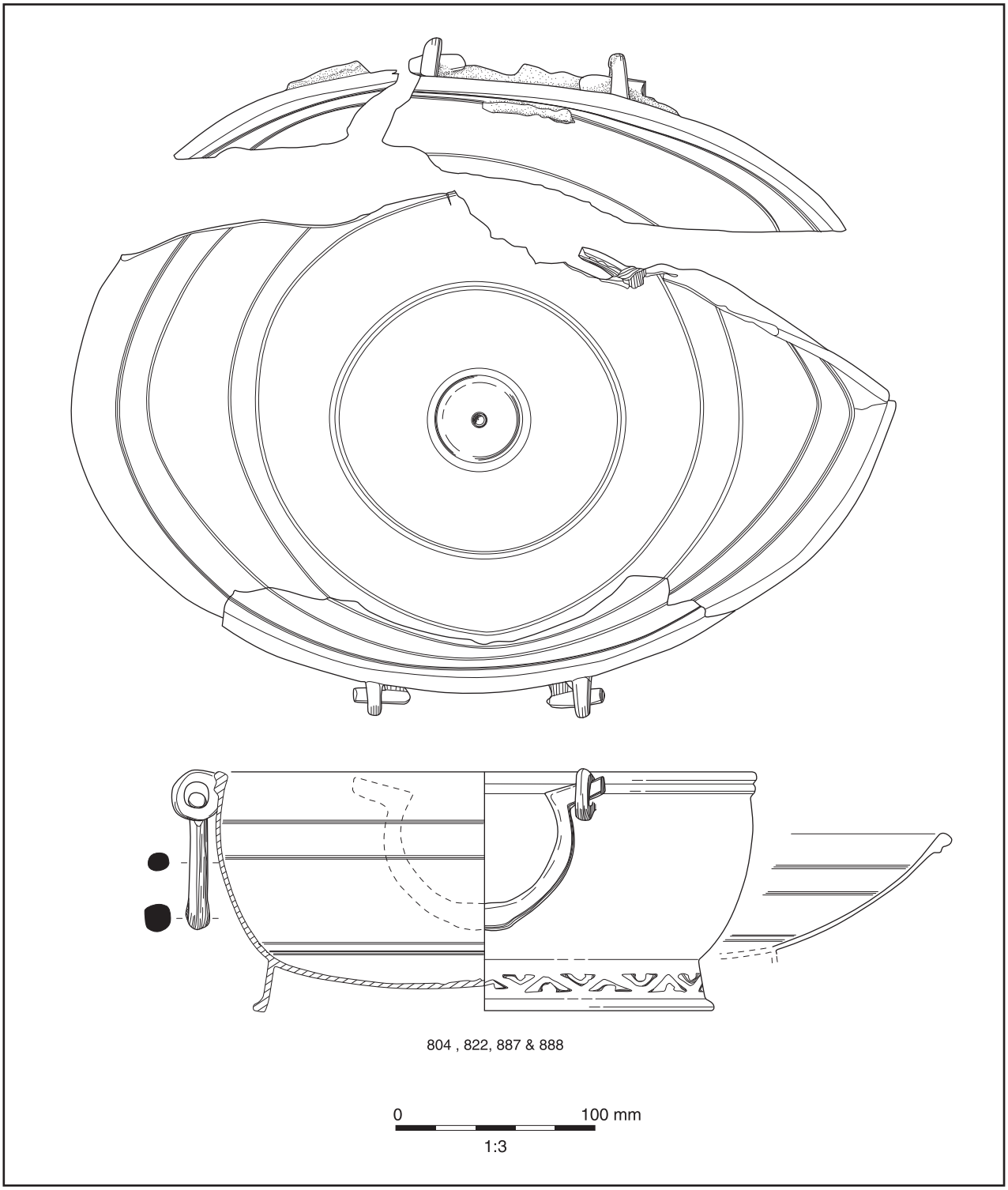


Figure 6.15 Saltwood Tunnel: 'Coptic' copper alloy bowl from grave C1048

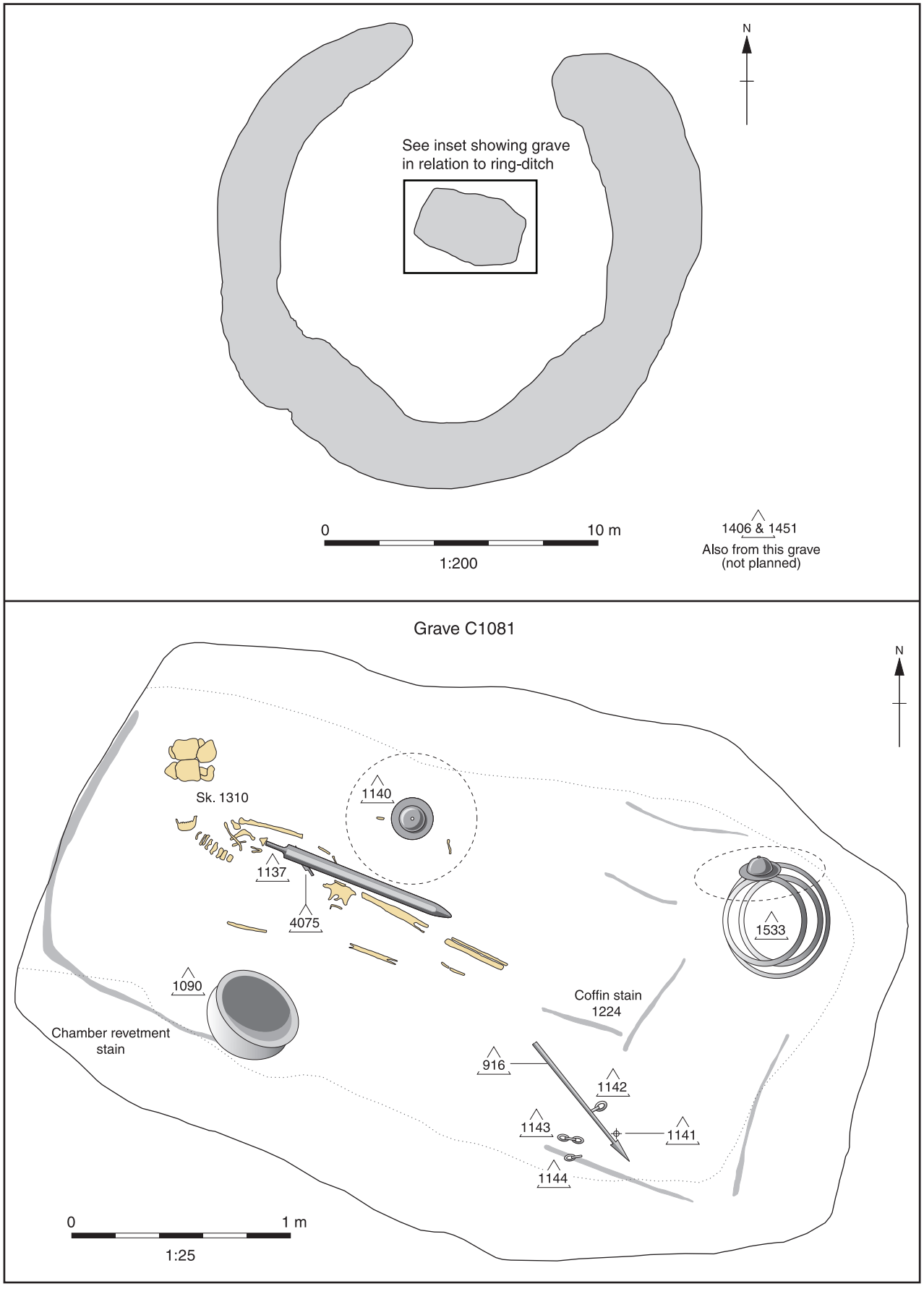


Figure 6.16 Saltwood Tunnel: grave C1081, central cemetery

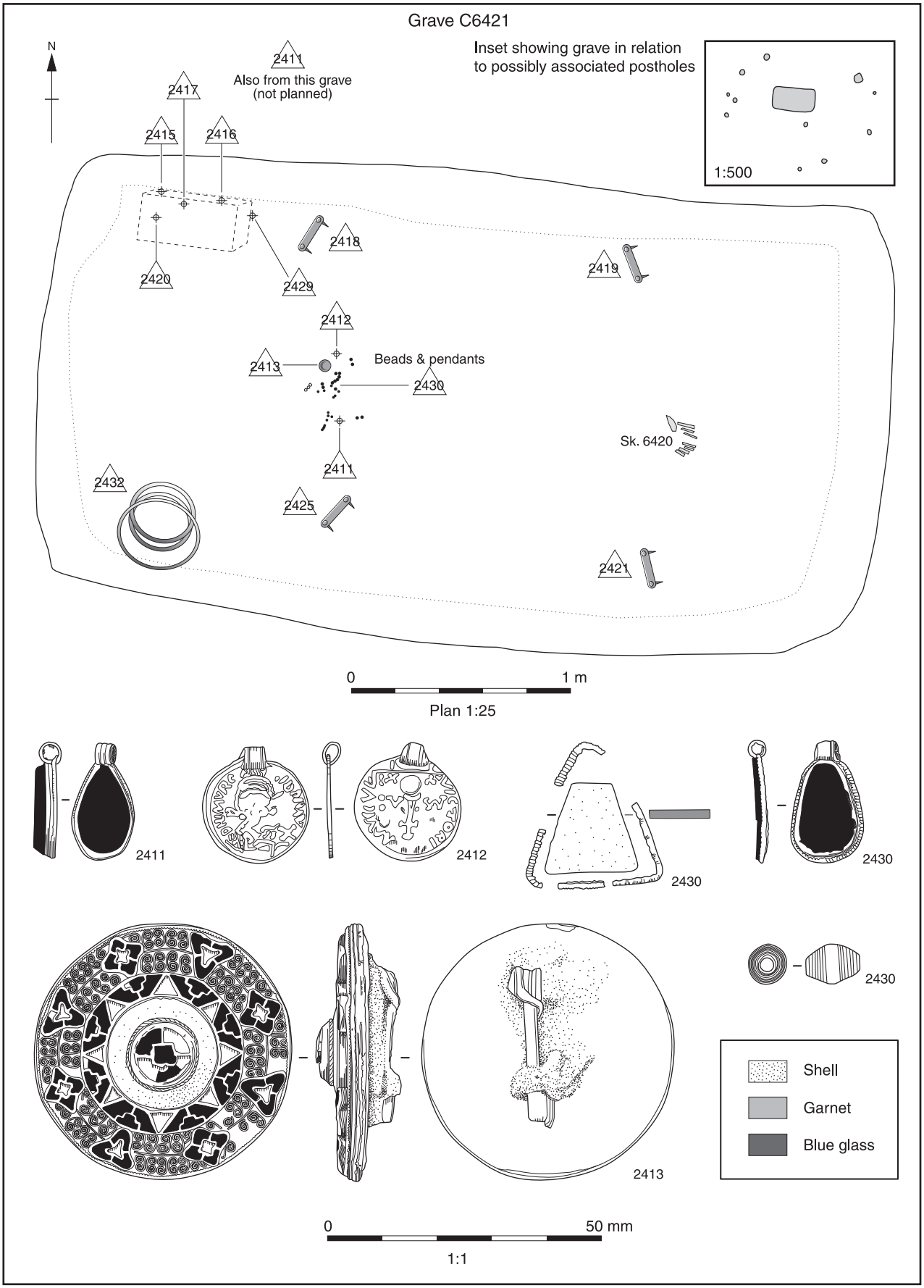


Figure 6.17 Saltwood Tunnel: grave C6421, central cemetery. Plan and a selection of grave goods

A view of high-status female attire at this time is provided by the grave assemblage with the succeeding ostentatious burial, grave C6421 (Figs 6.17–18). As noted above, the grave may have been covered with a mound, perhaps revetted by posts. The skeletal remains indicate the burial of a young woman above 13 years of age. Two gold drop-shaped pendants with garnet settings, a Visigothic gold coin (a *solidus* issued in the name of Maurice (AD 582–602)), with a suspension loop, and a gold composite disc brooch set with garnets and of Kentish type all serve to confirm a date in the first half of the 7th century for this burial. Iron fittings for a box and a bucket were also found within the grave.

The last of this group, and the most southerly of them, is grave C6653. Although no human remains were found, the occupant of this chamber grave or coffined burial was male to judge by the finds, which included three shield bosses, a Frankish angon, and a further Coptic bowl, a variant on the B1 type but not strictly classifiable as such (Harris 2006, 2). Comparisons include vessels from other very high-status burials, including Mound 6 at Sutton Hoo (Suffolk) and, closer to hand, at Coombe (Kent) (Evans 2005, 207; Ellis-Davidson and Webster 1967). The man was also buried with a sword with a bar-shaped pommel, a type mainly known from 5th and 6th century Anglo-Saxon contexts (Ager 2006, 4).

Beyond the very rich graves there is a series of further weapon graves which, as Riddler has observed, appear to bear a direct relationship to the very high-status burials in terms of proximity and alignment (Riddler 2006, 48). Grave C1163 lay south of grave C1048 and the scabbard for the sword also seems to have held an upward-pointing knife as was the case with the sword and knife in the probable Frankish grave W1767 in the eastern cemetery. Grave C6532 with a spear and knife lay to the south of the wealthy female in Grave C6421, while grave C6643, with a spear, shield boss and other fittings, lay to the south of grave C6653.

Once these four plots had been established, the cemetery developed around them with graves of a lesser status. Further remarkable finds include a buckle of Italo-Byzantine type from grave C1261, just to the south-west of grave C1048 (Fig. 6.19, no. 1165). The latest burials in the central cemetery appear to be those at the northern

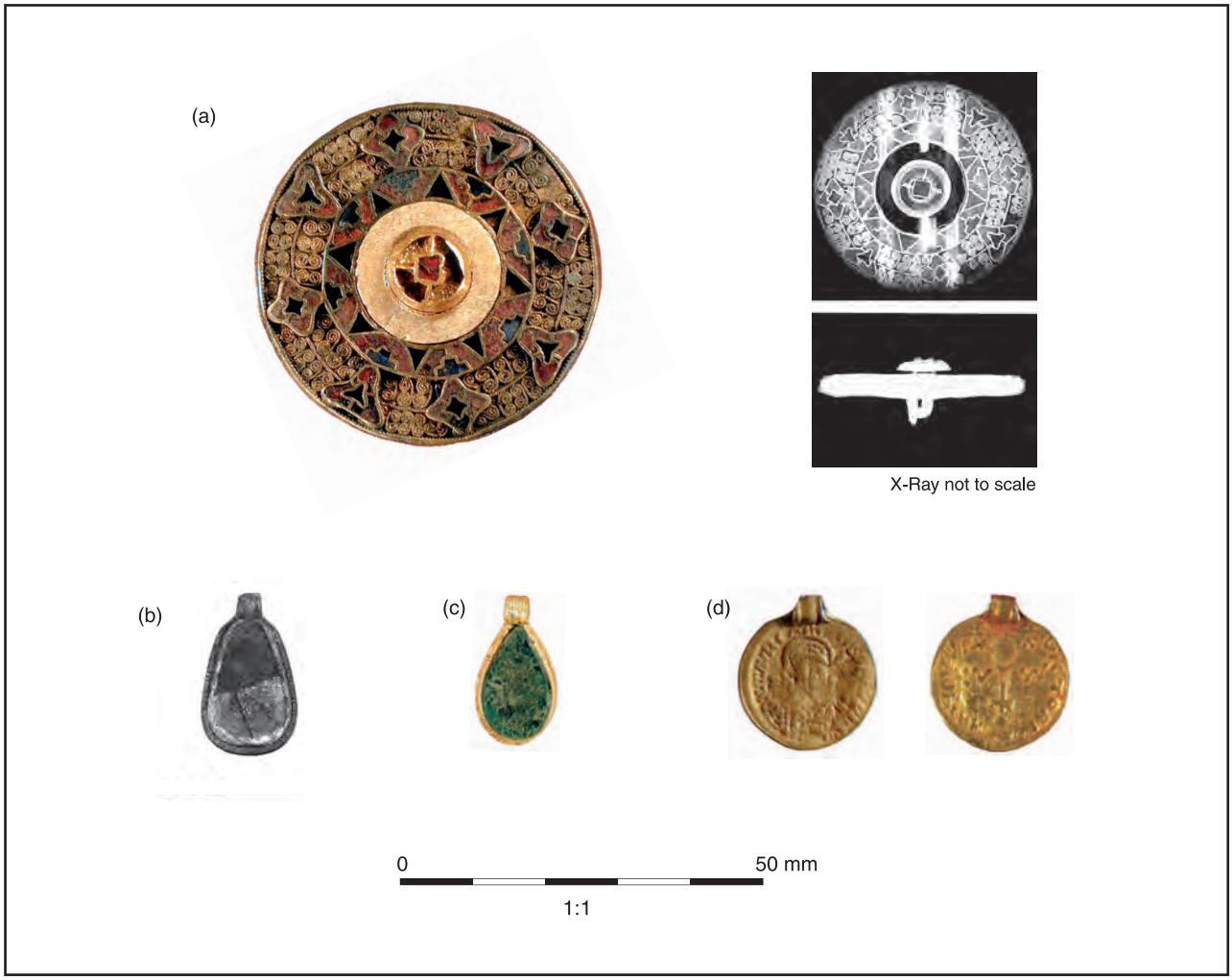


Figure 6.18 Saltwood Tunnel: grave C6421, central cemetery: gold plated disc brooch (a), set with garnets and blue glass and gold-wire filigree; pendants from necklaces: (b) flat-cut pear-shaped garnet on gold foil in silver setting (left), and (c) flatcutdrop-shaped garnet on gold foil in a gold setting (right), both from central cemetery grave 6421; (d) front and back of the coin pendant

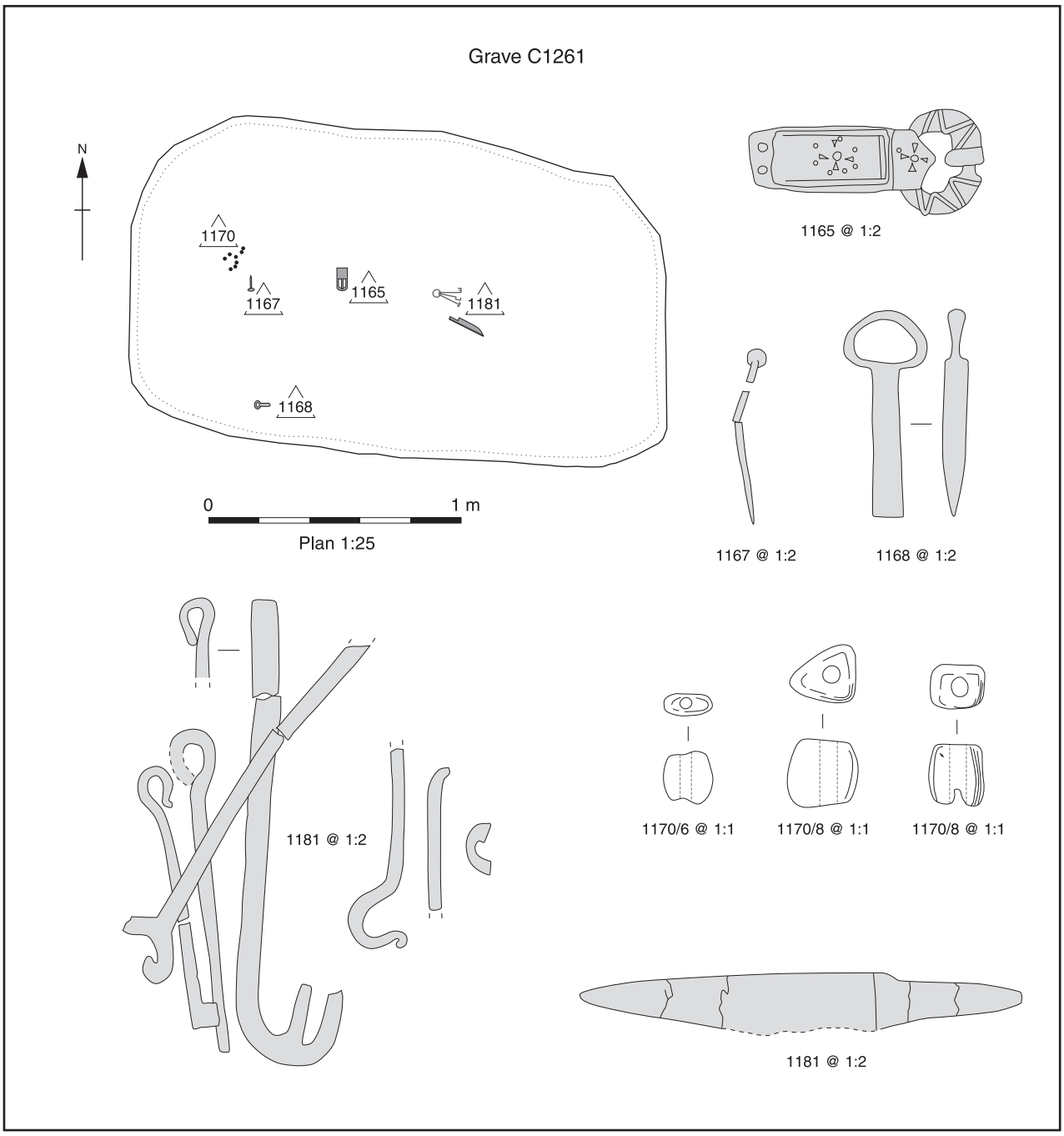


Figure 6.19 Saltwood Tunnel: grave 1261, central cemetery: Italo-Byzantine type buckle 1165 and other grave goods

limits and are characterised by graves containing amethyst and glass beads, which occur largely in later 7th century contexts (Geake 1997, 41).

It is possible to argue that the northern row of graves east of the trackway, the majority of which are dated to the 7th century, are marked out from the main part of the central cemetery by the fact that they are delimited by ditches to the east and west which flare out to the south facing the one burial in this group within a penannular ditch (Fig. 6.20). Further south a short length of ditch (229) running roughly east to west with terminals turning northwards partly delimits a space around the ditched burial. Perhaps the lack of a prehistoric barrow on the eastern side of the trackway led to the creation of ritual space; elements of planning are clear and a separate burial plot seems likely. Such arrangements are not common and a direct parallel for the enclosed Saltwood burials is not immediately apparent, although the 7th century cemetery of *c* 150 burials discovered at Springhead Park, Northfleet, also connected with HS1-related activities, revealed a row of 19 graves with a ring-ditch at the northern end (Pitts 2008).

The Saltwood Early Anglo-Saxon domestic structures

In common with an increasing number of cemetery sites, the Saltwood excavations, and one earlier intervention associated with the M20 immediately to the north, have provided a tantalising glimpse of associated settlement in the form of three sunken-featured buildings. The buildings are widely dispersed (Fig. 6.21; SFB from M20

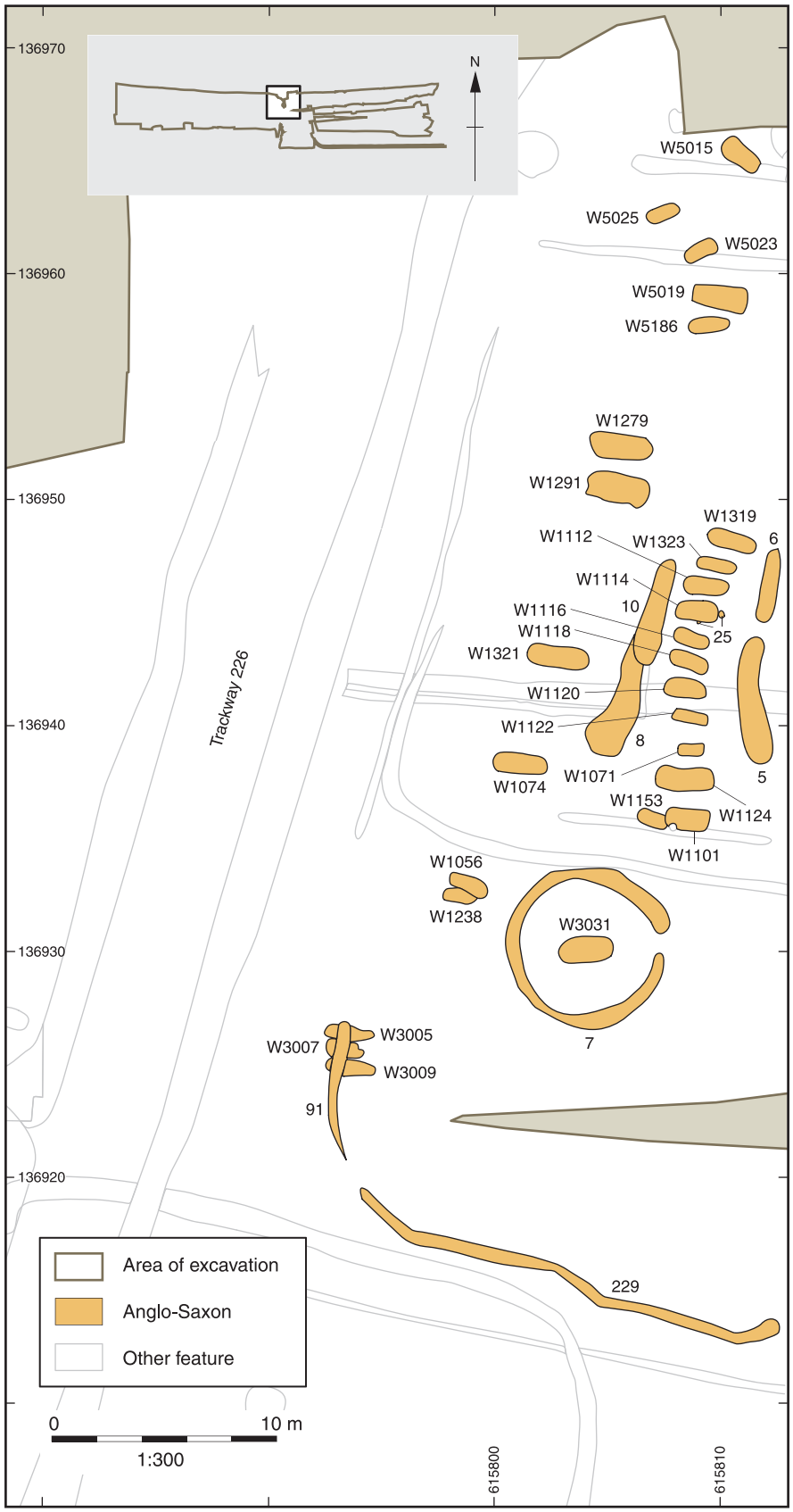


Figure 6.20 Saltwood Tunnel: graves east of trackway 226

excavation not shown) and this is what one would expect to find in a 6th–7th century rural environment. Perhaps the structures lay on the fringes of several small farmsteads just north of the cemetery. A single sunken-featured building infilled in the 6th or 7th century was recently excavated adjacent to the 5th century cemetery at Ringlemere, near Woodnesborough (Parfitt and Needham 2007, 52, fig. 6), although later graves might yet be found

in the vicinity. Anglo-Saxon settlement archaeology is known nearby at Dollands Moor, a few kilometres to the east, and to the west at West Hythe (*Sandtun*), while the royal vill and 7th century nunnery at Lyminge lay 4km to the south, a location also characterised by several inhumation cemeteries spanning the mid 5th to 7th centuries (Gardiner *et al*., 2001; Richardson 2005, sites 159, 160 and 161). Other settlements in eastern England, most notably Mucking (Essex), have revealed cemeteries adjacent to settlements. At Mucking two cemeteries lay within a large area of sprawling settlement, while at Bishopstone, Sussex, the cemetery focussed on a Bronze Age barrow a short distance from the settlement (Hamerow 1993; Bell 1977). At Spong Hill (Norfolk) a small settlement, probably one of several in the vicinity, lay at the north-western edge of the large cremation and inhumation cemetery (Rickett 1995). At Saltwood, further research could usefully be undertaken to establish the extent and relationship of settlement there to the extensive cemetery populations.

Saltwood: an excavated assembly site?

Potentially one of the most interesting, yet archaeologically subtle, aspects of the Saltwood sequence are the remnants of Middle and Late Anglo-Saxon use of the former burial landscape. In his consideration of the landscape of Saltwood, Riddler notes that the meeting place of the local Domesday hundred, Heane, must be close by the burial sites; the place-name scholar Wallenberg having noted the occurrence of the name Heane Wood Barn, less than 250m south-west of the western cemetery (see Fig. 6.4) (Riddler 2006, 68; Wallenberg 1934, 457). Riddler notes the convergence of tracks just south of the cemeteries and the plateau just north as possible locations, but three further factors suggest the excavated locale of the cemeteries as the meeting place.

First, in topographical terms, mounds are commonly known throughout north-western Europe, including England, as sites for public assemblies (Gelling 1978, 191–214; Reynolds 1999, 76–80; Pantos 2003) and both the Bronze Age and Anglo-Saxon barrows at Saltwood would have provided precisely the type of distinctive topography required. Second, the name Heane Wood is likely to have formerly referred to a wider area than that shown on early maps (see Fig. 6.4), probably incorporating the site of the cemetery. Indeed, given that the hundred name is Heane, the wood is most likely to have been named from its proximity to the meeting-place. Wallenberg suggested that the origin of the name might be found in an otherwise unrecorded OE noun *H a*, meaning 'mound' (Wallenberg 1934, 366). Following Wallenberg's analysis of Kentish place-names, another Scandinavian scholar, O S Anderson, studied specifically English hundred names. His study of south-eastern England argues for an explanation of the name as meaning simply 'at the high (place)', being derived from OE *H an* (Anderson 1939, 137-8). In view of the HS1 discoveries, perhaps Wallenberg's claim deserves reconsideration. Thirdly, and crucially, the cemetery spaces, particularly at

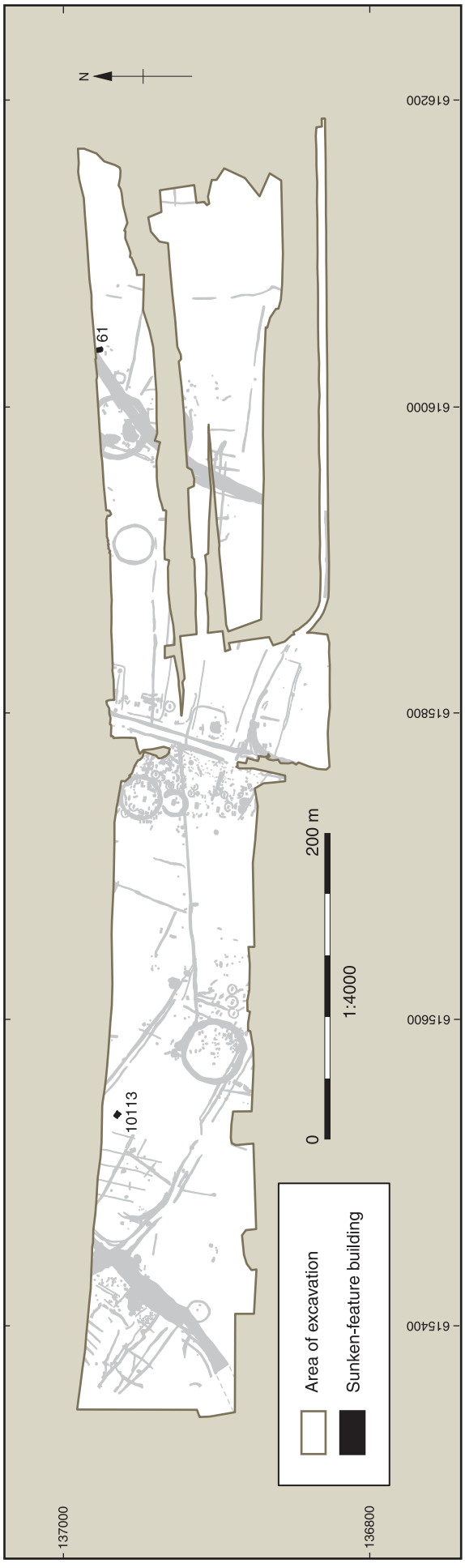


Figure 6.21 Saltwood Tunnel: sunken-featured buildings

the western and eastern ends of the excavated area, have revealed archaeological evidence in the form of pits, some containing material culture, and pottery sherds from the topsoil indicative of sporadic non-funerary occupation of 7th century and later date—following on from the period of burial activity. These pits and other finds represent continuing use of the site after burials ceased in the late 7th century. Whether the site might have been used as a meeting place while it was still also in use as a cemetery is a distinct possibility. Several of the pits cut into graves in both the eastern and western cemeteries and demonstrate Middle and Late Anglo-Saxon use of the Bronze Age mounds. The ceramics from the Saltwood pits mainly date to the 7th to 8th century, although a fine iron knife with inlaid copper alloy wire on both sides of the blade is Mid to Late Anglo-Saxon in date. An angled back knife of 9th–12th century type and handful of Late Anglo-Saxon pottery sherds suggest a similar level of activity at the eastern end of the excavated area. Several ditches in close proximity represent further 11th or 12th century activity.

Sites elsewhere in England, such as that discovered at Dorney, near Eton, have revealed similar evidence of periodic occupation, lacking buildings or other evidence of permanent settlement, and the suggestion has very plausibly been made for that site that the remains represent those of an assembly site (Foreman *et al*., 2002, 70). The site of the Early Anglo-Saxon cemetery at Loveden Hill, Lincolnshire was a hundred meeting place by the time of the Domesday Survey (Meaney 1964, 158) and perhaps a parallel process of development took place there also; further research is necessary into this interesting phenomenon.

Anglo-Saxon Saltwood: conclusions

It has been suggested, and indeed partially demonstrated, that settlement relating to the three Saltwood cemeteries lies to the north. Rather than seeking one such site, however, it makes more sense to envisage a series of farms scattered across the landscape, some perhaps comprising as few as two households, perhaps represented in death by Saltwood's eastern and western cemeteries, alongside larger settlements, as represented by the central cemetery. If such a view holds, an attempt can be made to reconstruct the dynamics of settlement in the locale, with small settlements during the 6th century running into the 7th, but with larger scale settlement developing in the later 6th century and continuing into the late 7th century. An alternative view might be to see the smaller cemeteries as attempts by individual families based within an entirely dispersed settlement pattern founding dynasties of their own marked by distinct burial places. In this respect, even the structure of the central cemetery indicates several wealthy families whose leading figures attracted the burials of those of lesser rank around their graves. The preceding discussion has raised the issue of reconstructing living communities from burial remains and the Saltwood discoveries have provided material of considerable importance, not least a snapshot of the physical environment within which these people lived. The finding of several cemeteries in close proximity is not only sometimes a feature of Early Anglo-Saxon Kent, for example at Bekesbourne and Deal, but further afield in Hampshire, at Portway near Andover, in Wiltshire at Roche Court Down and further west still at Kemble on the Wiltshire/Gloucestershire border and at Beckford, formerly in Gloucestershire, now in Hereford and Worcester (Brookes 2007a, 205 and 212; Cook and Dacre 1985, 3; Stone 1932; Reynolds 2006b, 144; Evison and Hill 1996, 2, fig. 1).

Overall, the characteristics of the Saltwood cemeteries easily find comparisons among other cemeteries of the period in eastern Kent. Ring-ditches are known at Dover Buckland and Finglesham, for example, while the overall wealth of the cemeteries can be compared again to Dover Buckland but also with sites such as Bifrons. Although the Saltwood cemeteries lie at the south-eastern limit of the distribution of Early Anglo-Saxon cemeteries in Kent, their contents should come as no surprise. The close proximity of Saltwood to the sea suits continental connections and the other rich Kentish cemeteries are largely located in similar ways in the landscape. The dynastic element visible at Saltwood is paralleled at Finglesham (Hawkes and Grainger 2006), while the appropriation of earlier monuments finds a series of parallels, perhaps best illustrated recently by the excavation of the Mill Hill cemetery near Deal and the remarkable 5th century cemetery at Ringlemere near Woodnesborough (Parfitt and Brugmann 1997, fig. 4; Parfitt and Needham 2007, fig. 6). The occurrence of a high number of weapon burials is a feature of a series of coastal cemeteries, for example in Kent at Sarre and Dover Buckland, but such are known much further afield as at Bargates, near Christchurch in Dorset (Richardson 2005, no. 231; Evison 1987; Jarvis 1983). One should perhaps expect to find well armed communities in coastal locations in a climate where cross-channel movement was evidently common and where, by migration, so much was to be won and lost. In every respect, the Saltwood burials fit well with the known picture of east Kent (Brookes 2007a).

In most cases the changing nature of land-utilisation immediately following the use of a locale as a cemetery is beyond the reach of the archaeologist. In the case of Saltwood, however, it is has been possible to use a combination of archaeology, place-name and topographical evidence to suggest a process whereby a place used for up to two centuries for burial by populations settled in the wider landscape retained a fundamental role in succeeding centuries as a place of assembly, by Domesday that of the hundred court. In this way, the Saltwood evidence provides a valuable model for a sacred origin for assembly sites and provides a direct link between the pre-Christian world and that of an organised society in a climate of kingship and organised religion.

Burial in west Kent: the Cuxton Anglo-Saxon cemetery

As noted in the introductory sections, west Kent is very different archaeologically to the east of the county. The Cuxton Early Anglo-Saxon cemetery lies on the west side

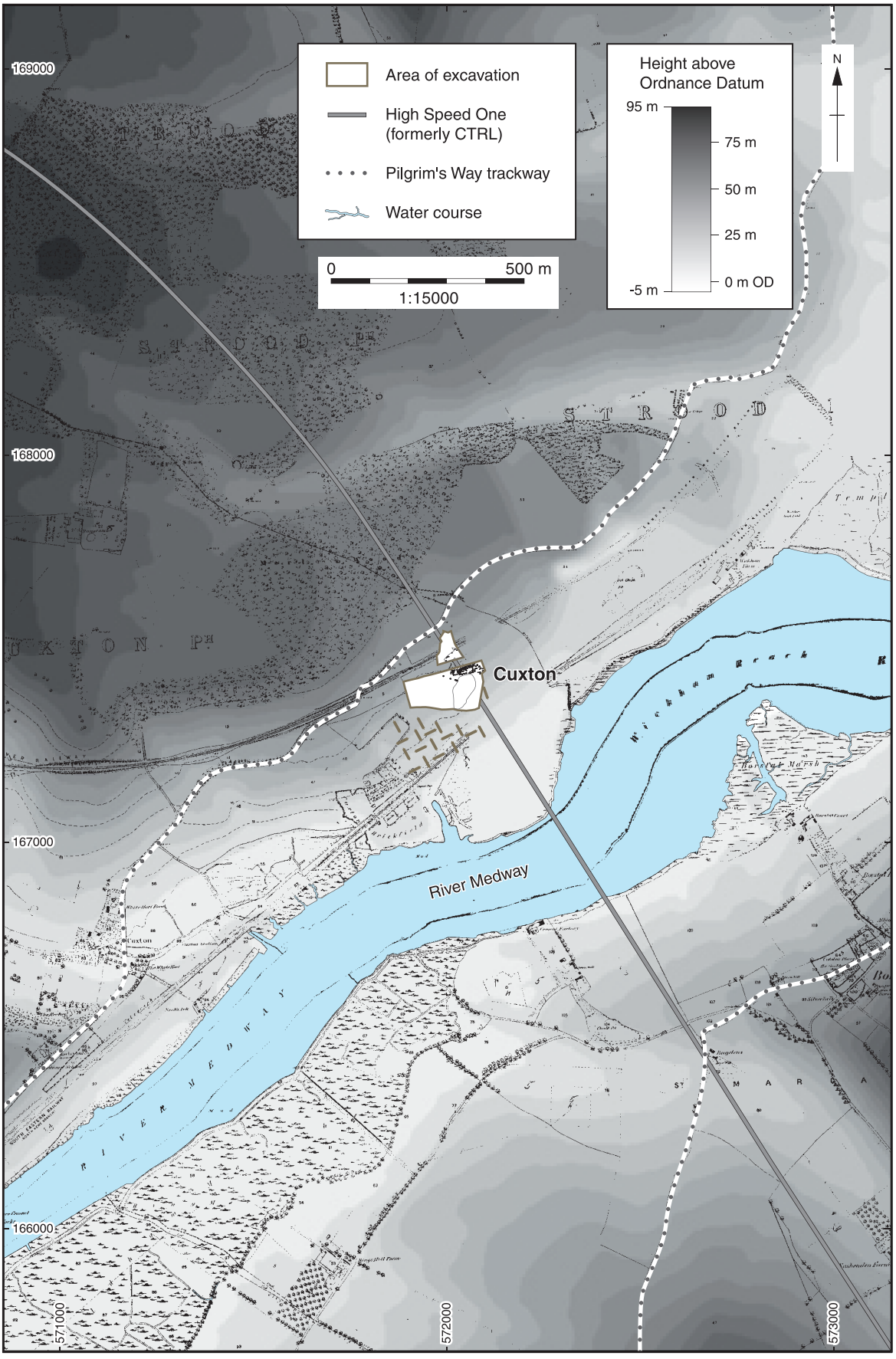


Figure 6.22 Cuxton overlaid on the 1st Edition OS map (6 inches to 1 mile, 1869)

of the River Medway and thus provides an excellent opportunity to further examine the contrast between the two regions. Does the cemetery show greater affinities with those of the Lower Thames Valley? Are different topographical characteristics evident? What contrasts and comparisons can be made with regard to social structure and social and economic relationships?

Two kilometres south-west of Rochester, the location of the Cuxton cemetery is notable, lying as it does with a south and east facing aspect overlooking the river Medway (Fig. 6.22). The limits of the cemetery are defined not by man-made features but by natural topography, a terrace *c* 30m above OD approximately halfway up the side of the river valley. Although the geology is Upper Chalk, normally conducive to the preservation of human remains, human bone was very poorly preserved. The location has commanding views along the river in both directions and directly over the river is the head of the Nashenden Valley, followed by the Pilgrim's Way, a route whose importance has already been highlighted and to which we will return. Indeed, the Cuxton cemetery would have been a highly prominent territorial marker visible to travellers coming from the east by road or from north or south along the river. An Anglo-Saxon weapon grave was discovered in the 19th century when one (it is not known which) of the two railway cuttings running parallel to the north bank of the Medway was dug, while close to the site a further record of a burial with a Frankish angon was made later in that century (Mackinder 2006).

The HS1 excavations revealed 36 Early Anglo-Saxon inhumation graves, each containing a single inhumation apart from a juvenile tooth crown found in grave 303 with an adult burial (Fig. 6.23). The majority of burials were of adults (24) with five juveniles, four infants and one individual whose age could not be determined. Half of the adults could not be sexed from the biological evidence, but of the remainder who could, half were male, half female. Nine weapon burials furnished with spears were found, four of these also with shield bosses; all the weapon graves lay in the eastern half of the cemetery (Fig. 6.24), although a relatively high-status male buried with a purse lay on the western side (see below). Five graves were without finds. A total of 11 graves were enclosed with penannular ditches, of which seven had evidence of postholes between the terminals. While the southern and western limits of the site were defined by the natural slope of the ground, the railway immediately to the north surely overlies further interments, while others probably lie outside the eastern limit of the excavation. Even so, the plan of the cemetery indicates that most of the graves have been recovered. In common with most Early Anglo-Saxon cemeteries, there is little intercutting of graves, apart from a degree of over-lapping of three of the penannular ditched burials at the north of the excavated area in the centre of the cemetery (see Saltwood above). As Mackinder (2006) notes, this aspect indicates either a very short chronology overall, whereby graves were still visible as low mounds of earth, or a situation where graves were marked in a more permanent way. Certainly, we should expect the graves surrounded by ditches to have been marked with mounds, albeit on a modest scale. One grave (316), a coffined weapon burial and an outlier to the rest, east of the main concentration, may have had a canopy built over it. At least eight postholes surround the grave and are reminiscent of structures found most notably at the east Kentish cemetery of St Peter's, Broadstairs (Hogarth 1973).

Further possible structural evidence associated with burials was observed in the form of ledges along the sides of graves 176 and 382, although the profiles of both suggest a lack of squaring the grave cut on the part of the grave-digger rather than any structural intentions.

Five burials at Cuxton were probably contained in coffins, evidenced by soil stains rather than nails, and in all cases where the body position could be determined, the corpse was placed extended on its back with one exception, grave 303, where the body may have been crouched or flexed; Mackinder (2006) favours later disturbance as the cause of the corpse's aspect.

Thirty-two inhumations were furnished in varying degrees, while two of the unfurnished burials, a mature female in grave 279 and an individual in grave 379, were both associated with charcoal, a bed underneath the body in the former instance. Although a total of 190 objects were recovered from the cemetery, as might be expected there is considerable variation between individual graves. Imported materials were rare and limited to amber, which could come from north-east Scotland or much further afield (the Baltic, Portugal, Romania or Sicily), amethyst, probably ultimately from the eastern Mediterranean, and cowrie shell, potentially from India, the Red Sea or the Near East (Huggett 1988, 64, 66 and 72).

Four Cuxton graves contained finds that denote high status and it is of interest that all four were found close together on the southern edge of the burial plot (see Fig. 6.23). The westernmost of this group, burial 215, was of a female aged 17–30 buried with a range of finds of probable later 7th century date, including a silver wire ring, one whole and one partial pendant formed of a thin sheet of antler pedicle suspended by an iron loop, the former with punched dots in concentric circles, a further pendant made out of a re-used annular glass bead within a sheet copper frame and a bone comb which has a rather wider date range (Fig. 6.25). Several iron tools lay at the woman's left side, perhaps in a bag, and included a set of shears, a knife, and probable sharpening steel. An iron ring and chatelaine, among other objects, lay over the pelvis. A mass of beads was also found in the neck region which, although including several forms that span the entire Early Anglo-Saxon period, exhibited amethyst types of the late 7th century and a glass bead of a type dated to *c* 675–750 at Dover Buckland (Evison 1987, 61–3). Immediately to the east and within a penannular ditch lay grave 262, the burial of a man aged 30–45. Finds in the grave, all found at the waist, included a lace-tag and a small copper alloy buckle of late 7th century type. The most distinctive object, however, is an earlier 7th century Kentish type buckle, of copper alloy but probably

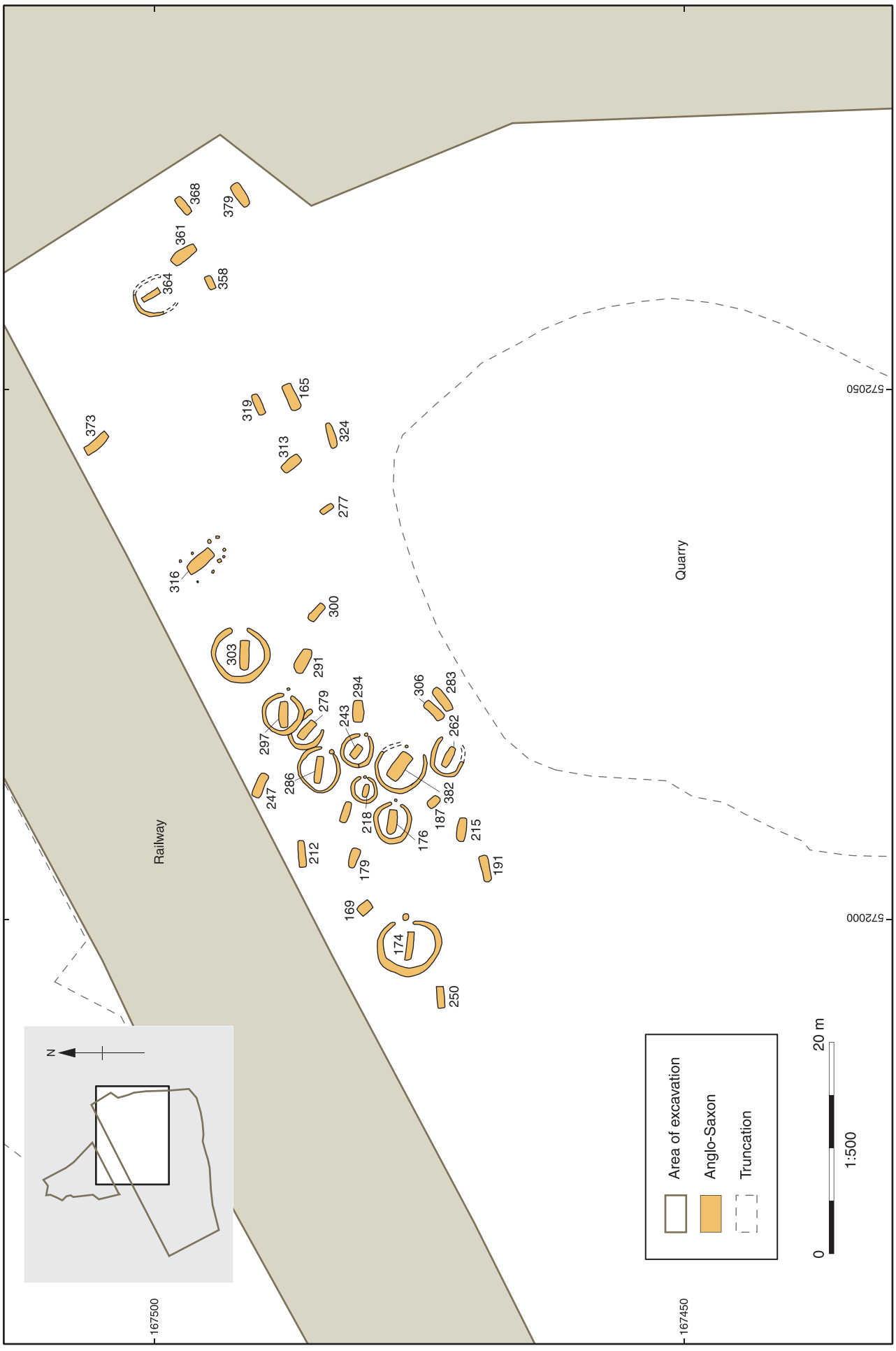


Figure 6.23 Cuxton: overall plan of the Anglo-Saxon cemetery

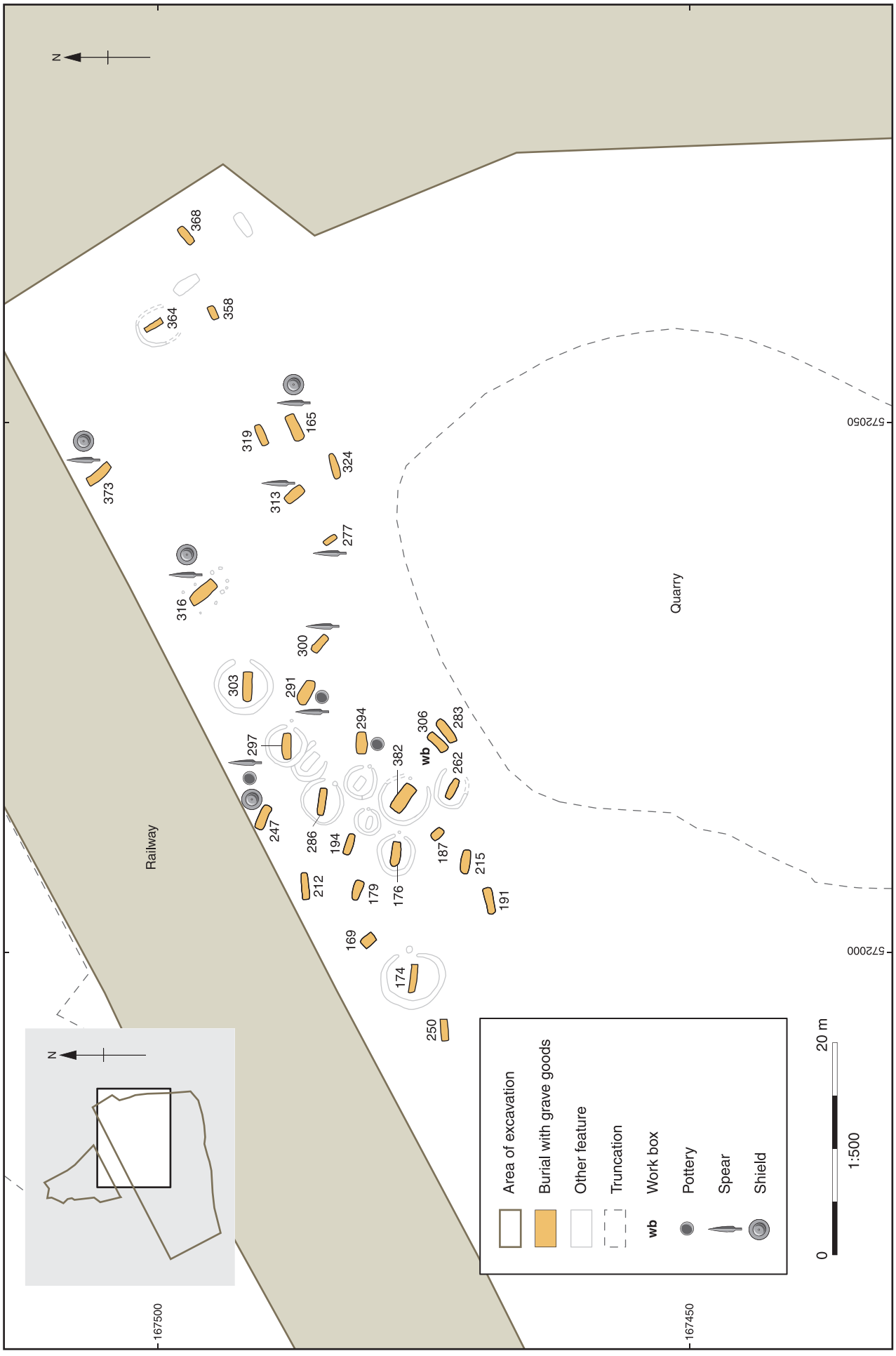


Figure 6.24 Cuxton: plan of the distribution of grave goods

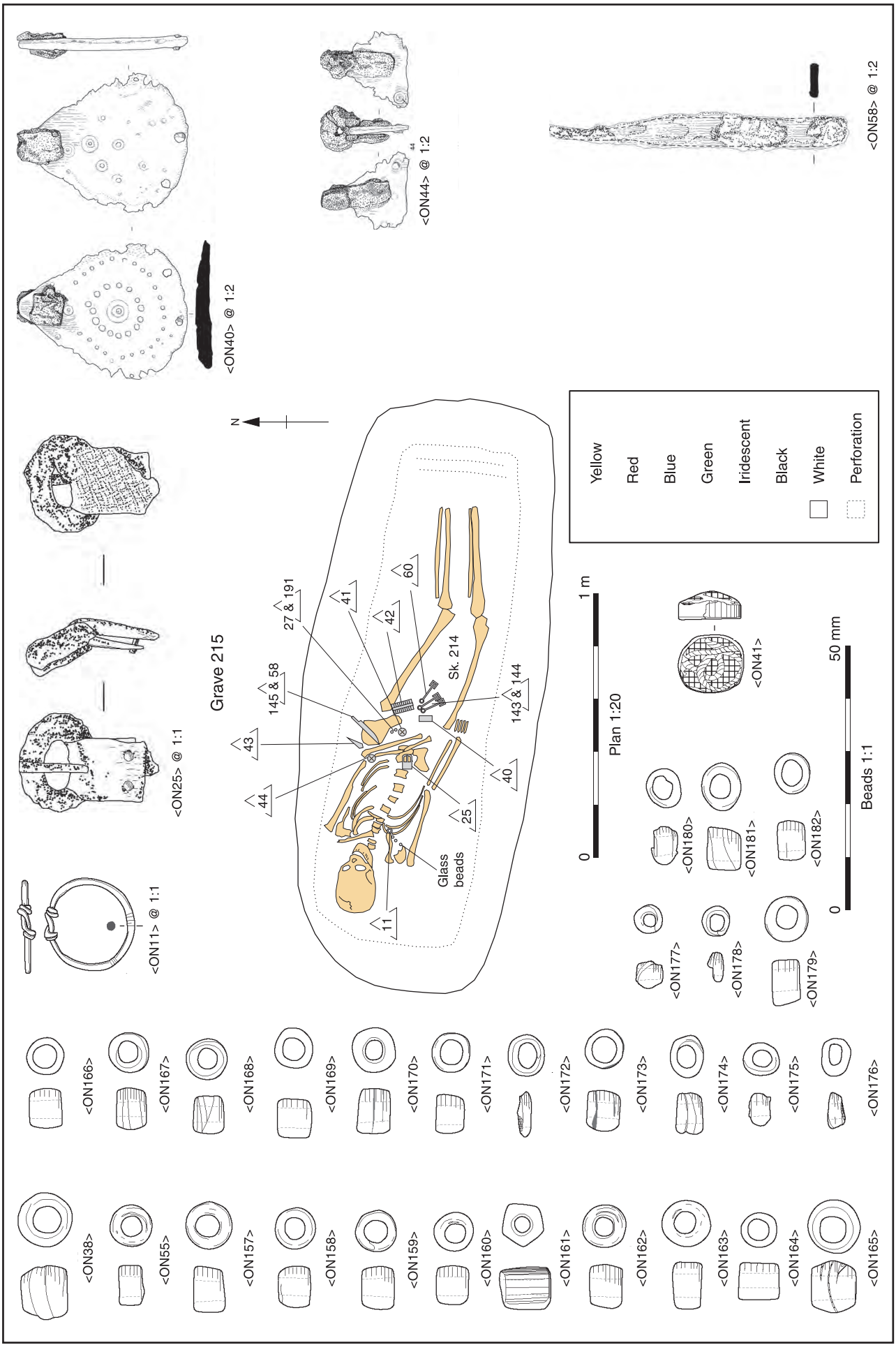


Figure 6.25 Cuxton: grave 215 and its associated finds (NB location of <ON199> not specified, ON27, 136, 142, 191 and 199 not illustrated)

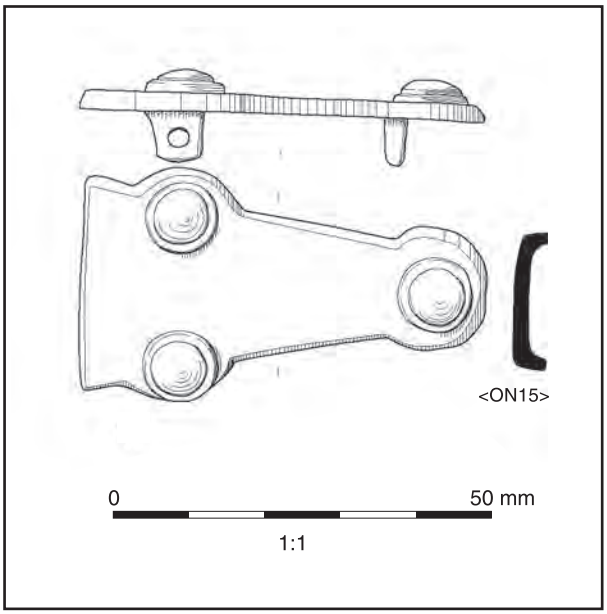


Figure 6.26 Cuxton: early 7th century Kentish type buckle from grave 262

originally gilded, formed of a triangular counter plate with three iron rivets, each formerly covered with gilded domed mounts, a buckle plate and loop (Fig. 6.26). To the east of grave 262, lay graves 283 and 306 side-by side. Grave 283 (Fig. 6.27) contained only a few skull fragments but the objects within the grave suggest a male burial. A continental type buckle, broadly similar to that from grave 262 discussed above, with a triangular counterplate, probably dates to the first half of the 7th century and is very likely of insular manufacture, while two iron knives and an awl were also found. Most striking was the finding of a kidney-shaped, copper alloy purse frame measuring 250mm across, a 7th century artefact type, perhaps dating to the second half of that century (Fig. 6.28). Two small copper alloy buckles and a small copper alloy mount are probably purse fittings, while a possible sharpening steel may have been contained within. Purse frames are very rare finds and only three insular parallels for the kidney-shaped Cuxton example are identified by Lyn Blackmore in her discussion of the find: from the Mound 1 ship burial at Sutton Hoo (dated to the late 6th or early 7th century), from grave 1356 at the Buttermarket cemetery Ipswich, and from the high-status female burial from Swallowcliffe Down, Wiltshire (both dated to the second half of the 7th century) (Blackmore 2006, 29; Bruce-Mitford 1978, 487–522; Scull and Bayliss 1999, 41; Speake 1989, 80).

The adjacent grave 306, however, contained some truly remarkable objects. The use of the Cuxton cemetery spans the period of the conversion to Christianity in Kent (from AD 597) and evidence for the local impact of this process at Cuxton is provided by the contents of grave 306, which included two objects inscribed with indisputably Christian iconography. First, the lesser finds. Four silver wire rings confirm a 7th century date, while a gold scutiform pendant with a cross-like motif and a prominent central boss also fits this date range. A further gold pendant has a glass setting *en cabochon*. Iron finds include a chatelaine and parts of iron knives.

The most important finds, however, are the two copper alloy work- or reliquary-boxes found by the upper and lower left leg respectively (Fig. 6.29). These objects are thought to have served either of two functions: they might contain prized personal possessions or perhaps fine tools such as sewing equipment, or they might contain relics or other devotional objects. One basic difference is that certain boxes were clearly designed to be opened, whereas others were not and Hawkes suggests that the distinction between amuletic or functional contents can be determined on these grounds (Hawkes 1973, 197). Both of the Cuxton containers were designed to be opened. Meaney's excellent discussion makes it clear that a range of purposes is likely for these objects, noting that scraps of cloth sometimes found within are very small and drawing attention to David Brown's observation that none is known to have actually contained needles (Meaney 1981, 181–9). Workboxes were apparently worn in one of two ways; either around the neck or suspended from the waist (Wamers 1995, 148–51). The larger of the two containers is probably of eastern Mediterranean Byzantine origin, whereas the smaller of the two is of probable insular manufacture. Lyn Blackmore has discussed both objects in full and what follows is drawn from her detailed consideration (Blackmore 2006, 35–41).

The larger Byzantine object (ON22) is formed of a rectangular sheet of copper alloy rolled to form a tapered tube 67mm high, with a diameter at the wider base of 25mm. The base is formed of a separate disc, while the object has three chains fixed to loops on the tube, each of which is suspended from a copper alloy ring. A further chain attached to the ring is connected to a lid which fitted inside the upper, narrow, end of the tube. Four bands of lightly incised lines run around the tube. Overt Christian symbolism has been added to the container in the form of two groups of three mounds set opposite to each other either side of the two central incised bands. The form of the mounds is varied but it is clear that this secondary decoration is intended to represent the Calvary and the hill of Golgotha.

The Byzantine container finds its closest parallels in graves of the highest status and, indeed, the closest known comparison is from a very wealthy female grave underneath Frankfurt Cathedral dated to the late 7th century (Hampel 1994, 167). Only two other English finds are known, one from the Kentish cemetery at Kingston Down (grave 222), and the other from the 'princely' Prittlewell grave found recently in Essex (Fausett 1856, 81, pl 13, 7; Hirst *et al.* 2004, 28). The second workbox (ON21) is rather larger with a diameter of 60mm and a height of 48mm. It too is formed of sheet metal although its workmanship is cruder with the exception of the zoomorphic fitting which was originally set with a hinge vertically on one side of the object. One side of this hinged plate has secondary decoration in the form of very fine, and barely visible, incised lines. The zoomorphic form of the plate has been emphasised with

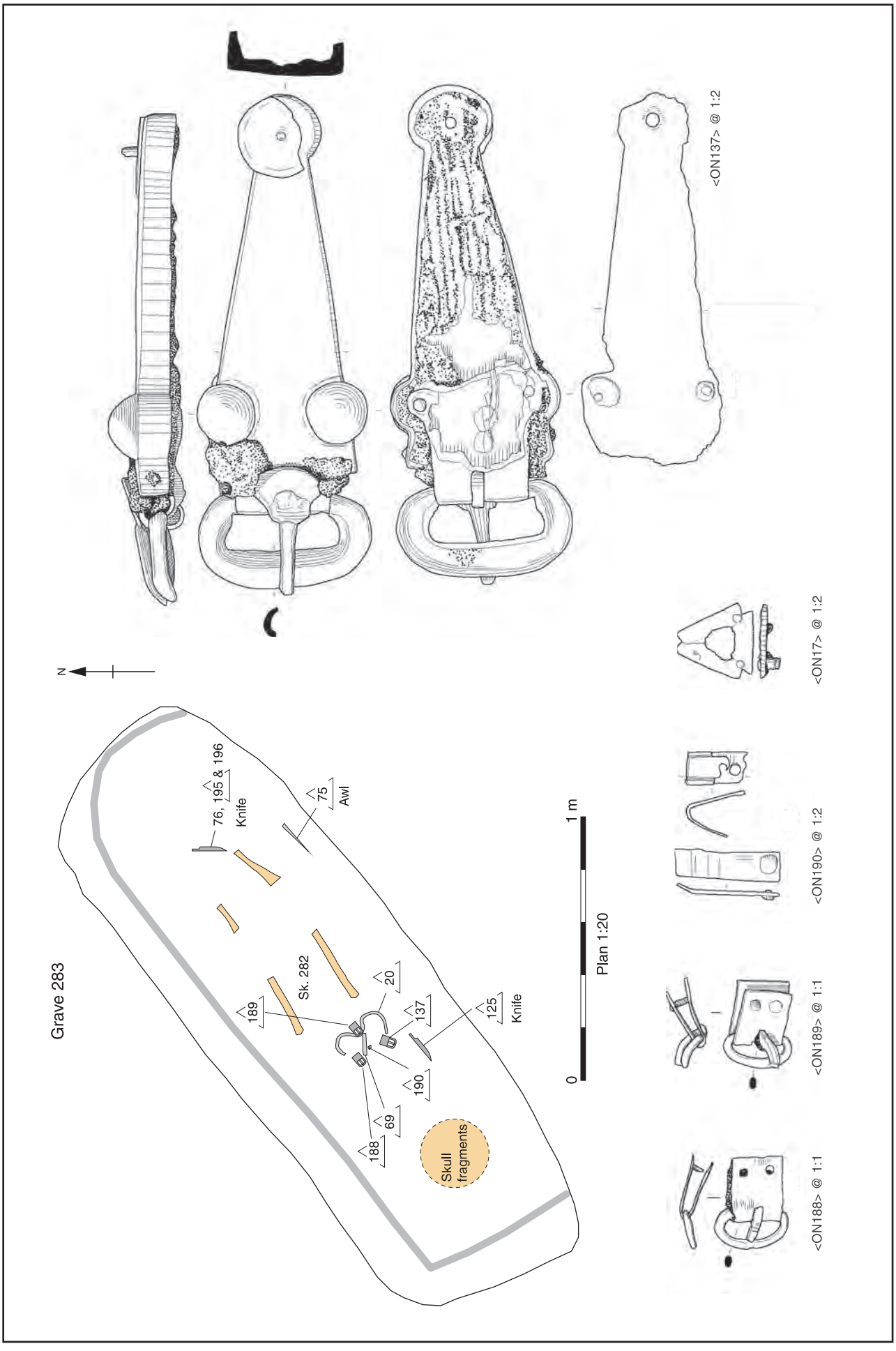


Figure 6.27 Cuxton: plan and selected grave goods from grave 283

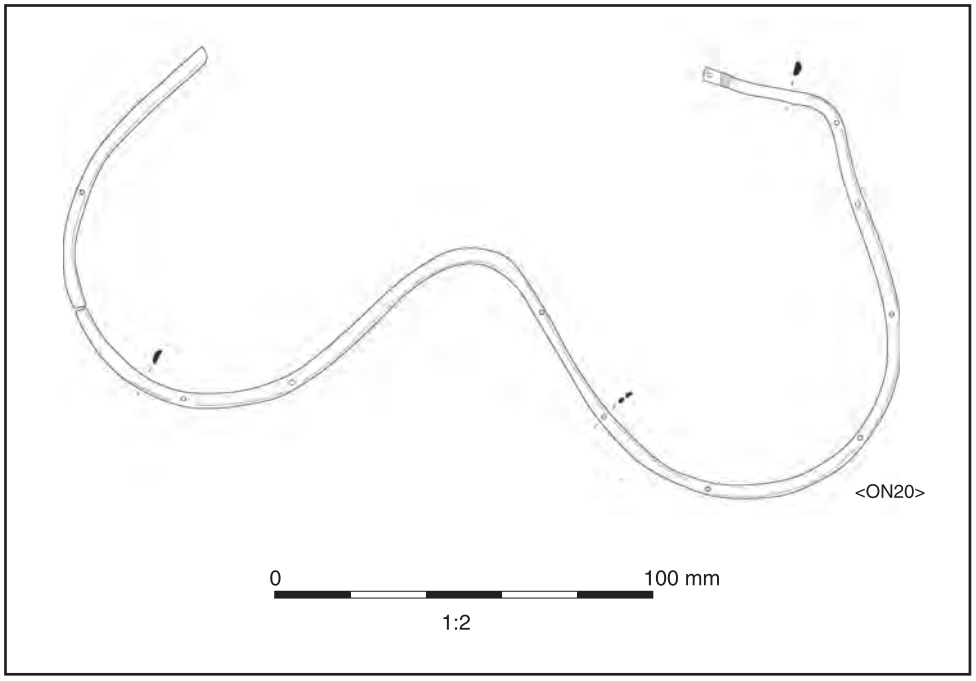


Figure 6.28 Cuxton: purse frame from grave 283

fine lines to form a central panel which has then been filled with a Latin cross with expanded arms set on a mound with two smaller crosses either side. The whole arrangement, while different in style and quality of execution, is clearly the same iconographic scene as that found on the Byzantine workbox. It is suggested that the faintness of the secondary decoration would have rendered the scheme invisible to anyone other than the owner of the object (Blackmore 2006, 39) and perhaps this reflects the reality of a society undergoing fundamental ideological change as was the case in 7th century Kent.

Cuxton conclusions

Although the graves at Cuxton were generally less richly furnished than those at Saltwood and other east Kent cemeteries, similarities are nevertheless evident. The importance of prominent topography and location by an important route of communication are shared characteristics, although no earlier barrows are recorded at Cuxton. The Kentish tradition of enclosing graves with penannular ditches is seen at both sites. The differences in wealth can be accounted for not only by geographical and economic factors, which are certainly key, but also by the fact that Cuxton is a largely 7th century cemetery and it was during this period that nationally the wealth and range of objects buried in inhumation graves rapidly declined. The full complexity of the wealth differences between the two halves of the county has been discussed by Stuart Brookes in a powerful and persuasive analysis (Brookes 2007a, 146–50). The Byzantine container from grave 306 indicates that the inhabitants of west Kent had access to continental imports, like their counterparts in the east of the county, but in a less spectacular fashion and in a rather different context, in this case probably that of personal devotion. Paranoia regarding changing religious affiliations is perhaps exhibited in the insular workbox from grave 306 and this provides an instance of how archaeology might contribute to debates about the nature of ideological change and its social context in local communities. The purse frame from grave 283 places that burial alongside those of a very special kind elsewhere in Anglo-Saxon England.

Where the Cuxton community actually lived is at present unknown, but given that only a handful of wealthy graves are known which are likely to span the entire 7th century, perhaps three generations of one social unit are represented. In this respect a comparison might be drawn with the eastern and western cemeteries at Saltwood.

Investigations at White Horse Stone

While the study and reconstruction of Roman roads constituted a field of enquiry in its own right in the 1940s, 1950s and 1960s, including a study of the routes of the Weald (Margary 1948; 1955), the study of Anglo-Saxon and medieval routeways has seen much less attention, despite the fact that the framework of roads and routeways in the modern landscape owes much more to the post-Roman centuries than before. Roman roads, at least the principal routes, are far more suited to study having a known structural composition in terms of materials and well-known characteristics in terms of their straightness in the landscape. While these latter features certainly apply to major Roman routes, much less is known about minor ones. The large-scale investigations at White Horse Stone, Aylesford, have provided a valuable archaeological view of the intersection between a major Roman route, leading south from Rochester across the Weald towards Hastings and the so-called Pilgrim's Way, a late name given to an early route, perhaps even that used by William during his conquest of

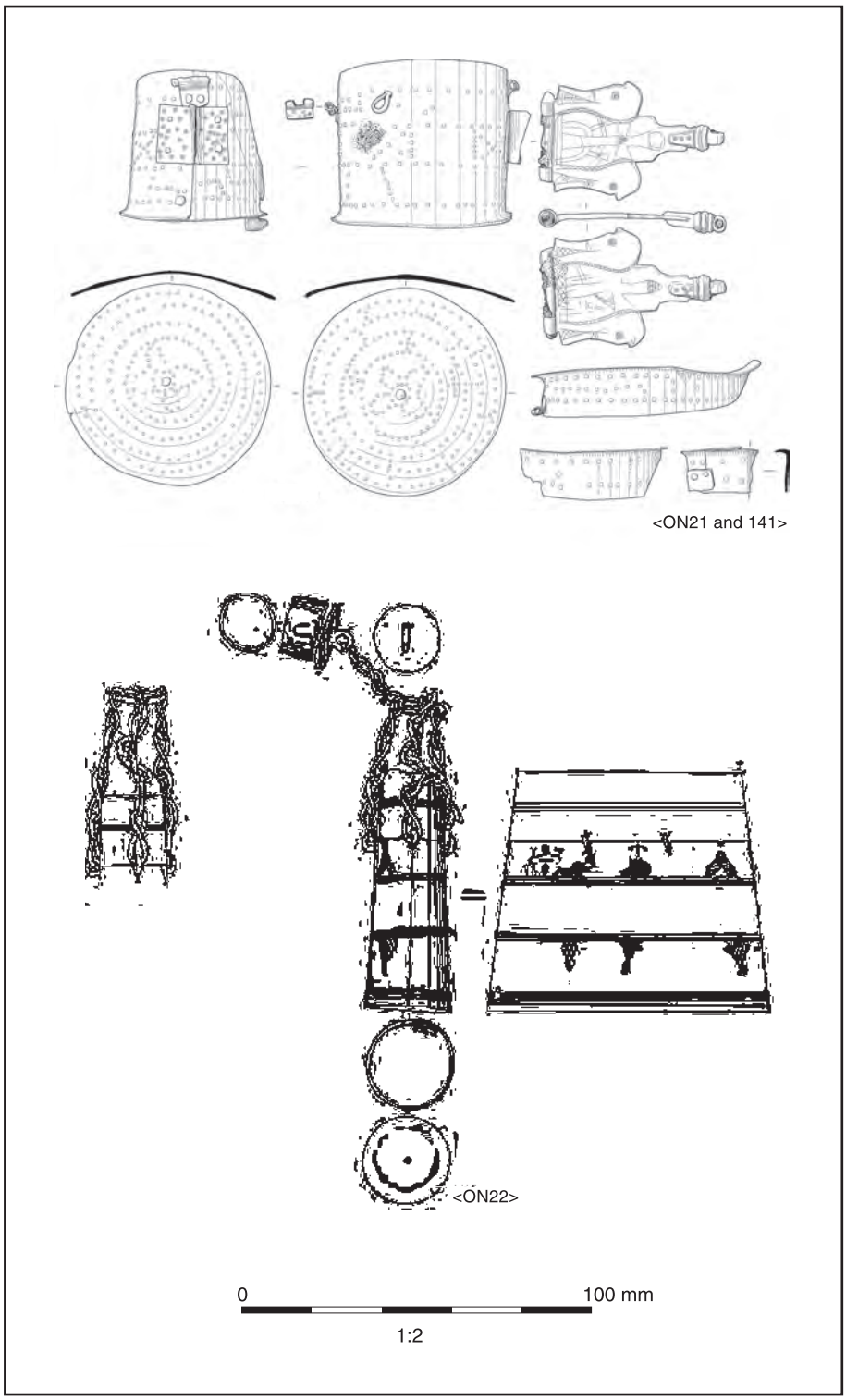


Figure 6.29 Cuxton: containers from grave 306

Kent immediately following Hastings and on his (rather circuitous) way to London (Banyard 2004, 34). Archaeology shows that the route is indeed ancient.

Three interventions were made in close proximity to each other; from north to south known as White Horse Stone, Pilgrim's Way and West of Boarley Farm (Hayden 2006a) (Fig 6.30). Parallel ditches of Roman date were recorded running north-south through the first two trenches and these are likely to represent the course of the Roman road. A section through the Pilgrim's Way itself revealed a sequence of three holloways, each with flint metalling, the first of which was aligned slightly differently to the later routes, while the second holloway had become largely infilled before the third had formed. The current Pilgrim's Way reflects the course of the second and third holloways. Rather than reflecting periods of disuse of the route, the archaeology no doubt reflects a common feature of major early roads whereby prolonged periods of wet weather led to minor local detours being made around impassable stretches,

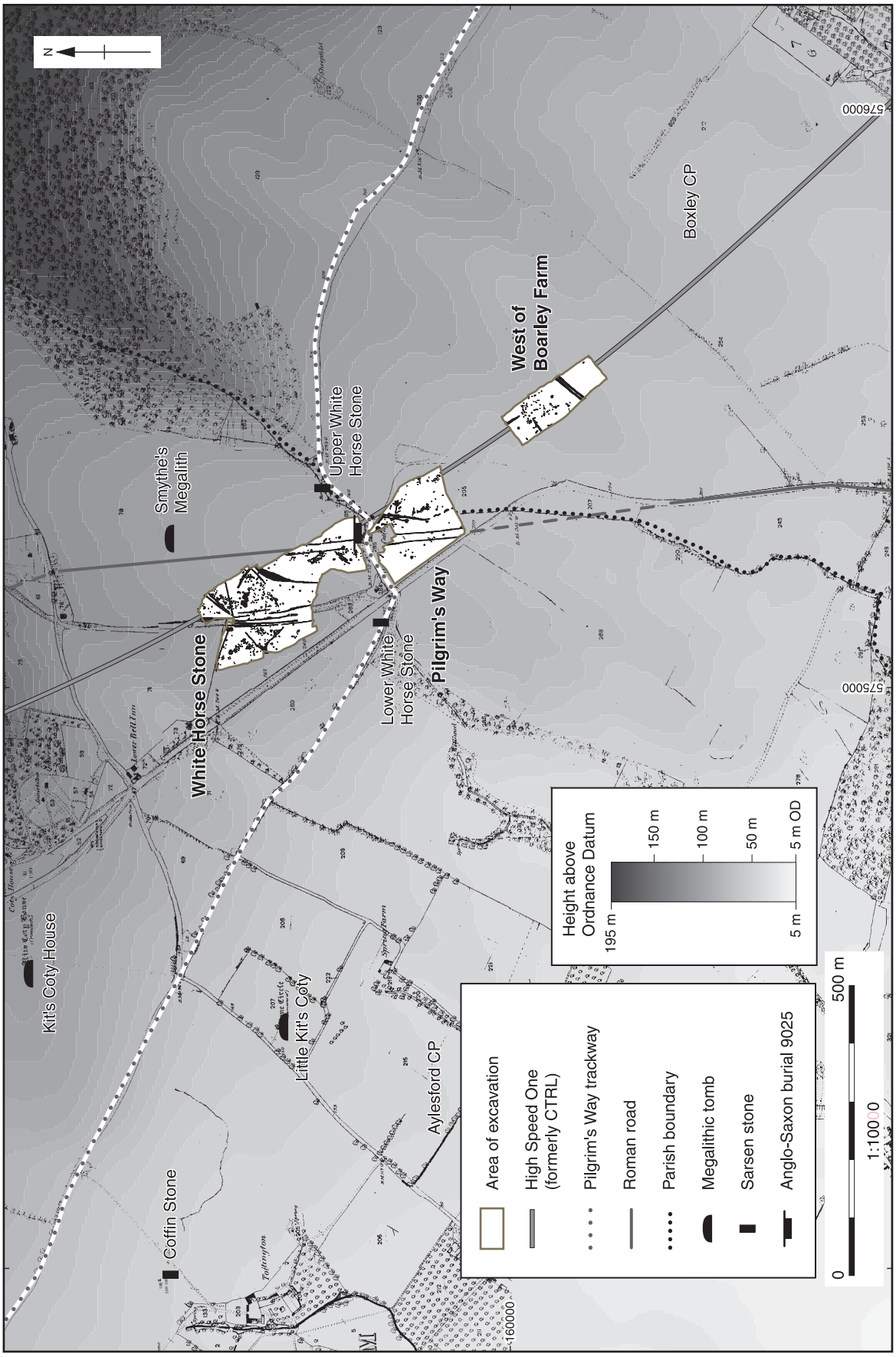


Figure 6.30 White Horse Stone overlaid on the 1st Edition OS map (6 inches to 1 mile, 1869)

perhaps for a short period or perhaps longer. The Wessex ridgeway provides a clear example of this process (Crawford 1960, frontispiece).

With regard to dating the Pilgrim's Way, several observations can be made. The earliest of the holloways overlay a buried agricultural soil which was cultivated into the Roman period but not after, while a burial (see below), which predated the third Holloway, is radiocarbon dated to between the late 7th and late 10th centuries AD. It seems reasonable, therefore, to infer at least a Middle Anglo-Saxon date for the route overall and, on the basis of the processes of infilling and re-surfacing, perhaps a date early in that range.

Besides the archaeology of the routeways, a striking archaeological example of an explicit relationship between a crossroads and an Anglo-Saxon burial was revealed. The burial of an unaccompanied female aged 25–35, laid supine with the arms folded across the chest, was found just 5m north of the boundary line in the north-east quadrant of the crossroads (Fig. 6.31). A radiocarbon determination from the woman's femur returned a date of cal AD 680–980 (GU-9013). Not only was the burial located at a crossroads, significantly the boundary between the parishes of Aylesford and Boxley, and also between the hundreds of Maidstone and Eyhorne, runs across the intersection. Until recently, crossroads burial was considered to be a post-medieval practice, although re-evaluation of the evidence from Anglo-Saxon charters and careful study of isolated interments with radiocarbon dates confirms that the practice begins as early as the 6th century in England (Halliday 1996; Clarke 2004; Reynolds 2002; 2009).

The motivation to bury an individual at a crossroads is likely to have been driven by a desire to permanently remove the corpse of a person who had died in unusual circumstances, for example suicide, from the realm of the living. Certainly, there was a fear in the Middle Ages of revenants haunting the living and burial at a crossroads is often considered to a reflect a desire to confuse a corpse raising itself from the dead and to prevent it from returning to the community (Caciola 1996; Murray 2000, 46–9). Burial in a boundary location was also viewed as a fitting place for the burial of social outcasts and the location of such a burial here of 8th, 9th or even 10th century date suggests also that the administrative structure of the landscape was in place by the time the interment was made. While it is unfortunate that the burial cannot be more closely dated, this latter observation nevertheless has major implications for our understanding of the chronology of territorial units in the Kentish landscape and a comparable chronological picture emerges from other southern English regions (Reynolds 2009).

Further Anglo-Saxon archaeology was recorded at West of Boarley Farm, where a series of pits, postholes and several ditches appear to represent Middle Anglo-Saxon agricultural and settlement activity (Fig. 6.32). Although no clear structural ground plans or fence lines are evident from the distribution of postholes, and very few of these were excavated, four pits containing animal burials were excavated, two of which provided radiocarbon dates. Pit 1036 contained an almost complete articulated cow skeleton and returned a calibrated date of AD 700–1000 (GU-9086), while pit 1061 contained a horse burial calibrated to AD 680–900

Figure 6.31 White Horse Stone: burial of an Anglo-Saxon woman

(GU-9087). Pit 1004 contained the maxilla, and pairs of mandibles, radii and humerii of a young horse, while pit 1040 contained pairs of femora and humerii and other bones from a neonate pig. These latter finds might reflect the consumption of selected body parts, perhaps linked to social rank, or they may be ritual deposits (Sykes 2004; Hamerow 2006). Pit 1057 was probably cut much later as it contained modern glass, and also produced a single sherd of Ipswich ware, further confirming activity in the vicinity from the 8th century (Blinkhorn 1999, 9).

This activity was found in the northern part of the trench in close proximity to two undated ditches (1301–2) perpendicular to each other that described the south-east corner of an enclosed area in the north-western part of the trench. Two further ditches (1303–4) running NE-SW through the southern end of the trench may also belong to the Anglo-Saxon phase, but equally they may be earlier. Only two minor features were recorded to the south of these ditches and the absence of animal bone and other refuse in their filling also supports a date prior to the settlement activity, although they are respected by the settlement archaeology and were thus presumably visible in the Middle Anglo-Saxon period.

White Horse Stone conclusions

Evidence for Middle Anglo-Saxon settlement activity is currently rare in Kent away from the major urban and ecclesiastical centres and the coastal fringe, although the discovery of a Middle Anglo-Saxon domestic pit at Otford is a recent exception (Bennell and Stump 2007). Further work at Boarley Farm might well reveal more coherent settlement remains, but the absence of coins, imported pottery, or even local pottery, suggests a low-status site connected with the processing of animals of

Figure 6.32 West of Boarley Farm: Middle Anglo-Saxon agricultural and settlement activity

various kinds. The proximity of the site to the junction of two major routes may have been due to the regular passage of herds and flocks. The woman buried at the crossroads may have been a stricken traveller or perhaps even an outcast of the Boarley Farm community, while the location of the burial here in the 8th century or later may have been driven by a combination of the crossroads with the boundaries of important local territories.

Later medieval activity was sparse and restricted to the Pilgrim's Way intervention. A roughly built crop-drier, formed of a pit with the sides lined with sarsen stone, is dated to the 11th–13th centuries on the basis of pottery finds from the fill, although the drier itself showed no signs of having actually been fired. The drier lay immediately to the west of a truncated holloway that ran for 83m southwards from the north end of the trench and petered out. Horseshoes and horseshoe nails from cobbling suggest that the holloway is no earlier than the 13th century. A short distance north of the drier, a scatter of postholes and a pit may represent associated features. Short sections of two small ditches containing 11th–14th century pottery were also observed in the northern part of the trench.

Mersham: Middle to Late Anglo-Saxon iron-working and medieval agriculture

Moving into the Middle and Late Anglo-Saxon periods, the nature of the archaeology revealed by the HS1 changes from a record largely of communities in death to one of communities at work. Excavations at Mersham, west of Saltwood, revealed substantial evidence of an iron-working site, with the main period of occupation dating to between the mid 11th and mid 12th centuries. The excavation site, which covered just under 1 ha, lay immediately to the south-west of St John the Baptist Church at Mersham (Helm 2006, 4) (Fig. 6.33). As a territorial entity, Mersham first enters the written record as *Merseham* (Maersa's homestead) in AD 858 when it is referred to as being converted to 'folkland' in a charter of King Æthelberht, sub-king (of the West Saxons) of Essex, Kent, Sussex and Surrey from AD 858–60 (Sawyer 1968, 152, no. 328). In AD 863, by which time Æthelberht was king of Wessex, a further grant of land was made at Mersham (ibid., 153, no. 332) and it is reasonable to suggest that the basic territorial framework that survives as parish units in the modern landscape was established by this time in the vicinity. Further charters relating to lands at Mersham were made in AD 1042x1066 and AD 1053x1090, which further attest to the complexity of land ownership and transaction in the Anglo-Saxon period (ibid., 312, no. 1047, 325, no. 1090; Kelly 1995, xxxii, fn. 57).

Folkland is much debated in Anglo-Saxon studies and the Mersham charter of AD 858 is a key document for understanding the meaning of this term which is otherwise referred to in only three other documents of the Anglo-Saxon period: the early 10th century laws of Edward the Elder, the 10th century poem known as *The Wife's Lament*, and in the will of a 9th century ealdorman Alfred (I Edw 2; Attenborough 1922, 117; Sawyer 1968, 422–3, no. 1508). Folkland was long considered to be land held under common law, unlike bookland which was subject to conditions laid down by royal charter, but close attention to the wording of the earliest Mersham charter reveals that it could be created, as Æthelberht 'turned it [Mersham] into folkland for himself'; a statement that Sir Frank Stenton interprets as the king imposing obligations of food-rents and customary services on land which was formerly exempt from such burdens (Stenton 1971, 310–11). The full complexity of the debate regarding the creation and meaning of folkland is beyond the remit of this paper, and Stenton's view has been particularly criticised by Eric John (1964, 36–7), but the Mersham charter is central to its understanding whatever view one takes.

By the time of the Domesday Survey, Mersham was in the hands of the Archbishop of Canterbury and the commissioner's report describes a broadly based agricultural economy, noting land for 12 ploughs, 2 mills, 2 salt-pans, 13 acres of meadow and woodland for 30 pigs, and the presence of a church (Williams and Martin 2002, 9). Shortly after the Great Survey, the monks of Christ Church, Canterbury, owners of Mersham before the Norman Conquest, appear to have re-asserted their authority over the estate (Smith 1943), according to a payment to them of 28*d* in a list of dues received from priests and churches in the so-called *Domesday Monachorum* (Douglas 1944; Tatton-Brown 1988, 114). A group of Domesday-related texts, the *Domesday Monachorum* concerns estates belonging to the archbishop of Canterbury, the monks of Christ Church, Canterbury, the bishop of Rochester and several other Kentish landowners. With regard to the history of early English land tenure, then, Mersham holds a special place, but what of its archaeology?

At Bower Farm, close by the excavated site, a cemetery of 6th to early 7th century date is indicated by 19th century finds (Richardson 2005, sites 174 and 175; Brookes 2007a, 224), but otherwise occupation at Mersham itself is first indicated by three sherds of Canterbury-type Sandy Ware, which has a date range of 775–875, and one further 'miscellaneous' Middle Anglo-Saxon sherd, unfortunately all residual finds in later contexts found during the HS1 excavations; their presence is significant nevertheless (Mepham 2006a, 3).

The earliest tangible activity found at Mersham is represented by a scatter of pits and a curving gully at the northern edge of the excavation (Figs 6.34–5). The largest of these pits (1160) contained a substantial quantity of metalworking debris (51.434kg) resulting from both smelting and smithing activity as well as horn-working waste in the form of cattle and sheep/goat horn-cores. Three smaller pits contained pieces of tap-slag resulting from smelting, although no direct traces of such activity, namely hearths or furnaces, were found in the excavated area relating to either the Anglo-Saxon or medieval phase. This may be due to later truncation of features, which is thought to have led to the loss of as

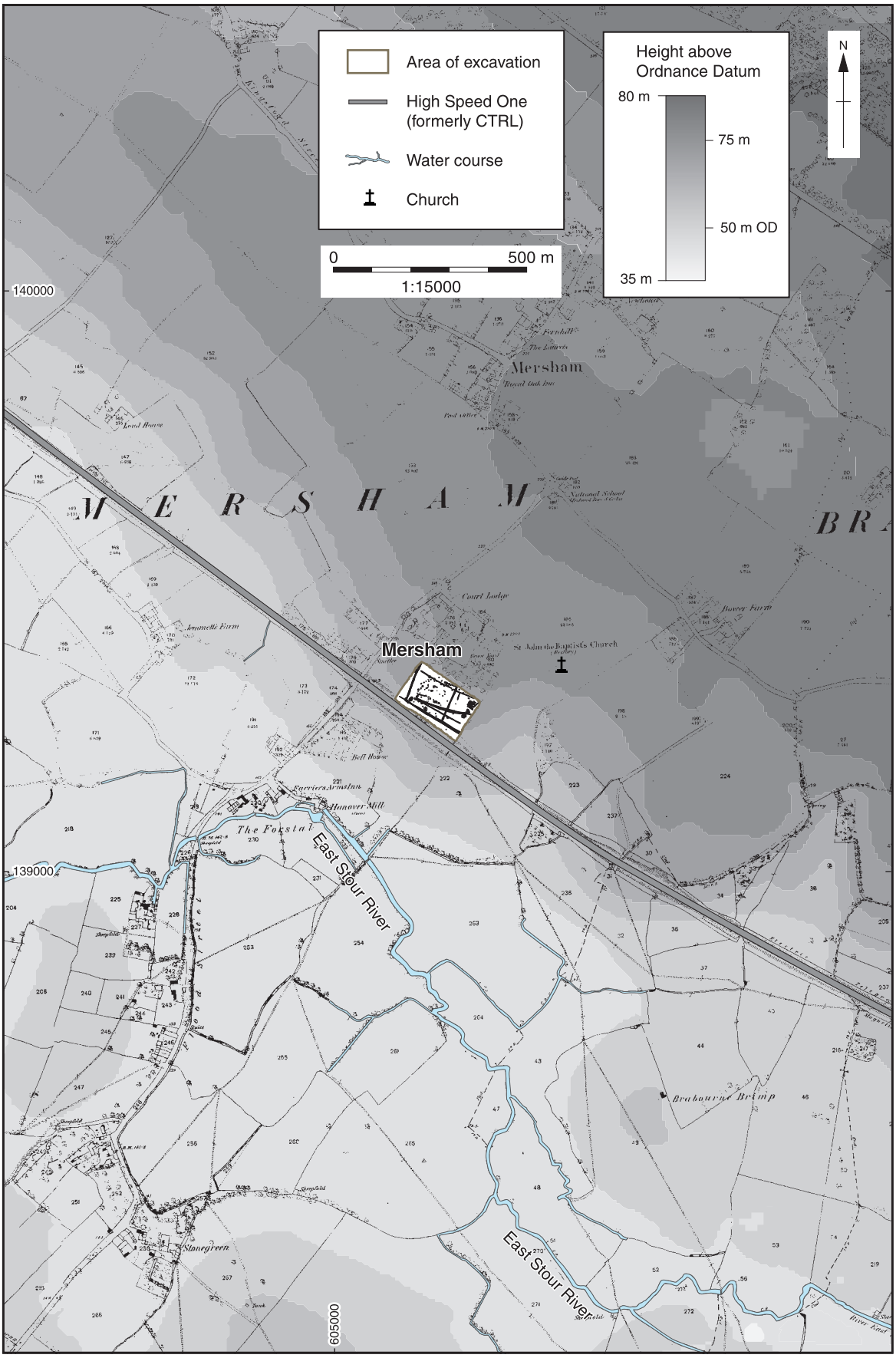


Figure 6.33 Mersham: topography and archaeological background overlaid on the 1st Edition OS map (6 inches to 1 mile, 1876–1877)

much as 1.5m of deposits in places (Andrews and Riddler 2006, 14). The type of slag found indicates the use of shaft furnaces whereby molten slag was tapped as opposed to the continental non-tapping method which is attested at the only other iron-smelting site of the Anglo-Saxon period known in the Weald at Millbrook in the Ashdown Forest of Sussex, where radiocarbon determinations place the industry there in the early 9th century (Tebbutt 1982). Continental-type furnaces were generally replaced by shaft furnaces in the 9th and 10th centuries, a process documented archaeologically at Ramsbury in Wiltshire (Haslam 1980). More widely, smithing and smelting of iron and precious metals are attested at other Anglo-Saxon secular sites, particularly at manorial estate centres, such as Faccombe Netherton, but also at higher status sites, such as Cheddar (Fairbrother 1990, 244–54; Biek 1979, 252–8). Smithing and smelting are also known, however, at Anglo-Saxon sites that appear to lack a high-status component as at Catholme, Staffordshire (Brown 2002, 113–5).

Although no structures were identified relating to this phase, the pits had evidently been re-used for the disposal of rubbish which was mainly domestic in nature and included animal bone and utilitarian pottery (Kitch 2006b; Mepham 2006a).

The mid 11th century saw an intensification of activity and a continuity of function until the mid 12th century. A new boundary ditch delimited the southern edge of the site and followed the natural topography of the plateau upon which the site lay. No features were observed to the south of this latter ditch, while to the north, adjacent to a possible entrance, lay a large sub-circular feature measuring *c* 8m by 5m, probably a pond for the quenching of iron blooms and the washing of iron ore

Figure 6.34 Mersham: late Saxon features (AD 775–1050)

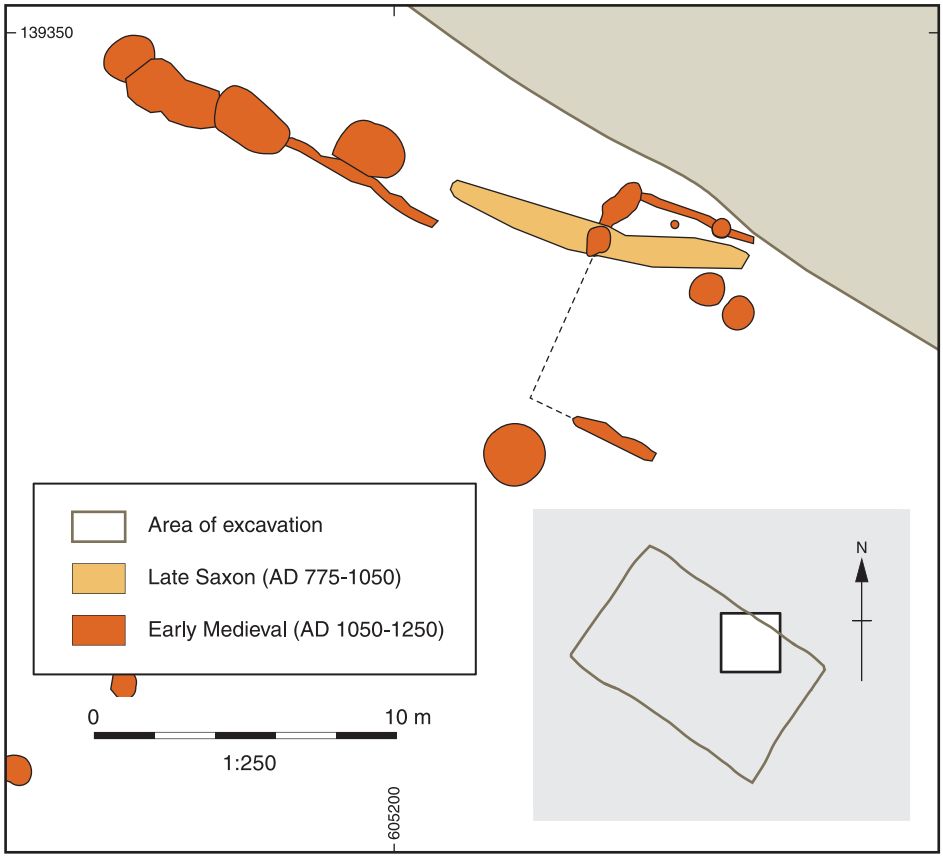


Figure 6.35 Mersham: possible late Saxon building

before roasting (Helm 2006, 9). The 'pond' was fed at one time or another by one of three linear ditches converging on it from the east. Many more pits (82) were dug, probably with the primary purpose of providing clay for the building of hearths and furnaces and for the daubing of buildings, although at least nine were used as cess pits and 41 contained metallurgical and domestic waste; 18 contained only the former and six only the latter (Helm 2006, 9–10; Andrews and Riddler 2006, 17). Most of these pits lay in the north-western part of the site covering the area of Middle-Late Anglo-Saxon occupation (Fig. 6.34). Plausible evidence for a contemporary building was identified at the north-eastern limit of the distribution of pits and at the edge of the excavation area. Parts of three beam slots and several postholes appear to partially describe three sides of a structure, measuring *c* 7.6m by 4m internally, resting on beams set into narrow trenches (Fig. 6.35). The entire eastern side was probably removed by the cutting of a late medieval ditch (see below). A series of pits just to the west of the building contained domestic finds including two knives, a basalt lava quern, animal bones and pottery. Besides the clear evidence for metalworking, a bone pin-beater, a clay loomweight, two iron fibre processing teeth, possibly from a flax-heckle, and a lathe-turned siltstone spindle whorl suggest textile working, probably in the 11th century rather than the 12th according to Riddler (Andrews and Riddler 2006, 3 and 9). The spindle whorl was likely to have been made at nearby *Sandtun*, where manufacturing debris has been found; such whorls are common finds in East Kent (Riddler 2001, 240, fig. 47). An iron awl indicates leather-working, a broken axe attests woodworking, while a gaming counter formed from the base of a samian vessel provides the only evidence for recreational activity (Andrews and Riddler 2006, 12–13).

Following the industrial and domestic phase outlined above, the site was evidently turned over to agricultural activity. Two new ditches were cut: one running along the southern edge of the excavated area, the other running north-east from it (see Fig. 6.34). Significantly, both ditches appear to have been preserved in the layout of field boundaries beyond the limit of excavation, in the latter case separating Court Lodge from St John's Church (see below). Dating evidence in the form of pottery indicates that both ditches were infilled in the late 15th and early 16th centuries (Helm 2006, 13), although they may have originated earlier, perhaps in the later 13th century following the cessation of industrial metalworking. Horticultural activity marked by the cutting of a series of closely spaced bedding trenches indicates a further change in land-use in the later 16th and 17th centuries.

Mersham in context

Mersham is best described as a polyfocal settlement, a morphological type first identified and discussed by Christopher Taylor in the context of the east midlands (Taylor 1977). St John's church evidently lies near the

core of the early settlement as indicated by the late 8th or 9th century sherds noted above, but almost certainly post-dates the earliest occupation, probably by about two centuries. Further distinct settlement foci are evident on Ordnance Survey maps to the north and to the south-west of the church. In this respect the layout of the settlement conforms to the character of that described in Roberts and Wrathmell's Wealden sub-province (Roberts and Wrathmell 2000, 43). St John the Baptist Church, probably a later 10th or early 11th century foundation, was rebuilt in the Norman period (Newman 1976, 424) and the main phase of iron-working and domestic occupation revealed during the HS1 investigation appears to belong between these periods in time. It is no doubt significant that the only timber building recorded in the excavation lies close to the church itself. Settlement features and pottery of 13th and 14th century date were found immediately east of St John's during quarrying in 1967, while an impressive stone-built manor house of Christ Church Priory, Canterbury, Court Lodge, built *c* 1320–1340 on a site known to have had high-status occupation from the late 13th century, lies to the west (Bradshaw 1967; Pearson *et al.* 1994, 90–1). Perhaps the cessation of metal-working and the layout of a new field pattern were associated with either the building or re-building of Court Lodge, although dues paid by Mersham to Christ Church Canterbury in the form of iron are documented from the mid 13th century and thus iron-working apparently continued there but on a different site (Andrews and Riddler 2006, 21).

Further excavation is necessary to understand the full sequence of development at Mersham, but the HS1 excavations have provided a valuable insight into the nature of rural industry and settlement on the northern edge of the Weald between the 11th and 13th centuries, and also a view of the evolving nature of the landscape over time. The sequence overall suggests frequent change in the landscape with the late Middle Ages leaving the greatest impression in terms of the framework of boundaries surviving into the modern age.

Northumberland Bottom

Just as the Cuxton Early Anglo-Saxon cemetery provides a West Kentish contrast to Saltwood in the east, excavations at Northumberland Bottom have revealed West Kentish medieval settlement evidence to compare with Mersham to the east. The added benefit to the Northumberland Bottom excavations is that an extensive area was uncovered which included evidence for three locales of medieval settlement and agricultural activity during the 11th/12th and 13th centuries. In this respect, Northumberland Bottom in the centuries following the Norman Conquest also appears to verify the apparently dispersed character of much of Kent in the medieval period according to Roberts and Wrathmell (2000, 43).

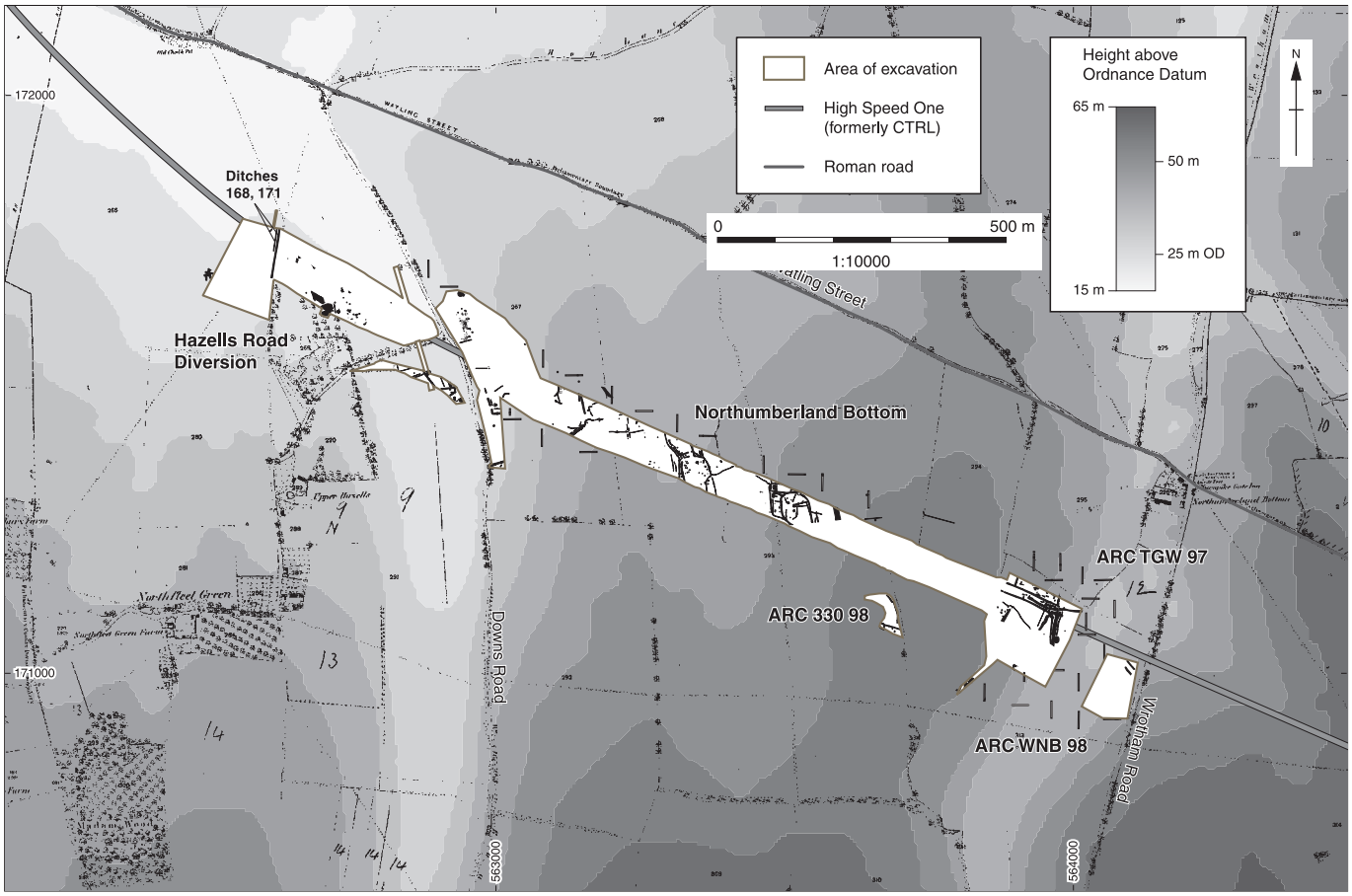


Figure 6.36 Northumberland Bottom overlaid on the 1st Edition OS map (6 inches to 1mile, 1869)

All three sites lay about 350m south of Watling Street, which itself runs from London to Canterbury *via* Rochester (Fig. 6.36). Agricultural settlements dating to the earlier and later Roman period were excavated at three locations in the vicinity with no evidence of continuity into the Anglo-Saxon period (see Booth, Chapter 5). Medieval settlement and associated field systems lay at the western end of the area investigated on either side of Downs Road, an undated trackway leading south from Watling Street and forming an irregular crossroads continuing as Hog Lane to the north of the Roman road. While on first inspection the nature of the crossroads might suggest that Watling Street is the earliest feature, the nature of the local topography determines the dog-leg at the junction of these routes and the lanes may pre-date the road; unfortunately, in contrast to Saltwood, no dating evidence for Downs Road itself was recovered during fieldwork. The Downs Road sites are undoubtedly part of the same settlement focus, while 600m to the east lay a further medieval settlement at Northumberland Bottom proper, enclosed with ditches in a similar manner to its Roman equivalent 150m to the west.

At Downs Road the settlement comprised at least one timber building sited parallel to the eastern side of the road just above a shallow terrace (Fig. 6.37). Although the evidence is inconsistent for the full ground plan of the building, it is possible to suggest a structure of *c* 28m by 7.5m, perhaps with two compartments, aligned north-south. A small cooking pit (740) within the building contained a more-or-less complete vessel dated *c* 1050–1225, suggesting possible occupation from as early as the second half of the 11th century (Mepham 2006c, 4, fig. 1.1) (Fig. 6.38). Most of the pottery recovered, 287 sherds, was of so-called North Kent Shelly Ware with a date range of 1050–1225 (Mepham 2006c, 3). A single sherd of Early Anglo-Saxon pottery dated AD 550–725 was also recovered from cooking pit 740, although the lack of further finds of the early period precludes the likelihood of settlement of this date in the immediate vicinity.

If the building was indeed of the scale suggested, then it was very large in comparison, for example, with surviving later medieval timber buildings in Kent which, at the upper end of the scale, average about 24m in length (see the numerous plans in Pearson *et al*. 1994). Indeed, the dimensions are paralleled by those of the Late Anglo-Saxon Period 1 royal hall at Cheddar, Somerset (Rahtz 1979, 50, figure 10). The nature of the foundations, postholes of varying sizes, indicates an earthfast structure, a type which was largely defunct nationally by about AD 1200. The lack of intercutting postholes, or evidence for underpinning of rotten structural members with stone footings, suggests a relatively short life for the building. A suggested threshold along the line of the narrow south wall of the building is a further unusual feature as entrances into earthfast buildings are normally found along the long walls in rural contexts.

The density of postholes at the northern end of the building perhaps suggests more than one phase. A line of posts just beyond the southern end of the building indicates a fence, itself perhaps superseded by a shallow ditch (700) a few metres to the south again.

Several pits lay both to the east and north of the building, which is a typical arrangement of so-called 'service features' (such as cess pits and rubbish pits) observed throughout the Anglo-Saxon and medieval periods. That only one possible pit (584) encroaches upon the building suggests again a short phase of occupation with most, if not all, of the features related to one phase. Overall, the structural characteristics of the building, the lack of intercutting features, and the ceramic assemblage suggest a late 11th and 12th century period of occupation on the east side of Downs Road. It is always possible that the structure is a barn. Unfortunately, environmental evidence was scarce, with only a single cattle mandible recovered from a posthole at the north-west corner of the building (Askew 2006, 38; Kitch 2006b). While one must be wary of pushing the evidence too far, it is possible that the finding of a selected body part in such a specific structural location is more than coincidence. A recent study of 'special deposits' in Anglo-Saxon settlements notes an association between high-status buildings and the placing of animal remains, drawing particular attention to the fact that many such deposits relate to the end of occupation sequences, although other examples are known where animal remains, such as ox skulls, were clearly deposited during occupation (Hamerow 2006, 26; Reynolds 2006b, 136–7). There is no good reason why elements of superstitious behaviour should not be found in later medieval contexts as is known, for example, in Scandinavia from the late 10th century through to the 17th century (Carelli 1997, 395).

To the west of Downs Road the earliest features found were two circular ovens, one of which cut the other. Both appear to have had a single chamber comprising a domed clay superstructure formed over a framework of stakes, while pottery associated with both ovens suggests a date range of *c* 1100–1250 (Askew 2006, 39); ie broadly contemporary with the occupation of the building to the east. Poorly preserved grains of rye were recovered from the floor of the earlier of the two structures, with oats, wheat and rye found in deposits relating to its destruction. The later of the two ovens yielded charred bread wheat and rye (Davis 2006). A series of boundary features describing a pattern of small rectilinear parcels of land succeeded the ovens in the second half of the 13th century, although they had silted up by *c* 1400 on the basis of pottery found within them (see Fig. 6.37).

At Northumberland Bottom itself, evidence for an enclosed settlement of two major phases provides a valuable addition to the medieval settlement record in Kent. Perched on a gentle slope with a north-west facing aspect, the earliest phase of occupation is characterised by an egg-shaped enclosure *c* 50m across, whose southern limit lay without the area of excavation (Fig. 6.39). On its northern side, the enclosure was entered *via* a 5m wide break in the ditch circuit, a gateway being indicated by two substantial postholes set back from the opening. A

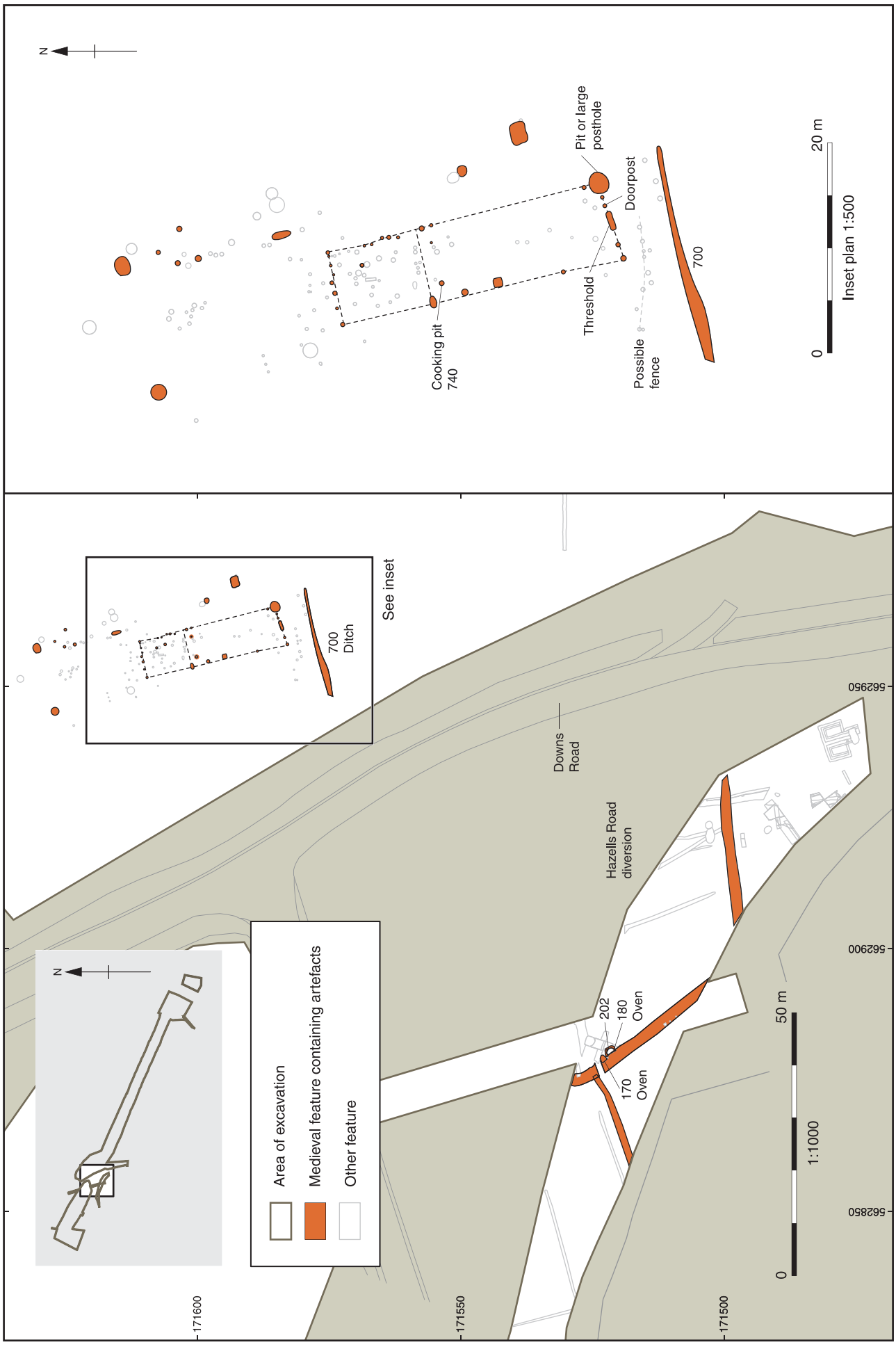


Figure 6.37 Northumberland Bottom: plan of early medieval settlement east of Downs Road and at Hazells Road

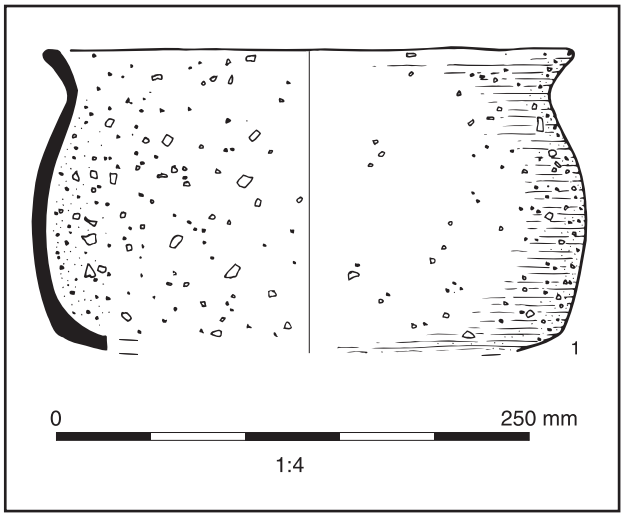


Figure 6.38 Northumberland Bottom: early medieval pot from cooking pit within the timber building

few Roman features were excavated but none appeared to have directly determined any aspect of the layout of the medieval settlement, although the medieval phase II western ditch is on much the same alignment as its late Roman predecessor. This alignment appears to be preserved in a 19th-century field boundary (see Fig 6.36), which would suggest that here, at least, there is possibly a long-lived feature in the landscape. The interior of the phase I enclosure was divided by a series of linear ditches into at least three areas. Structural evidence during this phase was limited to a line of five postholes in the southern part of the enclosure; no coherent evidence of residential accommodation was noted. It is also worthy of note that pits suggestive of domestic occupation are entirely absent from the first phase. Dating of the enclosure and associated subdivisions is provided mainly by a collection of 107 mid 11th–mid 13th century pottery sherds from one of the internal boundary ditches; a single sherd of London-type ware, imitating a Rouen style jug, is dated to after 1200 and indicates that features of this phase were being infilled in the early 13th century (Mepham 2006c, 5). The lack of pits, domestic debris and accommodation suggests a purely agricultural function for the enclosure during its early life, although it is possible that settlement lay just beyond the limit of excavation.

The second phase of activity saw a remodelling of the phase I enclosure with the addition of a rectilinear enclosure on its western side. Within this extension at the north lay a sunken area (998) possibly representing a building to judge by a series of undated postholes set around the edge of the depression. Unfortunately, the filling of this feature was not fully investigated. Further to the south, also within the area of the westward extension was another sunken area (896), either a 'working hollow' or a sunken-featured building, containing an oven. Charred remains from the building of bread wheat, barley, oats and pulses, but also plum/bullace and cherry, indicate domestic food preparation, but probably also crop-processing to judge by the concentration of cereal grain (Davis 2006). Late 13th to early 14th century pottery from the sunken featured structure associated with the oven is the main dating indicator for the second phase, although most of the pottery found is similar to that of the first phase and overall the ceramic affinities appear to lie in the direction of London rather than eastwards (Askew 2006, 41–2). A few pits containing domestic refuse could be related to Phase 2, but the remains of human occupation within them are sparse being limited to a single Niedermendig lava quern, from pit (890) close to the oven structure, and only two sheep/goat and two horse bones (Kitch 2006b).

Northumberland Bottom in context

The Downs Road settlement is in many ways similar to the 11th–13th century phase at Mersham in the sense that the landscape appears to have been characterised by small rectilinear fields of later medieval date, with a dispersed settlement pattern. Besides the lasting influence of the course of Watling Street, little if any residue from earlier periods appears in the field boundaries across the area investigated and similarly, the later medieval landscape appears not to have lasted long, having been re-planned with regular large rectilinear fields. The only possible exception was the trackway running north-south across the landscape, which appears to reference the western side of the Northumberland Bottom Settlement, which itself may have been laid out in relation to this trackway. Unfortunately, as at Downs Road, no evidence was forthcoming for the age of this routeway.

The enclosed settlement at Northumberland Bottom finds clear parallels both in Kent and further afield. Sub-circular settlement enclosures on the scale of medieval Phase I, in the region of 50–60m across, have their origins in the Middle Anglo-Saxon period, and by the 12th century when that at Northumberland Bottom was laid out they should be considered an archaic settlement type (Reynolds 2003, 112, fig. 6; Reynolds 2004). At Well Wood, Aylesford, an enclosure of similar dimensions contained clear evidence of domestic occupation, including stone buildings, and appears to have functioned between the 12th and 14th centuries (Philp 2006, 28–31, fig. 2). A similar settlement is evidenced at Lot's Hole, a site excavated at Dorney, near Eton, Berkshire, where an enclosed settlement of 12th–13th century date was evidently short-lived in a continually evolving landscape (Foreman *et. al.* 2002, 75, fig. 6.1). At Trowbridge, Wiltshire a probable manorial enclosure of 11th or 12th century date, of similar proportions to that at Northumberland Bottom medieval phase I, has an identical entrance with two large postholes set just inside the enclosure ditch marking the position of a gateway structure (Graham and Davies 1993, 34, figure 12). Slightly smaller enclosures of this type are evidenced at Wroughton Copse, also in Wiltshire, in the 13th century (Fowler 2000, 123, fig. 7.9).

Environmental evidence suggests that the Northumberland Bottom sites developed in a marginal area characterised by stinking mayweed, a plant that favours

Figure 6.39 Northumberland Bottom: plan of the medieval enclosures

heavy, waterlogged soils (Askew 2006, 43). The overall chronology of occupation, 11th–13th centuries, fits with what is know nationally of a period of population expansion. As Chris Dyer (2002, 156) has noted, the population of England in 1300 was equivalent to that in the 18th century and the period during which the Northumberland Bottom sites developed was one where less favourable lands were newly occupied, in many cases for the first time since the Roman period, and brought under agriculture in response to population growth. Put simply, the pioneering role of certain settlements that emerged during this period may have led to their failure, while others failed due to the downturn in climate, and widespread famine of the early 14th century and the onset of plague from the middle of that century (ibid., 228–9).

Westenhanger

A few kilometres west of Saltwood, the line of the railway runs immediately north of Westenhanger Castle, perhaps better described as a fortified house, of which the standing structure largely dates to the 14th century. The castle's origins, however, may well lie in the period of the Norman Conquest (Gollop 2006, 2). With such a significant element of the medieval landscape close to the route of the new line, the likelihood of further evidence for settlement was confirmed by excavation (Fig. 6.40). While medieval settlement other than the castle is first documented, or at least implied, by a grant of land from King Cnut to Bishop Eadsige in 1035, the settlement is no longer evident, nor is the lost church of St John, probably the church mentioned at Berewic in the *Domesday Monachorum*, in the same list, incidentally, as the church at Mersham; Berewic is also the name of the estate in the 1035 charter (Sawyer 1968, 292, no. 974; Tatton-Brown 1988, 114). It is worthy of note that the boundary clause of the 1035 charter describes the limits of a land unit virtually identical to those of Westenhanger Manor when it was sold in 1885, even to the extent that a detached parcel of woodland recorded in the early document (at *Gimmincge*) appears to be that at Gibbins Brook in the late 19th century sale (Ward 1935; Gollop 2006, 2). By 1191 the estate (known as *Hangre*), had been divided into Westenhanger and Ostenhanger; Hasted, writing *c* 1800, noted that the church was only recently pulled down (Hasted 1797–1801).

The archaeological evidence for medieval activity in the landscape to the north of the castle is not entirely coherent, but it is possible nevertheless to discern episodes of landscape planning and, to a degree, to investigate the nature of settlement below the level of that experienced by the inhabitants of the castle. As at Northumberland Bottom, the influence of the medieval period on the form and layout of the modern landscape appears to have been minimal with only post-medieval field boundaries in the eastern part of the area investigated traceable beyond the limits of the HS1 investigation. The excavated area covered some 6.37ha and has provided a significant opportunity to re-construct at least part of the landscape in which the castle lay.

The earliest post-Roman activity from the excavations is limited to a single sherd of Canterbury-type Late Saxon sandy ware with a date range of the mid 9th–mid 11th century (Mepham 2006b, 3). The lack of related material suggests settlement at this time in the wider locale, as is known from the documentary evidence considered above, but that the core of Anglo-Saxon settlement lay elsewhere, perhaps focussed on Stone Street to the east, the line of the Roman road from Canterbury to *Lemanis* (Lympne) (Gollop 2006, 2).

Three main periods of medieval activity were determined. The first is dated by pottery to between 1050 and 1175 and, in this respect, compares well with both Mersham and Northumberland Bottom, where settlement either begins or becomes much more substantial at the earlier end of that chronological range. Occupation during this phase is difficult to understand, owing to both a paucity of finds and direct stratigraphic relationships between features, but also to issues of archaeological visibility during fieldwork and truncation of features by later activity particularly in the southern part of the area investigated. Nevertheless, what is clear is that from the mid-11th century a series of ditches running on a NW-SE alignment formed a series of plots perpendicular to, and to the north-west of, a linear ditch (429) that ran across the entire excavated area (Fig. 6.41). Ditch 429 appeared to delimit the settlement area and no further evidence of this phase was observed to the east of it. Evidence for four structures was recorded, although in every case the remains were either truncated (Structures 1, 3 and 4) or undated (Structure 5). Structure 1 comprised two concentric gullies which, if complete, would have described a circular space *c* 11m in diameter. The gullies were narrow, between 0.25m and 0.45m wide, and several postholes and stakeholes are perhaps the remains of a superstructure. Structure 1 predated the laying out of ditched plots, although 20 sherds of pottery contemporary with the other material from the first medieval phase was recovered from the gully fills. Circular structures are known from several Anglo-Saxon settlements, Quarrington, Lincolnshire, Yarnton, Oxfordshire, and perhaps Bishop's Cleeve, Gloucestershire (Taylor 2003, 239, fig. 7; Hey 2004, 113, fig. 6.9; Enright and Watts 2002, 11). Although these latter are all of early to Middle Anglo-Saxon date (6th–9th centuries), there is no good reason to exclude the possibility of yet later examples.

On the basis of the plan of the features of this phase, it is possible to suggest that Structures 3 and 4 lay within plots described by ditches 518, 445 and 553 respectively (Fig. 6.41). Such a configuration allows for two plots of equal width (45m) with a building in each of similar beam-slot construction and, in each case, with the narrow end facing to the south-east. It must be said, however, that the traces left by Structures 3 and 4 are not as substantial as one might ideally like. Several pits were located in the vicinity of Structure 3, including pit 721 which contained fragments of daub with wattle impressions, while to the north-west of Structure 4 lay evidence

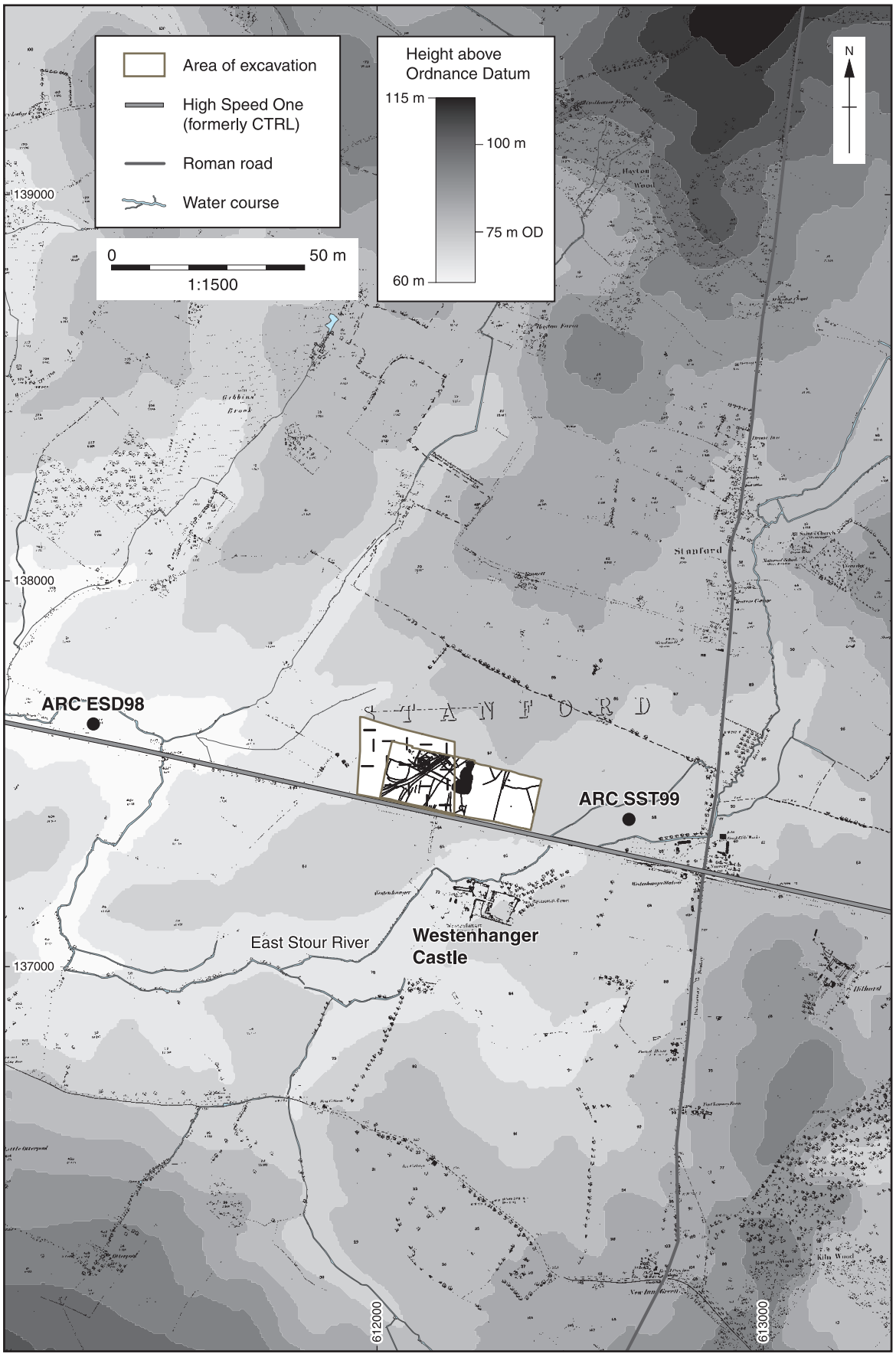


Figure 6.40 Westenhanger Castle overlaid on to 1st Edition OS map (6 inched to 1 mile, 1877)

Figure 6.41 Westenhanger Castle: medieval phase plan. Inset: early medieval

for an earthfast building (Structure 5). Although only part of Structure 5 lay within the excavation trench, its visible elements do not inspire great credibility as a domestic structure and perhaps a fence at the rear of the plot is represented by these features. A series of pits, perhaps surrounded with a fence, marked the western limit of settlement of this phase. Various other linear ditches were cut within the area of both plots during this period.

Material culture associated with this phase is unimpressive, being limited to a relatively small collection of pottery, mostly of Ashford and Canterbury type, but much of it with affinities to wares from East Sussex, two knives of probable 11th–13th century date, and several honestones of local provenance (Mepham 2006b, 3; Riddler 2006, 3). Environmental evidence associated with the settlement phase reveals the cultivation and processing of wheat, barley, rye, oat and 'celtic' bean (Stevens 2006d).

The second medieval phase is marked by the digging of a series of drainage ditches across the site, running broadly parallel to, but largely east of, ditch 429, which had limited the eastern extent of the earlier settlement. This reorganisation is dated by pottery to the late 12th and 13th centuries. During the late 13th and 14th centuries the shift in activity appears to have moved further eastwards with the cutting of a very few drainage ditches, although dating evidence is scarce for this late phase.

Westenhanger in context

Clearly, the nature of the remains from Westenhanger limits comparative discussion, yet the evidence from the other medieval settlements considered so far allows what has been found to be placed within an emerging sequence. While the origins of Westenhanger Castle have yet to be determined, documentary sources indicate settlement from the 11th century, a date confirmed by the earliest finds from the excavations, and perhaps the first phase of settlement and landscape planning, is linked to the establishment of the castle, the land perhaps having been down to pasture in the Anglo-Saxon period to judge by the lack of pottery that might be expected from the manuring of arable. In common with both Mersham and Northumberland Bottom, the Westenhanger sequence indicates dynamic settlement development, and serves to confirm a view of short-lived pioneering settlement during the post-Norman Conquest era of population expansion and the settlement of marginal land; it also underscores the limited economic sphere within which the occupants of such settlements existed. Similarities can also be drawn in the nature of dividing the land into small parcels from the mid 11th century onward.

Parsonage Farm: a medieval rectory?

A complete contrast to the living conditions of the populations whose settlements we have examined up to now is provided by the rich structural and artefactual evidence from Parsonage Farm, near Ashford, where a sequence of high-status later medieval occupation was revealed (Fig. 6.42) (Hill 2006). A short distance south of the Pilgrim's Way, the site lies on a small south-facing knoll sloping to the south. Streams on either side of the knoll converge to the south and form a partially enclosed plot of ground within which the medieval occupation lay. Immediately east of the site is Parsonage Farm itself, an impressive 16th century building.

The settlement history of the parish within which Parsonage Farm is located, Westwell, is complicated. In a recent paper, Mary Adams has reviewed documentary evidence in the Canterbury Cathedral archives relating to the foundation of the village of Westwell, which lies about a mile to the NNE of Parsonage Farm, in the 13th century (Adams 2007). Westwell was known as *Welles* in the Middle Ages and is first recorded in a will of 1005, of Archbishop Aelfric of Canterbury; the *Domesday Monachorum* records a church there by the later 11th century (Tatton-Brown 1988, 114). Before considering the development of settlement within the parish any further, however, the archaeology of Parsonage Farm requires presentation.

One of the first issues to note is that not all of the archaeological levels and features encountered were excavated. A decision was taken to protect strata not threatened by the railway and thus only very partial traces of the earliest medieval activity were revealed; masonry walls were left *in situ*.

The medieval sequence is divided into three principal phases. The earliest dated medieval activity (Phase 1 – *c* AD 1100–1175/1200) comprised a dump layer that sealed a stream channel on the eastern side of the knoll. A ditch (43503) running broadly parallel with the eastern stream, a barrel-lined well, a pit and a series of postholes and possible beam-slots were cut through the dump layer and appear to represent a building and associated features (Fig. 6.43). Dating evidence for this phase offers only a broad range. Pottery from the ditch included local types, Ashford Potters Corner ware and North-west Kent Sandy ware datable to the 12th and early 13th centuries, while imported North France/Flanders Fine White Sandy ware supports a similar date range. No material datable to before AD 1100 was found and the filling of the well, which was stratigraphically later than the structural remains, could have been deposited at any time between about AD 1125 and 1250. The dating of the Phase 2 assemblages, however, suggests a more restricted date range for the early phase with a terminal date of *c* AD 1200.

Wholesale redevelopment occurred in Phase 2 (*c* AD 1175/1200–1250) with the construction of a substantial medieval house (Fig. 6.44). The streams to the south-west and south-east were modified to create a more moat-like appearance, although the whole site was not completely enclosed until Phase 3. The absence of aquatic taxa in pollen samples and iron staining within the 'moat' sediment indicate only periodic flooding as opposed to a continually flooded water feature. The principal space of the new building was a structure 20m long and 7.5m

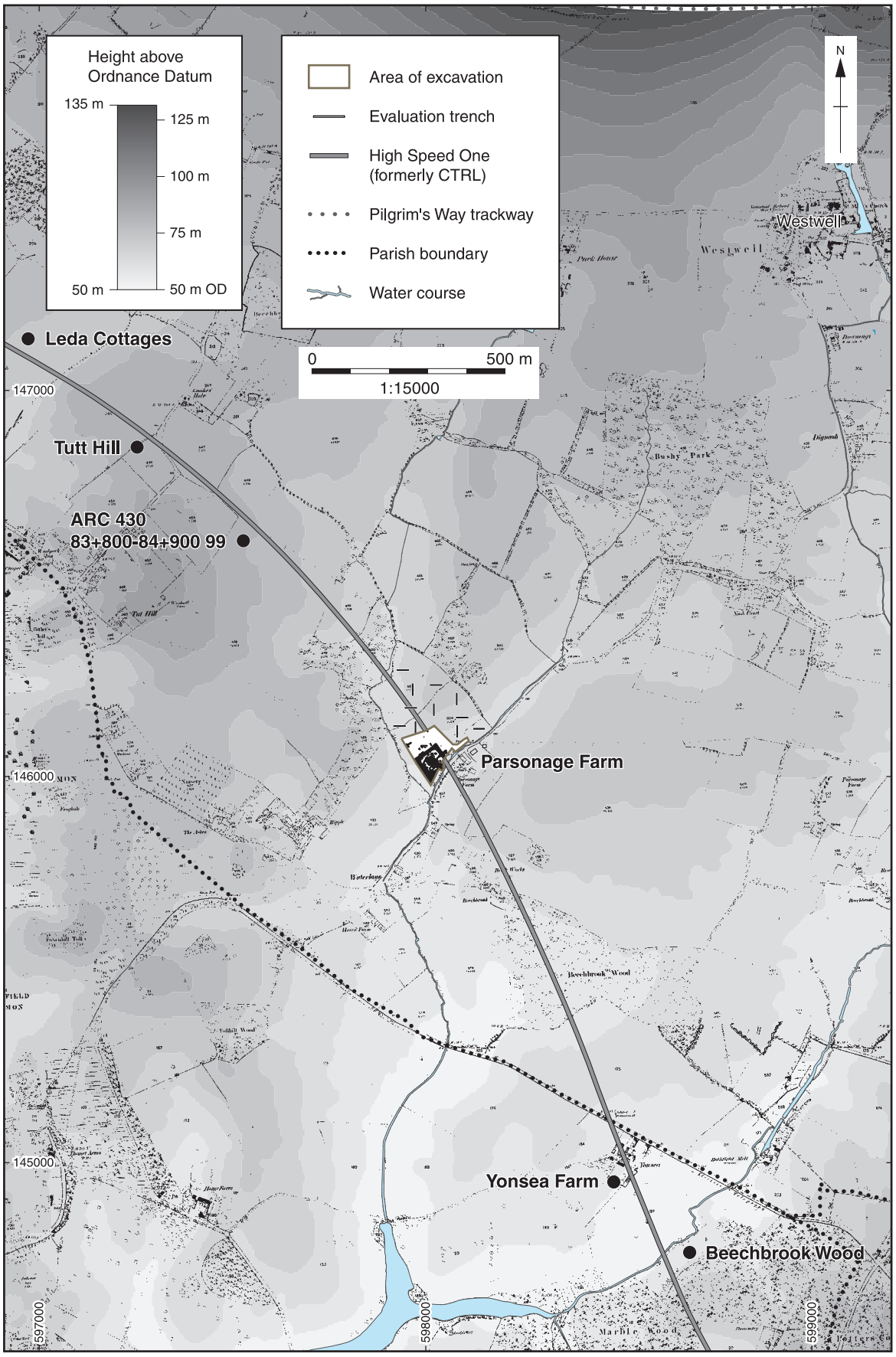


Figure 6.42 Parsonage Farm overlaid on the 1st Edition OS map (6 inches to 1 mile, 1876)

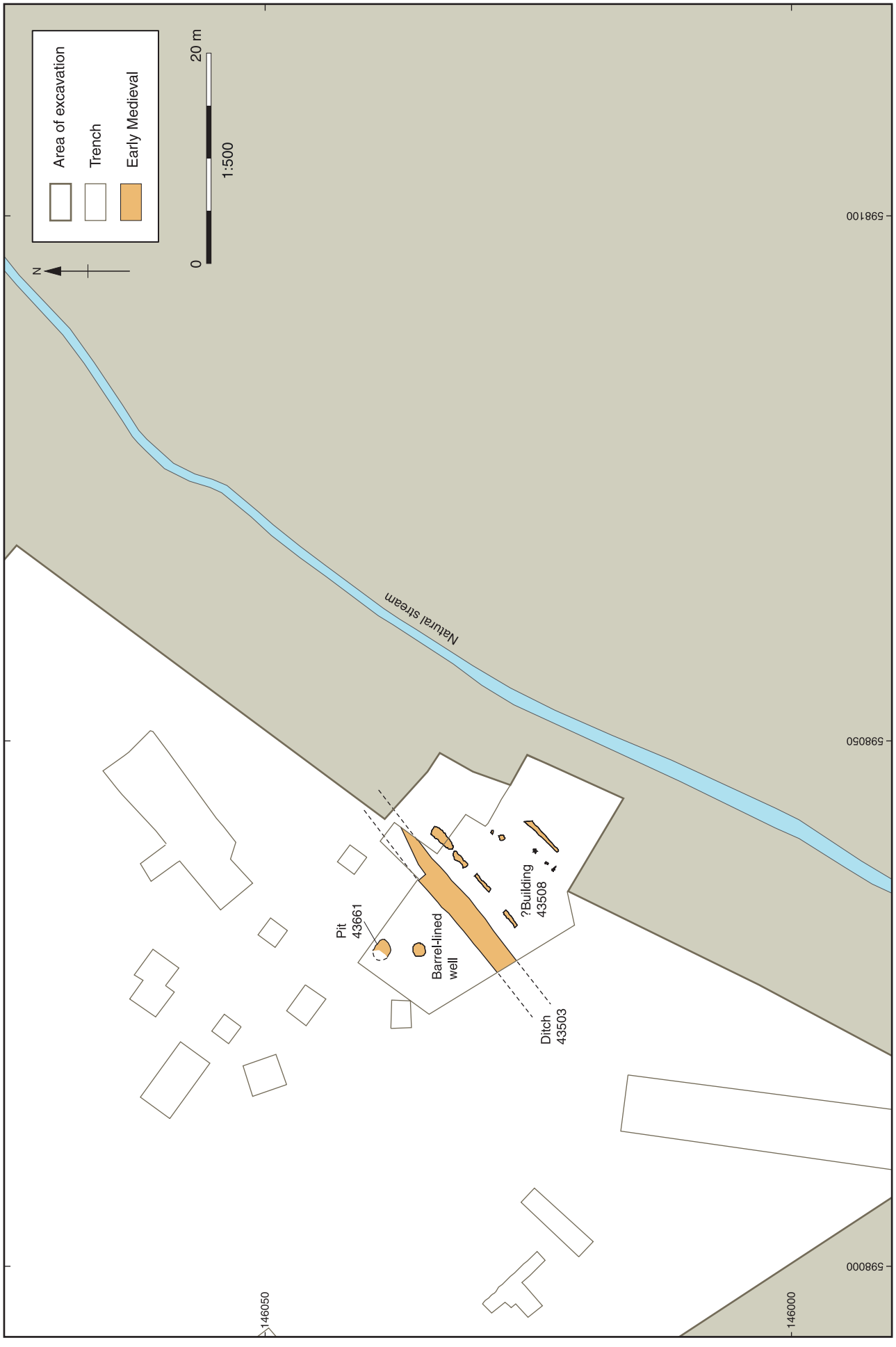


Figure 6.43 Parsonage Farm: medieval phase 1 features

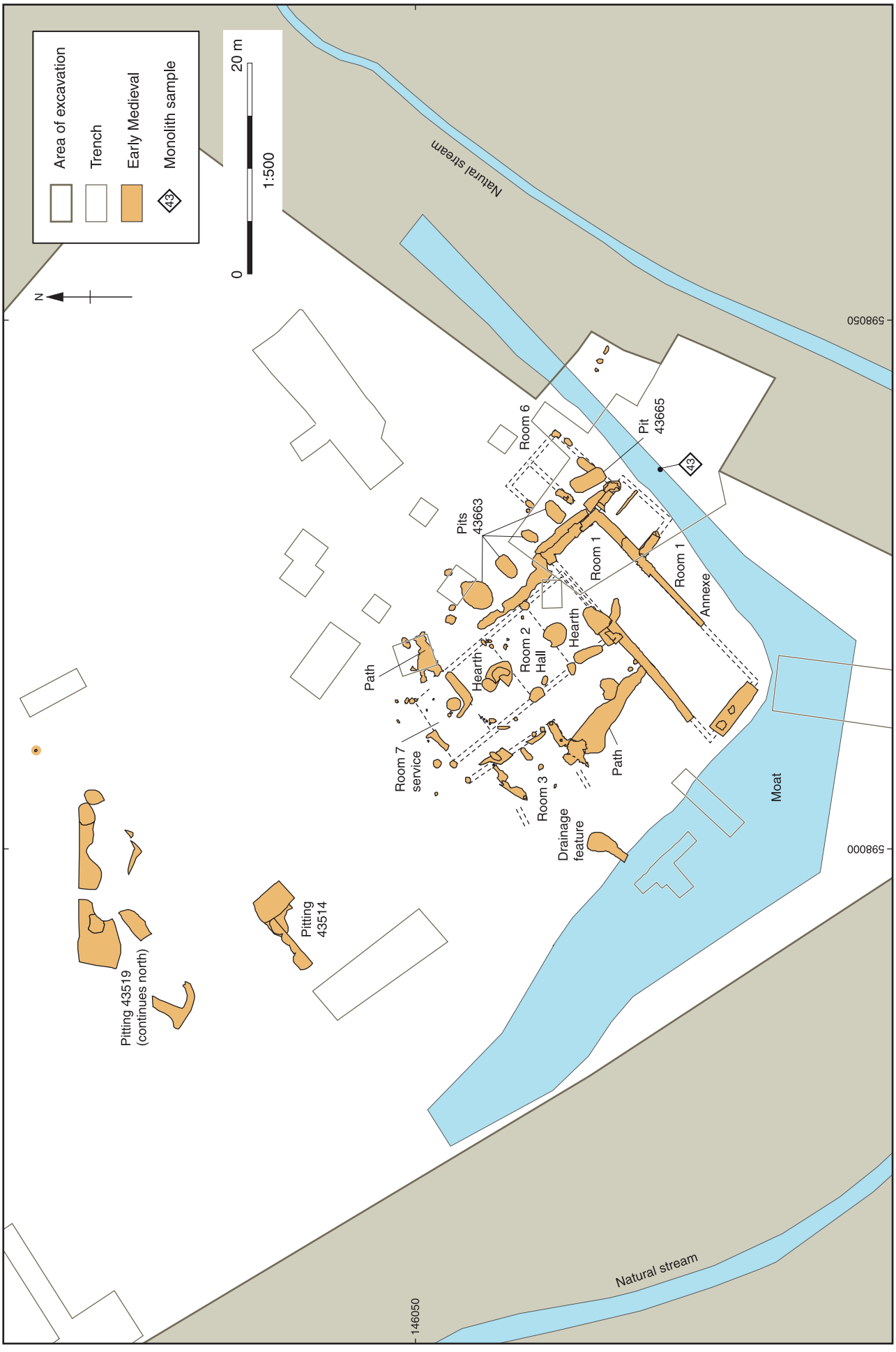


Figure 6.44 Parsonage Farm: medieval phase 2 features

wide of four equal bays. The building was timber-framed as indicated by a series of stone post-pads that described the outline of the structure. The north-westernmost bay (Room 7) was evidently divided off from the other three bays (Room 2) and is interpreted as the 'service' end of a hall. External access to Room 7 was through a doorway in its eastern wall where evidence for a cobbled path was recorded. The hall, Room 2, contained two large hearths centrally placed at each of the bay divisions and access to Room 7 was by way of a doorway between the two spaces.

At the eastern end of Room 2, a further structure (Room 1) was added at right angles to the main building. Room 1, which measured 18.8m by 7m, was formed of masonry foundations cut into make-up layers and appears to have been free-standing, albeit so close to the east of Room 2 as to necessitate remodelling of its east wall. A small annexe was then added to the south-east side of Room 1 and clearly overlay the infilled ditch of medieval Phase 1. Room 3 measured at least 10m by 5m and lay in the north-western part of the courtyard formed by Rooms 1 and 2/7. It was formed of a series of slots, presumably for beams, and had two entrances, one marked by a shallow cut filled with gravel in the north-west wall and another more substantial opening in the south-east wall where a path led to the north-east wall of Room 1.

The features described so far suggest a principal north-east facing hall with a wing on the south-east side and a yard behind the property. Further structural evidence (Room 6) was recorded at the north-east end of Room 1 and appears to represent a further free-standing ancillary structure of two bays. Sherds of so-called Tyler Hill ware from a modification to Room 3 and the foundations of Room 6 suggest a date after *c* AD 1225 for elements of those structures, while ceramics from a group of pits (43519) to the north-west of the structural complex can be divided into sub-groups with the following date ranges: AD 1125–1250, AD 1175–1250 and AD 1225–1400. The latest group probably relates to the subsequent medieval Phase 3. A further pit group (43514) just south of the aforementioned features is actually cut by the medieval Phase 3 moat. A mid to late 13th century date range for these pits is indicated by the presence of 28 sherds of decorated pottery of North French or similar type. Local wares predominated, however, and comprised largely Ashford-type, Tyler Hill and London-type wares; the latest Ashford-wares are dated *c* AD 1250–1450 and overall a date in the second half of the 13th century seems likely for the end of medieval Phase 2.

The end of medieval Phase 2 is of interest in the light of the documentary evidence for the foundation of the new village of Westwell in the 13th century. While the pit groups just discussed indicate a date in the second half of the 13th century for their infilling and subsequent cutting of the medieval Phase 3 moat, a line of five regularly spaced pits (43663) along the north-eastern frontage of the Phase 2 house are probably connected with the demolition and clearance of the site. Significantly, these pits are dated slightly earlier to *c* AD 1225–1250 (Hill 2006, 15). One of these pits (43665) actually cuts the foundations of Room 6, while all contained quantities of peg tile unsuitable for re-use in their upper fills.

Substantial spreads of dumped and trampled material mark the end of medieval Phase 2 and represent a clear horizon prior to the construction of the Phase 3 building. Dumped material extended as far as the north-western side of Room 1 of the Phase 2 house, but did not encroach upon it indicating that this part of the structure was initially incorporated into the Phase 3 rebuilding. Dating evidence from the dumped layer included a short-cross farthing of Henry II to Henry III type with a date range of AD 1180–1247 and an ornate annular brooch of 13th century date (Keily and Richardson 2006b, 4) (Fig. 6.45), while dating of the ceramic assemblage overall is placed in the mid–late 13th century. In summary, the dating evidence indicates a major period of remodelling of the site in the mid to late 13th century.

The final period of medieval occupation (Phase 3) saw the cutting of a moat around the entire site (Fig. 6.46). To the north and west new channels were cut, while the same cut was also identified to the south of the site indicated complete re-furbishing sometime after AD 1250. Conjoining sherds of a stamp-decorated jug from the primary fill of the moat and the medieval Phase 2 pit group (43514) suggest that they are linked, although given that the moat cut into these infilled pits, the sherd in the moat may have been re-deposited from disturbed pit fill.

The moated site lay within the area described by the two modern streams and comprised a more-or-less square enclosure measuring *c* 70m across externally and *c* 49m by 45m internally. On the north-west and north-east sides the ditch was *c* 8m wide and *c* 3m deep, although rounded inner corners and squared outer corners extended the width to *c* 20m diagonally across the moat at the north and west corners. The moat was evidently much wider on the south-west and south-east sides. Environmental samples suggest a flooded moat in

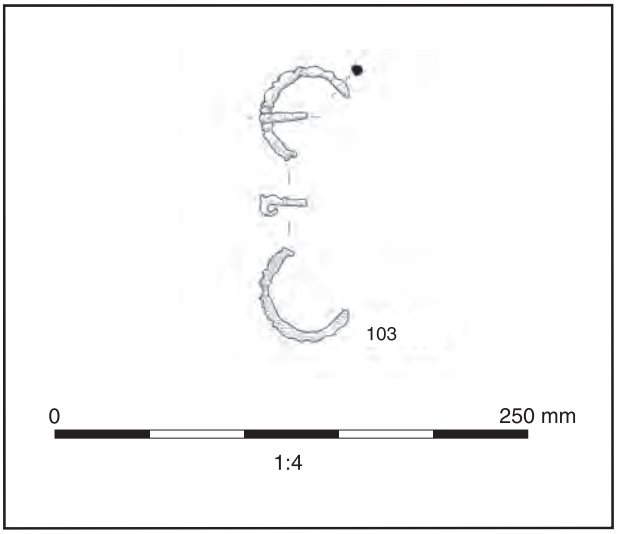


Figure 6.45 Parsonage Farm: annular brooch of 13th century date

Figure 6.46 Parsonage Farm: medieval phase 3 features

contrast to Phase 2. Passage across the moat was apparently on the north-east side where timber revetting, an external gravel surface and an internal tile and flint path leading towards the main building indicate a causeway or bridge.

The new structural complex comprised a principal hall of three bays (Room 3) built on the site of its predecessor with a service room at the northern end separated from the main hall by a passage. Built on a larger scale than the Phase 2 hall, at 21.5m in length and 9.8m in width, Room 3 was built on sill beams to judge by negative traces on the ground, although various slots and post-settings indicate further structural members. The building was aisled along each of its long sides, while two hearths and associated waste were located in the southernmost bay. Immediately west of the service room lay a garderobe pit with associated structural evidence (43761), including a tile-lined drain (43763) leading to a sump or soakaway. A short distance to the north lay features probably connected with cooking (43772), including an oven, later replaced by hearths with a semicircular arc of postholes to the west probably marking a windbreak. A little to the north again lay a further hearth and pits (43771).

Room 1 of the preceding Phase 2 house was shortened in length, the north-east part of the west wall was remodelled and the former annexe (Room 2 of the new house) was augmented with massive foundations where the wall followed the edge of the moat, almost certainly reflecting the addition of an upper storey or solar.

The area between the main hall and the south-western arm of the moat was infilled with two further structures, Rooms 4 and 5. A masonry revetting wall (43741) along the inside of the south-western arm of the moat may have formed the end wall of both structures, although the evidence was not well enough preserved to provide a clear view of the nature of either structure. Only fragments of each building survived, mainly the north-east ends, while Room 5 may have started life as a post-built structure only to be partially replaced in stone, or at least with stone footings. A drain connected the north-east corner of Room 5 with the garderobe pit at the corner of the main hall.

Ceramic changes can be associated with the transition from medieval Phase 2 to 3. Later-type Ashford wares and Tyler Hill wares are more common, although the range of vessels remains similar (Hill 2006, 21). The latest finds of this phase are derived from the garderobe pit and include two sherds of Early Valencian lustreware (*c* 1380–1450), although evidence for occupation later than the mid 14th century is otherwise lacking. The end of life of the complex is marked by a series of deposits reflecting demolition and robbing of walls and foundations, presumably for use elsewhere. Destruction debris was found within and around individual buildings as well as in the moat itself, and included tile and lead-melt from either roof covering or window cames. Broken roof tiles and cobbles were dumped along the inner edge of the moat, but only three pieces of moulded stone were recovered. Overall there is no evidence that the complex was left to decay and the archaeology suggests a systematic clearance of the site (ibid., 2006, 22).

Parsonage Farm in context

Among the accounts of building works in the Canterbury archive is a record of the moving of a great barn to Westwell. Mary Adams, however, notes that such records normally state where a building has been moved from, sometimes providing details of the cost of transporting the dismantled structure (Adams 2007, 180–1). The absence of such details relating to Westwell suggests to Adams that the great barn must have come from a site close by, that of the original Anglo-Saxon manor. While the results of the Parsonage Farm evaluation suggested that the site of the original manor had been located (Glass 1999), subsequent full excavation revealed, as described above, occupation which lasted until the 14th century. Initially, the excavators considered that the wholesale nature of demolition and reconstruction between phases 2 and 3 was unlikely to occur at a functioning farm (Hill 2006, 9). Razing of the site to move it elsewhere, to the site of present Westwell, however, makes sense of the archaeological sequence. Reappraisal of both documentary and archaeological evidence suggests that Parsonage Farm was in fact a rectory in the Middle Ages, perhaps becoming a farmhouse before 1328, by which time the rector no longer resided in the parish (Adams 2007, 183). The earliest occupation at Parsonage Farm, however, may be related to the two mills rendering 5s recorded in the Domesday Survey (Williams and Martin 2002, 9), although all too little of the earliest phases of occupation was revealed. Adams further suggests that the site of the documented Anglo-Saxon church lay immediately west of the Parsonage Farm site; the present parish church at Westwell is a 13th century building and further Canterbury documents support her conjecture that a wholly new church was built at this time (Adams 2007, 187).

Observing the actual process of village formation in the Middle Ages in documentary sources is very rare, yet the difficulty of reconciling written and excavated evidence is exemplified at Parsonage Farm. While the precise location of the Anglo-Saxon church and manor of *Welles* are yet to be established, Adams' interpretation of Parsonage Farm as a rectory is entirely plausible.

Conclusions

Concluding remarks can be made with regard to a number of key areas where the results of the HS1 project have contributed significantly to our knowledge of Kentish society and landscape between the end of the Roman period and the end of the Middle Ages. The discoveries at Cuxton and Saltwood, spectacular though they undoubtedly are, serve to confirm existing thinking about the distinctiveness of eastern Kentish society in the 6th and 7th centuries, and the cultural differences between the west and east of the county that became

formalised in an administrative sense by the ecclesiastical division of the county into the dioceses of Canterbury and Rochester in the 7th century. It is also worth noting that even though over 100 years of archaeological enquiry and discovery have elapsed since Smith's discussion of Anglo-Saxon Kent in 1908, the known extent of material remains of the period is basically unchanged despite many new sites and individual finds (compare Smith 1908, map facing p. 339 with Brookes 2007a, 77, fig. 36). Early and Middle Anglo-Saxon finds from the north-eastern part of Romney Marsh are the main noticeable difference.

The distinct possibility that a hundred meeting place has been excavated at Saltwood should not be underplayed, particularly regarding the social implications of converting a community cemetery to a place of social gathering; perhaps the cemetery had long served that function. The archaeology recorded at Saltwood and White Horse Stone both provide key data from which to assess the antiquity of the framework of the Kentish landscape. Saltwood reveals a very ancient fabric of field boundaries and trackways, White Horse Stone a Roman landscape augmented by an Anglo-Saxon and medieval (if not earlier) route of communication, the crossroads created by the intersection of the two routes itself creating an environment deemed suitable for an isolated burial, perhaps of a suicide. It is of particular interest that both Saltwood and White Horse Stone allow for an assessment of past perceptions of places in the landscape using archaeological evidence.

Village origins and the working life of the lower orders are accessible at Mersham where the origins of a typical Wealden polyfocal settlement apparently lie in the late 8th or 9th century. The evidence from Mersham, however, cautions against using individual excavations to model patterns and processes in landscape development more widely. The Mersham sequence evidences a continually evolving landscape, with changes in field boundaries and economic function; Saltwood's 'archaic' landscape is only a few kilometres to the east.

As at Mersham, the archaeology of Northumberland Bottom and its environs belies a continually changing landscape, although the major difference between the two sites is that the latter appears to represent short-lived pioneer settlement and the former part of a longer term occupation of the same locale. At Parsonage Farm, the settlement archaeology is certainly of a higher social order than that excavated at the other sites, but the picture is similar with the evolution of settlement in the Westwell environs mirroring the marked dynamism observed elsewhere.

Comparable chronological horizons include residual ceramics of Middle Anglo-Saxon date at Mersham and Saltwood, while settlement features indicate more tangible activity at White Horse Stone. The mid-11th century sees the beginning of settlement at Mersham, Northumberland Bottom and Parsonage Farm, while at the first two of these sites, the laying out of field boundaries characterises activity in the 13th century. In many cases both settlement and agricultural features continued to influence boundary patterns into succeeding centuries, sometimes up to the present.

The major lesson to be learned is that while large-scale landscape characterisation of the kind undertaken by Roberts and Wrathmell (2000) provides a snapshot based on 19th century evidence, which may provide a relatively accurate estimation of the medieval situation, only site-specific work will reveal the full complexity and chronology of landscape development. Ultimately, the HS1 investigations have provided a much needed injection of key new evidence into long existing debates. To return to the comparison made at the start of this chapter between the landscapes of the south-western counties and those of Kent, it now seems that in both 'provinces' a simplistic characterisation of such landscapes as 'archaic' because they are markedly different in appearance to the great tracts of medieval planned arable of the English midlands is misleading. Throughout the medieval period the Kentish pattern of landscape development north of the Weald was both complex and continuous.

Chapter 7

The Late Medieval and Modern landscape

by Julian Munby

Introduction

While consideration of the later medieval, post-medieval and modern archaeology was almost incidental as a research aim of the High Speed 1 (HS1) project, the results of fieldwork have nonetheless provided interest and information along the whole route. Often the later eras are thought to be better understood from historical and topographical sources, and so the possibility of making discoveries on the scale of interest for earlier periods were in some respects limited. However, the unusual opportunity to examine archaeologically a small group of buildings before and during their removal was an important part of the project aims, and has proved fruitful. There was one major difference in the study of these sites in that the design and engineering of the rail link involved finding an effective transport route that avoided houses, historic buildings and gardens, so the subjects for investigation were known in advance once the adopted route was chosen, and only a couple of additions were made for practical purposes. The late-medieval and post-medieval buildings in Kent thus form the principal subject matter of this chapter, together with aspects of landscape (and railway) history that emerged from excavated sites along the route (Fig. 7.1). Even more so than in the preceding chapter the results cannot add up to a coherent account of the later landscape history of Kent, although some key aspects are touched upon in considering the results.

To a greater extent than for buried archaeology, historic buildings were available to be investigated at a general level in advance, and carefully considered during the development of the project. All structures could be summarily assessed, checked on estate and Ordnance Survey maps, and where necessary subject to internal investigation. A valuable baseline assessment was provided by John Thorpe and Jo Cox of Keystone, to which the experience and profound local knowledge of Ken Gravett was a necessary and delightful addition to field excursions, and added weight to negotiations deciding the fate of historic buildings. The concurrent study of Kent vernacular buildings by Sarah Pearson of the Royal Commission for Historical Monuments allowed some exchange of data and interesting discussions, while the publication of their research has been an important addition to the long tradition of building studies in Kent (Pearson 1994).

The earlier work of the Canterbury Archaeological Trust on the buildings of the Channel Tunnel Terminal at Folkestone had demonstrated the importance of considering buildings as up-standing archaeology, to be investigated, carefully dismantled and excavated (CAT 1990). Building archaeology, first demonstrated in its modern form by Professor Willis in Canterbury in 1844, has had a variable application in the following century and a half, but it is now generally recognised that both standing and buried archaeology are a continuum, to which the documentary sources (if they exist) may be complimentary; it remains difficult to put into practice this understanding, and successfully link the various strands. In the event some buildings on the HS1 route were rebuilt without a full investigation, and one (being moved whole) was not even dismantled, but in general the programme of investigation was chosen to direct attention to the most significant aspects where results would be worthwhile. One of the most interesting results of the approach was the dichotomy between excavation and fabric examination, and the often disappointing results of excavating beneath an inhabited building whose archaeology had been greatly disturbed by the effects of continual habitation and modern building works. The application of tree-ring dating by dendrochronology has now become an essential part of calibrating what are fundamentally stylistic considerations, and was used in one instance (Talbot House).

The Environmental Assessment of HS1 was a pioneering effort that from the first sought to follow an integrated approach to Cultural Heritage, by looking at landscape, archaeology, and buildings together (twenty years on we would now add intangible heritage as a subject). The historic landscape was much considered (and reported in the EIA), but the archaeological programme was less directed to landscape. A comparative study of field, woodland and parish boundaries might have been instructive, as indeed would the archaeological recovery of the vegetation history of woodland and hedgerows. In the event several sites encountered roads, ditches, banks (and especially field drains), which are described in the site reports, but not addressed as a general theme. Much remains to be done on the seemingly intractable history of the Kent landscape, with its resolutely regional flavour derived from distinctive soils and geology.

Although the Environmental Assessment was begun before the days of planning guidance on historic buildings (PPG15) it was realised that it was necessary to consider fully the significance of listed and other historic

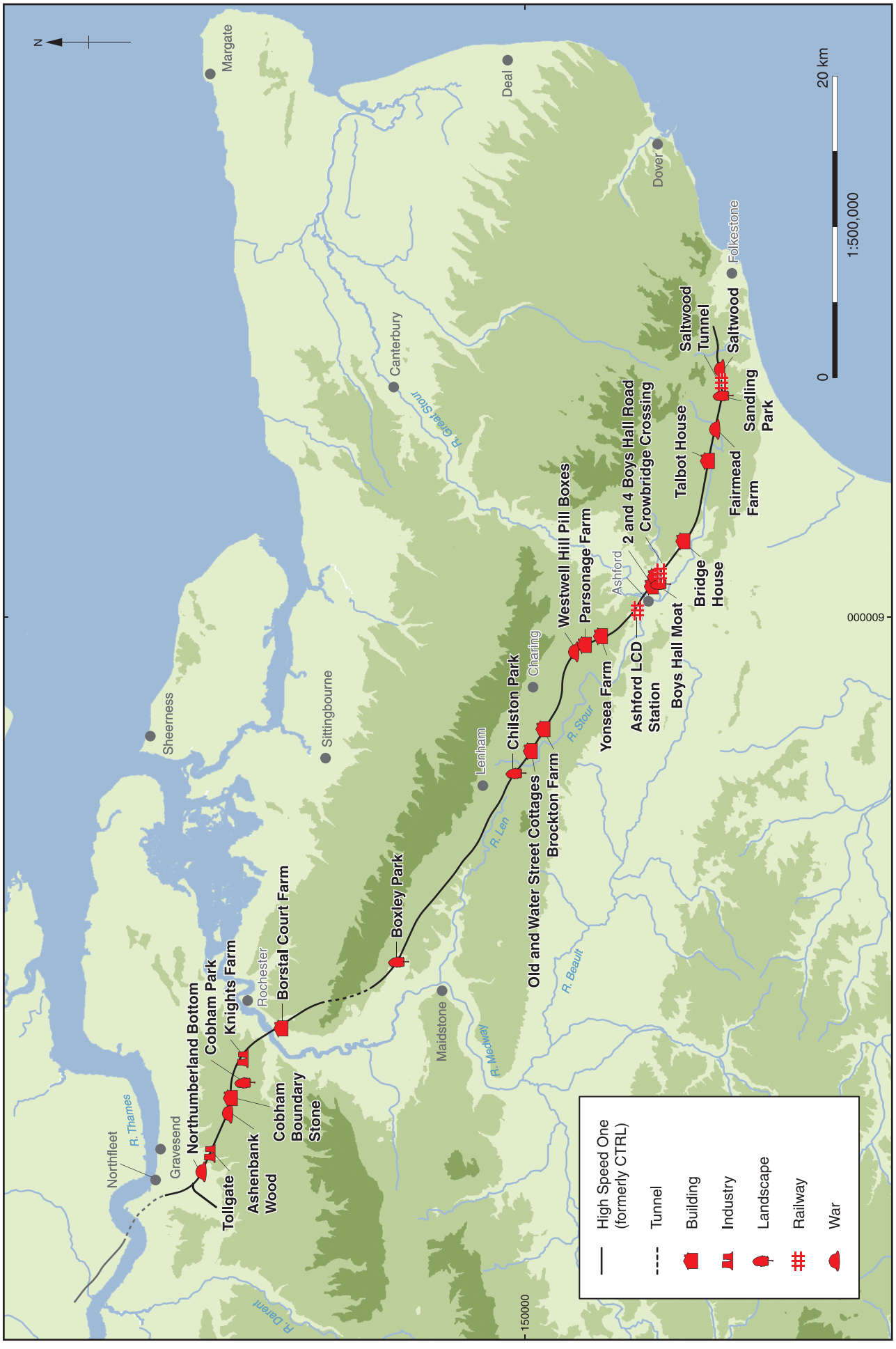


Figure 7.1 Location of major late-medieval and modern sites along the HS1 route

buildings, and their setting and historic landscape context. In one sense this arose from existing best practice in English landscape and building studies, but also drew upon the principles of the Burra Charter 1979 (*The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance*). The charter specifically dealt with conditions for removal and reconstruction of historic structures. It was thus in the context of a careful consideration of significance (including rarity value) that the decisions were made about the reuse of buildings.

Nature of sites found

The ingenuity of railway engineers could not avoid a small number of properties (mostly near existing railway lines) that were removed because they were on the route or so close as to make them unviable for habitation.

The buildings removed were Old and Water Street Cottages (Lenham), Brockton Farm (Charing Heath), Yonsea Farm (Westwell), No. 4 Boys Hall Road and No. 2 'Crowbridge Cottage' (Sevington), Bridge House (Mersham), and Talbot House (Sellindge) (see Fig. 7.1).

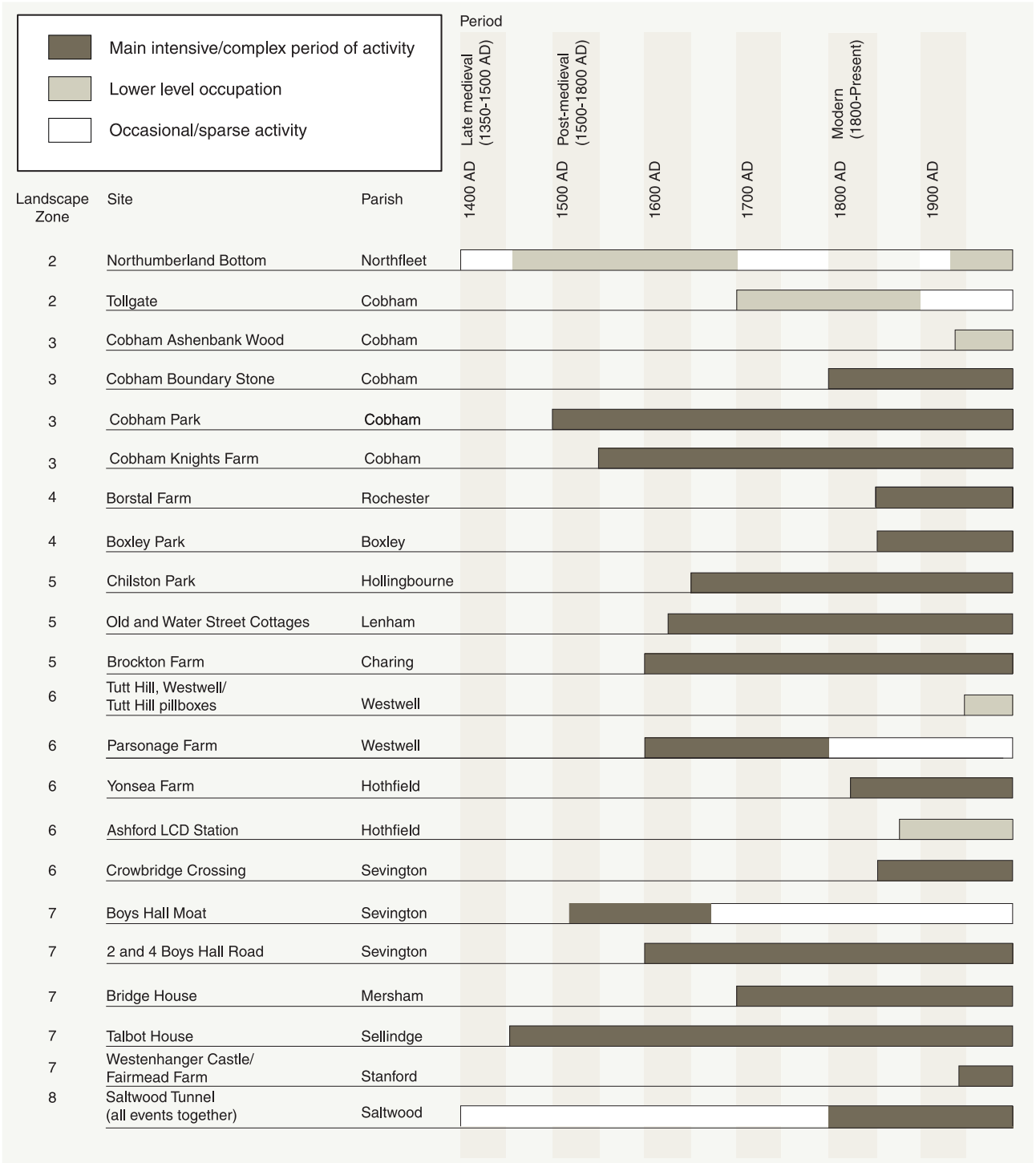


Figure 7.2 Late medieval and modern activity along the HS1 route by site and period

Between them (and their outbuildings) these do provide a cross-section of large and small farms and cottages dating from the 15th to the 19th century (Fig. 7.2). Other structures included a crossing box at Crowbridge/Boys Hall Road, and a WWII Pill Box at Westwell.

Historic buildings that were retained but left in close proximity to the rail link include Borstal Court Farm (Borstal/Rochester), Boarley Oast (Boxley), Workhouse Cottage (Detling), Brockton Oast (Charing), Parsonage Farm (Westwell), Yew Tree Cottage (Lenham Heath), and Orchard, Maytree and Bridge Cottages (Sevington), and the Cobham Boundary Stone. Major sites to be avoided in proximity to the railway included Boxley Abbey precinct, Ashford Railway Works, and Westenhanger Castle, while Cobham Hall and Leeds Castle were further away. Historic village centres at Eyhorne, Harrietsham and Mersham with their Conservation Areas were variously tunnelled or screened to reduce impacts.

Building re-use and investigation

Absolute numbers of historic buildings lost were few, owing to their removal to museums or their re-use. Old and Water Street were rebuilt as 'Lenham Cottages' at Cobtree Museum of Kent Life (which also has Petts Farm from Burham, close to another prospective route that was not built). Brockton Barn was removed to Ratsbury (Tenterden) and rebuilt for use as a barn within a farm complex of equivalent date (and is now a wedding venue), and some elements of Yonsea Farm have been rebuilt on a site adjacent to the Rare Breeds Centre, Woodchurch, Kent, while other parts await reconstruction there. Talbot House has been carefully rebuilt as house in Sellindge and successfully offered for sale as a private house; while Crowbridge Cottage was rebuilt as subsidiary domestic building in Romden Road Smarden (with the Romden Hall house dating from the 15th/16th century).

These buildings were variously investigated at a general level or in detail at the time of their dismantling, and where it was thought appropriate their sites were excavated. This can be summarised in Table 7.1

Parks and gardens

The historic landscapes encountered range from big formal landscapes to smaller and less ambitious places. These were modified rather than being 'destroyed': the wide corner taken round Cobham Park with the loss of the park fringe was partly offset by the Cobham Ashenbank Management scheme and contributions to the restoration of the badly damaged Darnley Mausoleum. Little could be done for Chilston Park in Boughton Malherbe which was already clipped by the M20 motorway and lost another strip, though the remaining outer part (with the ice pond) is now a country park. The earthworks of a 'lost' garden at Boys Hall moat (Sevington) on the south side of the railway were barely affected by a minimal landtake. Lesser parkland landscapes of the 19th-century were crossed at Boxley Park and Sandling Park (Saltwood) with more or less intrusion.

Industrial sites

One of the more interesting aspects of the chance archaeological discoveries of post-medieval material was the occurrence of industrial features such as brick-working sites that might not have been anticipated in a rural setting, but of course were a natural concomitant of the great age of rebuilding.

Railway features

Railway features occurred between Ashford and Folkestone where the HS1 was running next to the main line. At Ashford the former terminus of the London Chatham and Dover line from Maidstone was lost to other development, while the site of the South Eastern Railway works were left undisturbed to the south of Ashford International Station. Just to the east of Ashford the Crowbridge crossing in Willesborough had a minor lineside structure, and further east railway bridges were rebuilt to accommodate European gauge. The historically interesting Saltwood railway tunnel was undisturbed.

Modern military

Military features from the two world wars were encountered at various places, including a WWII battery at Northumberland Bottom (Cobham), a magazine disguised as a barn at Fairmead Farm (Westenhanger),

Table 7.1: Buildings investigated as part of the HS1 project

Building	*Place*	*Investigated*	*Excavated*	*Rebuilt*
Old and Water Street Cottage	Lenham	CAT	Previous evaluation	Cobtree Museum
Brockton Farm	Charing	OA	OA	Not
Brockton Barn	Charing	OA	OA	Tenterden
Yonsea Farm	Westwell	OA	MoLA	Woodchurch
4 Boys Hall	Sevington	OA	OA	Not
3 Boys Hall Crowbridge Cottage	Sevington	Not	OA	Smarden
Bridge House	Mersham	Not	OA	Mersham
Talbot House	Sellindge	OA	OA	Sellindge

and a pair of pill boxes on the railway at Westwell. Remains of army encampments of WWI were found at Saltwood, and of WWII in Ashenbank Wood (Cobham).

The Late Medieval Landscape

The general structure of the Kent landscape has been better explained than its detailed workings, and perhaps little can be added from the disparate archaeological discoveries beyond what has been said in the previous chapter. The underlying grain of the Kent countryside remained the same from the medieval period until the 20th century: east-west bands of varied soils and geology crossed by larger parishes that covered more than one soil type, and the whole transected by long north-south tracks that linked the areas of ancient wealden pastures with the periphery. While the HS1 passes on a slow diagonal across the principal landscape zones of Kent (across chalks and heaths and clays, from the top of the Downland west of Rochester, down to the Holmsdale east of Maidstone, and then onto the Chartland nearer Ashford), the parishes it traverses usually comprise more than one landscape zone (Everitt 1986).

The 'normal' Midland pattern of nucleated villages and regular field systems is rarely to be found (nearest perhaps in the scarpfoot parishes), and most villages are rather notable for having disparate elements of 'street' and 'forstal', and any number of scattered farmsteads. In its need to avoid village centres, the HS1 sample of the countryside was necessarily biased towards edges and periphery of settlements. By the late medieval period the general disposition of fields woods and commons was well established, and its general character remained unchanged down to the 20th century (less marked than other parts of the country by enclosure, for example).

The built environment – 15th to 17th century

Change in the rural economy may be marked by the frequency of well-built oak framed farmhouses of 'Wealden' type, and these may be found on village streets and on the edge of commons and heaths, or in remote countryside, alongside other buildings of more modest pretension. Changes in the late medieval and early modern economy resulted in phases of wealth that could be transferred into rural building as much as urban expansion (Pearson 1994; Quiney 1993; Zell 1994). Talbot House was a good example of a substantial late medieval house, whose origins and development could be studied in detail during dismantling.

Talbot House, Sellindge – c. 1450 (Figs 7.3–9)

Talbot House, a 15th-century Wealden House, was investigated by Ric Tyler for OA during controlled dismantling in January to March 2000, and excavation took place after that. The evidence of excavations suggests that there may have been an earlier, (possibly 14th-century) building on the site before the construction of the Wealden house, but the remains were so scant as to make any reconstruction impossible.

Phase I: Talbot House originated, in the mid–late 15th century, as a four-bay timber-framed house of classic 'Wealden' form. The Wealden house combined a recessed, open hall and storeyed, jettied end bays beneath a single unitary roof, and gave apparent status with a relatively simple construction. It was constructed on an east-west alignment and comprised a two-bay open hall, recessed to the south, flanked by storeyed, jettied bays to east and west below a single, fully hipped roof. The open hall was central to the plan, occupying bays II and III. The high end of the hall, with parlour and chamber beyond, was located to the east while to the west, two service rooms with a further chamber over formed the lower end. Access was via opposing doors in the north and south walls at the west of Bay III, leading into the hall. The maximum dimensions of the ground floor building footprint were 14.8m (E/W) by 6.35m (N/S). The upper storeys of the end bays were jettied to the south by *c* 40cm.

Talbot House represents an interesting, though unremarkable, example of a traditional 'Wealden' farmhouse of the mid 15th century, the most common single type of medieval house to be found in Kent. With its low walls and total ground floor area of 90m^2, Talbot House is in the mid-range of the 127 examples of Wealden house recorded during the RCHME study of medieval houses in Kent (Pearson 1994, 71, table 67).

The structure as recorded during dismantling retained a relatively high proportion of its original fabric (including some re-used timbers), despite having undergone several phases of adaptation and modification. This high survival allows for a fairly confident reconstruction of the original appearance of the house to be made, though certain elements, such as the central open truss, remain subject to speculation. The house displays a standard range of structural features and decorative details, though it also includes a number of less common structural details (eg the detail at the junction of the hall and the storeyed end bays). The framing was infilled with close studding only in the front elevation and in the lower section of the dais partition, reflecting its use as a signifier of status, by representing a relatively extravagant use of timber resources. Interestingly, and somewhat unusually, the close-studwork throughout most of the elevation was substantial (160 x 75mm heartwood) and was pegged top and bottom, with no apparent use of additional bracing.

The discovery of a series of five 'combed' daub panels revealed below the dais beam of the hall during the dismantling of the house represents a feature of particular, intrinsic interest (Fig. 7.8). The panels were removed for conservation and are currently housed at the Weald and Downland Open Air Museum, Singleton, West Sussex. The survival of this type of decorative surface

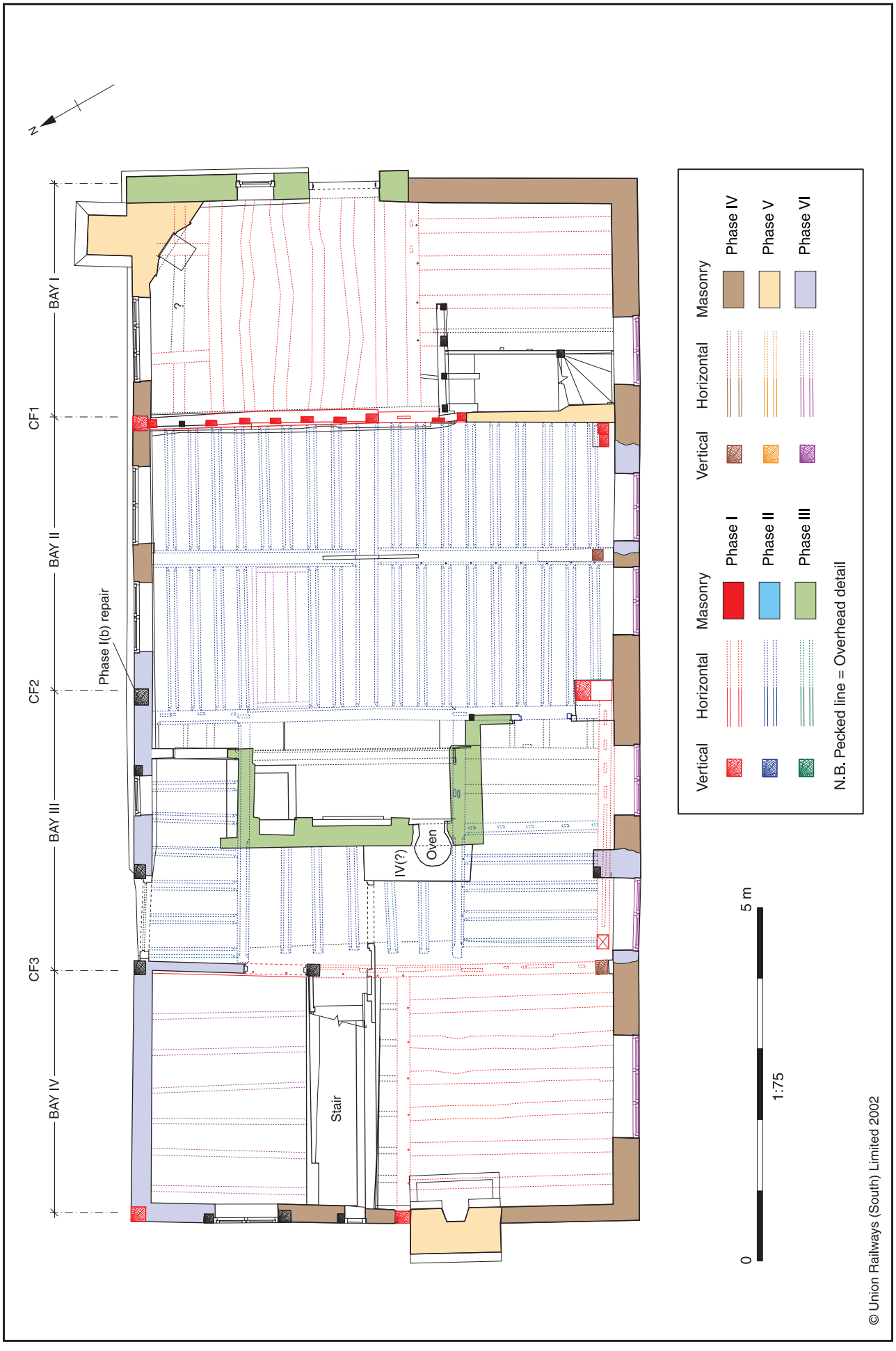


Figure 7.3 Talbot House: ground-floor plan with phasing of principal structural elements

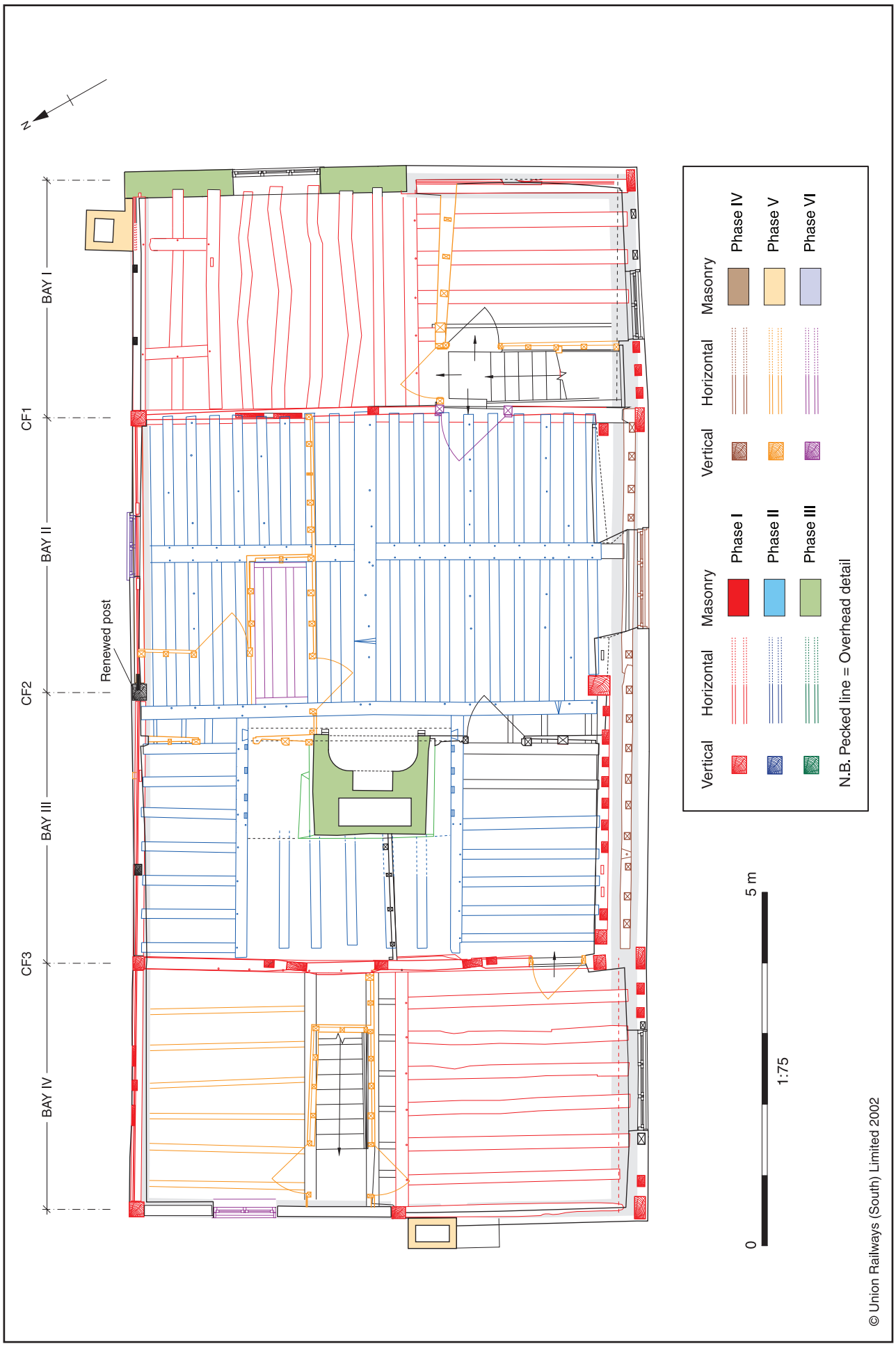


Figure 7.4 Talbot House: first-floor plan with phasing of principal structural elements

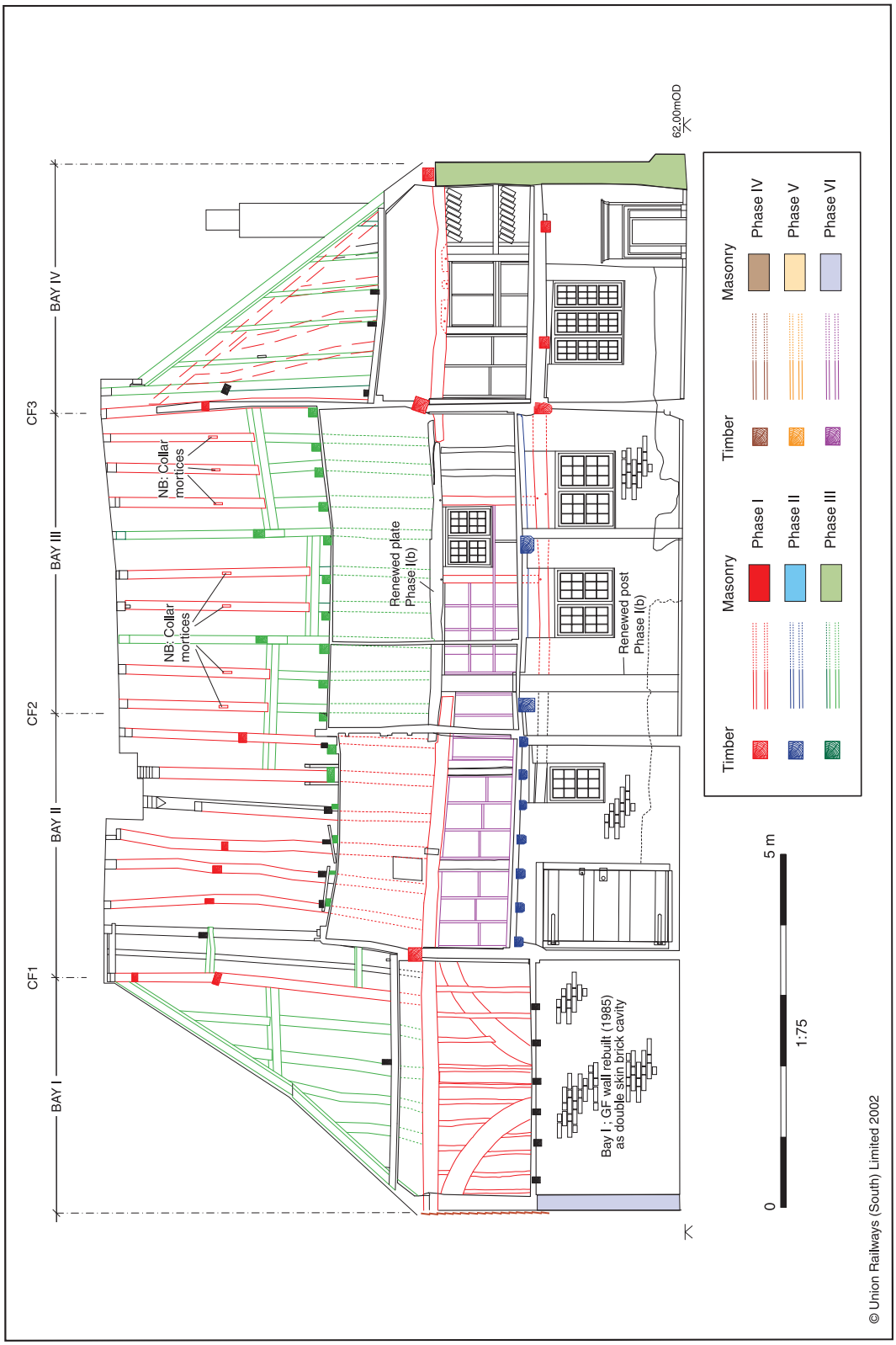


Figure 7.5 Talbot House: interior longitudinal elevation looking south, with phasing of principal structural elements

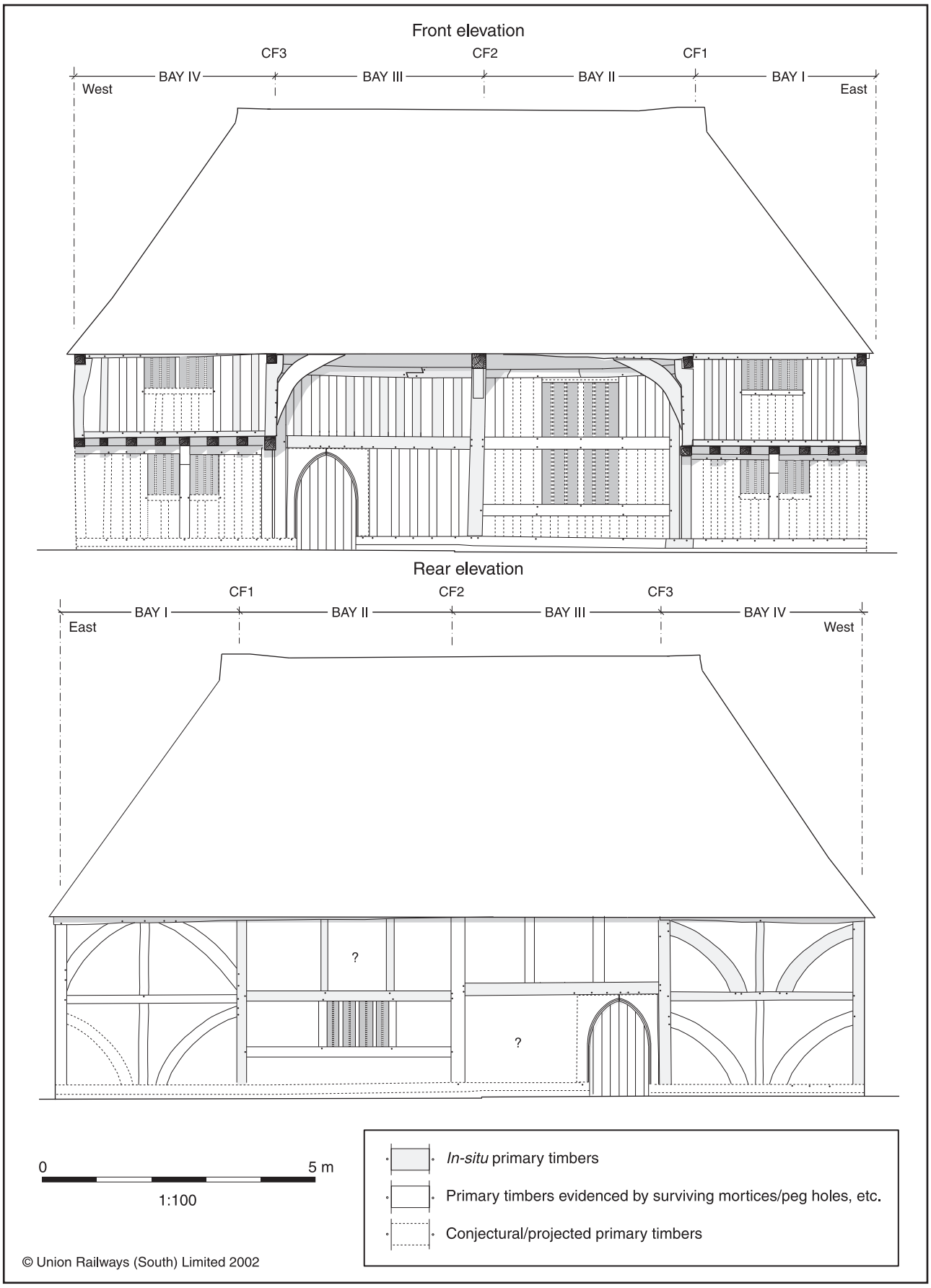
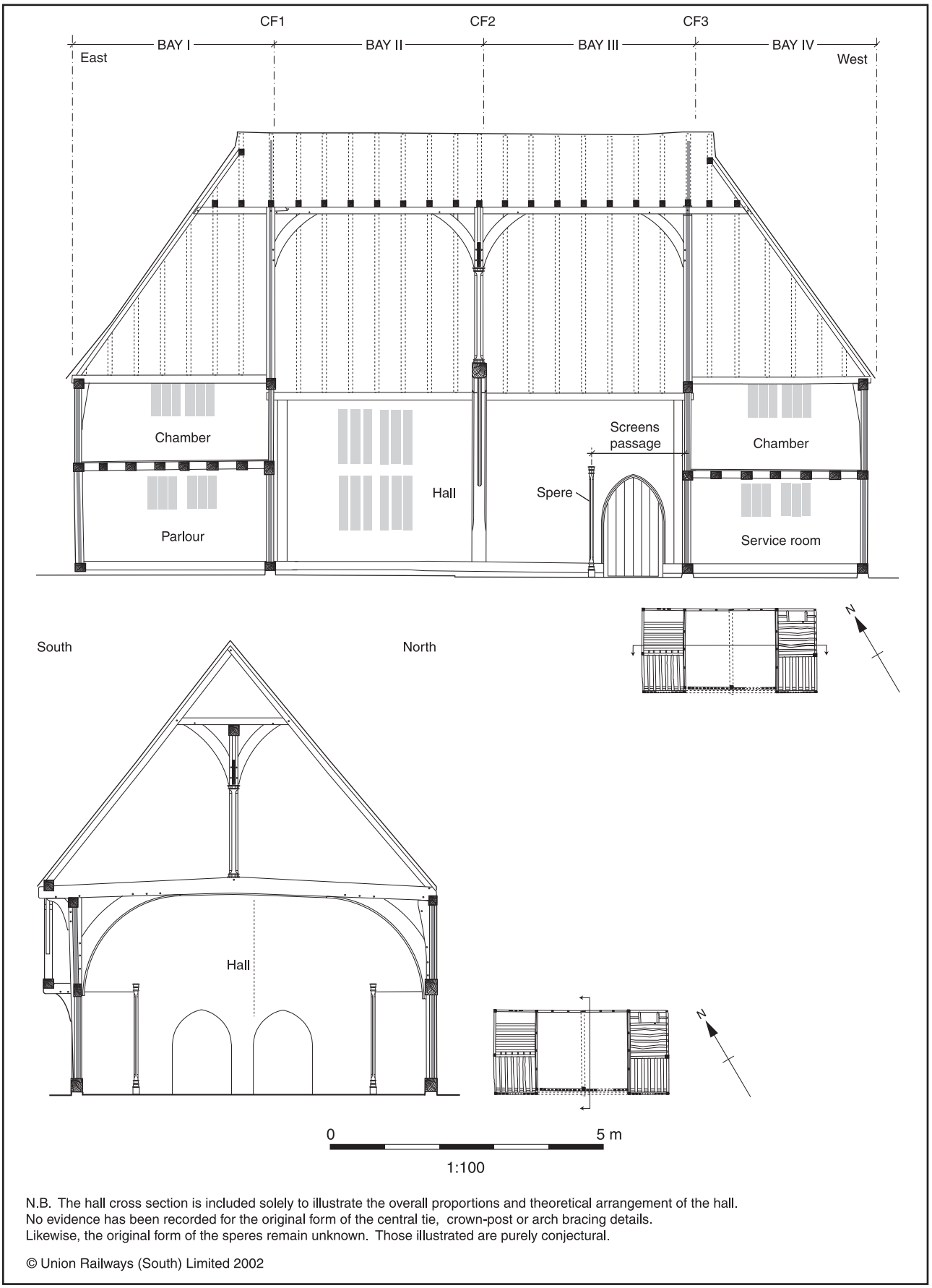


Figure 7.6 Talbot House: reconstructed principal elevations in Phase I



N.B. The hall cross section is included solely to illustrate the overall proportions and theoretical arrangement of the hall. No evidence has been recorded for the original form of the central tie, crown-post or arch bracing details. Likewise, the original form of the speres remain unknown. Those illustrated are purely conjectural.

Figure 7.7 Talbot House: reconstructed longitudinal and hall cross sections in Phase 1

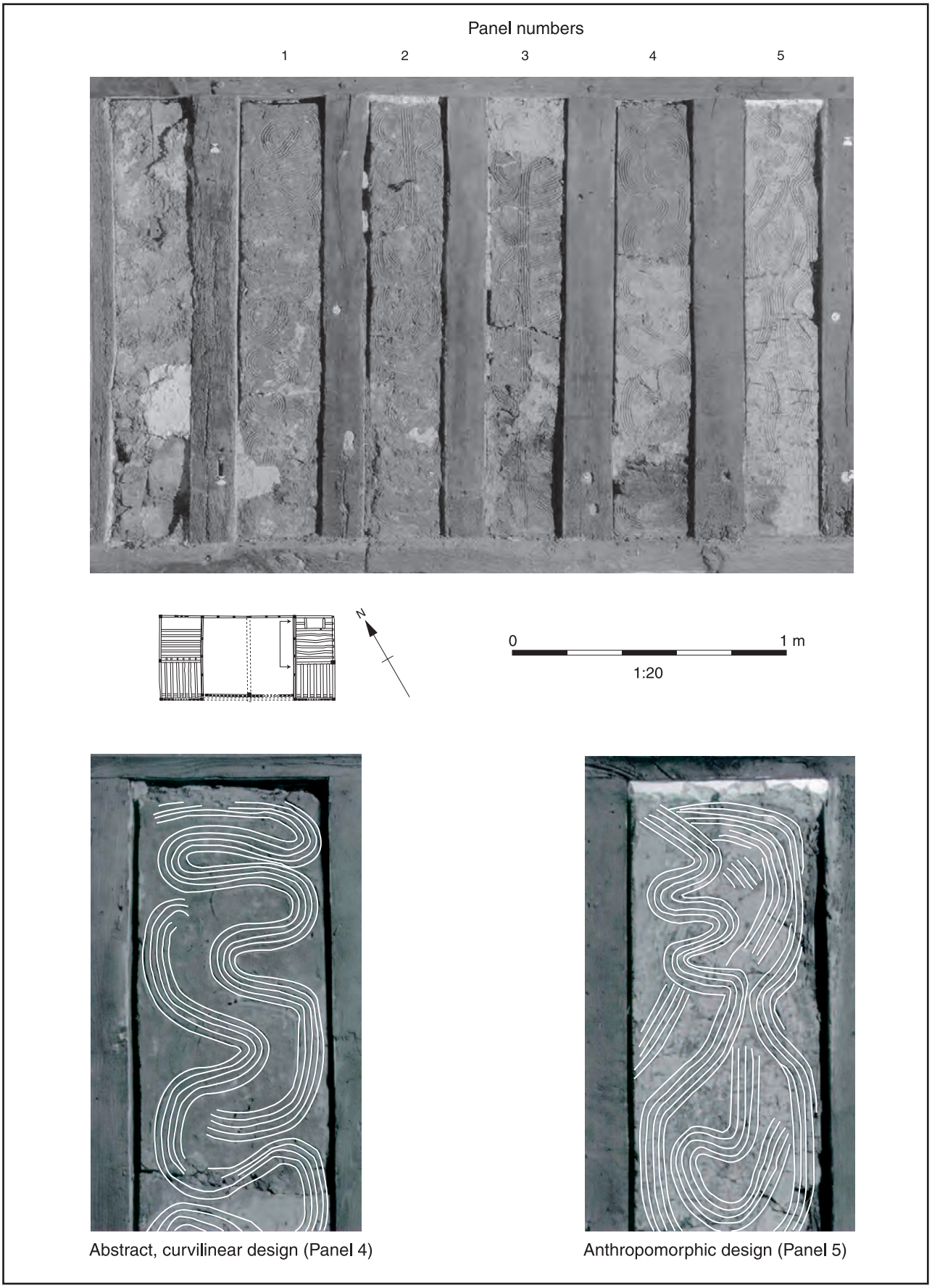


Figure 7.8 Talbot House: daub panels on hall dais

treatment, though not unknown, is by no means common (Barnwell and Adams 1994, 123). Pearson identifies only one certain example of plaster with incised decoration at ground floor level in her discussion of *c* 450 medieval houses in Kent (1994, 93), and thus the Talbot House panels can be seen to represent a particularly significant find. The inclusion here of a vernacular, representational human figure would appear, at this stage, to be unique and unparalleled feature and it is unfortunate in this respect that the timbers of the primary building were unsuitable for dendrochronological sampling, as the feature remains dated only on stylistic grounds.

With the exception of possible traces of an early hearth, archaeological evidence from below ground about occupation of the medieval house has been disappointing, principally as a result of the recent introduction of concrete flooring throughout the building which has served to remove, almost completely, traces of earlier occupation.

Phase II (c 1550–60): The first identifiable phase of alteration to the structure occurred in the middle years of the 16th century and comprised the insertion of a floor into the open hall of the house including an integral timber-framed stack backing onto the cross-passage of the primary house, replacing the former open hearth in the centre of the hall (Fig. 7.9). The insertion of an upper floor within the hall of the house and the enclosure of the fireplace in the mid 16th century represents an almost universal and widely acknowledged development of the traditional medieval open hall. Such improvements reflect a fundamental change in attitudes toward comfort and privacy, and were fuelled by a significant contemporary redistribution of wealth in favour of the landed, food-producing classes, of the middle stratum of society, the lesser gentry and Yeomen. The chronology and the physical processes by which this adaptation from open hall to storeyed house took place are, however, by no means uniform and while certain modifications to pre-existing timber houses are apparent as early as the second half of the 15th century, open halls continued to be built anew until well into the 16th century and the fully-storeyed house with brick stack did not become the norm until the 17th century (Pearson 1994, 108).

The inserted floor at Talbot House of *c* 1550–60, though relatively plain in its detailing, is remarkable in its almost complete survival and in several unusual features. The completeness and detailing allow for a fairly full understanding of the functioning of the house following this significant change. The integral single flue, timber-framed stack and the stair located adjacent to the stack, serving the new hall chamber, are features of interest. The complete separation of the hall and entrance passage served to significantly improve the comfort and privacy of the principal room of the house.

Phase III (late 17th–early 18th century): In the mid–late 17th century, the phase II timber stack was removed and replaced by a double-flue, brick-built stack serving fireplaces at ground and first floor level (hall and hall chamber) (see Figs 7.3–5). Contemporary with this work, the roof underwent a major rebuild, the first floor chambers were ceiled for the first time and the parlour was subdivided. The replacement of the simple, single-flue timber stack by the double-flue brick stack represents the conclusion of the process of conversion begun in Phase II. The hall continued to function as before while the quality and comfort of the hall chamber was improved by the provision of an additional upper fireplace. Associated with these changes, a radical reordering of the roof structure was required, comprising the rebuilding of the western hip and the substantial conversion of the medieval crown-post roof to a post-medieval staggered butt-purlin form, though reusing a high proportion of the medieval rafters. The upper chambers were, for the first time, closed by the insertion of ceilings. The combination of a brick stack with a ceiled and fully plastered interior would have served to greatly reduce draughts and would thus have significantly increased the domestic comfort of the property.

Phase IV: In the 18th or early 19th century, a radical change was made to the external appearance of the house (if not to its internal arrangements) when the recessed front (S) wall of the hall and ground floor end bays were underbuilt in brick to create a flush elevation (see Figs 7.3–5). The underbuilding of the jettied front elevation in stone or brick represents a common modification of medieval buildings in the post-medieval period (Barnwell and Adams 1994, 40). The effective gain in usable floor area resulting from this modification was negligible (3.65m^2 or *c* 4%) and it is more probable that the aesthetic desire to create a flush elevation was the deciding factor in undertaking such a significant programme of building works.

Phase V (c 1840): Following the passing of the South Eastern Railways Act of 1836, the main line rail connection from London to Ashford was opened in 1842 and was through to the south coast at Folkestone in the following year. Construction of the railway had a negative impact upon the location and setting of Talbot House since the line passed immediately south of Talbot House upon a substantial embankment. It was thus perhaps inevitable that the property should move into the ownership of the railway (first to the South Eastern Railway Company and eventually to the British Rail Properties Board). The property was divided into three separate dwellings ('Railway Cottages') and was used as accommodation for rail employees, plate layers and track maintenance workers and be used as accommodation for railway employees; the division of the house into three separate cottages (with additional fireplaces and stacks) reflects this relative downgrading of its social status.

Phase VI (1985): In 1984, 'Railway Cottages' were sold into private hands and a programme of building works undertaken to revert the house to a single dwelling. The

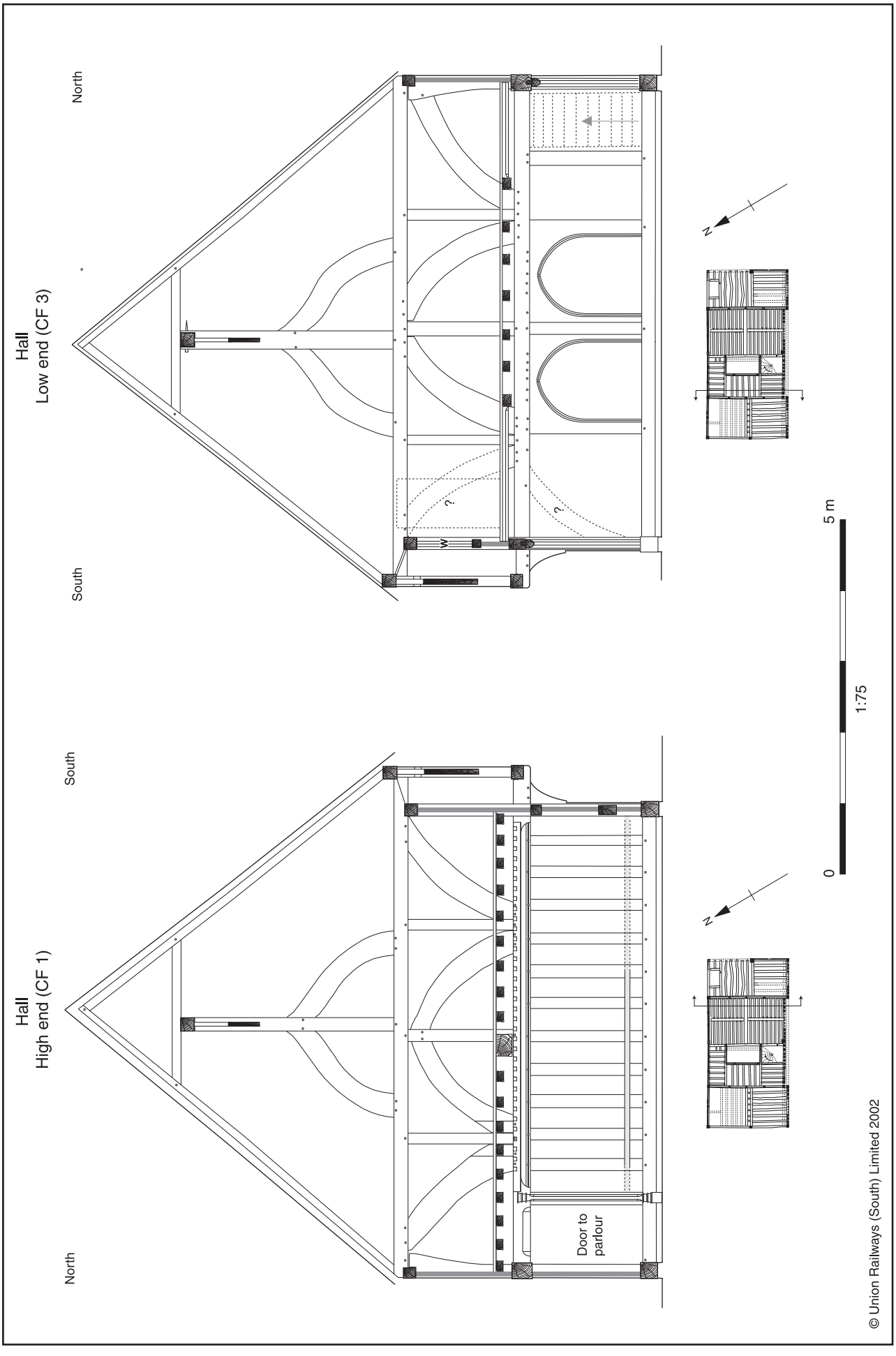


Figure 7.9 Talbot House: reconstructed transverse cross-sections in Phase II

works comprised both external refurbishment (eg re-roofing) and internal re-ordering related to the new arrangements (creation of through access/blocking of superfluous doors, stairs, and concrete floor). This sympathetic restoration saved the building from destruction and paved the way for its eventual rebuilding.

Archaeological investigation and rebuilding

The results of archaeological excavations following the dismantling of the building proved to be somewhat disappointing, the paucity of evidence being the inevitable result of the periodical programmes of refurbishment and modification of the structure over its extended history, in particular the lowering of the internal floor levels and the laying of concrete floor slabs in the recent past. The archaeological investigation of the building during dismantling did, however, produce valuable information about its original form and the various phases of its development and alteration. While the more recent restoration activities have reduced the amount of information that could be obtained about the stratigraphy of decorative schemes, or under-floor deposits, the current study was nonetheless a worthwhile activity.

Talbot House has now been rebuilt within Sellindge parish at a new site in Swan Lane (NGR: 611446 18950). On the basis of its interest, and with the agreement of the Local Authority, it was rebuilt, not as the multi-period house that was dismantled, but as a partially restored Wealden house. The rebuilding project has sought to restore the original exterior appearance of the medieval structure with its distinctive recessed hall and jettied end-bay arrangement, while internally the central truss and crown-post have been reintroduced for structural reasons. The purpose of the restoration was not, however, to create a historically correct, single-phase reconstruction, and the rebuilt house also reflects its subsequent stages of development by retention of later features of significant interest, in particular the 16th-century inserted floor and 17th-century brick stack.

Old Parsonage Farm, Westwell – 16th century

The Old Parsonage Farmhouse in Westwell lies just south of the LCD railway line from Maidstone to Ashford, and was retained by taking the HS1 through Yonsea Farm. Instead, the diverted line encountered the (unexpected) moated site across the road, whose excavation has been described in the previous chapter; this was abandoned in the late medieval period and seems to have been replaced by the existing Parsonage Farm. The excavation of the moated site has been described in Chapter 6. The existing Parsonage Farm is an important fragment of a high-status 16th-century house, the surviving timber framing representing the parlour wing at one end of the house and part of the main return. There was also a small contemporary framed barn (now collapsed) to the south, and a barn dated 1850 to the north-east.

No. 2 Boys Hall Road (Crowbridge Cottage) – c. 1600 (Figs 7.10–12)

In Willesborough to the east of the SER railway works the village had a dispersed plan extending from the church along Boys Hall Road round Crowbridge Road, Bentley Road and back to the church. This had been severed by the building of the original SER railway, leaving houses on both sides of the line, leaving Nos 2 and 4 Boys Hall road close to the railway (see below for No. 4). Crowbridge Cottage (No. 2 Boys Hall Road) was a two-bay house, thought to have been constructed around 1600 and with some reused medieval timbers. Its size was uncertain until the site was excavated, from which it was clear that the building had not lost a third bay; the modest two-bay plan is of interest as an unusual small version of the new post-medieval plan type of lobby-entrance house. The normal floor plan in England/Kent would have had three rooms rather than two as here (when translated to New England in the 17th–18th centuries the plan-type occurs in greater variety). It had rubble stone walling in the ground floor and gable ends with clay tile hanging over timber framing in the first floor facing the south (towards the railway). On the north side was a modern rendered brick outshot giving this the appearance of the back side of the house, but which actually concealed an earlier timber-framed jetty with original wattle and daub panels, ie the original front wall. The roof is pitched, clad in clay peg tiles with two hipped dormers, and a simple roof construction of collars clasping purlins. The two-room plan included a central brick chimney stack; no original windows were visible, but their location became apparent after dismantling the front and end walls.

The excavations of the building footprint revealed five development phases. Evidence of early activity (Phase I) was very slight, consisting of clay floor levels with some medieval pottery (?12th century), domestic debris and traces of early walls; the length of time between the demolition or abandonment of the medieval structures and the construction of the cottage (Phase II) is uncertain. The ground was levelled for the new building, and stone foundations were laid in a trench; features (pits and postholes) related to the construction of the cottage contained pottery of early–mid 16th century date. There was also evidence for an external hearth or oven. The next phase (III), perhaps later in the 16th century, involved modifications to the sill walls (and possibly an external stair). There were few internal occupation layers in the main room, except in the vicinity of the hearth, but more activity was recorded in the back room where a series of floor levels (some cobbled) were uncovered. To the rear of the house an extension or ancillary structure was added in the early modern period (Phase IV), a fireplace was inserted in the late 18th or beginning of the 19th century in the back room (Fig. 7.12), and the floor raised in the front room in the 19th century. In the modern period (Phase V) the house was extended at the rear over existing cobbled areas, removing the earlier outbuilding and replacing it with a lean-to extension covering the whole of

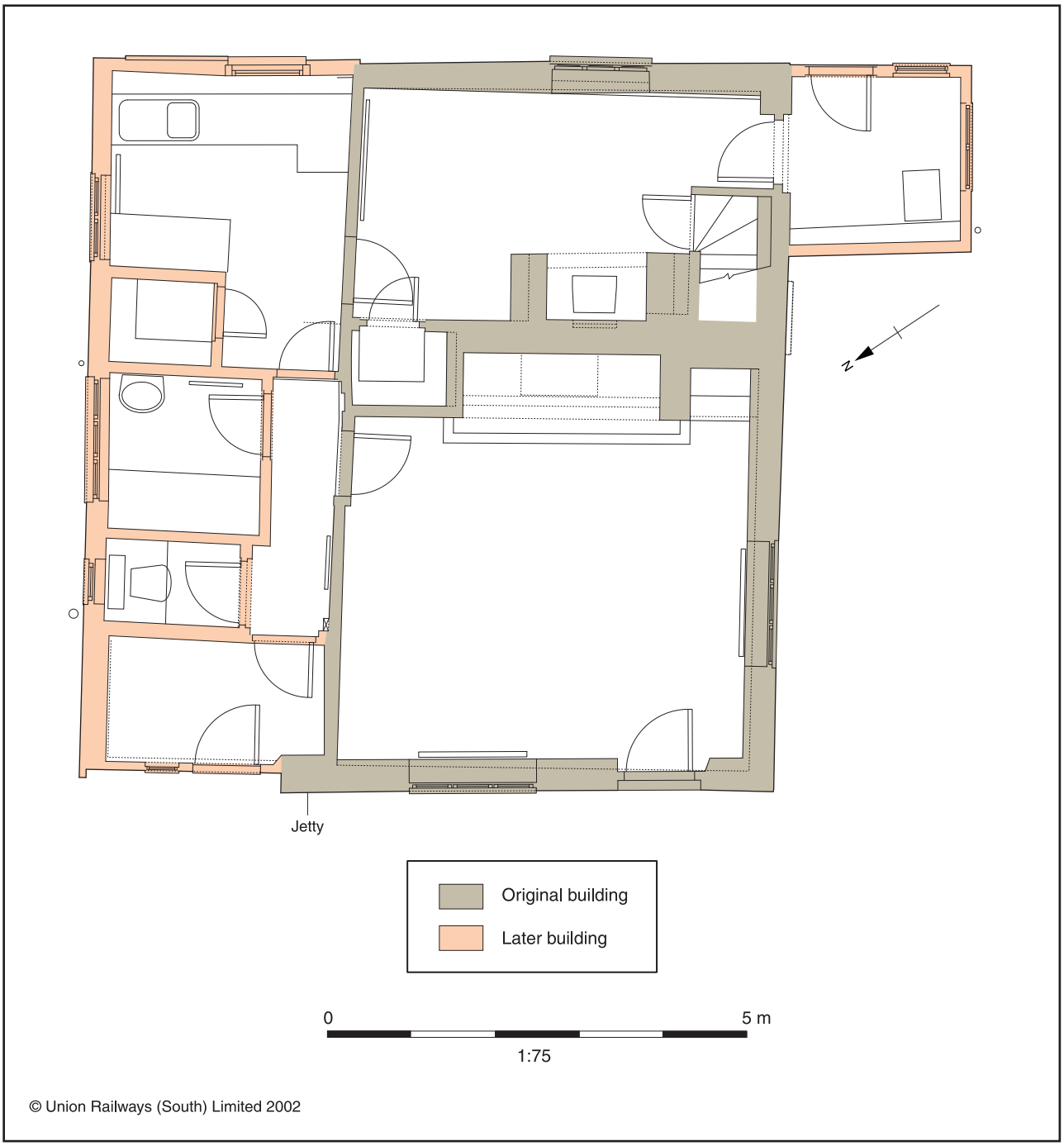


Figure 7.10 2 Boys Hall Road: ground floor plan

the back wall. This provided a bathroom and kitchen, and was accompanied by a general relaying of floors in concrete, and a landscaping of the cottage garden.

In addition to the main excavations two test trenches were opened to evaluate the archaeological context of the building and to assess whether any archaeological deposits survived. These mainly revealed modern deposits although a second trench also contained features associated with earlier phases. Finds included a range of 16th and 18th-century pottery (but not a continuous series), including an unusual sherd of an Anglo-Netherlands tin-glazed Albarello (drug jar). Amongst the keys, nails, pins, buttons and thimble was a part of a late medieval brass candleholder.

Old and Water Street Cottage, Lenham Heath – 17th century (Figs. 7.13–19)

A historic property at Lenham Heath was expected to be retained but was found to be too close to the line, and was removed to the Museum of Kent Life, Maidstone, being investigated during dismantling by the Canterbury Archaeological Trust in 1999, whose report forms the basis of this section (Austin 2001). A preliminary survey had also been undertaken by David and Barbara Martin of Archaeology South East (Martin 1999), and historical research undertaken by Jeanette French (2000).

The building was comprehensively recorded, including brick-by-brick drawings of the lower walls,

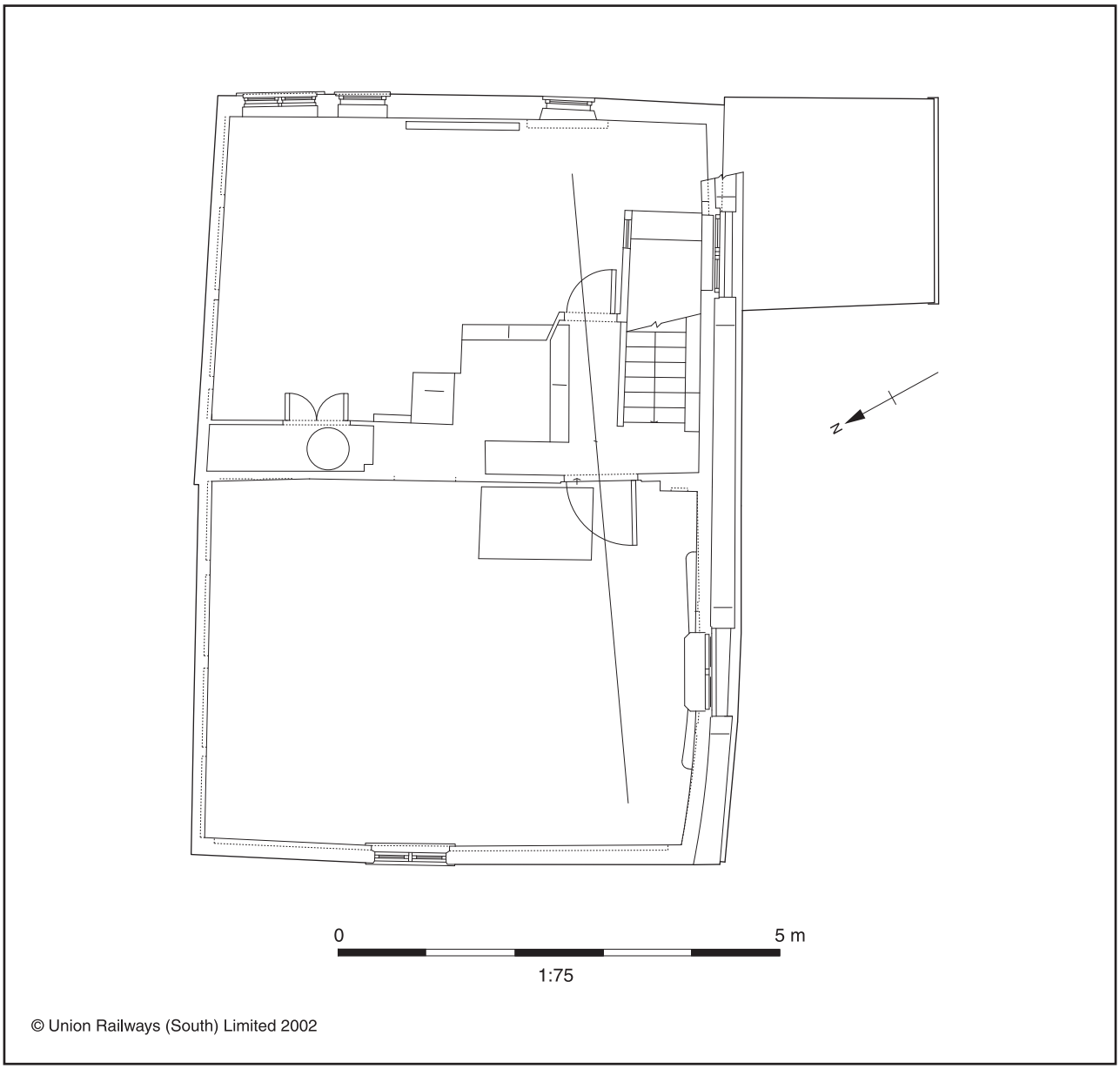


Figure 7.11 2 Boys Hall Road: first floor plan

since it was to be rebuilt using the same bricks, and preserving its authentic irregularity. As with many of the HS1 buildings, Old and Water Street Cottages are typical of a modest building of the period and locality, and the opportunities afforded by the dismantling process to understand both its architectural development and social history, and the chance to present this as an exhibit to the public, have considerably enhanced its interest.

The house had belonged to the Chilston Estate, and appears from the documentary sources to have been used as accommodation for estate workers (eg carpenters, rope-makers, labourers, and more recently carpenters, bricklayers, stonemasons and wheelwrights). The house was built in the early 17th century (between 1605 and 1625 according to dendro-dating), and in the earliest property record of 1649 a carpenter from Lenham bought the house and garden with 1½ acres. By 1666 it had been divided between two carpenters as separate dwellings.

In origin this was a modest three bay timber-framed building, surrounded by later work of the 19th and 20th centuries. The 17th-century building is a relatively late example of a 'transitional' house, one built after the demise of the open-hall, but before the introduction of the early modern house (Figs 7.14–15). A good part of this structure, which is an interesting but unremarkable example of its type, survived within the property. Many changes to the original building occurred during the 17th and 18th centuries, including the addition of single-storey outshots against the north and south ends of the property. The introduction of glazed windows, and the application of decorative pargetting are two more examples of the many other improvements undertaken. The outshots and other features were, however, swept away in the following centuries by the construction of

A

B

C

Figure 7.12 2 Boys Hall Road: photographs of (A) west elevation of the house, (B) internal view, jettied front to north, and (C) west room main fireplace

modern extensions, the most notable a brick and softwood-framed two-cell cottage. This was built against the south end of the building in the second half of the 19th century, its construction resulting in the loss of the southern bay of the timber-framed building.

The primary frame was built round a large central chimney which had two ground-floor hearths, and with

A

B

Figure 7.13 Old and Water Street Cottages: photographs of cottages looking (A) north-east and (B) south-west

the 'baffle-entry' front door to one side (Figs. 7.14-16). The hall/living room on the north side has the original fireplace with the initials GM, presumably George Miller, one of the owners in 1666. The ceiling was neatly formed of chamfered and stopped joists, giving the room a certain status. Two doors in the north partition led to the stairs, and a smaller unheated room (later the pantry with adjoining dairy); it has more plain ceiling joists. The south end of the first building has been lost to later reconstruction, but the main room had a large hearth and may have been the kitchen.

On the first floor there was a better room over the hall (although unheated and open to the roof), with a lower status room at the north end, (these did not connect with the rooms at the south end) (Fig. 7.17). The first-floor ceilings were introduced in the later 17th or 18th century, and another aspect of upgrading the quality of this modest house was the introduction of glazed windows, while some pargetted decoration was applied to the north exterior (later buried within an extension).

In the 18th century the chimney was rebuilt (but still without first-floor hearths), and outshots were added at either end of the building (pottery below the foundations suggested that this was of mid-18th century date); these were linked by a passage, and a porch was added to the

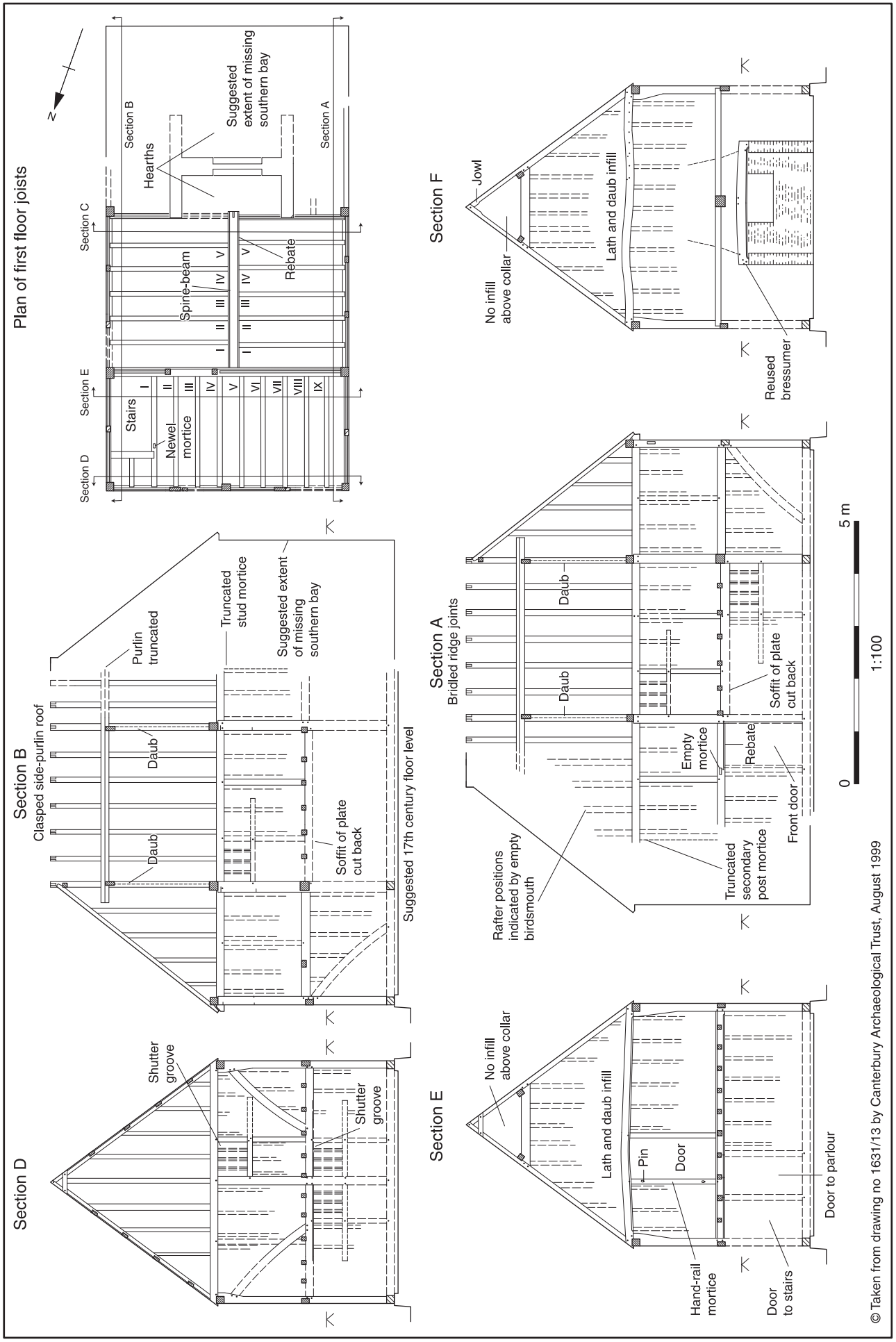


Figure 7.14 Old and Water Street Cottages: Phase I sections

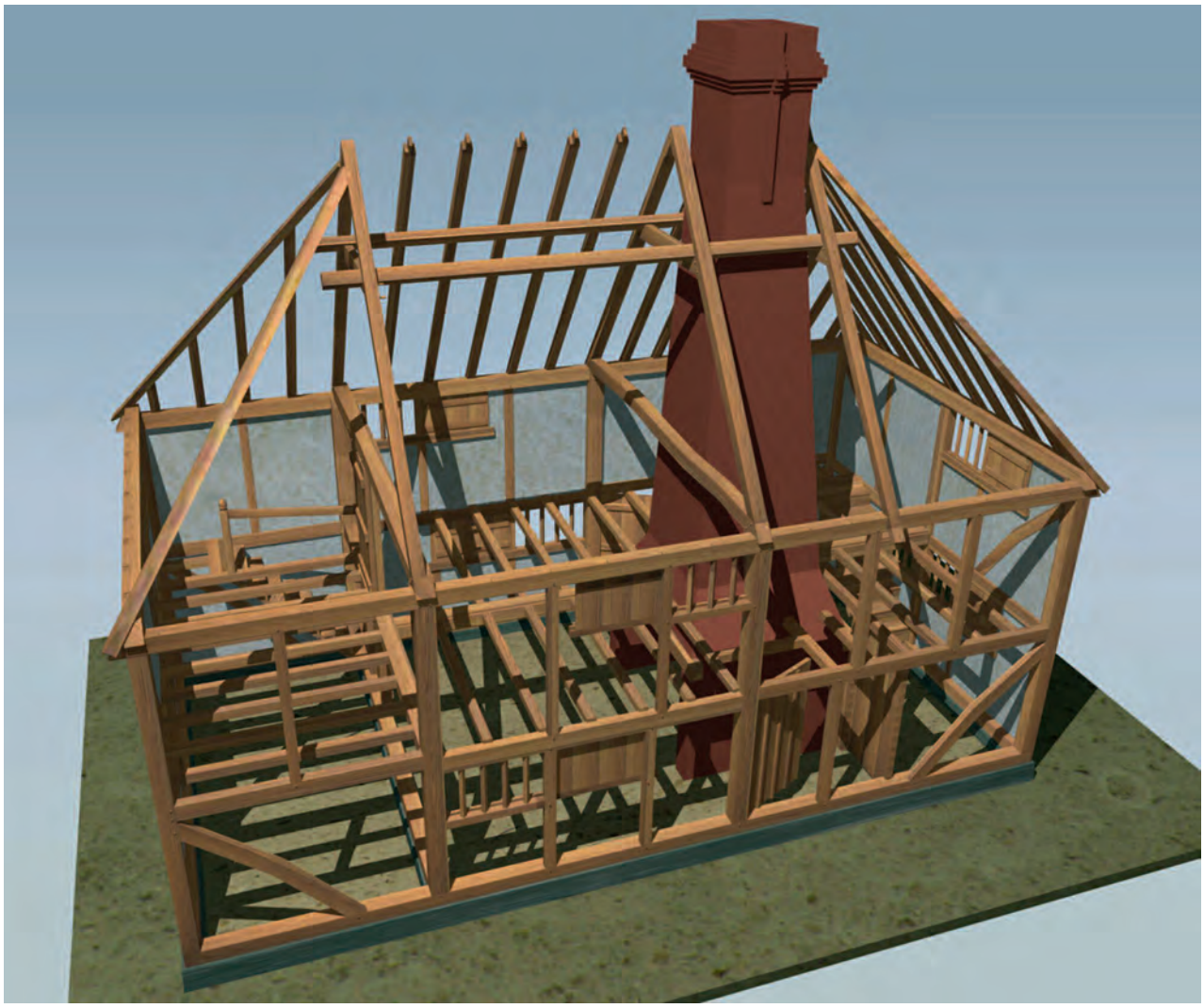


Figure 7.15 Old and Water Street Cottages: Phase 1 (model)

front (Fig. 7.18). At various times the framing was underpinned with brick walling, no doubt as separate section failed, and the western wall was rebuilt in the mid 19th century.

The informal division of Old Cottage into two dwellings that had existed since the 17th century was made permanent in the 19th century following the construction of Water Street Cottage. This substantial two-unit, two-storey extension was built against the south end of the 17th-century building in the second half of the 19th century. Its construction resulted in the demolition of the southern bay of the original house. The property now comprised a pair of independent two-cell cottages beneath one roof (Figs 7.18–19). Examination of the early Ordnance Survey maps suggests the extension was built between 1867 and 1898. The new cottage seems, however, to post-date a title deed of the 12th May 1842, which records the sale of the building to James Douglas Stoddart of Chilston Park for £185 (with occupants Mathew Chapman and Burgess widow) '…now and for some time past occupied as two dwellings with the barn stable garden and orchard and piece or parcel of land called or commonly known by the name of West Croft…'.

The new building was brick- and timber-framed (well executed in softwood), with casement windows. In plan the new cottage comprises two ground and first floor rooms divided by a central stairwell. The main living room occupied the larger ground floor room, that to the south, the kitchen the northern room, and two bedrooms were present on the first floor. The main entrance to the property led into a small lobby and is centrally located along the frontage. From the entrance lobby one could turn right into the living room or ascend the straight flight of stairs to the first floor. To gain access to the kitchen one had to cross the living room to a second door at the rear. From here one passed behind the stairs before entering the kitchen. The width and height of Water Street Cottage exactly match those of the 17th-century building. The floor within its northern half continues at the same height, but within the southern half it has been raised to improve the headroom at ground level. All that remained of the missing bay of the 17th-century building, within the 19th-century range, were the truncated east and west eaves-plates, which extend a metre or so into the new structure. Later modifications saw the exteriors tile-hung to create a consistent appearance between the two cottages, and this was accompanied by further

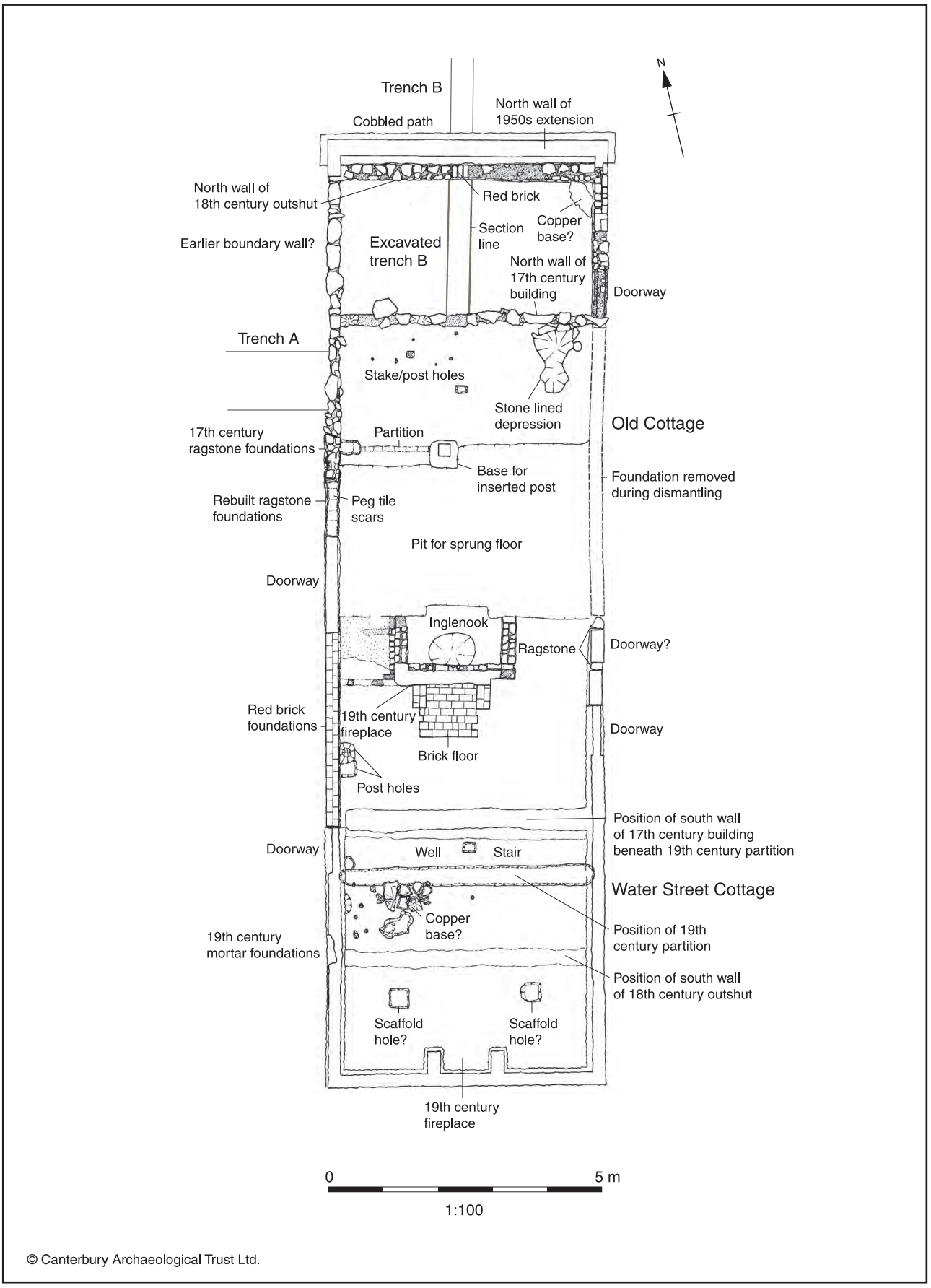


Figure 7.16 Old and Water Street Cottages: ground plan

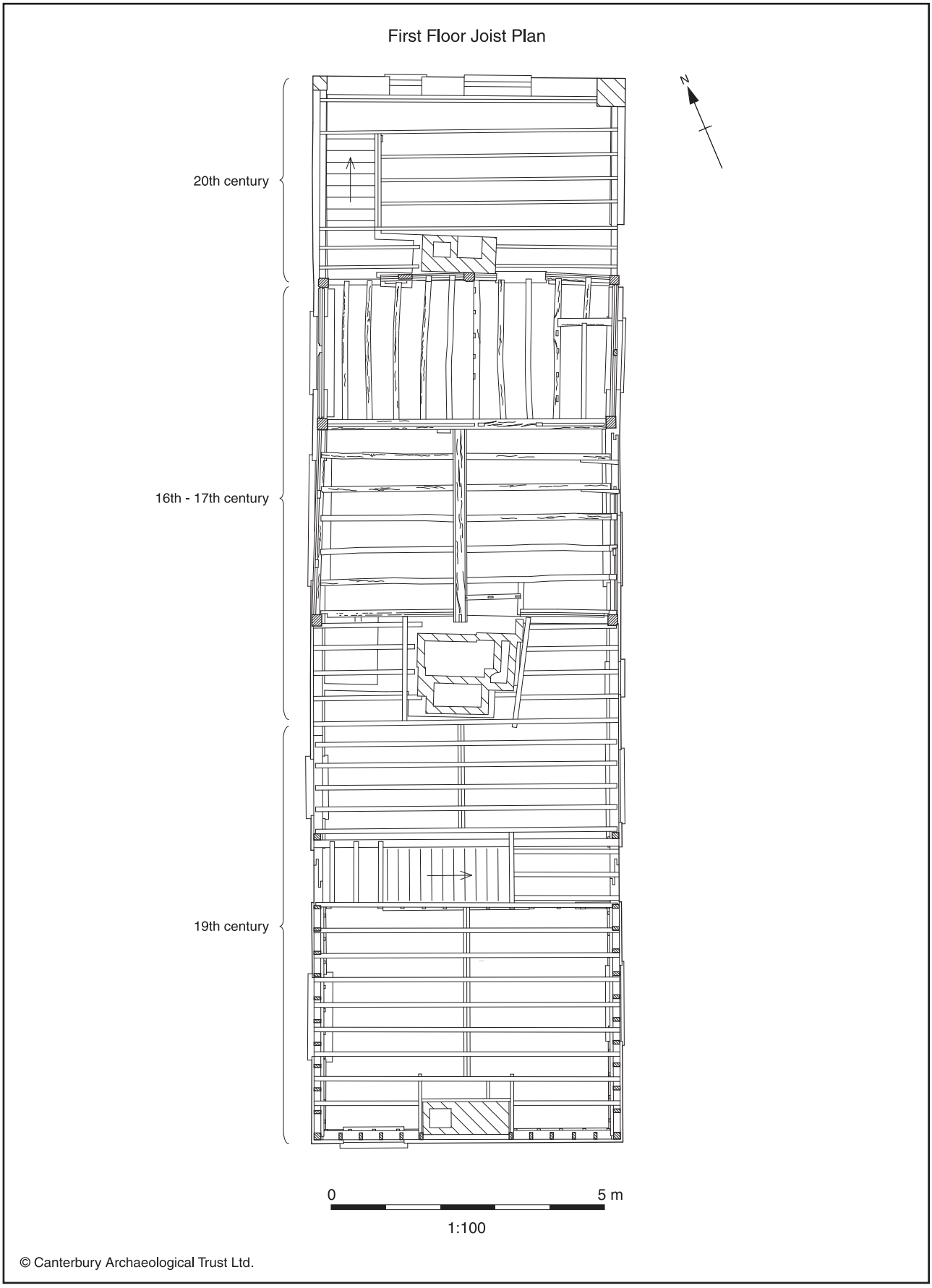


Figure 7.17 Old and Water Street Cottages: first floor joist plan

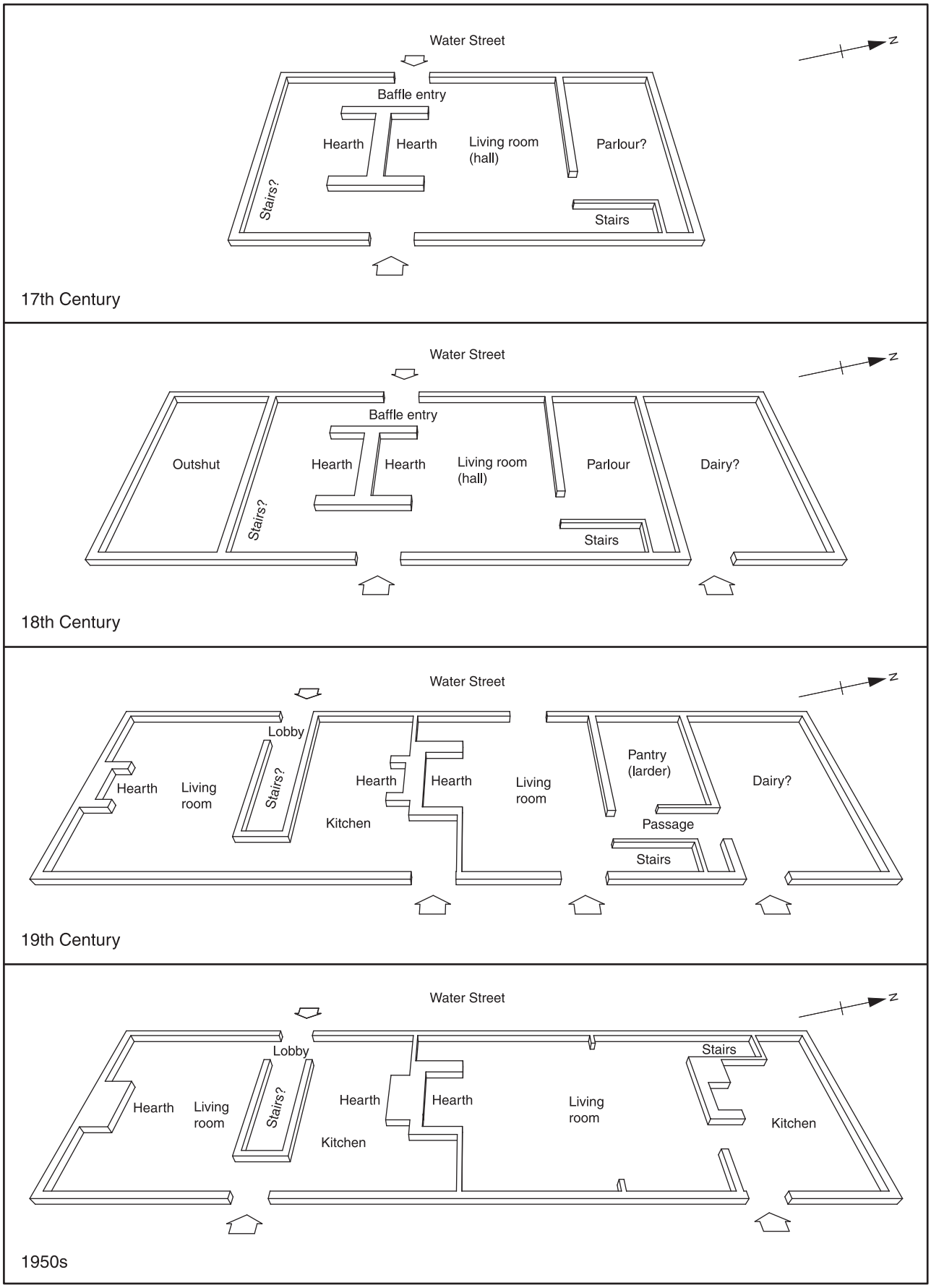


Figure 7.18 Old and Water Street Cottages: phase plans

A. B.

Figure 7.19 Old and Water Street Cottages: photographs of (A) internalised hip of 17th-century roof, and (B) 17th-century joists and beams during dismantling

rebuilding of the walls. A series of alterations was undertaken in the 20th century, which modernised the interior facilities (and reunified the pair of cottages), and included the addition of one more extension at the north end. The archaeological investigation of these later phases is a not unimportant part of the story (and an interesting mixture of observation and oral testimony), but need not be reported at length here.

Brockton Farm, Charing Heath – 17th century

(Figs 7.20–8)

Brockton Farm is situated south-west of Charing village and on the south-east corner of Charing Heath, a large triangular area of former common surrounded by a number of farms and cottages. Brockton Farm was always problematic in that its age and sequence of

Figure 7.20 Brockton: photograph of farmhouse

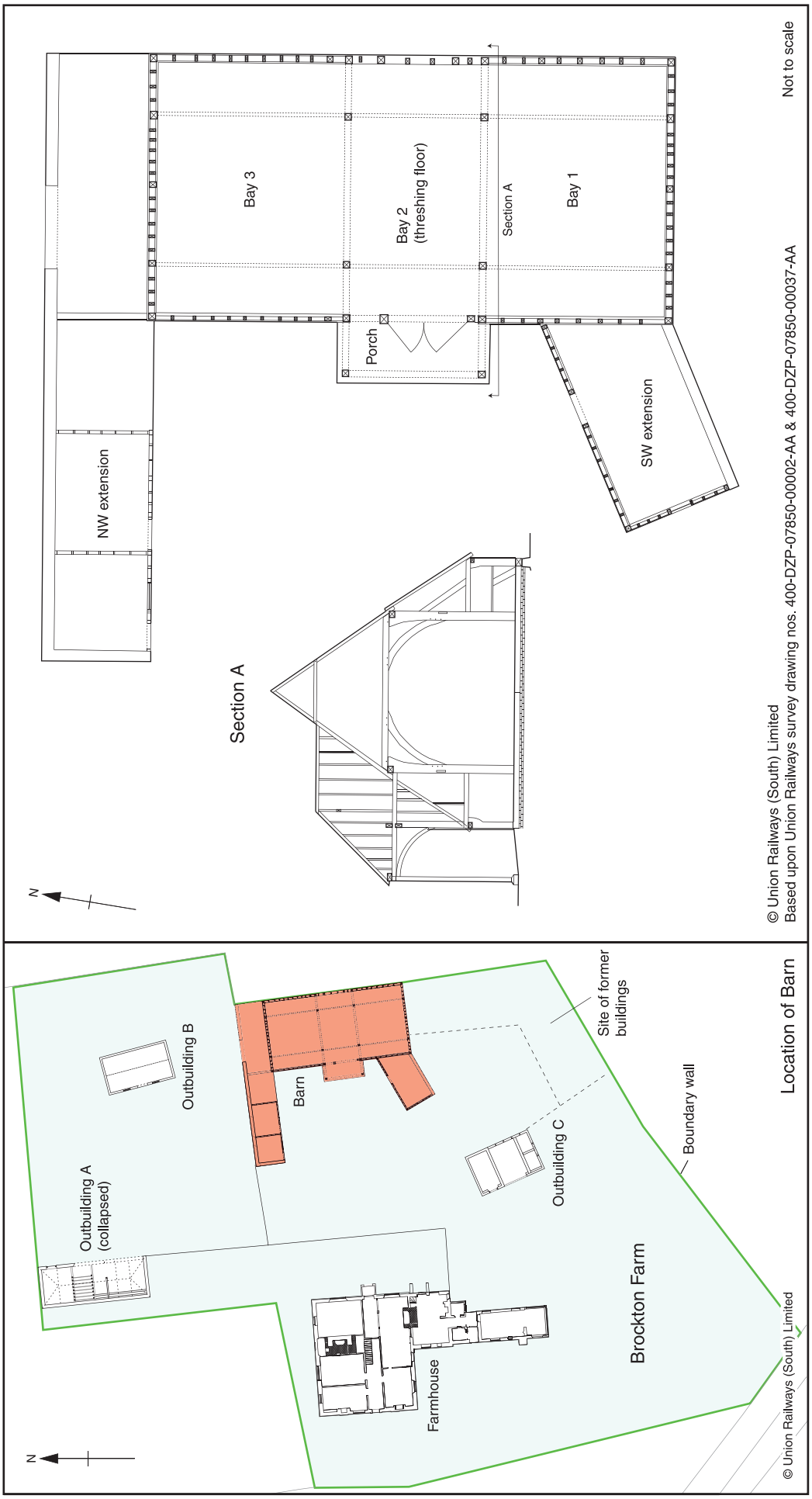


Figure 7.21 Brockton: site plan and details of barn

Figure 7.22 Brockton: phase plans of house

development was not readily apparent on superficial inspection. Even its history was somewhat obscure (in the absence of its title deeds), though analysis of early village records (eg Hearth Tax) suggest that this (and not the nearby 'Brockton Manor') was more likely to have been the manorial centre. In 1840 the Tithe Map shows the present buildings (with no oast house) and a farm of over 120 acres, with hops, orchard and 62 acres of arable; in *c* 1860 the first edition Ordnance Survey 25" map showed all the present buildings except the small stable. The evidence uncovered in the dismantling revealed the extent to which the farm had been altered and modified into a Georgian farmhouse while retaining substantial elements of the primary 17th-century timber framing.

The barn was separately dismantled and removed, and the stables had been recorded previously after storm damage in 1992, but the farmhouse was carefully investigated and recorded during dismantling, and the site was partially excavated. Salvage items of historic interest were recovered for the Weald and Downland Museum at Singleton, West Sussex, and the Brooking Collection of Architectural Detail, University of Greenwich.

Investigation of the farmhouse quickly revealed the extent to which its historic fabric was obscured by dry lining of the walls, behind which more evidence survived, while the floors also contained a substantial part of the story. The farmhouse consists of two parallel ranges, an older one on the north and later one of the south (Fig. 7.22). The earliest elements identified were four timbers which were interpreted as the fragmentary remains of a pre-17th century gabled cross wing at the east end of the north range, which was perhaps one element of a larger building for which no other evidence was found above or below ground (Fig. 7.23).

The second construction phase was demonstrated by a detailed examination of the roof carpentry of the house, which revealed extensive remains of a 17th-century structure within the north range, while small areas of the southern wall framing survive within the south ground-floor wall (GF03), and in the cross frames on either side of the principal brick chimney stack (Fig. 7.24).

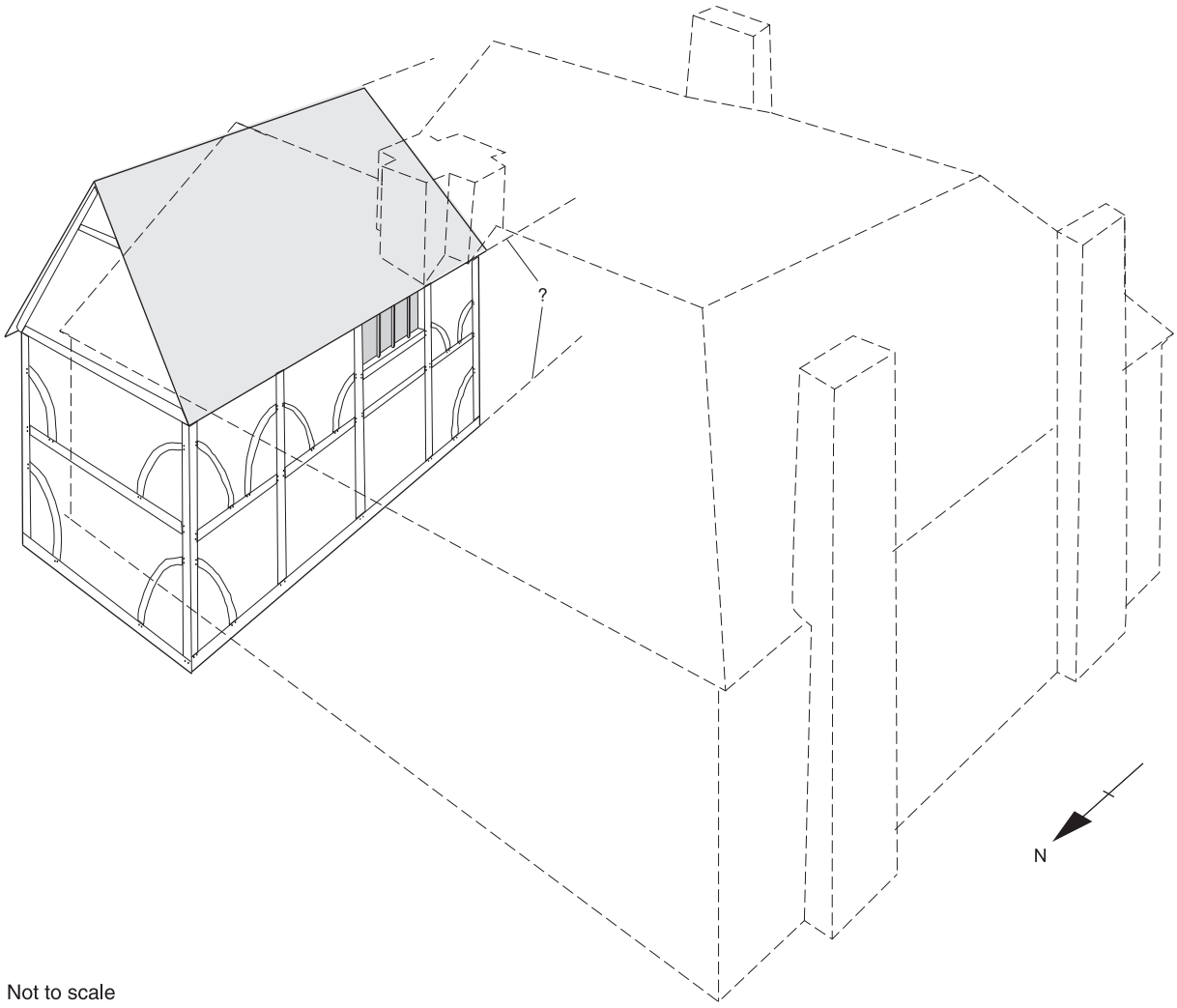
In the roof, the northern wall plate had survived complete from the 17th-century building. This had evidence of two projecting gables, also indicated by gaps in the rafters. Substantial amounts of the contemporary floor and ceiling frame survived on the first floor on either side of the central brick chimney stack, which also belonged to this phase, while a section of original wall framing including a full height wall post and sections of daub panelled walls survived, encased in the south wall by the later corridor. Other sections of framing also survived within the cross walls around the principal stack, and some evidence in the roof and framing suggested that a south range was built or intended. All other framing elements had been removed in the next phase of work, when the north range had been underbuilt in brick.

From this evidence it was possible to reconstruct the northern elevation of the building with some degree of certainty (Fig. 7.24), though it remains unclear whether there was a western cross-wing, and the archaeological evaluation (Trench 13) to the west of the extant building has, unfortunately, proved inconclusive in this respect. The detailing of the fireplaces and the carpentry techniques suggests an early 17th-century date for the primary structure of Phase II. Closer dating of the frame by dendrochronology was considered post-dismantling, but the timbers had too few growth rings to make this feasible. The quality of the chamfer detailing to floor beams and joists within the surviving framework would appear to suggest rooms of a domestic nature, probably ground floor hall and parlour with chambers over, though the scale of the eastern fireplace may suggest that it was a kitchen. Overall, the framing, brick stack, and the presence of original paired fireplaces at each level indicated a building of relatively high status, and thus was likely to have been provided with additional service accommodation (either attached in the form of outshots or as detached structures). The presence of a series of four redundant mortices in the girth of the south wall of the surviving range at the level of the first floor was clearly suggestive of additional, attached accommodation, and a watching brief on the breaking out of the basement rooms of the farmhouse revealed the remains of a former cellar on the south side, probably related to the 17th-century rear wing (being smaller than the 18th-century rooms above it).

In the third construction phase (Phase III), during the late 18th or early 19th century, the farmhouse was again substantially remodelled, by the construction of an additional range to the south of the Phase II structure and the underbuilding of the north range walls in brick thus producing a building of approximately square plan (Fig. 7.25). An additional stack was raised in the eastern part of south wall serving a large fireplace at ground floor level only, probable for a new kitchen. The extensive survival of the 17th-century roof suggests that the roof structure of the Phase II house was simply shored up during this programme of work and the walls underbuilt in brick (with the removal of much of the Phase II wall framing). The construction of the southern range was in brick in single Flemish bond. Many of the extant internal partitions can be assigned to this phase of work, during which a corridor was formed linking the two ranges. All were of studwork construction with applied lath and lime plaster render. Joinery details contemporary with this phase, including the series of sash windows (and shutters) recorded throughout the main block, suggested an early 19th-century date for the extension of the building.

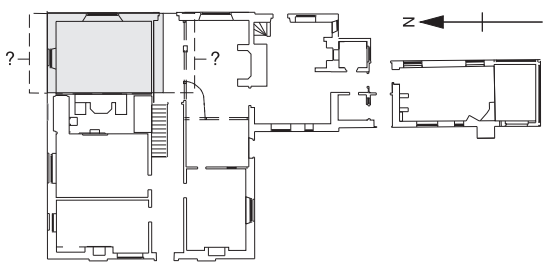
In the mid 19th-century, the fourth phase was represented by the addition of a lean-to extension on the south containing a service room with accommodation over, built of rubble stone with brick plinth, quoins and window detailing. The use of identical materials for the construction of a small, detached possible stable block suggests that it represents a contemporary addition (and likewise the northern part of outbuilding C). This addition is clearly indicated in its present form at the southern end of the Farmhouse range on the Ordnance Survey First Edition map of *c* 1860. The evidence of the Tithe Map of 1840 is a little more ambiguous, indicating

PHASE I: Pre 17th-century cross wing



Not to scale

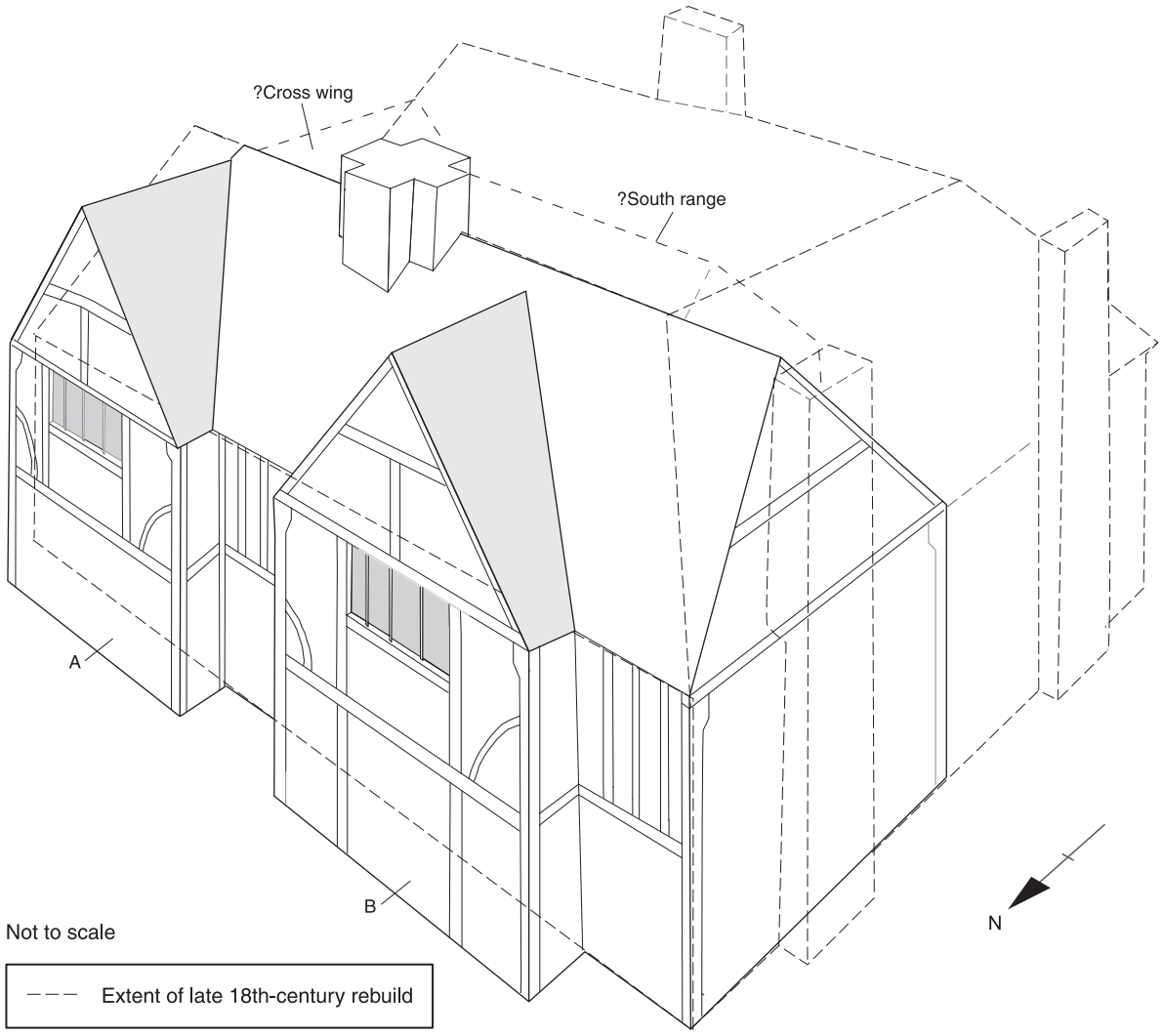
The evidence of roof timbers, specifically two plates and an *in-situ* tie beam, within the eastern part of the north range indicates the existence of a cross wing pre-dating the main 17th-century range. Details of wall framing indicated in the illustration above are for the most part conjectural, though evidence has been recorded for the upper floor window as shown. It is probable that this two storey cross wing formed one part of a more substantial structure, perhaps including an attached open hall - evidence for such related structures has not been identified during the current study and so the cross wing only has been shown.



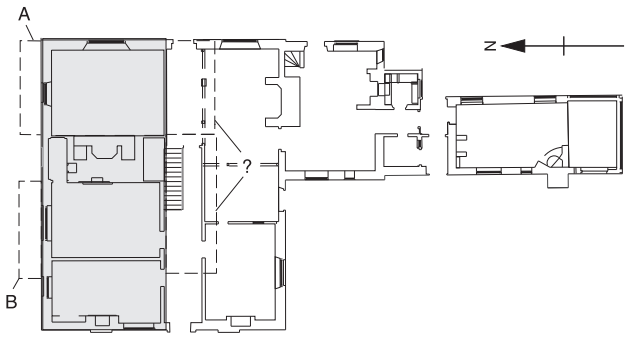
The limited nature of the evidence for the pre 17th-century building does not allow for a confident reconstruction of the northern and southern extent of the cross wing. It is clear, however, that it extended further north than the northern plate of the 19th-century building and further south than the surviving elements of the 17th-century roof. Excavation of the building footprint has unfortunately proved inconclusive in this respect.

Figure 7.23 Brockton: Phase I reconstruction

PHASE II: Early 17th-century range



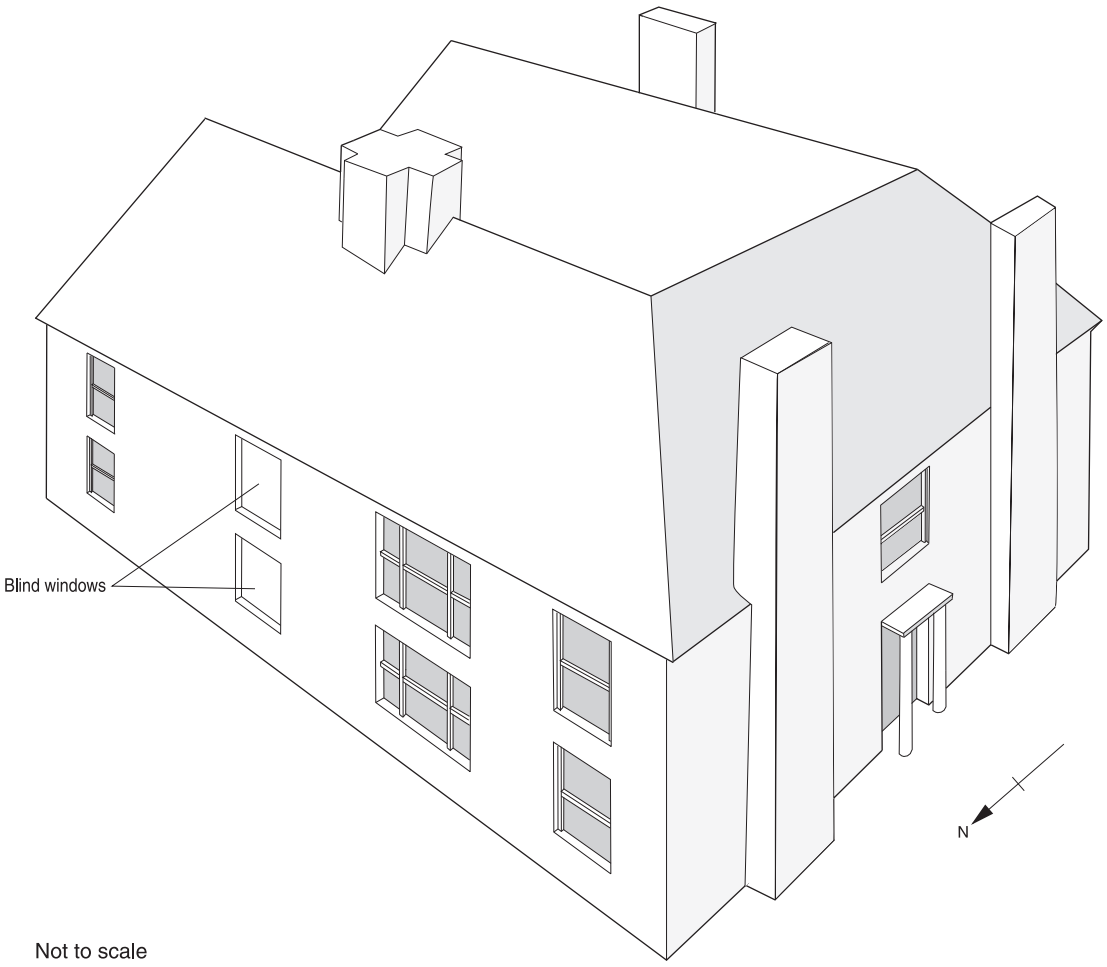
The study has revealed a well preserved 17th-century roof above the north range of the farmhouse, maintained and adapted during the late 18th/early 19th-century rebuilding. An analysis of the roof details has allowed for the reconstruction of two projecting gables (A and B) to the north elevation of the house, the eastern gable (A) probably representing the retention of the pre-17th-century wing within the frame of the 17th-century house which was thus, in effect, built up against the earlier structure.



In plan, the 17th-century range occupied the area of the northern part of the 19th-century farmhouse (left). The evidence of a fragment of the original southern wall of this range, surviving as the north wall of the corridor, indicated the former existance of a further southern range. It has not been possible, from the surviving evidence, to attempt an informed reconstruction of the southern range. Again, no evidence has been recovered from excavations to indicate the extent of the southern range.

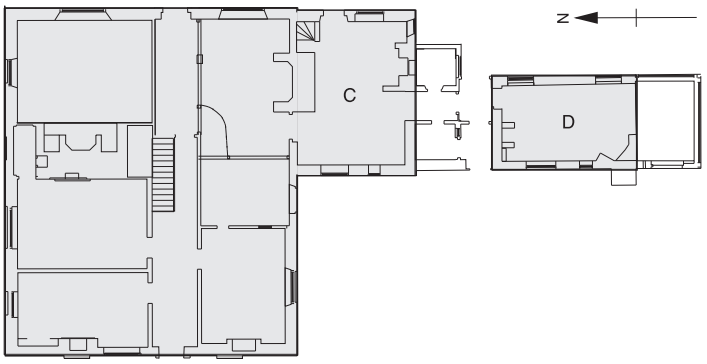
Figure 7.24 Brockton: Phase II reconstruction

Phase III: Late 18th/early 19th century



Not to scale

In the late 18th and early 19th century, the house was radically reordered and extended to the south to produce a double pile plan. During this phase of work, the surviving central section of 17th-century roof located to each side of the principal stack was left *insitu*. The roof was apparently propped below the northern plate and the walls underbuilt in brick, resulting in the loss of most of the external framed walls. The eastern and western gable ends of the roof were lost and the new structure hipped at each end. A new roof was erected over the southern range.



Although the evidence is somewhat contradictory, it appears likely that the pent-roofed extension (C) to the south of the main block represents an addition of the mid 19th century (*c* 1850), providing kitchen accommodation with servants quarters over. A small, detached rectangular outbuilding (D) was also added at this time, evidenced by its use of identical building materials.

Figure 7.25 Brockton: Phase III reconstruction

a southern extension to the farmhouse, and a possible structure to the west (not otherwise evidenced).

The next phase was represented by the building of a small store and larder adjoining the south wall of the previous extension, probably towards the end of the 19th century or in the early years of the 20th century. In Phase VI, at some point probably in the middle years of the 20th century, the access passage between the main farmhouse and the formerly detached block to the south was enclosed with a series of ephemeral stud partitions thus creating a covered connection between the main house and the former stables. Probably at the same time the block was converted to domestic use, by converting doors to windows and inserting a stack in the south-west corner. In the final construction phase, a lean-to glass house or conservatory to the extreme south end of range represents a modification of the later 20th century.

The excavation was disappointing as far as the archaeology of the development or occupation of the building was concerned; in the case of the farmhouse itself, this is the inevitable result of the periodical refurbishment and modification of the structure—the underbuilding of the north range walls in brick, the creation of the basement to the Phase III house and the laying of new floors internally—which have served to remove archaeological traces of earlier arrangements. However, the discovery of the infilled cellar, noted above, was a useful and unexpected addition to the information gained from the structural analysis. Externally, little more was revealed than the foundation trenches of the barn and other buildings, and a series of yard surfaces.

The most interesting single find was during the watching brief on the removal of a brick-lined circular well, located 4.30m east of the farmhouse (Fig. 7.26). At a depth of *c* 9m a circular timber object was retrieved which has been interpreted as a wooden cutting shoe associated with the digging of the well that had been preserved in the waterlogged conditions at the base of the well, having been abandoned when the construction was completed.

The complete object had an internal diameter of 92cm and an external diameter of 1.15m, formed of four quadrant sections, or felloes of triangular profile, further strengthened by a series of four curved plank sections nailed to their upper face, offset by 45° relative to the lower timbers. The upper planks were uniquely identified by paired numbers at each end corresponding to the adjacent timbers in their original arrangement. Thus the individual sections were numbered I-II, II-III, III-IIII, IIII-I, and the lower felloes were correspondingly marked I, II, III, and IIII on their outer face. The felloes were cut from the oak heartwood with only a little of their sapwood remaining, and the joints were free-tenons of elm single pegged to each felloe. The upper face of the plank sections retained traces of brick and mortar indicating their primary orientation, and their mode of use. The available

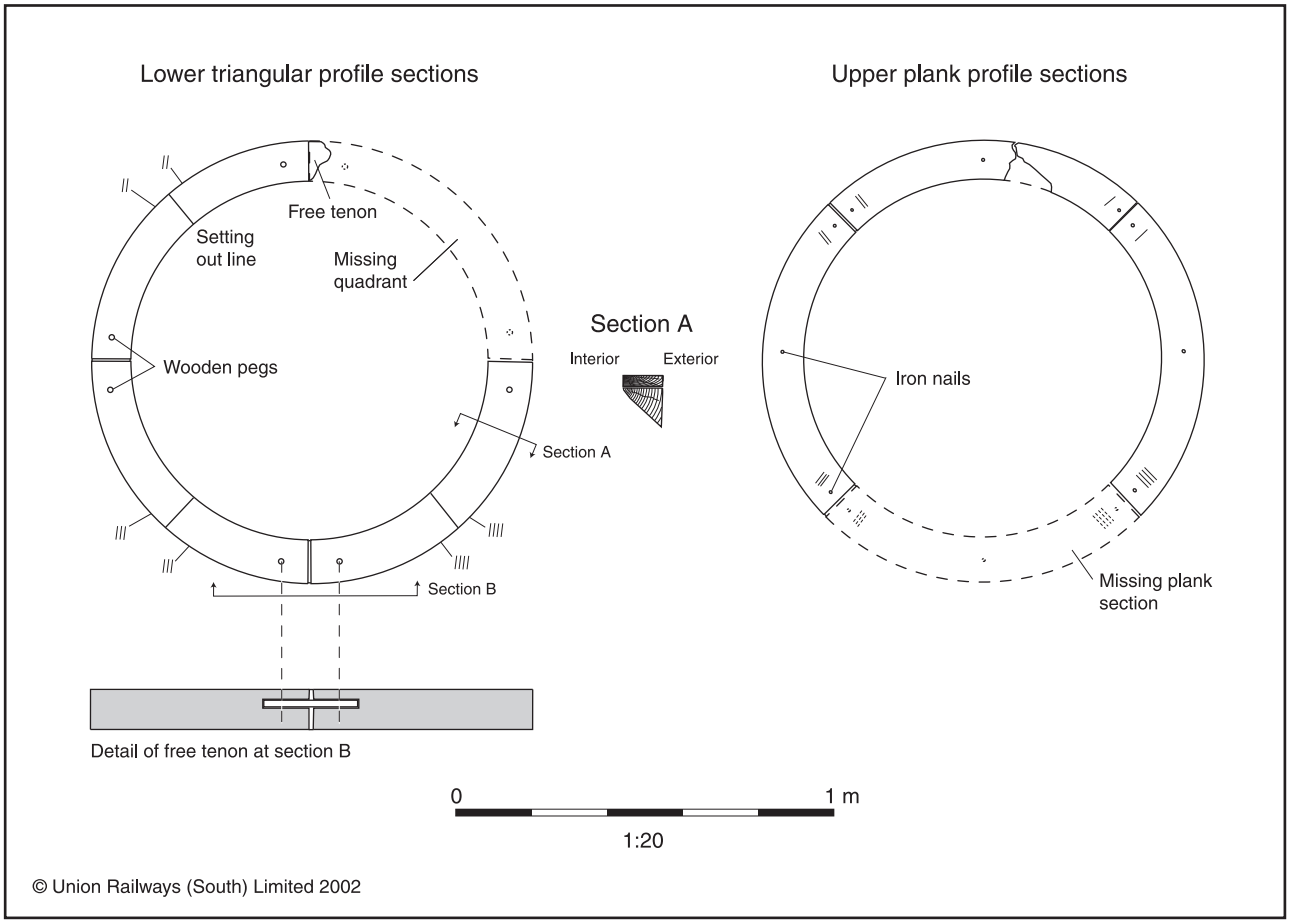
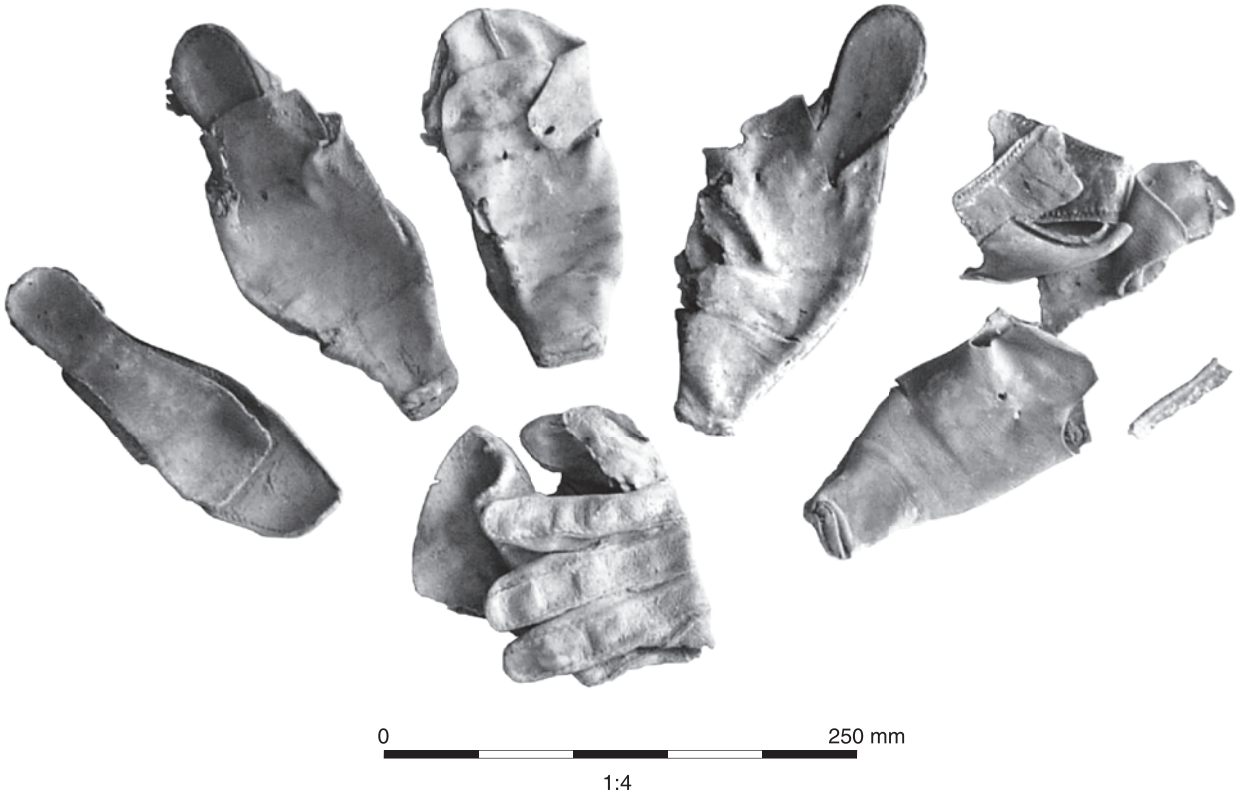


Figure 7.26 Brockton: details of timber well base



Selection of early 18th-century shoes and leather glove from 'spiritual midden' deposit

Three 'mummified' cats from 'spiritual midden' deposit

Figure 7.27 Brockton: photograph of contents of 'spiritual midden'

Table 7.2: Finds from a deposit of organic material within a void behind the stud wall at Brockton Farm

Sample Number	*Description*	*Material*
1	Bottle neck	Glass
2	Bottle base	Glass
3	Window glass	Glass + lead
4	Window glass	Glass + lead
5	Window glass x 5 frags	Glass
6	Clay pipe	Fired clay
7	Turned wooden object	Wood
8	?Spinning top	Wood + Fe
9	?Tuning key	Wood
10	Glove	Leather
11	?Corset	Textile
12	Strap with fittings (x 2)	Leather
13	Misc. leather (x 1 bag)	Leather
14	Shoe	Leather
15	Shoe	Leather
16	Shoe	Leather
17	Shoe	Leather
18	Shoe	Leather
19	Boot heel	Leather
20	?Chair leg	Wood
21	Glove (part)	Leather
22	Strap	Leather
23	Oyster shell (x7)	----
24	Architectural fragments	Wood
25	Horn	----
26	Twisted Cord	----
27	Pin	Worked wood
28	Bottle Base	Glass
29	Glove	Leather
30	Strap	Leather
31	Oyster shell (x14)	---
32	Garment (?Jerkin)	Textile
33	'Mummified' Cat	----
34	'Mummified' Cat	----
35	'Mummified' Cat	----

evidence suggests an original use as a cutting shoe for the brick well shaft, which would have functioned somewhat in the form of a caisson, a technique familiar from bridge pier construction. The shaft of the well would have been progressively built up from the shoe, excavation of the well being undertaken from within. The progressive 'undermining' of the timber shoe would allow the controlled sinking of the well, under pressure of the overlying brickwork, to the level of the water table. Upon completion of the well, the shoe was left *in situ*.

A number of other intriguing finds were revealed from a deposit of organic material within the void behind the stud wall to the south-east of the principal stack at first floor level. These finds are presented in Table 7.2.

The objects were presumably deposited from within the roofspace where the void was accessible to the south of the stack. The placement of selected objects and/or animal remains (especially mummified cats) in certain concealed parts of buildings, particularly around openings to houses (doors/windows/chimney stacks) is known throughout Europe from late prehistoric times and was particularly common during the 16th and 17th centuries (Easton 1995). Objects commonly encountered include articles of clothing (shoes in particular), household equipment, pieces of furniture and other articles reflecting the everyday life of a household. The function of such deposits, known as 'spiritual middens', has been discussed at some length (Merrifield 1987, 128–36) and is believed to be of a symbolic nature, probably a deterrent against malevolent spirits entering the building.

The selection of objects recovered from the wall void at Brockton would appear to represent a fairly standard assemblage for such 'spiritual midden' deposits (Fig. 7.27). Spot-dating of the shoes and other clothing items indicate an early–mid 18th-century date for the major part of this deposit. The poor condition of many of the items precludes a more precise dating.

Other buildings at Brockton (see Fig. 7.21)
A range of other buildings lay within the vicinity of Brockton Farm. Brockton barn, directly to the east of the farmhouse and is aligned north-south, likely to be of 17th-century date. The barn was of double aisled form, timber-framed of three bays and aligned north-south with a projecting porch within the central bay to the west. The overall dimensions were 18m long (N/S) x 9.20m wide (E/W). The exterior walls were of regular studwork upon ragstone plinths and were clad with feather-edged weatherboarding, while the roof is half-hipped and thatched (save for the junction with the porch roof where it is clad in plain peg tiles). Internally, long braces extended between splay-headed aisle posts and ties/aisle-plates. The arcade plates employed edge-halved and bridled scarfs, and the ties were jointed with double dovetails. The roof was of plain A-frame type, with high collars lapped and single pegged onto the principal rafters. A central threshing floor in Bay 2 was delimited by partially surviving, low boarded partitions.

Projecting extensions located at the northern and southern ends of the west elevation partly enclosed a yard of which the farmhouse formed the western limit. The 'external' elevations of the extensions were in brick (north) and stone (south), the elevations facing onto the yard were again clad with feather-edged weather-boarding. The extensions had pitched roofs with clasped-purlins and were clad with plain peg-tiles. The southern extension was gabled to the west; that to the north was hipped. A small set of brick-built stables (14 x 5m) lying north-east of the farmhouse were probably of 18th-century date, with a hipped and butt-purlin roof and traditional fittings in the stalls.

Other buildings comprised a pair of brick oast-houses lying north-west of the farmhouse, built between 1840 and 1860 and visible today outside the railway, and a late 19th-century brick-built shed (9m x 5m) north-east of the farmhouse.

Bridge House, Mersham – late 17th century
(Figs 7.28–9)

Bridge House, Mersham was a listed building next to the existing railway bridge that was thought possible to retain *in situ* by the building of a revetment wall, but was

subsequently found to be too near to the proposed works. Rather than removing or dismantling the house, its integrity was preserved by the decision to mount and slide it sideways to its present position some 50m to the west of its historic site (and thus remaining as a listed building). Consequently the building was not dismantled (or recorded in detail), but excavations took place in and around it to cast the underpinning beams on which it was to be moved. This rather unusual excavation did not produce much evidence of the occupation of the building, but was helpful in suggesting its date of construction.

Bridge House is a two-storey house with a central brick stack and walls of ragstone with brick, a front wall with plat band, and a timber-framed interior. It is a lobby-entrance plan, with the front door facing the chimney stack, and an added outshot at the rear. The roof is tiled, and half-hipped at each end. The brick porch has a sloping roof with a small dormer window set into it. There are wooden casement windows, those on the ground floor having segmental heads. Internally there

Figure 7.28 Bridge House: ground plan showing excavated areas

A.

B.

Figure 7.29 Bridge House: photographs of house (A) prior to relocation, and (B) during relocation

were no special features of note, with large brick fireplaces on either side of the stack, some visible ceiling beams and a brick paved kitchen at the rear with a water pump in it. On the basis of the visible evidence, it was considered that the building was probably a timber-framed building of 17th-century date, to which a brick front had been added in the early 18th century. The investigation by Oxford Archaeology consisted of several test pits excavated within the house to determine the existence of early floor levels, and also a watching brief on the trenches dug by hand by the engineers (Abbey Pynford) along the slide route and on the ring beam trenches under wall foundations. Overall, the results of the below-ground archaeological investigations added little to the understanding gleaned from the survey of the structure itself, but provided information on earlier activity on the site. The seven test pits excavated within the building aimed at establishing potential historical floor levels, revealed evidence of two former floor levels. In Test Pit 70 a possible clay floor was identified, and in Test Pit 80 a brick floor was revealed, although neither produced dating evidence. The archaeological watching brief revealed archaeological evidence suggesting a possible late 14th century occupation including postholes, pits and a gully (Phase I). In particular, rooms 2 and 3 contained pottery from the 14th and 12th century. However, the few sherds from the latter period are likely to be redeposited and there is no substantial evidence for activity prior to the late 12th century.

Archaeological evidence from the late 17th century (Phase II) included clay pipes in levelling deposits, and suggests Bridge House was built towards the end of the 17th century. Phase 3 (dated stylistically and by finds to the 18th century) was a period of major change to the building, the main one was represented by a repair to the facade of the building with squared ragstone overlain by red brick; a south-west facing chimney and fireplace were also inserted. During the early 20th century an extension was added to the house (Phase IV), a porch added in the later half of the 20th century (Phase V) and in the late 20th century a lean-to out-building was constructed to the rear of the house.

Post-medieval to modern landscape

The rural landscape of Kent, like everywhere in England, experienced a long continuity of rural culture, broken finally by the Great War and the replacement of the horse by machines. The special conditions of Kent's field systems (in lacking extensive areas of open-field farming) meant that in some ways Kent experienced less change, without the disruption caused by inclosure and the subsequent re-ordering of the countryside. Change was of course taking place, and was apparent in new crops and rural industries (see below), and in the re-ordering of the landscape of aristocratic leisure, partly expressed in gardens and parks (Thirsk 1967; Short 1984).

Landscapes

Boys Hall Moat

The Scheduled Monument of Boys Hall Moat lies immediately adjacent to the SER London–Folkestone railway line on the south side. It is the presumed site of Sevington manor, abandoned in about 1632 when Thomas Boys built Boys Hall on a new site 500m away to the north-west. The old site, which will have had a principal mansion surrounded by a moat, has extensive earthworks that were surveyed by the RCHME, and shown to have remains of the terraces and water features of a formal garden. Many excavations have been conducted in the vicinity of the site, while avoiding the central part of the moat and earthworks. An examination of the strip alongside the railway by Oxford Archaeology in 1993 uncovered a linear feature that may have been a feeder stream for the water supply (Russell 1993).

Figure 7.30 Cobham boundary stone

Cobham/Shorne Boundary Stone (1808) (Fig. 7.30)
On the edge of Cobham park, by the side of the road, was the boundary stone between Cobham and Shorne parishes, made of Portland stone, 9 ins square, inscribed 'SP/CP / 1808'. This had the distinction of being a Grade II listed building, even if being a less obvious one in an overgrown road verge, and was placed there to mark the limits of responsibility for road repair following disputes between the parishes. The line of the London to Dover road (the Roman Watling Street) had at one time by-passed Cobham to take in Gravesend, leaving the old road as a byway, but the old route came back into use in the 20th century as the A2 trunk road.

Cobham Park – Park Pale and Brewer's Gate (Fig. 7.31)
Cobham Park was eventually a beneficiary of the railway, since the badly vandalised Darnley Mausoleum of 1786, a vast pyramidal structure in the park designed by James Wyatt, has benefitted from the Cobham Ashenbank Management Scheme (supported by the Rail Link), allowing for its repair and restoration. This spectacular monument, now part of the Cobham Wood property of the National Trust, is once more publicly accessible. The HS1, in avoiding the A2, clipped part of the northern perimeter of the park, a large medieval hunting park with the Tudor buildings of Cobham Hall as its centrepiece. Humphry Repton produced one of his 'Red Book' designs for the park in 1790, as a result of which the pleasure grounds were laid out north of the hall. These comprise a circuit of walks around artificial mounds, forming a controlled picturesque garden in which to circulate, with set views out across the park. At the north end are ponds that supplied the house from a small waterworks, along with a long-lost park gate (Brewer's Gate Lodge), and subsidiary buildings shown on estate maps such as dog kennels.

The northern edge of the park was truncated by the railway, and the foundations of the Brewer's Gate Lodge were uncovered in excavation. The lodge was brick built with a large bow-fronted room towards the drive, a heated room at the rear and a smaller third room, over an infilled cellar; the remains clearly belonged to a rebuilding after 1909, and it had been demolished in the 1960s. Remains of other features shown on estate maps were not recovered, but the earth bank of the medieval park pale was sectioned near the eastern side of Ashenbank Wood, clearly showing that an earlier bank and ditch had been recut with a larger bank and ditch, perhaps as part of Repton's landscaping.

Chilston Park in Boughton Malherbe
Chilston Park is an 18th-century house with a small park visited by the diarist John Evelyn in 1666, who described it as a 'sweetly watered place'. A formal park was illustrated by Baddelslade in 1709, but this was extended and modified in a more naturalistic style after the rebuilding of the house in the early 18th century, and its acquisition by Thomas Best in 1736. The park rises above the house to the north, and ended with a low ridge on which pines had been planted. Towards the west end of this was an ice house with its pond. The M20 truncated the upper end of the park, leaving a strip of land with its pine trees and ice pond, and then the HS1 took a further slice, leaving a 10 ha strip along the northern edge, now part of the 'Heaths Countryside Corridor'. An evaluation found little trace of any significant remains, but a more recent historical and field investigation by Archaeology South-East has located the precise site of the ice house, which now survives alongside a handful of storm-proof pines (James 2007). It was found that the ice house was probably built in the latter half of the 18th century, but that the available evidence was not sufficient to refine this date or to confidently assess the full character of the structure.

Later parkland was encountered at Boxley Park, where an informal area of parkland around a house (where the poet Tennyson stayed) is traversed by the partially screened route, and at Sandling Park in Hythe where a tunnel preserved the approach to the Grade II registered park, designed by Henry Milner in 1897 for the Hardy family.

Agricultural change

Kent developed some specialisms such as cherry orchards and hop-growing, the latter making its mark in the hundreds of oast houses across the Kent landscape that were used for drying the harvest. The distribution of the now-vanished crop is shown in the tithe returns of the 1840s, though no distribution of oasts seems to have been attempted (Kain, 1986; Cordle 2011).

Oasts at Brockton have survived the loss of the remainder of the farm, and in Boxley the converted oast houses at Boarley Farm were avoided; the oast houses at Yonsea were dismantled and investigated (see below). Possible traces of hop poles were found at the Hurst Wood site, while numerous post-medieval ditches, banks

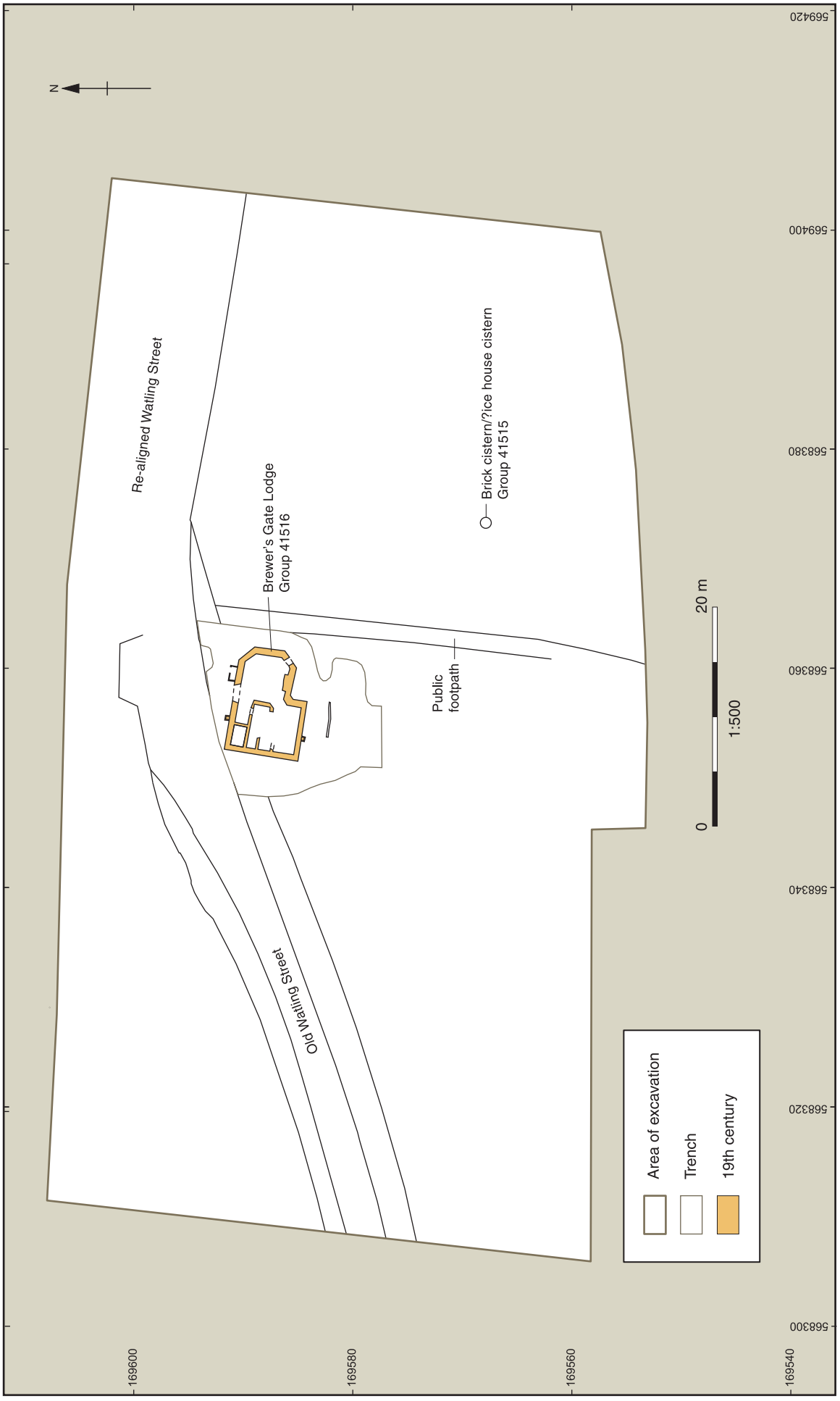


Figure 7.31 Cobham: Brewer's Gate excavation

and field drains on many other sites testify to minor aspects of agricultural improvement.

Industrial activity

Evidence for rural industrial activity was recovered from several sites, perhaps not surprising, if unexpected. As brick replaced timber as the predominant building material there must have been many local production sites, which with available brickearth and firewood could almost have been made for individual buildings. At Northumberland Bottom in Gravesend (on Thanet beds) a brick clamp was found just north of Hazells Farm, in an area of burnt and blackened ground measuring 16m by 5m. This overlay a layer of clay and charcoal on scorched clay with brick wasters and a base layer of under-fired green bricks containing parallel slots for the fire channels. Scattered brick wasters lay around, though these were too fragmentary to give a full series of dimensions. However, the sizes in general suggested a date bracket of 1450–1700 for the bricks from the last firing, and indeed the brick clamp may have been used to provide materials for Hazells Farm, which contains comparable bricks.

Near Tollgate to the south of Gravesend, a brick-built kiln was found near Singlewell Feeder Station (some 80m south of Watling Street), comprising several walled flues fed by a stokehole, dug in the chalk bedrock. The brick walling was identified as being late 18th–19th century in character, and the kiln had evidently seen frequent use—its location near the road network would have allowed easy access to Singlewell or Cobham, if not farther afield. At Parsonage Farm, Westwell, remains of 19th-century smithing were found outside the moated area, and at Knights Farm, Cobham, a series of pits and 'ovens' was traced across fields that may be remains of lime or charcoal burning and were thought likely to be of late medieval or post-medieval date.

Model farms

Kent is perhaps not the great county for model farms, and its old farms often had centuries of building investment to work out their time. Nevertheless, at Yonsea Farm in Hothfield there was a complete group of farm buildings constructed in a short period by the Earl of Thanet, and which included oast houses. These were completely removed by the HS1 (caused by the railway geometry that was determined by the retention of Parsonage Farm, Westwell) and were carefully dismantled for reconstruction. Model farms became popular in the late 18th and early 19th centuries and are part of the ideal of agricultural improvement. The farm buildings were to be of good quality and planned on the ideal of efficiency to minimise labour and promote the production of manure (Barnwell and Giles 1997, 5). Model farming was based on integrated farming with barn buildings, animal shelters and even the farmhouse based around enclosed yards. The underlying philosophy was that livestock needed to be looked after in order to produce manure to fertilise the fields and so increase cereal yields. In conjunction with this, crop rotation schemes were followed with root crops being used to feed the cattle and over winter increasing numbers of beasts. With the cow shed in the centre of the enclosed yard, all the manure was contained and available for use (Robinson, 1983, 63). The buildings making up the Yonsea complex clearly demonstrate this philosophy and manner of farming and put to full use the new theories of agricultural improvement. It represents a 'rare example in Kent of a Georgian planned model farm' (Robinson, 1998, 1).

Yonsea Farm, Hothfield, *c* 1820 (Figs. 7.32–8)
The farmstead at Yonsea Farm, Hothfield (NGR TQ 9850 4505) was an early 19th century model farm comprising a number of Grade II listed buildings and other non-listed structures, including the farmhouse, oasts, loose boxes, toll cottage, granary and cart sheds, cowsheds and stables, and barn (Fig. 7.32). The buildings were to be dismantled for re-erection on a site adjacent to the South of England Rare Breeds Centre, Woodchurch by the Traditional Buildings Preservation Trust. Both prior to and during the dismantling, Rail Link Engineering (RLE) and the Trust commissioned and carried out substantial recording including measured surveys, rectified photography, historical research, oral history, video footage and general photography. The buildings mostly belonged to a single phase, so an extensive archaeological record was not required, but OA carried out a detailed survey of the farmhouse kitchen which had surviving features including a bread oven, range and double copper. In addition to this, a watching brief was carried out during the controlled dismantling of the other buildings, and after clearance the site was further investigated by means of an archaeological evaluation.

The name Yonsea Farm was first recorded in the 13th century and this has led to suggestions that the new farm was built on the site of a pre-existing farm, and that the pond and linear depression to the rear of the oast was possibly the corner of a moated enclosure. An archaeological evaluation in July 1997 found in six trenches no material earlier than the 19th–20th century, and led to the conclusion that an earlier farm on the site was unlikely, and that the pond may have been a garden feature. Yonsea Farm was developed by the 9th Earl of Thanet (1769–1825), between 1816 and 1819, as part of the Tufton family's Hothfield Estate. Although no architect is known for the house Robinson suggests that it may be attributed to George Stanley Repton working in the office of John Nash, who is known to have designed to similar briefs for the Earl elsewhere. The more functional buildings could have been provided by the Earl's normal estate work force. Yonsea was developed after the purchase in 1814 of 30 acres of land also known as Yonsea Farm from John Barlow; this additional land was added to the Earl's existing holding,

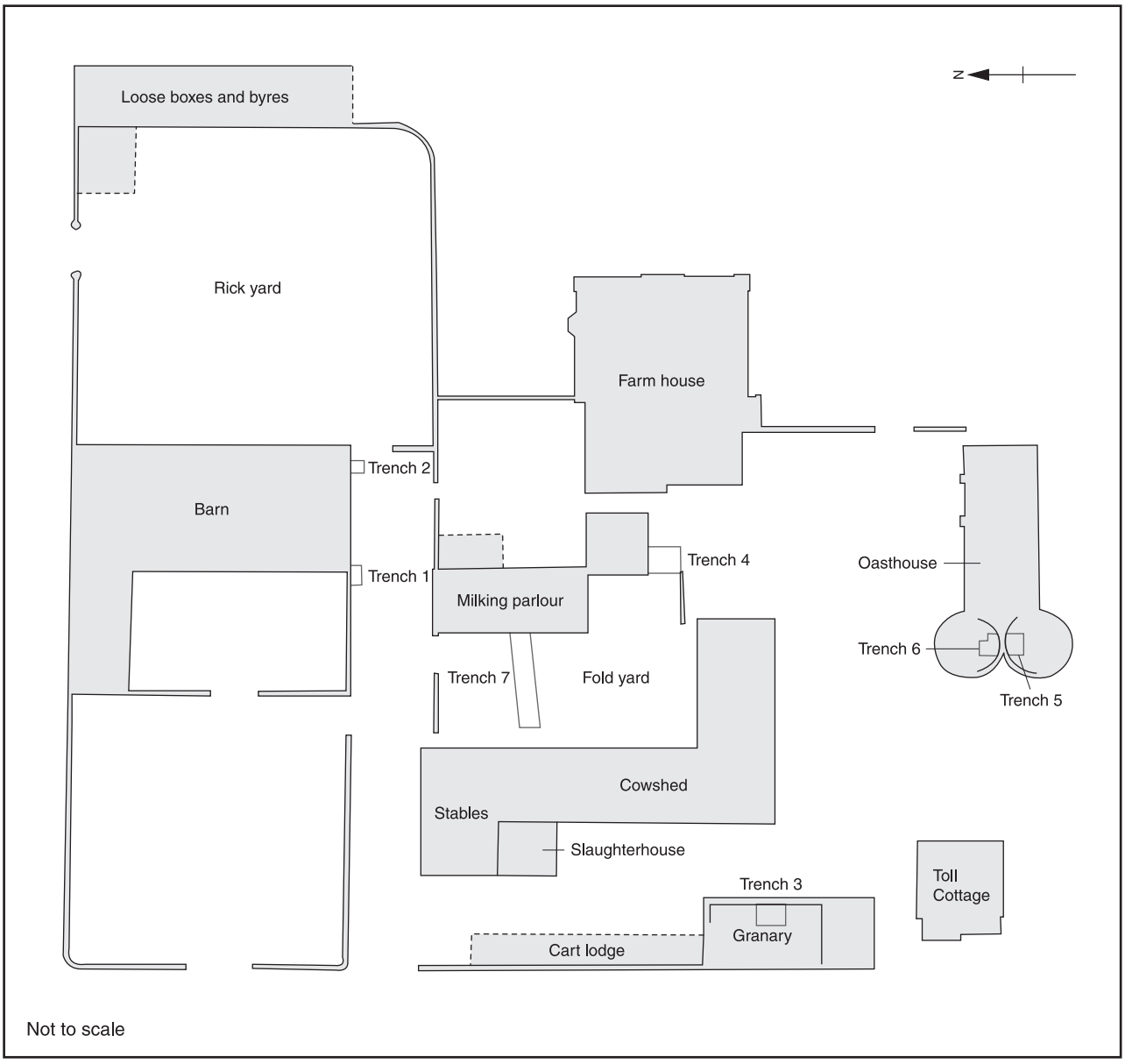


Figure 7.32 Yonsea Farm: overall plan

and rearranged to create the model farm. An economic context may be suggested in the variable prices of hops, and it is interesting to note that there was a great increase in hop production in the first decades of the 19th century, so with Yonsea being built with a single (later double) oast house, this may have been a motivating force in the farm's development. Once built the farm was leased out to long-term gentry tenants, and during most of the 19th century the Strouts family was the occupant, very much the desired 'Gentlemen Farmers' for whom the farmhouse was designed.

The majority of buildings making up the farmstead appeared to be of a one-phase development of 1816–19 with few alterations after this date. However, some evolution and adaptation within the buildings was seen during the process of dismantling. Evidence of this limited evolution is seen in the Hothfield tithe map of 1840, the Daniel Smith and Son report on the estate of 1850, and the 1872 estate survey and map. These sources show the 'bungalow' to be of a later date than the rest of the complex and it was reputed to be a toll cottage associated with the toll road from Ashford to Maidstone, though this has not been established with certainty.

The farm complex was made up of a number of buildings, many of which were individually Grade II listed, the remainder being curtilage buildings. The single phase of building in 1816–19 was represented in a degree of uniformity in building style, construction details and materials. The materials seen throughout the farmstead were brick laid in single Flemish bond (ie takes the appearance of Flemish bond where the wall was to be visible and English bond where the walling was to be hidden). To emphasise the decorative nature of the Flemish bonding many walls used salt-glazed headers, although this was not universal. Timber framing was another common component of the farm buildings with weatherboarded finish and often vertical butt-edged boarding. Jowled knee bracing was also a common characteristic throughout the

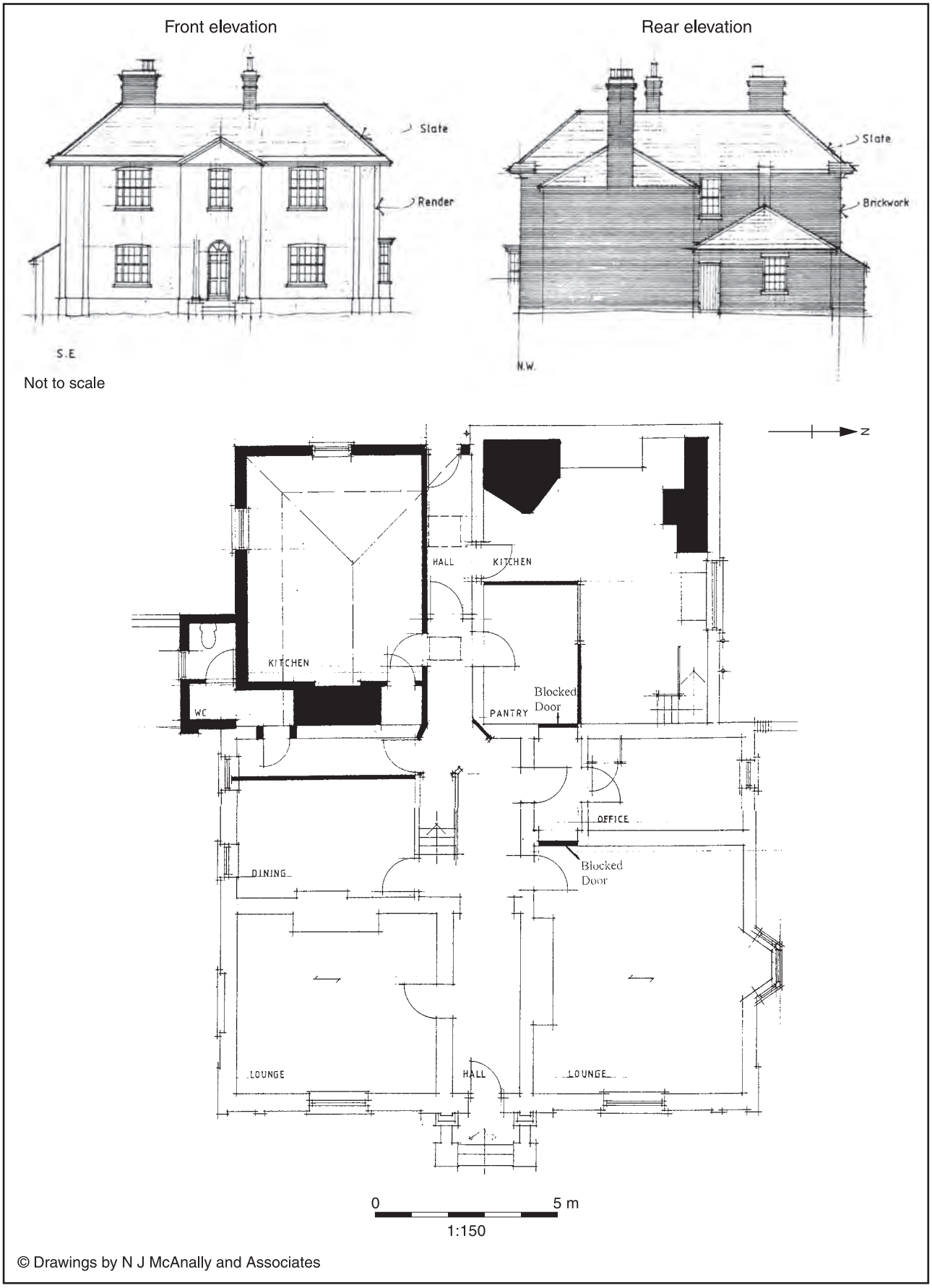


Figure 7.33 Yonsea Farm: farmhouse plan and elevations

buildings, giving a vernacular character. The roof structures of the various buildings were rather more sophisticated, and also displayed some common features, many of the roofs having tapering king-post trusses with raking struts and ridge boards. The trusses had wrought iron structural components at the foot of king-posts and ends of tie beams. Purlins were not structurally linked to the trusses but instead were bolted to the underside of rafters in a manner so consistent as to appear an original rather than secondary feature. Roofs were commonly of hipped construction with lead flashings to ridge and ridge hips with coverings of slate commonly on boarding (and the later buildings using batons instead).

The spatial arrangement of the buildings was designed to promote efficiency and be logical within the farm's working practice. The buildings formed three main working areas. The barn and the loose boxes framed one yard—possibly used as a rick yard where harvested crops could be temporarily stored before processing in the barn. The farmhouse, although within the farm complex, was to some extent detached with its front elevation facing east, away from the working buildings and its approach also to the east. Both the house and its approach were screened from the working farm with Flemish brick walls and ornamental planting including yews and box, and the garden had a ha-ha on the east side of the house. The track from the farmhouse led to a further area of the complex with the oast houses to the south, with walled garden and orchard behind, the toll cottage to the south-west and granary with cart lodge below and adjacent implement shed along the western boundary wall. In the centre of the farmstead, another range of buildings divides the space and is thought to have been used as stables, bullock feeding stalls and slaughter house.

A.

B.

Figure 7.34 Yonsea Farm: photographs of (A) the front elevation of the farmstead and (B) internal view of the original farmhouse kitchen

The farmhouse

The main farmhouse was gentrified in its appearance and dimensions, with a principal pedimented facade to the east (Figs 7.33–4). The double-pile house was brick built with a stuccoed front range of two storeys, with basements (used as pantry and dairy), covered by a series of slated hipped roofs and with sash windows. Adjoining the main house to the rear (west) were two kitchen areas, that to the north was contemporary with the main house and was the original kitchen with remarkable surviving features of bread oven, double copper, stone sink and range. The service use of this part of the original build was demonstrated externally with the block slightly set back from the line of the main house and with its Flemish bond walls left unrendered. The single storey kitchen to the south, with adjoining lavatory was a later addition.

The 1850 estate report calls this:

> *…a handsome modern House, stuccoed, brick and slated containing servant's room, five best bedrooms, two large parlours, a third room, kitchen, a back ditto, Pantry and a Dairy in basement. It is surrounded by Pleasure Grounds, Garden and Orchard opening to a large Park like Paddock with good wooded scenery – Yards nearly all walled in with Coach house and Stable.*

The interior had generously sized rooms with dry-lined walls and some surviving fragments of early wallpapers.

The barn and associated structures

The barn (Building 4) was situated to the north of the farmstead and runs north-south with its hipped end to the Maidstone Road (Fig. 7.35). It was of timber-framed construction, built on a brick plinth, with external covering of horizontal weatherboarding, and a slate roof. Internally it was of five bays with the threshing floor in the middle third bay. All the walls, with the exception of the south, were of timber framing with a brick-built plinth, and with long diagonal struts. The roof was a tapered king-post design with iron fittings, typical of Yonsea buildings.

In the northern angle of the porch and the main barn was an enclosed area with a suspended boarded floor, used as a corn hole: a storage area where threshed grain could be temporarily stored until enough had been gathered for winnowing.

A.

B.

Figure 7.35 Yonsea Farm: photographs of (A) east elevation of the barn and (B) west elevation of the barn and stable

At either end of the east side of the barn were two open-sided animal sheds with 'vernacular' detailing in the timber knee braces.

Machine room

A later timber-framed building situated to the north-west of the barn was of four bays with a slated hipped roof. It functioned as a machine room, and at the south end of the building the foundations for a brick-built engine house were visible (housing a steam engine which would have been connected to a flywheel in the machine shed by a drive belt, the gap for which is seen in the west end of the building).

Oasts

The oast house (Building 3) was situated to the south-east corner of the farmstead and consisted of two round drying kilns to the west and a two-storeyed receiving and processing barn to the east (Figs 7.36–8). The building was of brick mostly laid in Flemish bond, although the roundels were laid in header bond up to the plat band of the northern elevation marking the first floor level. The complex was roofed with slate covered boarded roofs. Neither of the roundel cowls survived but the wind vane of the northern most roundel was extant. The 1850 estate survey suggests that there was only one roundel at that time and that the second oast was a later addition. The floors of the oasts were further investigated during the evaluation, but no evidence was seen for an original single roundel.

Figure 7.36 Yonsea Farm: photograph of north elevation of double oast

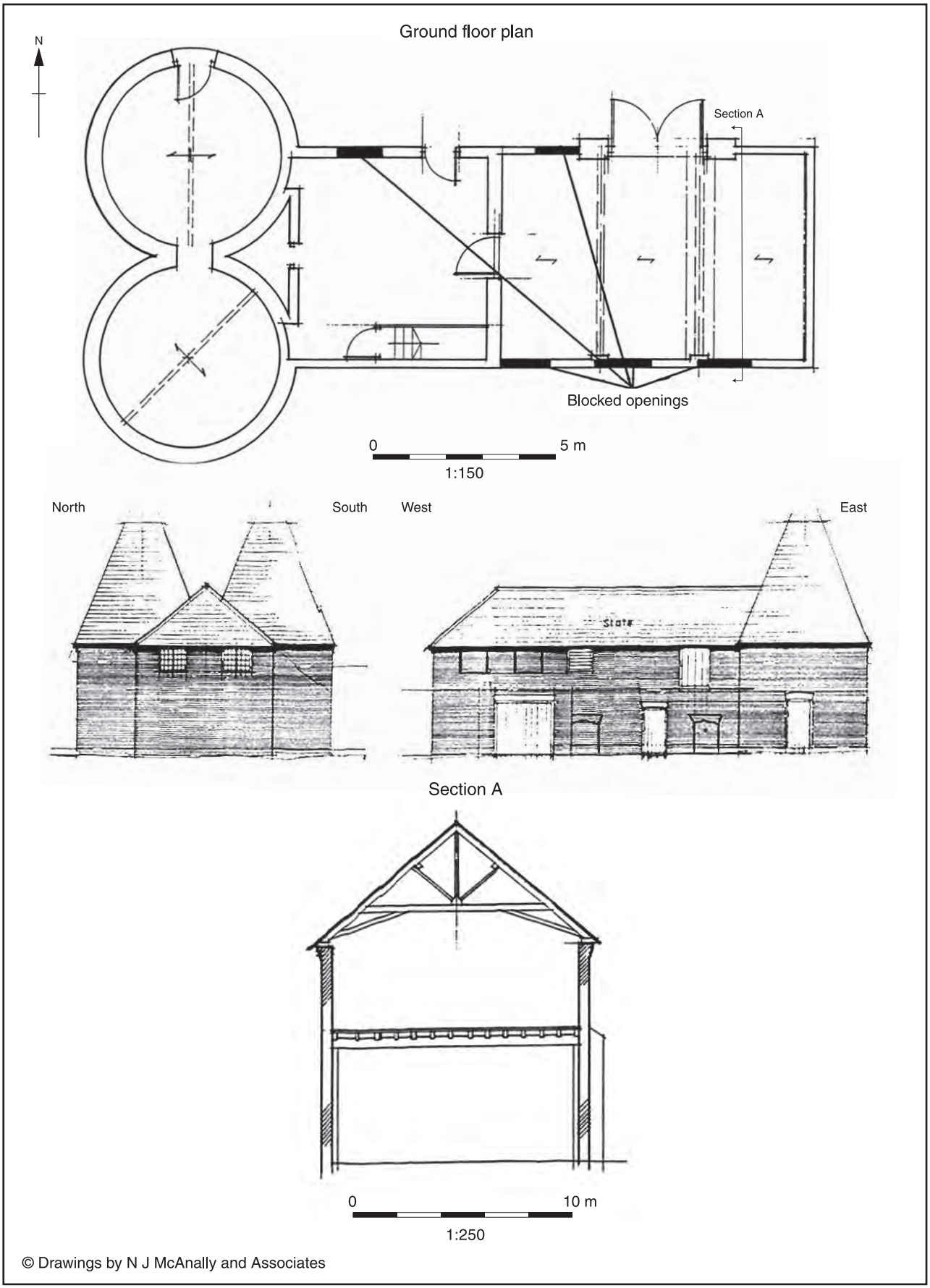


Figure 7.37 Yonsea Farm: oast house plan and elevations

The ground floor of the brick roundels had been quite substantially altered with doors inserted into the north external wall of the north roundel and in the dividing wall between the two kilns. The floors of the roundels had been sealed with modern concrete screed surfaces which were removed during the archaeological investigation revealing evidence of the former fire arrangement. During the excavation of a test pit to locate the depth of foundations, an air flue channel was located immediately to the east of the double roundels. The air flue was constructed in brick and capped with brick and seemed to serve the southern most kiln.

The wooden slatted drying floors of the roundels still survived supported on softwood joists and a T-section cast iron lintel. The floor of pine slatts or batons were spaced to support the hops and let the heat through.

The stowage building adjoining the roundels was divided into two rooms on the ground floor with flooring of brick tiles. The first floor of the building functioned as a single area for drying and storing hops. The freshly harvested hops would be fed onto the drying floor through the linking doors and after drying the hops would be removed and spread out over the whole floor to cool before being loaded into hop pockets.

Other buildings/structures

The loose boxes and byres (Building 7) were located to the east of the main barn in a 'L'- shape, comprising a number of loose boxes and open stalling areas of brick and timber framing.

The granary and cartsheds (Building 6) were constructed against the west boundary wall of Flemish bond brick with decorative plinth and raised pilaster detail. The granary was a two-storey building (with a wagon lodge below) and the (post-1850) cart shed was a single-storey structure.

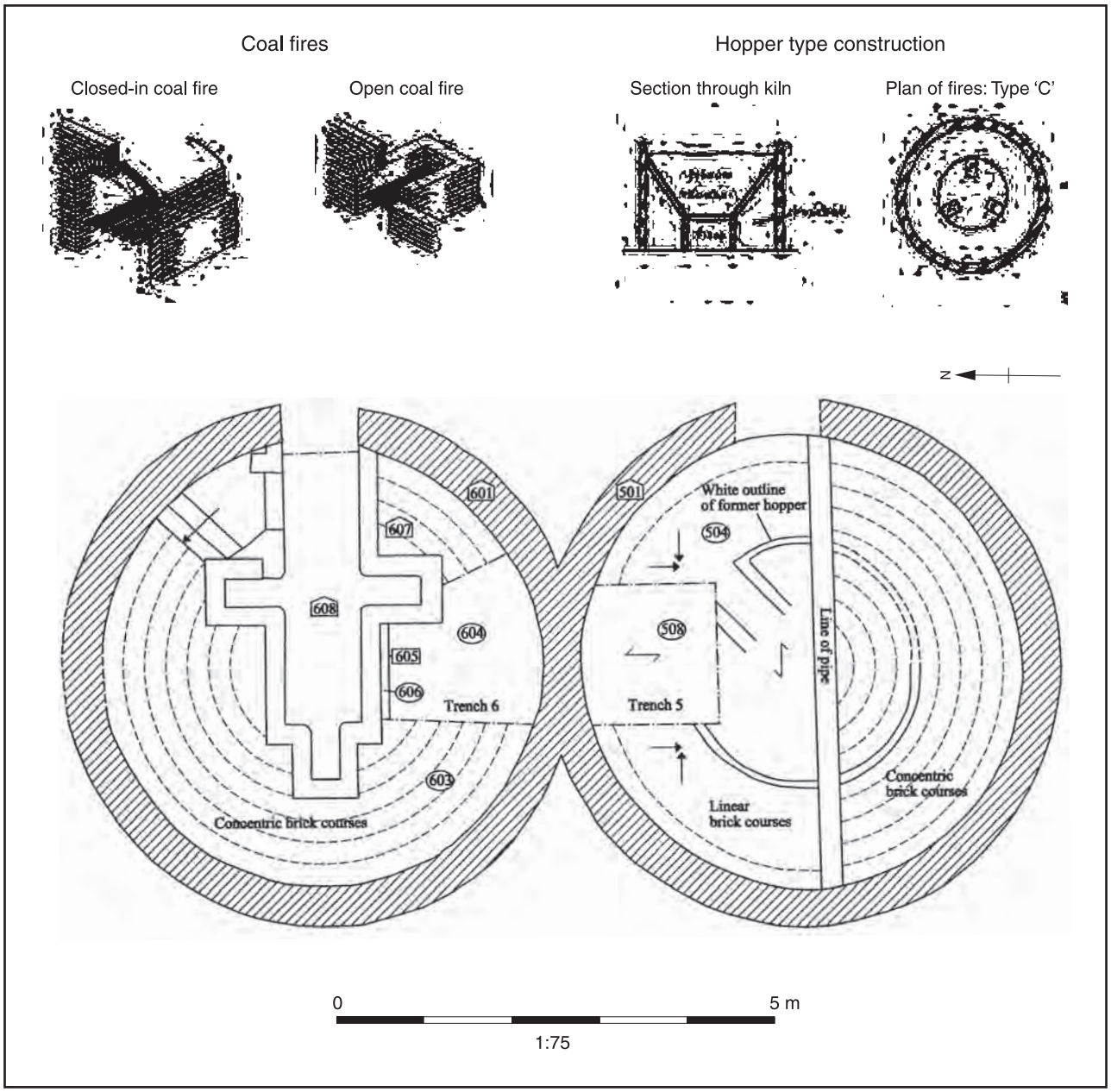


Figure 7.38 Yonsea Farm: plan of drying kilns within oast

The toll cottage (Building 2) was reputedly associated with the Ashford to Hothfield turnpike road (and was not mentioned in the 1850 estate survey). It may be that the original house (of square plan with a slate-covered pyramidal roof and central chimney stack) was indeed moved from a roadside position.

The stable and cowsheds (Building 5) were in the centre of the farmstead, consisting of a single-storey 'L'-shaped cow shed with food processing room at the south-west corner and a brick-built two-storey building at the north thought originally to have functioned as a stable, with a single storey slaughter house to the rear. The buildings were again a mixture of brick laid in Flemish bond and timber framing with weatherboarded exterior, and a slate roof.

New building materials

The railways (and no doubt coasting trade) finally brought slate to Kent as a rival to the 'native' peg tiles, and brick became more prevalent than timber framing. One local innovation of note was the development of Portland cement in the Medway chalk pits. The Medway and its tributaries was perhaps most notable for the paper industry, which supplied the needs of the watercolour artists in the 18th–19th centuries, but the chalk pits were a larger feature in the landscape. At Borstal by Chatham the HS1 passes very close to Borstal Court Farm, a building and farm perhaps easily dismissed as a modern building of concrete blocks, until it was realised that it was in fact an early example of block building, if less surprising for its location near to a chalk quarry and cement works at Wouldam. In fact the site (shown as 'Bugdens' on the 1867 OS map) was bought by the owner of the Burham cement and brick works in *c* 1882, who built a model farm, with a three-storey stuccoed house and farm buildings all constructed of concrete blocks.

No. 4 Boys Hall Road (Figs 7.39–40)
This Grade II listed building situated adjacent to Crowbridge Cottage already described above had a tile-hung exterior that belied its true age. It was investigated prior to dismantling, and the building would appear to have originated in the early 19th century as a three-cell, single-storey brick-built structure. The nature of the primary building remains uncertain, though the identification of a primary fireplace within the central room would appear to indicate a domestic function. This is perhaps supported by the evidence of a property survey undertaken in advance of the construction of the railway which describes the building as a 'lodge', related to No. 2 Boys Hall Road. In *c* 1890, the building was extended

Figure 7.39 No. 4 Boys Hall Road: photograph of building

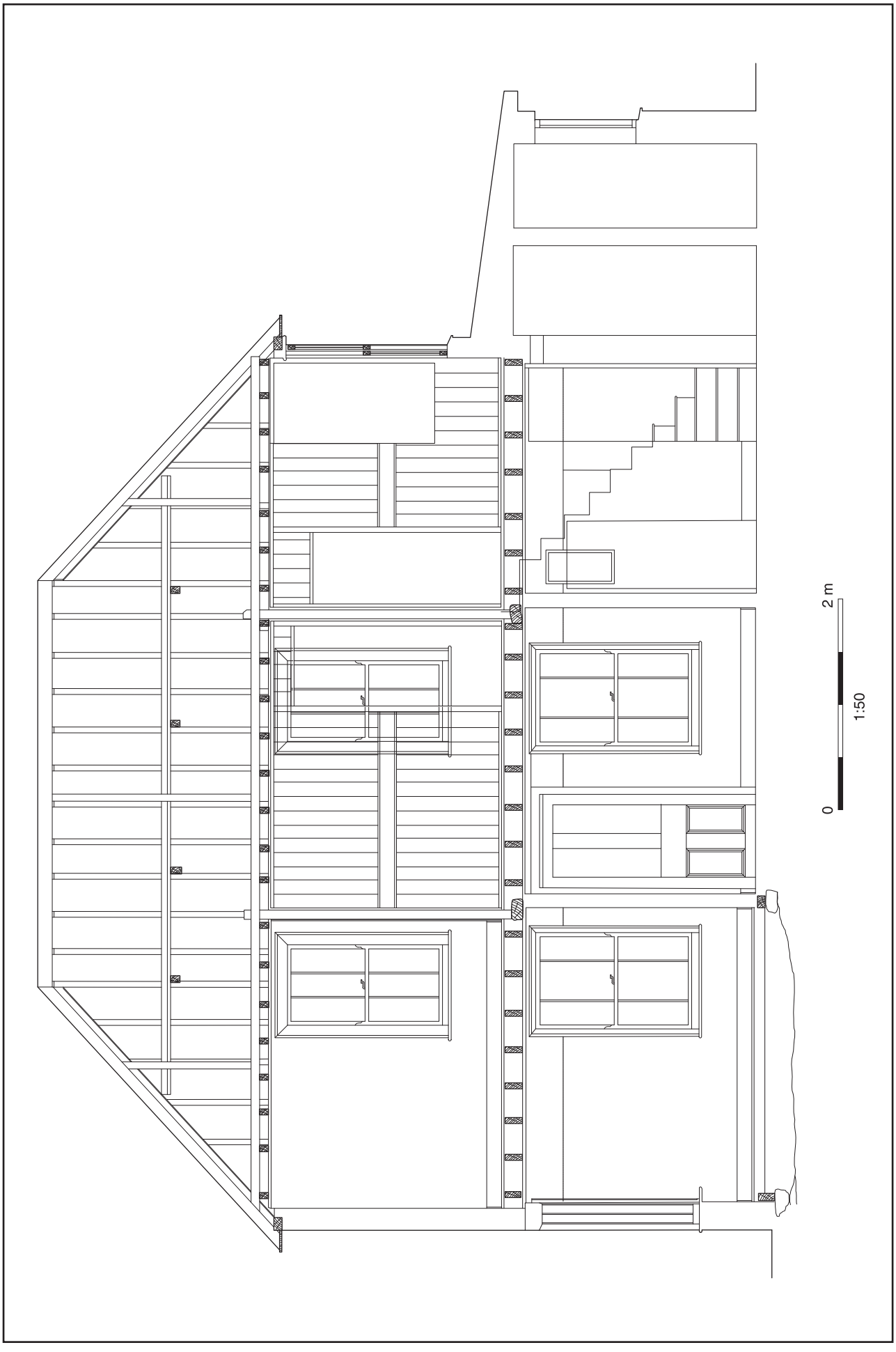


Figure 7.40 No. 4 Boys Hall Road: longitudinal section of building

by the addition of a first floor of timber stud construction clad externally with decorative banded tiles and providing three new bedrooms. The additional level was constructed of timber studwork with lath and plaster internally and a tile-hung exterior. It would appear that this adaptation of the building necessitated the rebuilding of the upper courses of the existing brickwork walls. The pre-existing central brick stack was raised and a new, southern stack added in a similar style with fireplaces at ground and first floor levels. A consistent system of fenestration, comprising vertical sash windows with three pane panels was inserted using, at least in part, pre-existing openings at ground floor level. During the 20th century, a single storey, pent-roofed bathroom extension was appended to the north elevation. The house can be seen as a late example of 'vernacular' construction on a modest scale.

The modern world and the development of rapid access

Roads

The history of transport in Kent is dominated by the routes from London to the Channel ports, and heavily influenced by the landform and the obstacles to easy north-south routes (Lawson and Killingray 2004). The road pattern was clearly influenced by the Roman patterns, with Canterbury as a distribution hub for east Kent routes from London, given the choice of Richborough and Reculver as ports. With the selection of Dover as the main entry point the road pattern was established, with the principal route through Chatham and Canterbury, and a southerly route through Maidstone and Ashford. It is notable, however, that the Roman roads were dispensed with as necessary, and the diversion of the London road though Gravesend (itself an exit port from London) meant that the old route past Cobham was unused until it was re-adopted in the 19th/20th century.

Railways

Ironically for those planning the route of HS1, the faltering development of the 19th-century railway in Kent left a difficult legacy. The reluctance of Maidstone and its landed proprietors to countenance a direct railway line from London drove the first line southwards, to that extraordinary straight route of the SER from Redhill to Tonbridge to Ashford, which left London Chatham and Dover winding round the north coast. It was left to HS1 to find the best fit to the natural route direct from London to Folkestone.

The HS1 route encountered railway heritage from start to finish. The story of the impact on London stations must be told elsewhere, though the triumphant recovery of St Pancras Station to its iconic status may be seen as a great benefit set against the loss of some of the nearby railway lands. In Kent the South Eastern Railway (SER) came to Ashford in 1842, and the extensive SER works were established in 1847, with the railway New Town laid out in 1851; these have survived almost unchanged beside the new Ashford International Station, though the Willesborough Crossing Keeper's box, the 'last level crossing between London and Paris' was necessarily removed. Also lost was the terminus of the Maidstone to Ashford branch line, a later arrival whose terminus had only a short life as a station between 1884 and 1899 when amalgamation made it redundant. The polychrome brick station building had been used as flats, and behind it were the contemporary Carriage and Goods sheds of brick with timber roofs and cast iron windows.

A number of original brick bridges were removed to accommodate the 'European gauge' of trains running through the tunnel on the existing track between Folkestone and Ashford, but the attractive 1880s vernacular revival-style station at Sandling at the Hythe junction was avoided. Just beyond this is one of the more interesting pieces of railway heritage on the route, the 1840s railway tunnel at Sandling, whose engineer was so taken with his achievement of tunnelling out from a series of previously excavated shafts that he wrote a book about it (Simms 1844). The tunnel was built in 1842–3 and is 954 yards (872m) long, brick-lined and with brick portals; the shafts had been sealed and capped. The archaeological benefit of this restricted ground disturbance in the 1840s was the preservation of sites above it that could be excavated in the 1990s (Millward 2000).

A.

B.

Figure 7.41 Westhanger Fairmead Farm: photographs of barn from the south-east (A) and north-east (B)

Defence

The defence of the realm is a major theme for post-medieval and modern Kent. The defence lines round London were encountered in route optioneering in southerly routes in west Kent, while the chosen route slips below the outer line of the ring of Chatham defences at Fort Borstal, one of five forts ringing Chatham constructed from 1860–90, outmoded almost before they were completed, but impressive remainders of the last major works of traditional fortification in the country (Smith 2003).

The railway was always important for troop movements, and itself needed protection against aerial attack as well as providing accommodation. At Saltwood, there had been a First World War barracks near the railway tunnel, and later a camp for marshalling troops in the Second World War. Remains of service trenches, some structural footings and a number of large latrine pits probably dating from 1914–18 were encountered. In

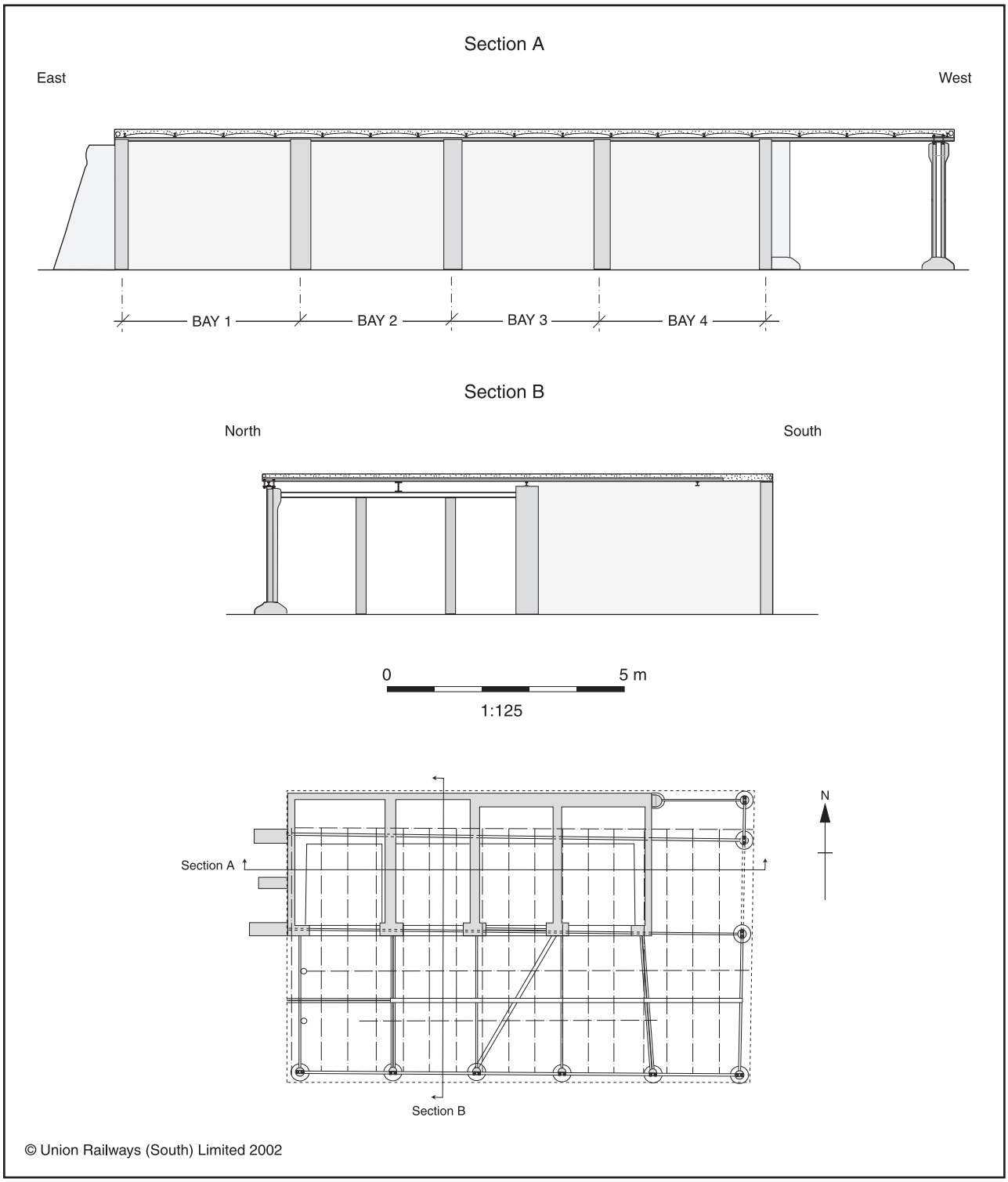


Figure 7.42 Westhanger Fairmead Farm: plan and sections of barn

Ashenbank Wood, Cobham, were the remains of a WWII army camp that had been demolished to its foundations. Four air raid shelters were rapidly recorded, and traces of perhaps three other buildings in heavy undergrowth (previously located by Victor Smith in 1998). At Northumberland Bottom in Cobham was the site of a WWII anti-aircraft gun battery and its associated domestic encampment, with some 26 single-storey buildings over an area of at least 7ha (some of them of post-war date, and some still in use), built of brick, concrete block, timber or steel-framed, with asbestos roofs. The site was chosen in 1938 for a four-gun 4.5 inch HAA battery, and by 1942 there was also a radar station, with personnel (male and female) increasing

A.

B.

Figure 7.43 Westwell: photographs of (A) pill box A, south-west elevation and (B) pill box A south-east elevation

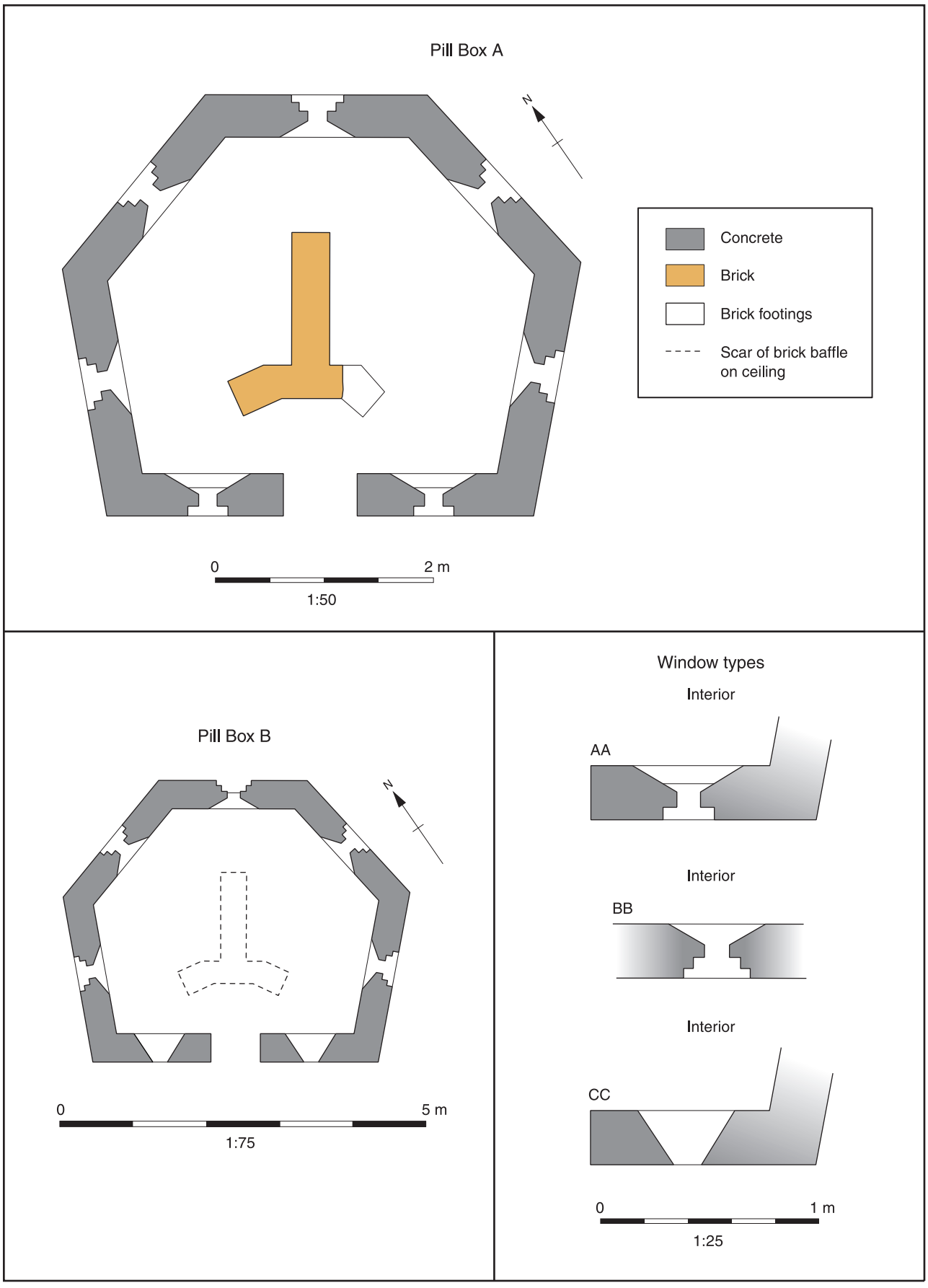


Figure 7.44 Westwell: plans of pill boxes A and B

from 312 in 1942 to 747 in December 1943, and finally closed in 1946. There were distinct operational and domestic areas, the gun park contained gun emplacements, NAAFI institute, guard house and sewage works, and the domestic camp three barrack blocks, kitchen/canteen, cinema/lecture hall, guard hut and kennels. [ARC NBAC 98].

In Westenhanger, a barn of traditional appearance at Fairmead Farm (Figs 8.41–2) was found to have an internal concrete structure forming a protected magazine for WWII 12-inch railway guns, for which sidings were provided nearby at Grove Bridge. It was rectangular in plan with five bays and a flat roof, and its core comprising four magazine bays with concrete walls. To the front and side of the magazine was an open area with six columns at the front and three at the sides, made of concrete piers cast against a 4½ inch cast-iron column flanked by timber uprights. These carried a series of narrow-gauge rails, an 'I' section beam and a series of secondary beams, supporting carrying a roof of concrete cast on corrugated iron, with curved soffits. This was no doubt sufficient to withstand casual fire or strafing, if not a direct hit. Remains such as these in Kent are the tangible 'battlefield' remains of the Battle of Britain, fought overhead in 1940.

Had invasion followed a less successful outcome of that conflict, then a variety of ground defences were relied upon, including lines of concrete pill boxes. At Westwell two WWII pill boxes were recorded in advance of their demolition prior to the construction of HS1 (Figs 7.43–4). The two shuttered concrete structures were built as part of the WWII 1940 defence strategy protecting the country from invasion, and occur at the north end of the mid-Kent spur defence line running from the Military Canal up to Ashford and Charing (Smith 2003, 96). They were specifically designed to protect the nearby Maidstone to London railway line either side of the Westwell Lane crossing. They were examples of the 'Type 24' pill box. The six sided structures had one doorway, facing south-west, flanked by two windows. The remaining walls all had a central window providing all round visibility. A brick baffle structure, protecting the doorway and dividing the internal space was largely intact in Pill Box A and had been removed from Pill Box B, but was visible in outline on the ceiling (Ruddy 2003).

It is an interesting sidelight on the development of archaeology during the life of this project that the monuments of the Second World War, somewhat less regarded in 1990, have by the second decade of the 21st century become more of a mainstream interest, and their context in Kent is much better understood. It was also thanks to the work of Ken Gravett and those on the project that building archaeology took its place alongside the other disciplines working on HS1.

Appendix 1

Gazetteer and route maps

The Gazetteer is presented in route order from north-west to south-east.

Fieldwork events
All evaluations, excavations and watching briefs were assigned 'fieldwork event names' and unique 'fieldwork event codes' by Rail Link Engineering. The black text labels in the Gazetteer mapping are fieldwork event names. NB: In many cases evaluation fieldwork events share the same name as the subsequent excavations—they are distinguished by the event code in the Gazetteer. HS1 event codes have the prefix 'ARC'.

Project Areas and watching brief event codes
The HS1 Section 1 route was divided into four roughly equal Project Areas (330, 420, 430, 440), major route sections which reflected areas of responsibility for construction, engineering and project management purposes (350/410 was an additional area covering the Medway Crossing only). Watching brief event codes refer to the Project Area—blue text labels in the Gazetteer maps are watching brief event codes.

The responsibility for Project Area 330, at the NW end of the route, lay with MoLA, whereas Project Areas 350/410, 420, 430 and 440 lay with Oxford Archaeology. Some differences in approach are apparent between these two organisations. In the MoLA area, all watching brief work was undertaken under a single fieldwork event code (ARC 330 98), the area being subdivided into zones, as detailed under Project 330 below. The circumstances and predominantly chalk geology of these route sections meant that it was possible to map continuous large areas under watching brief conditions, and the results were fully integrated with PX assessment reports. In OA project areas, watching brief codes were also assigned to the Project Area (eg ARC 420 99) and broken down into route sections, but individual discoveries were identified by reference to the project 'chainage'. The geological conditions and earthworks methods in the Wealden Greensand zones were not conducive to mapping large continuous areas under general watching brief conditions.

Chainages
Chainages are measurements (km+metres) along the HS1 route from north-west to south-east, starting at London St Pancras, (except the Fawkham Junction section, near Southfleet, which is numbered in a separate sequence). Primarily intended for engineering purposes these were used extensively during the archaeological fieldwork as a convenient means of referring to sites and finds, particularly during the watching brief. Chainage markers were set out along the route at regular intervals.

Principal Sites
For archaeological purposes the route was divided in the post-excavation updated project design into a series of 28 'Principal Sites' which are route sections comprising a variable number of individual fieldwork events linked under the name of the most significant site within them. These are the route sections referred to in the main text of this report unless stated otherwise. The red text labels on the Gazetteer maps refer to PX Principal Sites. Three letter codes were assigned to each Principal site, which are used in labelling digital files in the archive, etc. (see Chapter 1, Tables 1.1 and 1.2).

Building investigations
The building investigations were managed somewhat separately from the archaeological investigations in most cases. For the purpose of this volume the building investigations have been grouped under the relevant 'Principal Sites' (PX route sections). They are labelled on the Gazetteer mapping as individual fieldwork events. Several historic building recording projects included archaeological investigation of the building footprints as they were being demolished/re-located, the results of which are incorporated within the relevant historic building report.

Integrated Site Report reference
These are digital post-excavation reports published on the ADS website. An ISR has been produced for 20 of the Principal Sites with the most significant evidence. See Appendix 2 for a full list.

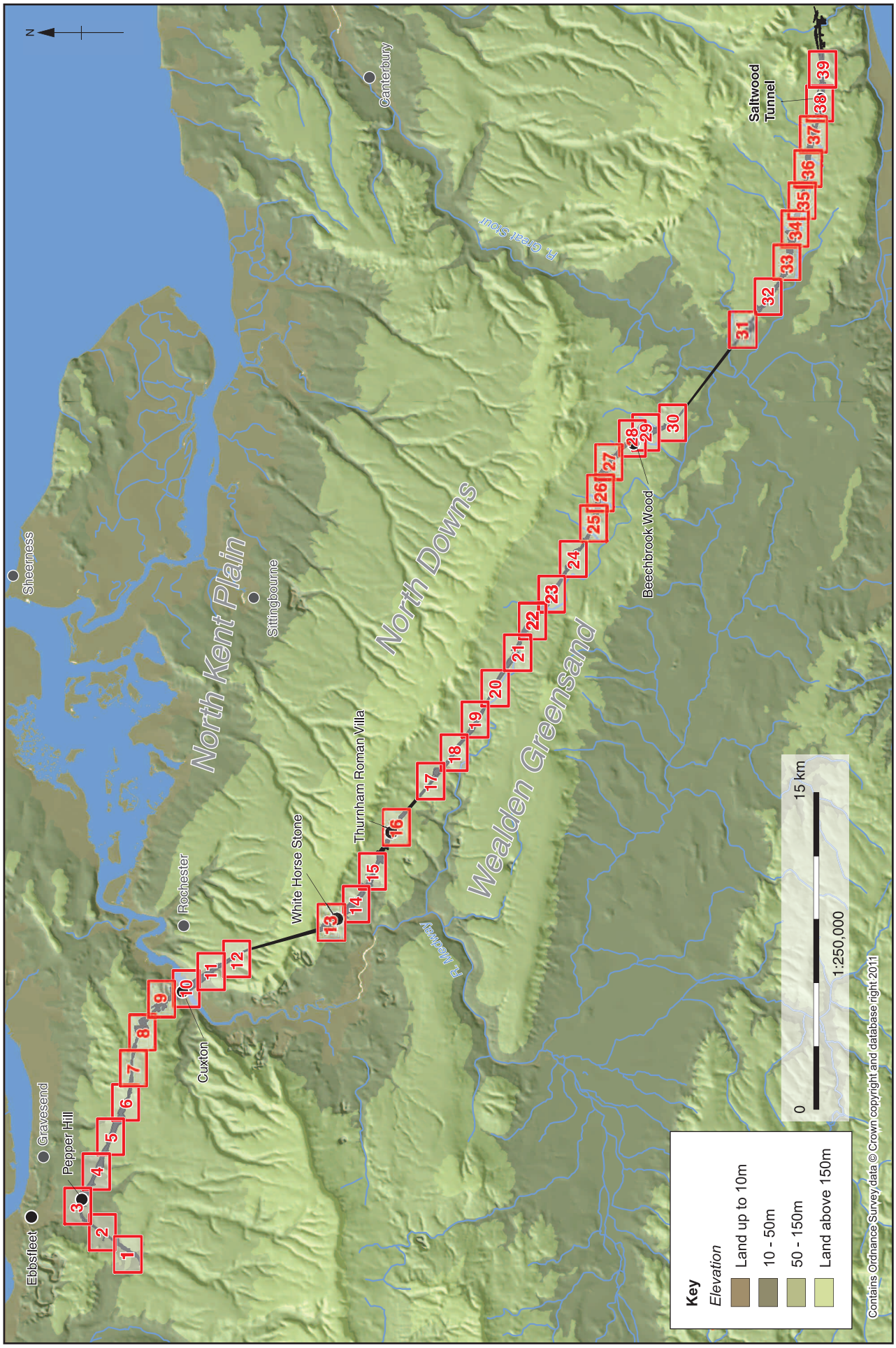
Evaluation, survey and post-excavation report references
These are grey literature reports, also available to download from the ADS website. See Appendix 2 for a full list of available reports.

Map Windows
The investigation areas are shown in the Gazetteer maps, shaded to distinguish different forms of investigation, on base mapping overlaid on BGS geology and a 1:10,000 OS map base. A map key is included at the start of the route maps showing numbered route windows on a topographical base map. The Gazetteer text refers to the 'Map Windows' on this figure (numbered 1 to 39).

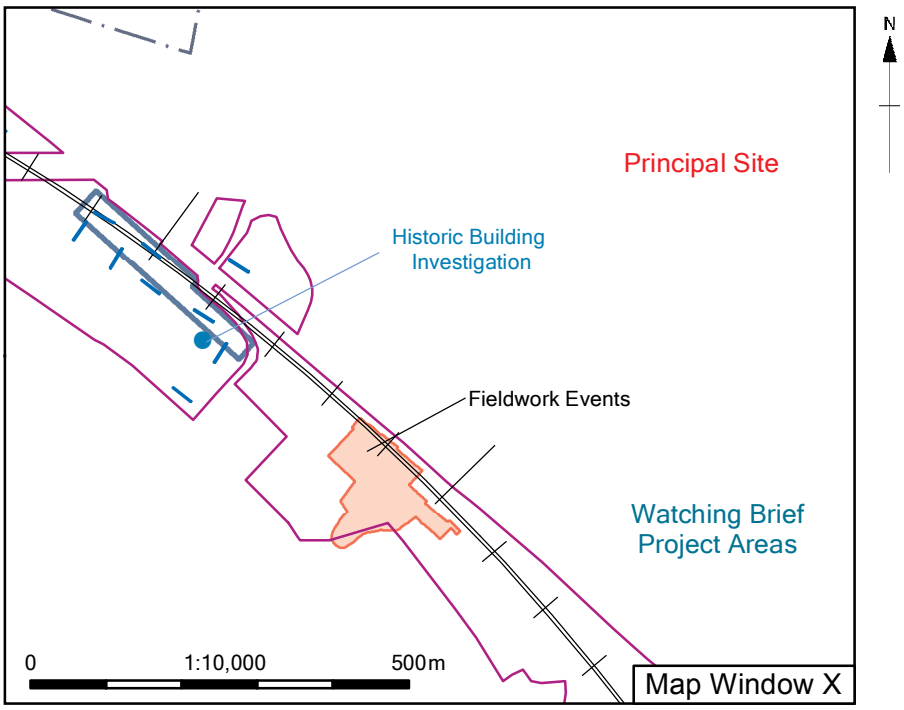
PROJECT AREA 330
Watching brief major route section from Southfleet to the Medway Crossing.

Project Area 330 (Southfleet to the Medway Crossing) was mostly undertaken by MoLA in the main excavation and watching brief phases, except for Pepper Hill Roman Cemetery (OA). The PX Principal Sites in this part of the route for the most part correspond with zones assigned by MoLA during the fieldwork stages (Zones 1–6, which are not to be confused with the PX landscape zones referred to elsewhere in this volume), which have been assigned names derived from the most important archaeological sites contained within them, as follows:

Whitehill Road Barrow - Project Area 330 Zones 1 and 2
Northumberland Bottom - Project Area 330 Zone 3
Tollgate - Project Area 330 Zone 4
Cobham Golf Course - Project Area 330 Zone 5
Cuxton - Project Area 330 Zone 6


N
Ebbsfleet
Gravesend
Pepper Hill
Sheerness
Rochester
Cuxton
Sittingbourne
White Horse Stone
Thurnham Roman Villa
Canterbury
Beechbrook Wood
Saltwood Tunnel
North Kent Plain
North Downs
Wealden Greensand
R. Great Stour
R. Medway
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
Key
Elevation
Land up to 10m
10 - 50m
50 - 150m
Land above 150m
0
15 km
1:250,000
Contains Ordnance Survey data © Crown copyright and database right 2011

Layout:



All Map Windows are at 1:10,000 with North at the top

Features:

Sites

- Detailed excavation
- Strip, map and sample excavation
- Watching brief discovery
- General watching brief extents
- Surface artefact collection survey
- Geophysical survey

Features

- Evaluation trenches
- Historic building investigation
- Chainage

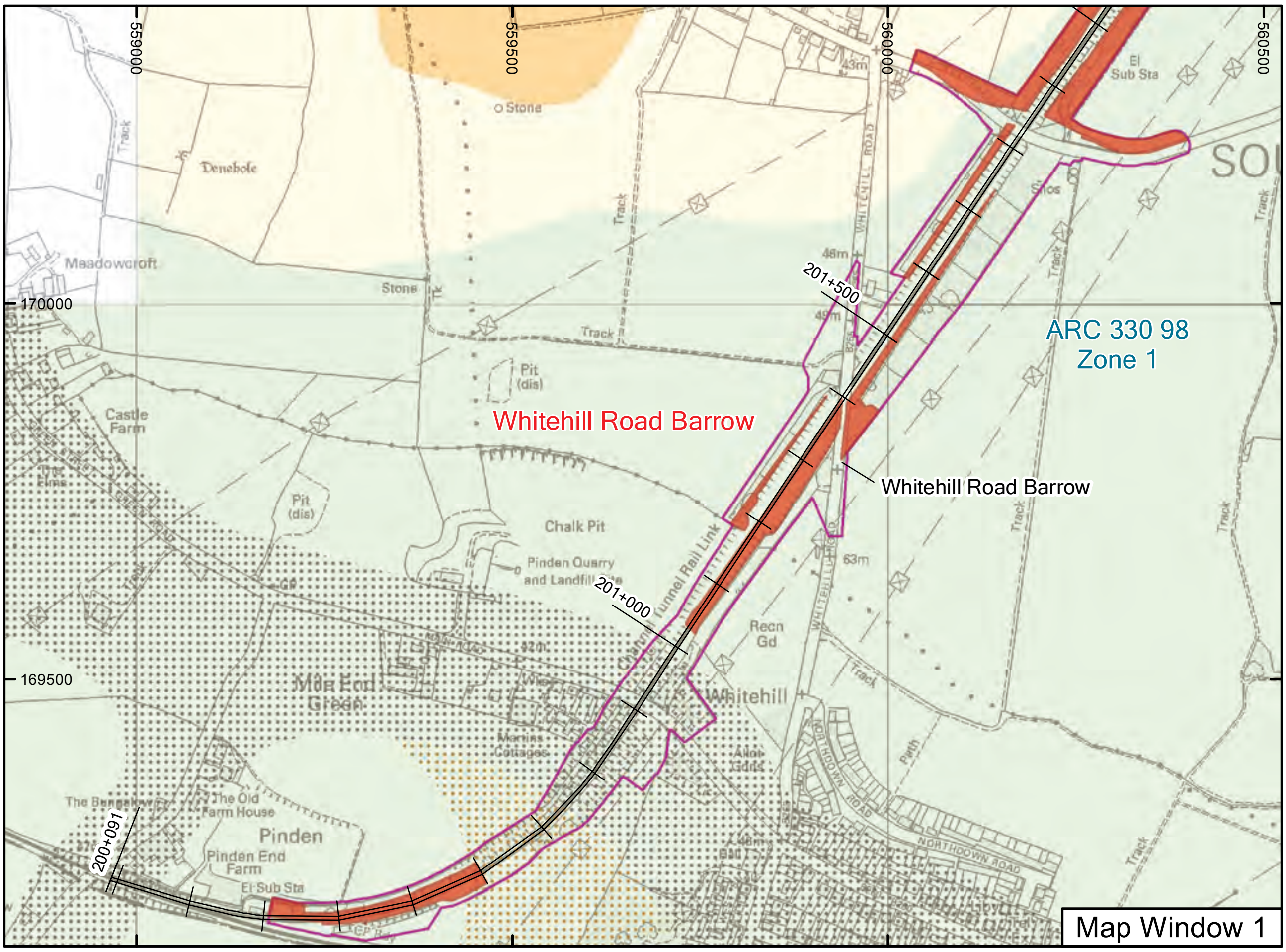
Geology:

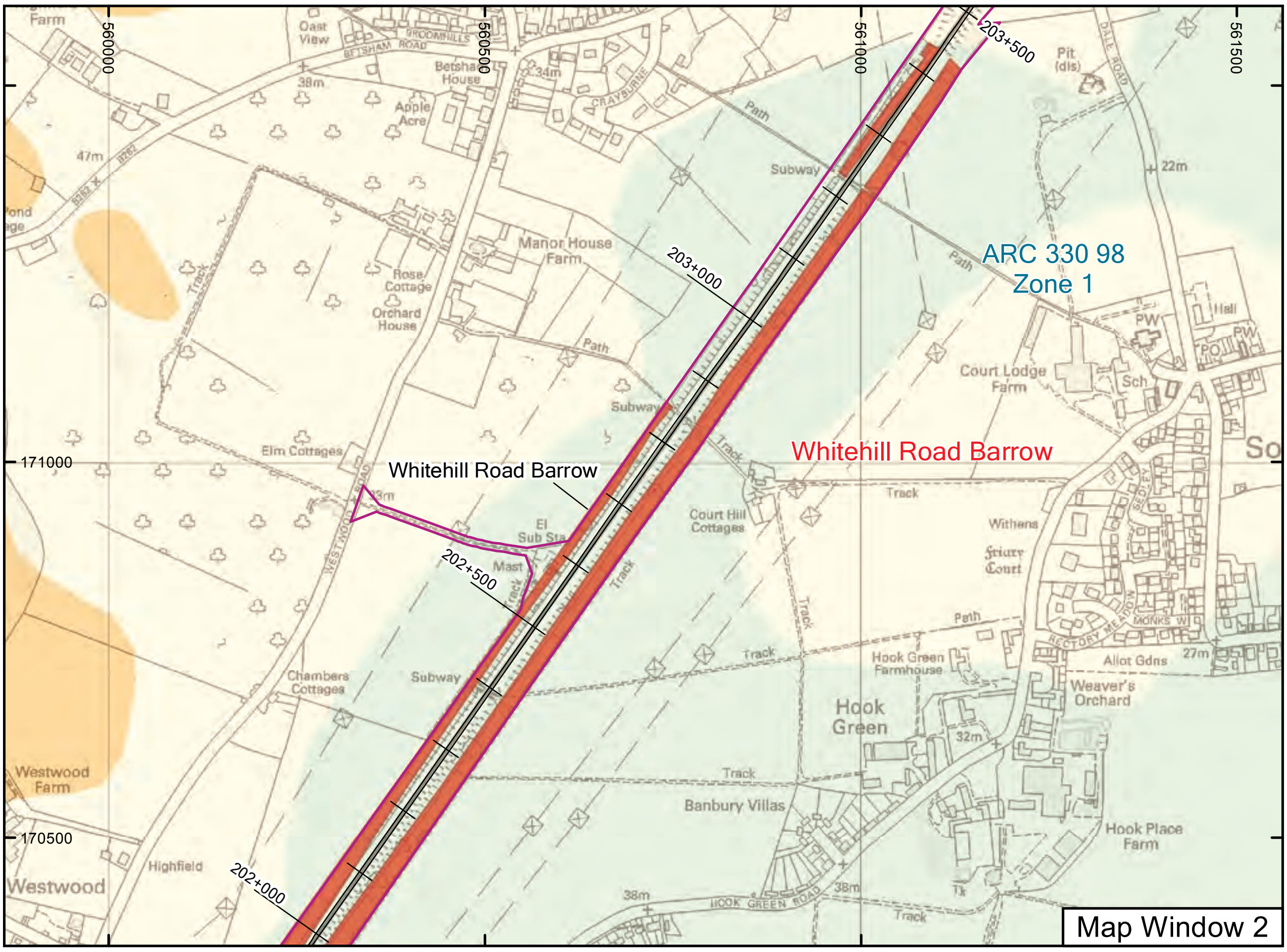
Solid

- Upper Chalk
- Middle Chalk
- Lower Chalk (Glauconitic Marl)
- Melbourne Rock
- Thanet Beds
- Hythe Beds
- Folkestone Beds
- Sandgate Beds
- Woolwich Beds
- Blackheath / Oldhaven Beds
- London Clay
- Gault Clay
- Atherfield Clay
- Weald Clay

Drift

- Alluvium
- Clay-with-Flints
- Head Gravel
- Coombe Deposits
- Brickearth
- River Terrace Gravel


559000
559500
560000
560500
170000
169500
Whitehill Road Barrow
Whitehill Road Barrow
ARC 330 98
Zone 1
201+500
201+000
200+091
Denebole
Meadowcroft
Stone
Track
Pit (dis)
Castle Farm
Chalk Pit
Pinden Quarry and Landfill Site
Channel Tunnel Rail Link
Recn Gd
Whitehill
Pinden
The Bungalow
The Old Farm House
Pinden End Farm
El Sub Sta
Marlin Cottages
Northdown Road
Whitehill Road
El Sub Sta
Map Window 1


560000
560500
561000
561500
171000
170500
Whitehill Road Barrow
Whitehill Road Barrow
ARC 330 98
Zone 1
203+500
203+000
202+500
202+000
Betsham Road
Betsham House
Apple Acre
Manor House Farm
Rose Cottage
Orchard House
Elm Cottages
Chambers Cottages
Westwood Farm
Westwood
Highfield
Subway
Court Lodge Farm
Court Hill Cottages
Hook Green Farmhouse
Hook Green
Banbury Villas
Hook Place Farm
Weaver's Orchard
Friary Court
Hook Green Road
Map Window 2

PRINCIPAL SITE NAME: WHITEHILL ROAD BARROW
Project Area 330 Zone 1 chainage limits: 200+091 - 203+750
Project Area 330 Zone 2 chainage limits: 203+750 - 205+200
Parishes crossed: Southfleet, Longfield and Newbarn
Integrated Site Report reference: Bull 2006a
Map Windows 1–3

Fieldwork event: Whitehill Road Barrow, Southfleet
Event code: ARC WHR 99
(reported with ARC 330 98 Zones 1 and 2)
HS1 chainage: 201+300
NGR: TQ 5990 6990
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: 1999
End of fieldwork: 1999
Integrated Site Report reference: Bull 2006a
Map Windows 1 and 2

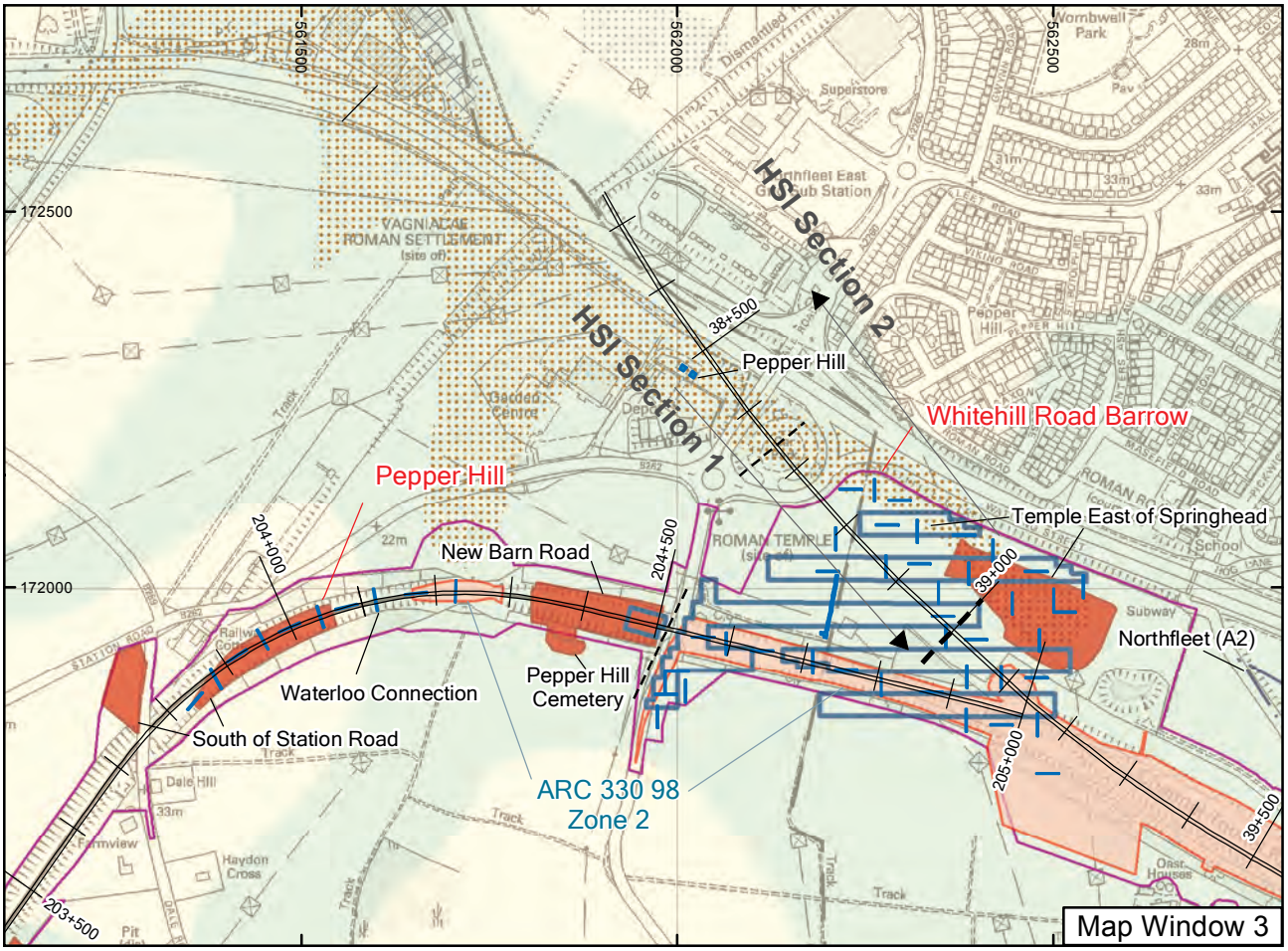
A barrow monument was set up near Whitehill Road: the original ditch around the barrow had partially filled in before the insertion of an inhumation burial. An amber necklace found with the body, while unusual in the Kent Early Bronze Age tradition, dates to latter part of the Early Bronze Age. Human bone fragments from the burial gave a radiocarbon result of 3273±30BP (NZA-22740). When calibrated (1620–1440 cal BC) this indicates that the burial is post-Beaker. The construction of a second, outer concentric ditch around the barrow was also a secondary event, probably contemporary with the burial.

Apart from small amounts of late Iron Age material, there was no evidence for further activity until the 1st century AD when Roman field systems are laid out at Fawkham Junction and New Barn Road, and an enclosure constructed at South of Station Road. The Roman land use and activity was apparently short-lived and passed into disuse AD 100–150.

Later medieval and post-medieval activity within the landscape remained agricultural in character until the construction of the Gravesend West Railway in the mid 19th Century.

Fieldwork event: South of Station Road, Southfleet
Event code: ARC SSR 99
HS1 chainage: 203+700
NGR: TQ 6120 7180
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: 1999
End of fieldwork: 1999
Integrated Site Report reference: Bull 2006a
Map Window 3
The excavation revealed part of a Roman field system dating from the 1st century AD.

Fieldwork event: Waterloo Connection, Southfleet
Event code: ARC SSR 98
HS1 chainage: 204+000
NGR: TQ 6160 7200
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1998
End of fieldwork: January 1998
Integrated Site Report reference: Biddulph 2006
Evaluation report reference: OA 1998h
Map Window 3



The evaluation comprised a total of ten trenches. A shallow ditch was attributed to the Middle or Late Bronze Age and a second ditch may date to the same period. A pit and ditch both produced pottery of the late 1st- or 2nd-century AD. Colluvial deposits up to 2.5m deep were recorded at the bottom of the valley slope, and produced struck flints of Mesolithic or Early Neolithic date as well as flints of Bronze Age date.

Fieldwork event: Pepper Hill, Southfleet
Event code: ARC THB 95
HS1 chainage: 38+500
NGR: TQ 6200 7235
Contractor: Canterbury Archaeological Trust
Type of investigation: Evaluation
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Bull 2006a
Evaluation report reference: CAT 1996
Map Window 3

The evaluation comprised a total of two trenches. No archaeological features were present.

Fieldwork event: Temple east of Springhead
Event code: ARC STP 95
HS1 chainage: 39+000
NGR: TQ 6230 7190
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical Survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Bull 2006a
Survey report reference: GSB 1995m
Map Window 3

Fieldwork event: Temple east of Springhead
Event code: ARC STP 97
HS1 chainage: 39+000
NGR: TQ 6230 7190
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: May 1997
Integrated Site Report reference: Bull 2006a
Evaluation report reference: WA 1997c
Map Window 3

The evaluation comprised a total of 41 trenches. The archaeological features included ditches, postholes, a relict watercourse and a probable terrace. Three ditches, one identified as Late Iron Age or early Roman, may correspond to some of the broadly SE-NW aligned fainter linear geophysical anomalies previously recorded. There was no evidence to suggest an extension of the Roman temple complex or associated features into the evaluation area. Colluvial deposits were identified within the valley floor, including a primary pedogenic horizon of probable Late Bronze Age date.

Fieldwork event: Temple East of Springhead
Event code: ARC STP 99
HS1 chainage: 39+000
NGR: TQ 6240 7200
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: 1999
End of fieldwork: 1999
Integrated Site Report reference: Bull 2006a
Map Window 3

Neolithic or Early Bronze Age activity associated with natural springs.

PRINCIPAL SITE: PEPPER HILL ROMAN CEMETERY
Chainage limits - 204+300 - 204+500
Parishes crossed: Southfleet
Map Window 3
Integrated Site Report reference: Biddulph 2006

Fieldwork event: Pepper Hill / New Barn Road Roman Cemetery
Event code: ARC PHL 97 and ARC NBR 98
HS1 Chainage - 204+300
NGR: TQ 6180 7200
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: August 1998
End of fieldwork: January 1999
Integrated Site Report reference: Biddulph 2006
Map Window 3

The site lay south of the Roman town and religious complex at Springhead (*Vagniacis*). Excavation revealed almost the entire plan of a Roman-period cemetery which developed alongside a road that took inhabitants, pilgrims and other traffic into the town. A total of 558 graves or other funerary-related features were encountered. ARC PHL 97 was the first phase of excavation, arising from a SEEboard cable diversion. ARC NBR98 was a subsequent phase of work along the main HS1 route.

The cemetery was located at a site previously used for burial in the Middle Iron Age. At least one grave belonged to that time. No burials were certainly made during the Late Iron Age, though quarry pits and a boundary ditch record activity dating before the Roman conquest. The site received the greatest number of burials during the Early Roman period (AD 43–130). The rate of burial declined during the 2nd century and, by the 3rd century, few graves were dug. The latest burials comprise a group of five dating after AD 260; given the fortunes of the neighbouring town, none is likely to date far into the 4th century. The site was abandoned after the Roman period until medieval times when quarrying and agricultural activity began.

The predominant rite, appearing throughout the life of the cemetery, was inhumation. Some 360 such graves were excavated. Many were devoid of grave goods—a factor resulting in a high proportion of undated burials—but offerings were by no means uncommon. Pottery was regularly deposited. Drinking vessels were most popular, followed by eating-related vessels, then cooking forms, such as jars. Other objects were less frequent, but could include brooches, shoes and, more rarely, bracelets, beaded necklaces and wooden objects. Skeletons were poorly preserved. Those that survived revealed a mainly adult population with an equal male-female ratio. Ages rarely extended beyond 30 years. Few children were recorded, although their number is probably lower than expected since their bones would have survived least well. Iron nails and decayed wood-derived soil stains attested to the frequent use of coffins. The proportion of coffined burials was higher in the 2nd century, compared with the 1st century. Wooden boxes or caskets filled with grave goods occasionally accompanied the burial.

Almost 150 cremation graves were encountered. The rite spanned the mid 1st to early 3rd century AD. The deceased were cremated on pyres within the cemetery and outside its boundaries. A cobbled surface west of the cemetery may have functioned as a crematorium or place of funerary feasting. The dead, often wearing brooches, necklaces and the like, were occasionally carried to the pyre on a bier. Pyre goods included shoes, pottery, joints of meat, and, rarely, beans and fruits. Overall, urned and unurned graves were equally represented, although urned graves were more common in the 2nd century, echoing the use of the coffin. The cremated remains had been carefully deposited in correct anatomical order in at least one urn, while the skull had been deliberately excluded from another. A few boxes and caskets were deposited. One casket was particularly ornate, being decorated with lion-headed studs. Analysis of the cremated human remains again indicated a largely adult population, but with a slight bias towards males. Surprisingly, few cremated individuals had died under 40 years, suggesting that the rite was largely reserved for Springhead's oldest inhabitants. However, children were also represented; some accompanied adults in double burials. Unburnt grave goods included pottery—the range of forms was little different from that recovered from inhumation graves—brooches and shoes. Grave goods hinted at changing beliefs in the afterlife during the 2nd century.

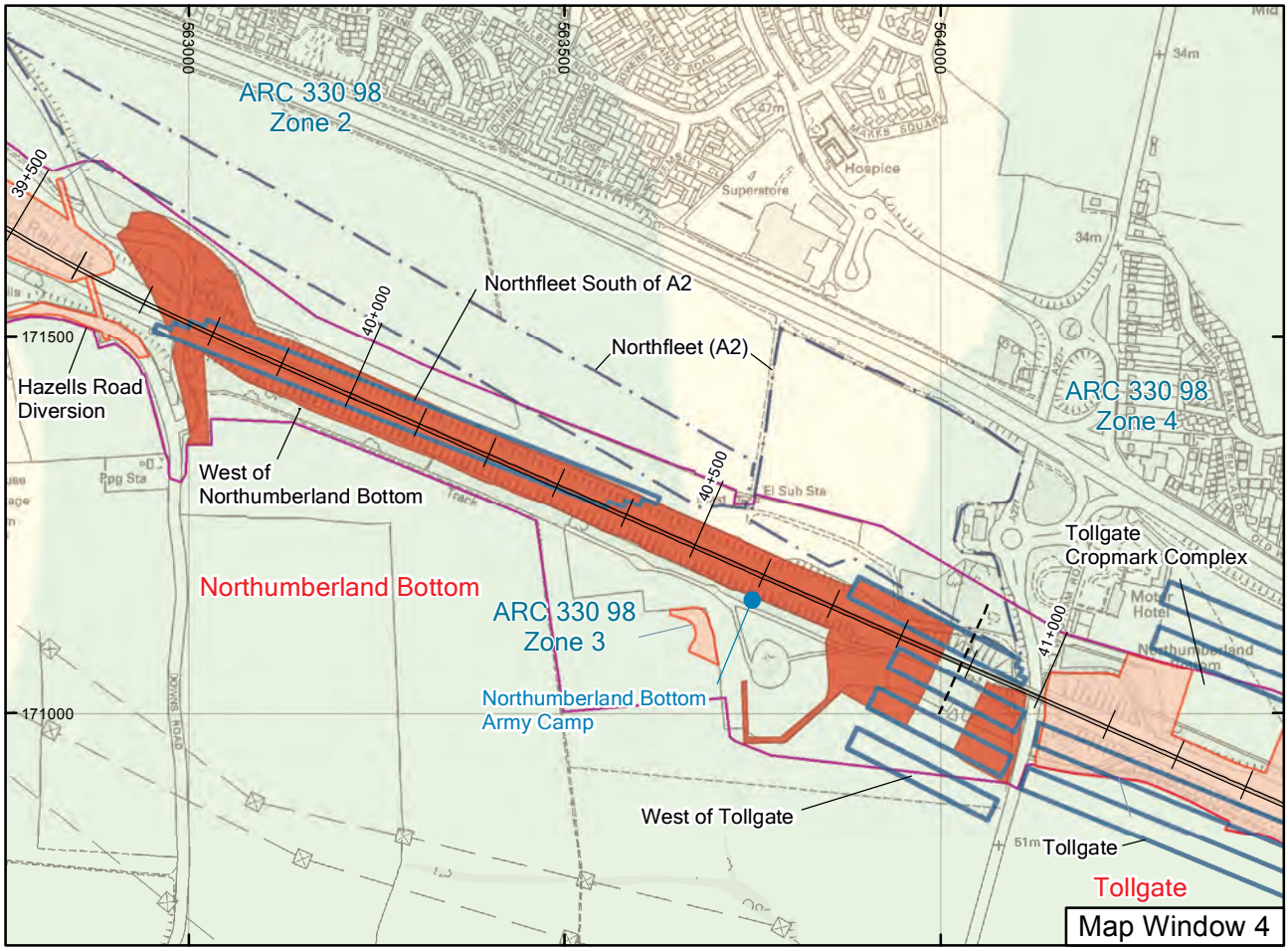
An unusual aspect of the cemetery was the presence of *busta*. Here, the deceased were cremated on a pyre and buried where the remains fell into an underlying pit. The features date mainly to the mid or late 1st century AD and the rite was introduced to Pepper Hill by soldiers or other newcomers, probably from the Rhineland or Danube provinces. Almost all *busta* were closely spaced, a further sign, perhaps, of a social or ethnic grouping. Other funerary-related features included cenotaphs that contained no human bone but were otherwise typical graves, and pits that yielded pyre debris only. A well or shaft east of the cemetery was not fully excavated, but is likely to have received ritual deposits.

The cemetery was very crowded and much intercutting was evident. It admitted a cross-section of Springhead's inhabitants, but inevitably the cemetery contained mainly low-status burials. The comparison with a walled cemetery only a little way north of the site, which covered a larger area and contained eight ornate burials, is particularly revealing.

PRINCIPAL SITE: NORTHUMBERLAND BOTTOM
Project Area 330, Zone 3
Chainage limits: 39+600 - 41+000
Parishes crossed: Northfleet
Integrated Site Report reference: Askew 2006
Map Window 4

Fieldwork event: Northfleet (A2)
Event code: N/A
HS1 chainage: 39+300 - 41+000
NGR: TQ 6350 7159
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Grey literature report reference: URL 1995
Map Window: 3–4

Fieldwork event: Northfleet (south of A2)
Event code: N/A



HS1 chainage: 39+700 - 40+400
NGR: TQ 6330 7140
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Grey literature report reference: GSB 1995n
Map Window: 3–4

Fieldwork event: Hazells Road Diversion
Event code: ARC HRD 99
HS1 chainage: 39+600
NGR: TQ 6280 7160
Contractor: Museum of London Archaeology
Type of investigation: Targeted watching brief
Start of fieldwork: April 1999
End of fieldwork: May 2000
Integrated Site Report reference: Askew 2006
Map Window 4

Early Iron Age evidence comprised a scattered group of five pits, a cooking pit, a waterhole, a metalworking area consisting of bowl furnace bases, and an area of possible animal pens. One of the pits contained a La Tène brooch, dating from the 5th to 4th century BC; another contained a large, mixed deposit of partially dismembered animal carcasses, perhaps evidence for feasting. A red deer bone from the pit was radiocarbon dated to 370–190 cal BC (NZA-22748). Activity continued in the Mid–Late Iron Age.

Roman features included the masonry foundations of a twin-chambered 'corn-drier' and elements of a field system, lying alongside a metalled track (probably a Roman precursor of Downs Road). The coin and ceramic assemblages from this site comprise the only exclusively Late Roman (late 3rd to 4th century) site assemblages from the HS1 Section 1 project.

Two medieval sites, found on either side of Downs Road, were dated by ceramic evidence to the 12th/13th century. They perhaps form part of a medieval precursor of Hazells Farm. They comprised at least one large rectangular timber post-built building, located *c* 200m east of the present farm, and traces of two circular domed clay ovens, lying alongside Hazells Road. Evidence for more recent land-use includes a brick clamp dating from *c* 1450–1700, located *c* 100m north of Hazells Farm.

Fieldwork event: West of Northumberland Bottom
Event code: ARC WNB 97 (reported with ARC 330 98 zone 3)
HS1 chainage: 40+100
NGR: TQ 6350 7130
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: May 1997
Integrated Site Report reference: Askew 2006
Evaluation report reference: MoLA 1997f
Map Window 4

The evaluation comprised a total of 44 trenches. The earliest features were three ditches and a pit which may date from the Mid/Late Bronze Age to Early Iron Age. The majority of features, consisting of pits and structural element such as postholes, slots and hearths, were of Late Iron Age to Early Roman date. They indicate that the site may have been occupied by a small settlement with an adjacent field system.

Fieldwork event: West of Northumberland Bottom
Event code: ARC WNB 98
HS1 chainage: 40+100
NGR: TQ 6350 7130
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Integrated Site Report reference: Askew 2006
Map Window 4

An Early Bronze Age double inhumation was found, in which each of the burials was accompanied by a Beaker vessel. Later prehistoric activity was represented by a large Middle–Late Bronze Age boundary ditch, part of a Middle–Late Iron Age enclosure, and part of a possible field system. Occupation continued into the Late Iron Age/Early Roman period, and was represented by pits, gullies, several kilns or ovens, human burials (including two cremations) and a horse burial.

An Early Roman field system was superseded in the 2nd century AD by domestic activity represented by two possible sunken-floored buildings, pits, a well, two single-chambered kilns or ovens and an infant inhumation.

Medieval occupation, situated on a shallow terrace near the foot of the hill, comprised one or more timber structures with associated pits and a boundary ditch to the south and a circular stock enclosure, which was superseded in the late 12th–early 14th centuries by a sub-rectangular ditched enclosure that contained some evidence for occupation, including a sunken-floored building containing was a possible corn-drying or malting oven.

Fieldwork event: Northumberland Bottom Army Camp
Event code: ARC NBAC 98
HS1 chainage: 40+600
NGR: TQ 6380 7110
Contractor: Museum of London Archaeology
Type of investigation: Standing building survey
Start of fieldwork: September 1998
End of fieldwork: October 1998
Integrated Site Report reference: Askew 2006
Map Window 4

The site comprised a Second World War anti-aircraft gun battery and its associated domestic encampment. There were 26 single storey buildings on the site, some of which are of post-war date. As well as the buildings there are a number of standing structures, partially buried structures, foundations and original roads and tracks surviving on the site. None of the buildings were Listed.

The military structures and buildings recorded form only part of the total number of military structures known to have existed. Many structures remain unlocated but levels information suggests that some of these may survive in a buried state. Evidence of other features, like the radar, may have been too slight to survive.

Many of the internal layouts of the buildings were recovered and in one case a large amount of the original fixtures survived. However, the function of many of the buildings was not discernible from the surviving structural evidence.

Fieldwork event: West of Tollgate
Event code: ARC TLGW 95
NGR: TQ 6400 7100
HS1 chainage: 40+700
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1996
End of fieldwork: 1996
Integrated Site Report reference: Askew 2006

Survey report reference: ABA 1996b
Map Window 4

Magnetic susceptibility and magnetometer surveys were carried out. The latter identified a probable E-W ditch and a section of N-S ditch at the northern edge of the survey area, which are likely to form part of an enclosure corresponding to a previously identified cropmark complex.

Fieldwork event: West of Tollgate
Event code: ARC TGW 97
HS1 chainage: 40+800
NGR: TQ 6400 7100
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: April 1997
Integrated Site Report reference: Askew 2006
Evaluation report reference: MoLA 1997i
Map Window 4

The evaluation comprised a total of 34 trenches. A number of field boundary ditches were recorded, forming part of a complex of rectilinear fields dating from the Late Iron Age/Early Roman period through to the early 3rd century AD. A medieval field ditch was also recorded in the area of Roman features. A large circular quarry pit, at least 5m in diameter, was found but no datable finds were recovered from it.

PRINCIPAL SITE: TOLLGATE
Project Area 330, Zone 4
Chainage limits: 41+000 - 44+300
Parishes crossed: Cobham
Integrated Site Report reference: Bull 2006b
Map Windows 4–6

Fieldwork event: Tollgate cropmark complex, Gravesham
Event code: ARC TLG 95
HS1 chainage: 41+100
NGR: TQ 6440 7100
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: July 1995
End of fieldwork: July 1995
Integrated Site Report reference: Bull 2006b
Evaluation report reference: OA 1995b
Map Window 4

The evaluation comprised a total of 18 trenches. It confirmed that a sub-rectangular ditched enclosure, visible as a cropmark on aerial photographs, is almost certainly of Neolithic date. It has been substantially plough damaged and it was impossible to determine whether it was originally a mortuary enclosure or a long barrow. Only one possible internal feature was noted. Some signs of Late Bronze Age and Middle Iron Age activity were noted in a small dry valley, but no unequivocal features of prehistoric date were found. A ditched trackway to the north of the dry valley, also partially visible as a cropmark, was investigated but yielded no dating evidence. A large chalk quarry of post-medieval date was found at the east end of the site.

Fieldwork event: Tollgate
Event code: ARC TLG 95
NGR: TQ 6430 7100
HS1 chainage: 41+300
Contractor: A. Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1996
End of fieldwork: 1996
Integrated Site Report reference: Bull 2006b
Survey report reference: ABA 1996a
Map Windows 4–5

Fieldwork event: Tollgate
Event code: ARC TLG 98 (reported with ARC 330 98 Zone 4)
HS1 chainage: 41+100
NGR: TQ 6410 7100
Contractor: Museum of London Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: 1998
End of fieldwork: 1998
Integrated Site Report reference: Bull 2006b
Map Windows 4–5

Excavations at Tollgate revealed Palaeolithic tools redeposited by colluvial processes at the base of a dry valley. The colluvial deposits sealed ancient soils indicative of an arctic environment (*c* 14,000–11,000 years before present).

Distinct spreads of sarsen stones were present to the east of Church Road. These have been considered as potentially the remains of a demolished Neolithic to Early Bronze Age megalithic structure, but are more likely to be a natural accumulation, disturbed by medieval and later field clearance. A sub-rectangular cropmark enclosure, identified on aerial photographs to the east of Wrotham Road, is believed to be a Neolithic mortuary enclosure. It was preserved *in situ* beneath landscaping earthworks and not investigated in detail.

Evidence of a settled and cultivated landscape first appears at the end of the Bronze Age. A small scale settlement, established in the Iron Age to the west of Church Road, provides evidence of domesticated and processed crops and livestock, supplemented by foraged foods and game. Iron Age activity around Tollgate persists into the early 1st century AD, when a possible eastward shift in the focus of settlement and activity to the Henhurst Road area is recorded. Evidence for activity in the Roman period is dispersed along the length of the Tollgate zone, with a particular focus in the Henhurst Road area. A trackway junction including metalled surfaces and recut ditches, was established here *c* AD 50 to 70, apparently falling into disuse shortly thereafter. In the 2nd century the area may lie on the periphery of a small settled area to the south and east of Henhurst Road. The character of Roman activity throughout the zone is agricultural, comprising field boundaries and trackways, with evidence for crop production and processing.

Archaeological evidence fades out by the mid 3rd century AD and no further features are recorded until the early medieval period, when new field systems and local routeways were established, suggesting renewed intensification in agricultural land-use in the 11th–14th centuries. Isolated pits at this time have produced evidence for wheat production and there is evidence that naturally occurring sarsen boulders were removed and broken up, presumably to improve fields for arable cultivation. Routeways and divisions of the agricultural landscape thereafter appear to remain stable, with little evidence for change to the modern period. Post-medieval chalk quarries are present across the Tollgate area. A brick kiln recorded near Cobham Service Station dates to the late 17th- to late-18th centuries and is likely to have provided brick and tile to the expanding communities of Gravesend, Singlewell and Cobham.

Fieldwork event: South-East of Tollgate
Event code: ARC TLGS
HS1 chainage: 41+500
NGR: TQ 6480 7075
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Bull 2006b
Survey report reference: ABA 1996b
Map Window 5

Magnetic susceptibility and magnetometer surveys both indicated an area of increased response in the western part of the survey area that is potentially of archaeological origin.

Fieldwork event: South-East of Tollgate
Event code: ARC TGS 97
HS1 chainage: 41+500
NGR: TQ 6480 7075
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: May 1997
End of fieldwork: May 1997
Integrated Site Report reference: Bull 2006b
Map Window 5

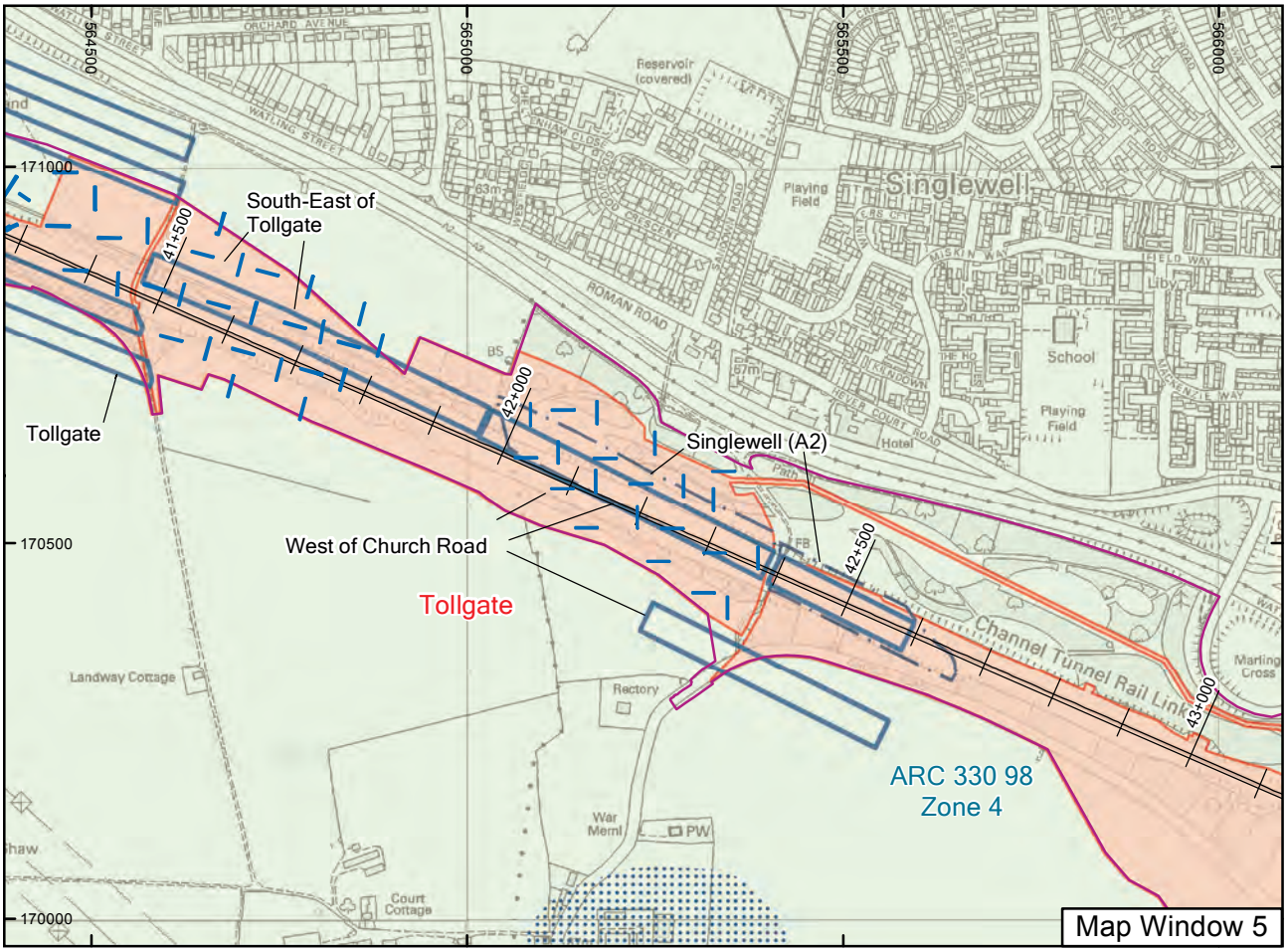
The evaluation comprised a total of 22 trenches. A Lower Palaeolithic pointed biface handaxe was found incorporated within a later deposit. A large pit was recorded dating from the Late Iron Age/Roman period. A linear feature containing charcoal and struck flint was also recorded.

Fieldwork event: West of Church Road, Singlewell
Event code: ARC CRS 95
HS1 chainage: 42+200
NGR: TQ 6550 7040
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Bull 2006b
Survey report reference: ABA 1996b
Map Window 5

Magnetic susceptibility and magnetometer surveys both indicated areas of increased response in the western half and at the eastern end of the survey area.

Fieldwork event: Singlewell (A2)
Event code: N/A
HS1 chainage: 42+000 - 42+600
NGR: TQ 6530 7060
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Grey literature report reference: URL 1995
Map Window 5

Fieldwork event: West of Church Road, Singlewell
Event code: ARC CRS 97
HS1 chainage: 42+200
NGR: TQ 6550 7040
Contractor: Oxford Archaeology



Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: April 1997
Integrated Site Report reference: Bull 2006b
Evaluation report reference: OA 1997e
Map Window 5

The evaluation comprised a total of 21 trenches. Two pits of certain Bronze Age date were identified, and a possible posthole. A number of shallow gullies, interpreted as field boundaries, located in the same part of the site as the pits, may be Bronze Age, although a later possible Saxon date cannot be discounted based on the ceramic evidence. Two quarries of probable post-medieval date were also identified..

Fieldwork event: West of Church Road, Singlewell
Event code: ARC CRS 98
HS1 chainage: 42+200
NGR: TQ 6550 7040
Contractor: Museum of London Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Integrated Site Report reference: Bull 2006b
Map Window 5

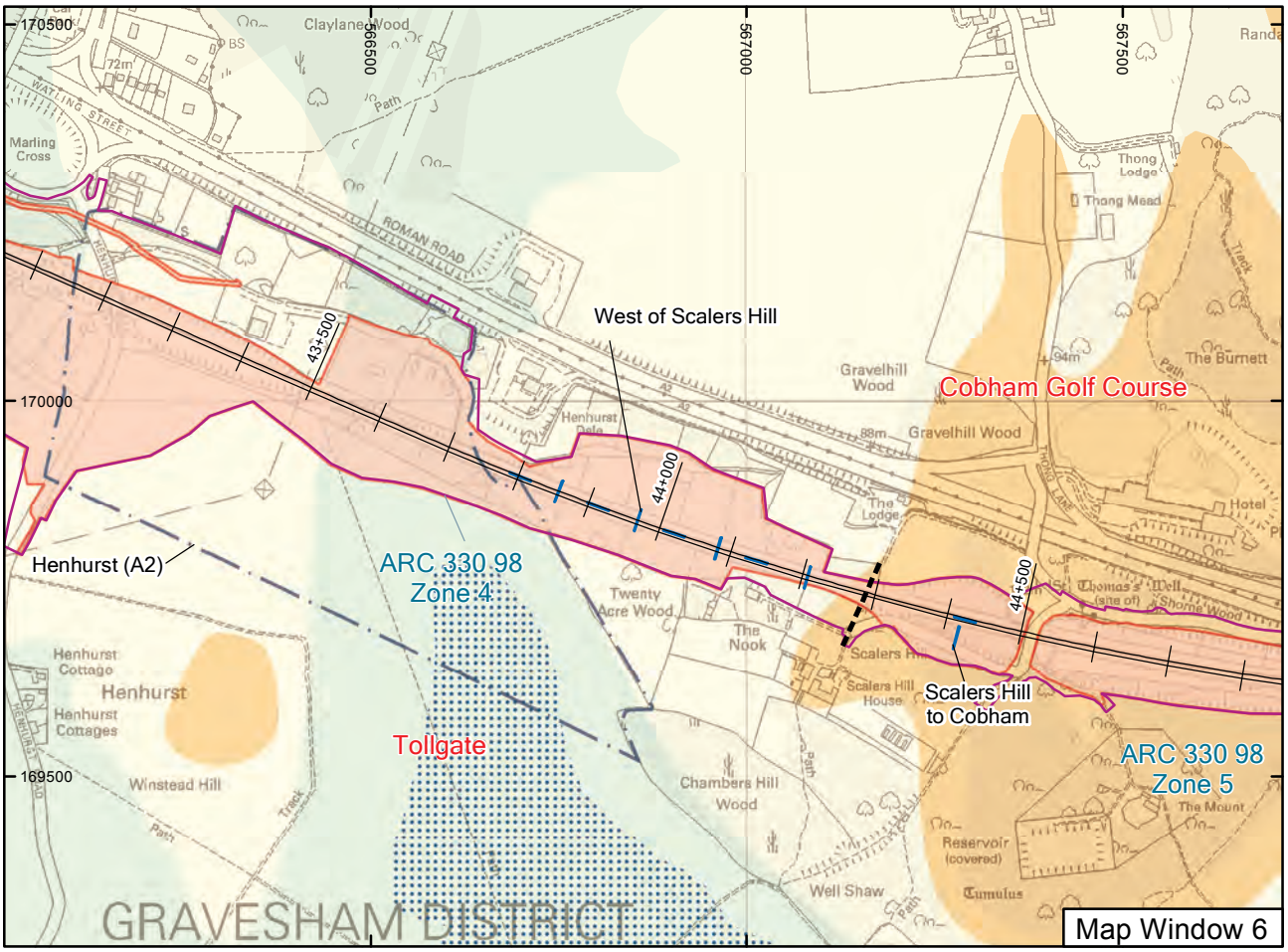
Several small pits or postholes, and ditches were recorded, but specific dating evidence was lacking.

Fieldwork event: Henhurst (A2)
Event code: N/A
HS1 chainage: 43+200 - 44+100
NGR: TQ 6643 6995
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Grey literature report reference: URL 1995
Map Windows 5–6

Fieldwork event: West of Scalers Hill, Cobham
Event code: ARC WSH 98
HS1 chainage: 44+000
NGR: TQ 6609 6980
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1998
End of fieldwork: January 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: OA 1998f
Map Window 6

The evaluation comprised a total of eight trenches. The features comprised three substantial ditches, one of which produced a small quantity of Late Iron Age–Early Roman pottery, as well as two gullies, a posthole and a small pit.

PRINCIPAL SITE: COBHAM GOLF COURSE
Project Area 330, Zone 5
Chainage limits: 44+300 - 49+800
Parishes crossed: Cobham
Integrated Site Report reference: Davis 2006
Map Windows 7–9



Fieldwork event: Ashenbank Wood Army Camp
Event code: ARC AWC 98
HS1 chainage: 44+900
NGR: TQ 6380 7110
Contractor: Museum of London Archaeology
Type of investigation: Standing building survey
Start of fieldwork: September 1998
End of fieldwork: October 1998
Integrated Site Report reference: Davis 2006
Building investigation report reference: MoLA 1999a
Map Window 7

Building survey of some of the Second World War structures located in Ashenbank Wood.

Fieldwork event: Scalers Hill to Cobham
Event code: ARC SCC 98
HS1 chainage: 45+200
NGR: TQ 6810 6960
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: September 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: OA 2000b
Map Window 7

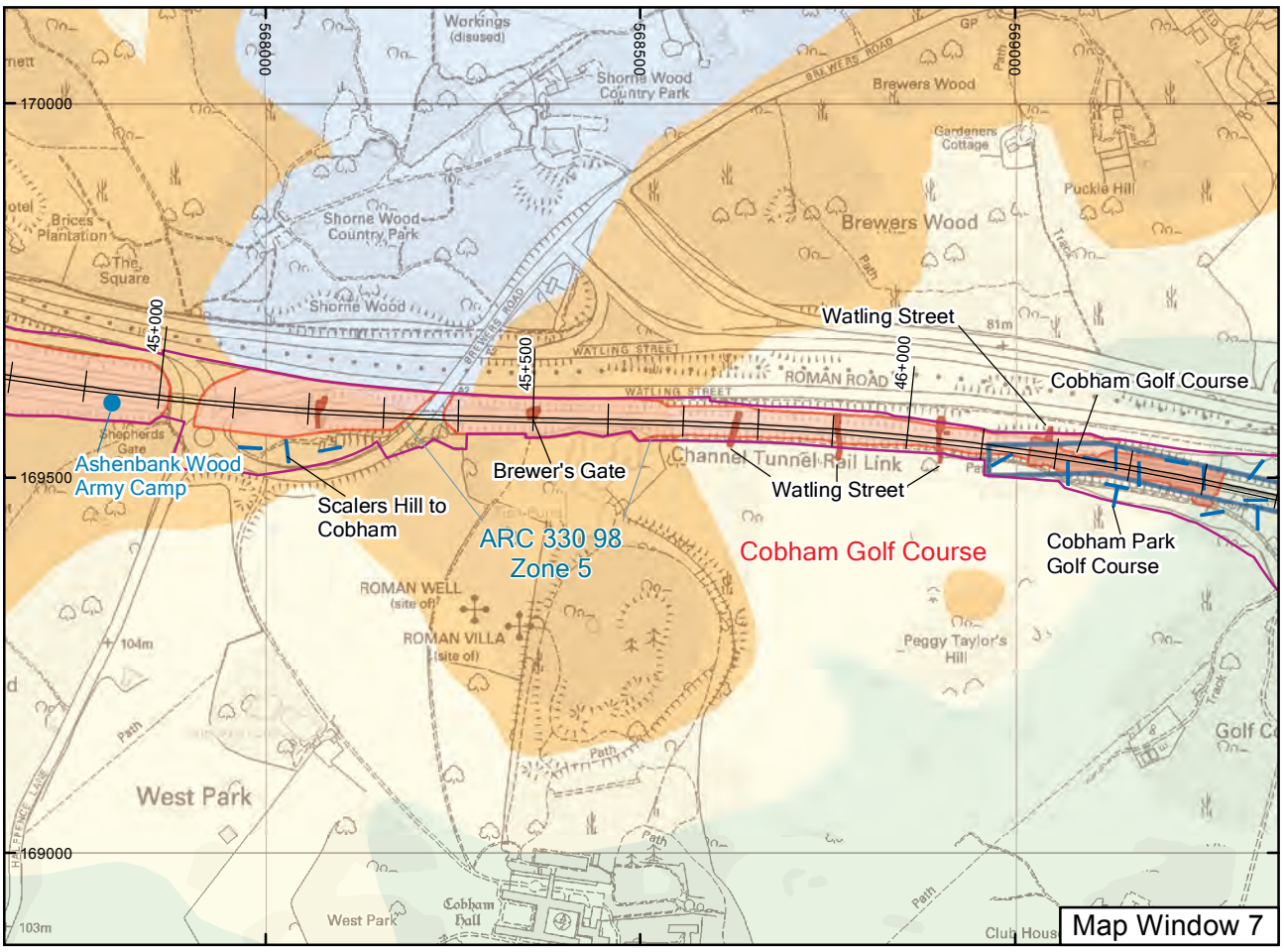
The evaluation comprised a total of five trenches. A single pit, of Bronze Age date, was recorded.

Fieldwork event: Brewer's Gate
Event code: ARC BG 98
HS1 chainage: 45+500
NGR: TQ 6836 6958
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Integrated Site Report reference: Davis 2006
Map Window 7

The foundations of a presumed rebuild of the gate lodge of Cobham Park (documented *c* 1900) were found. There was no sign of a documented earlier phase of construction. The west side of the gateway and a metalled drive were found immediately adjoining the gate lodge to the east.

Fieldwork event: Watling Street
Event code: ARC WS 98
HS1 chainage: 45+900
NGR: TQ 6850 6955
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: September 1998
End of fieldwork: October 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: MoLA 1999o
Map Window 7

The evaluation comprised a total of five trenches. A post-medieval park pale or substantial ha-ha was found. Very scant remains of buildings were found, documented as dog kennels erected *c* 1790. No evidence was observed for a road earlier than the current road.



Fieldwork event: Cobham Golf Course
Event code: ARC CGC 95
HS1 chainage: 46+200
NGR: TQ 6915 6940
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Davis 2006
Survey report reference: ABA 1996a
Map Windows 7

Fieldwork event: Cobham Golf Course
Event code: ARC CGC 98
HS1 chainage: 46+200
NGR: TQ 6915 6940
Contractor: Museum of London Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: August 1998
End of fieldwork: October 1998
Integrated Site Report reference: Davis 2006
Map Window 7

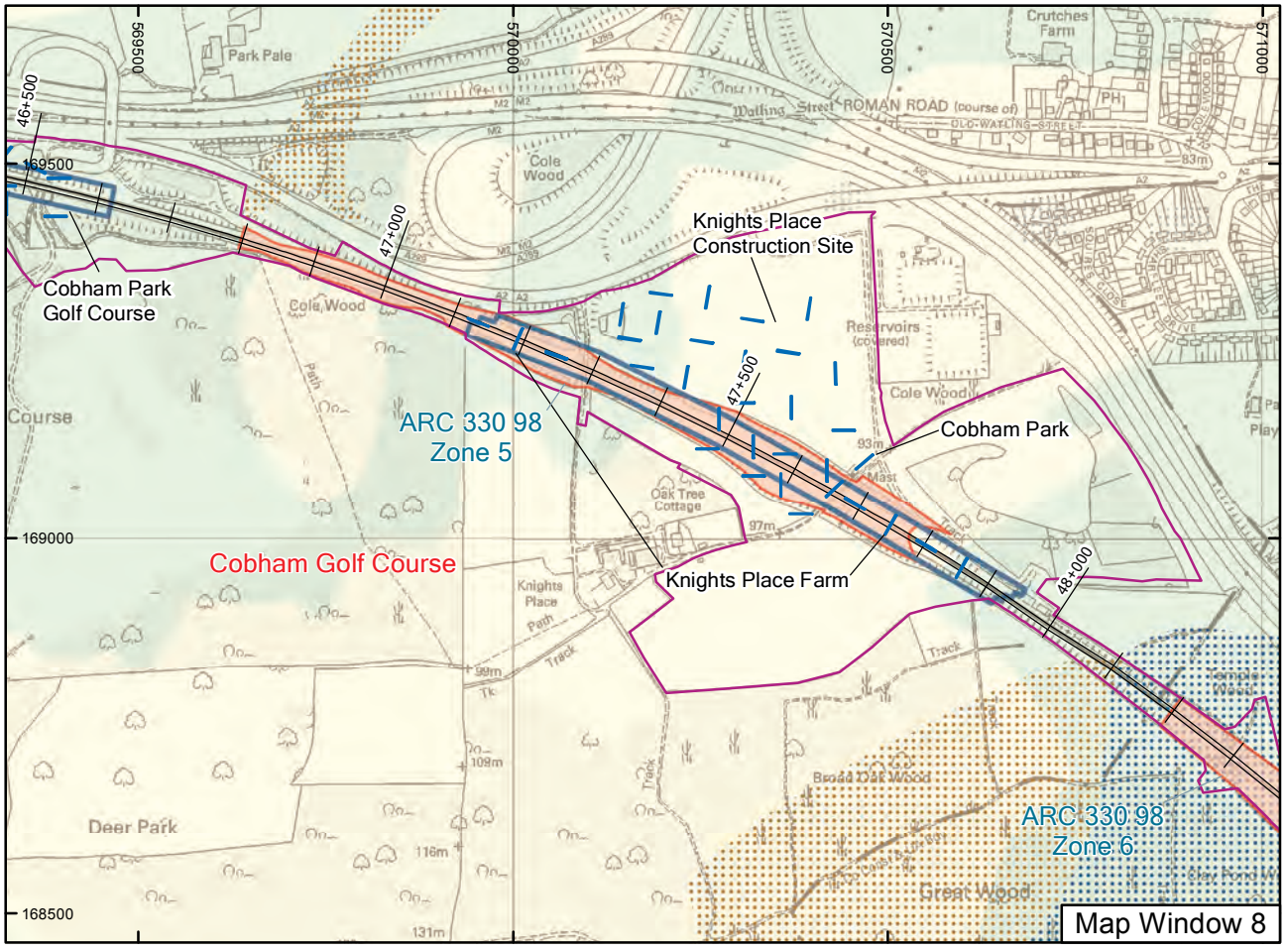
A ring ditch of Bronze Age date was found. No sign remained of an overlying mound. Other features consisted of a linear ditch and a concentration of small pits, postholes and at least two possible hearths. These features variously contained struck flints and pottery dated to the Middle and Late Bronze Ages. The site was badly disturbed by the bunkers, teeing-off platforms and irrigation pipes of a modern golf course.

Fieldwork event: Cobham Park Golf Course
Event code: ARC CGC 97
HS1 chainage: 46+300
NGR: TQ 6920 6950
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1997
End of fieldwork: September 1997
Integrated Site Report reference: Davis 2006
Evaluation report reference: OA 1997f
Map Windows 7–8

The evaluation comprised a total of 17 trenches. A scatter of shallow archaeological features were identified on the spur of higher land, some of which contained pottery dated to the Middle and Late Bronze Age.

Fieldwork event: Cobham Park
Event code: ARC CPK 97
HS1 Chainage: 47+200
NGR: TQ 7040 6910
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1997
End of fieldwork: September 1997
Integrated Site Report reference: Davis 2006
Evaluation report reference: MoLA 1998c
Map Window 8

The evaluation comprised of a total of five trenches, excavated in order to investigate a group of geophysical anomalies. No



archaeological features were located, but a number of undated, infilled stream channels, possibly of Pleistocene date, were found.

Fieldwork event: Cobham Park
Event code: ARC COPK 95
HS1 Chainage: 47+500
NGR: TQ 7030 6930
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1996
End of fieldwork: 1996
Integrated Site Report reference: Davis 2006
Survey report reference: ABA 1996b
Map Window 8

Magnetic susceptibility and magnetometer surveys were carried out, but in both surveys responses were relatively weak and are probably the result of geological variations.

Fieldwork event: Knights Place Construction Site
Event code: ARC KCS 98
HS1 Chainage: 47+500
NGR: TQ 7030 6935
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1998
End of fieldwork: January 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: MoLA 2000a
Map Window 8

The evaluation comprised a total of 13 trenches. The archaeological features consisted of a Roman-period field boundary ditch, a second undated field ditch, two small undated pits, and six possible ovens, the latter probably of medieval or post-medieval date.

Fieldwork event: Knights Place Farm
Event code: ARC KPF 98
HS1 Chainage: 47+700
NGR: TQ 7030 6930
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1998
End of fieldwork: January 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: MoLA 1998d
Map Window 8

The evaluation comprised a total of seven trenches. Six small, undated, dispersed pits and sunken ovens, possible of medieval or post-medieval date, were recorded.

Fieldwork event: Great Wood
Event code: ARC GWE 98
HS1 Chainage: 49+200
NGR: TQ 5715 1682
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Integrated Site Report reference: Davis 2006
Evaluation report reference: MoLA 1999c
Map Window 9

The evaluation comprised a total of 12 trenches in two areas of the northern side and part of the base of a dry valley. A deep colluvial sequence over 3m thick was recorded in the valley base but no archaeological features were encountered.

PRINCIPAL SITE: CUXTON
Project Area 330, Zone 6
Chainage limits: 49+800 - 51+000
Parishes crossed: Cuxton
Integrated Site Report reference: Mackinder 2006
Map Window 10

Fieldwork event: Cuxton Anglo-Saxon cemetery
Event code: ARC CXT 97
HS1 chainage: 50+000
NGR: TQ 7200 6735
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: April 1997
Integrated Site Report reference: Mackinder 2006
Evaluation report reference: MoLA 1997c
Map Window 10

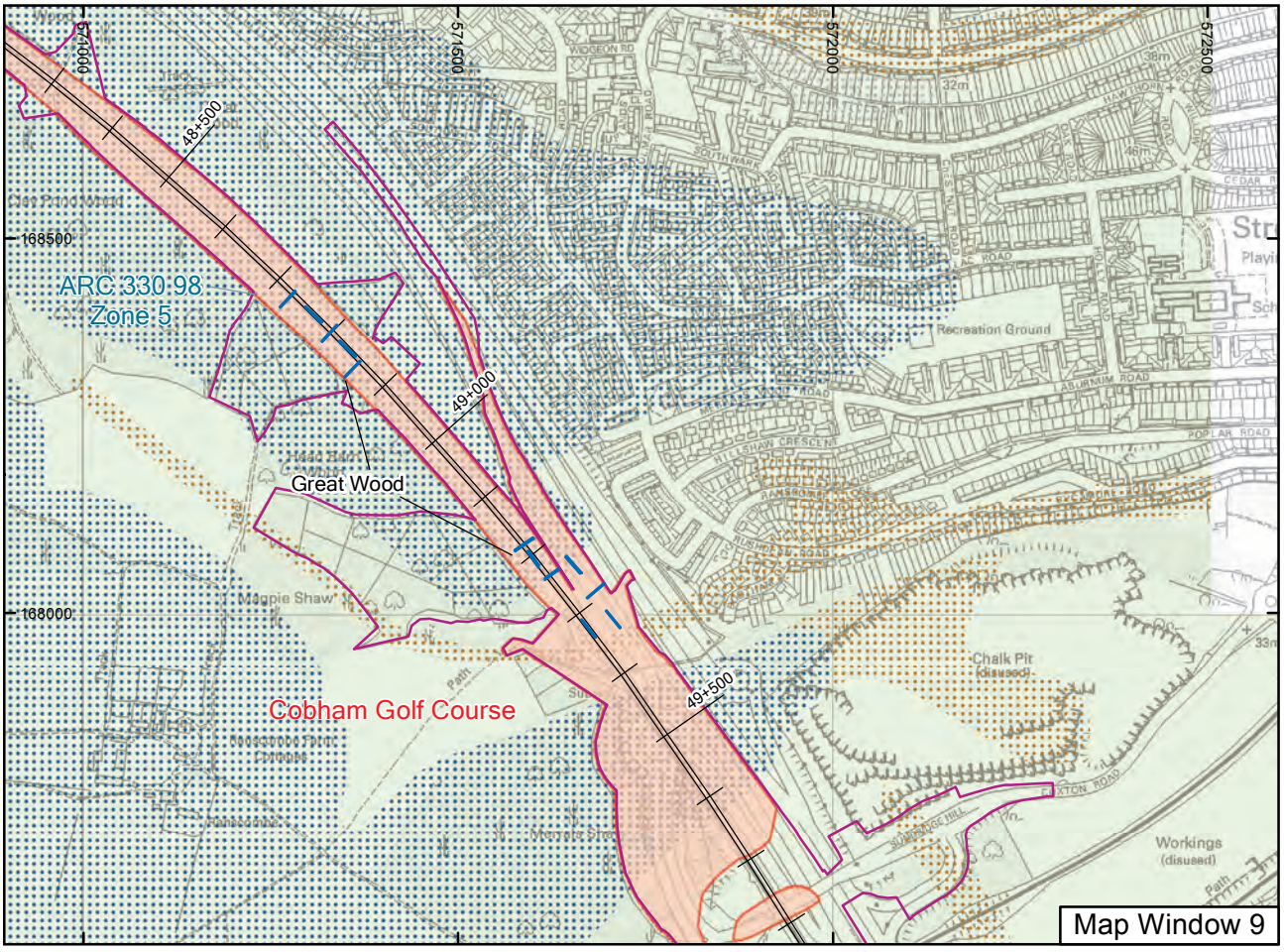
The evaluation comprised a total of 25 trenches. Possible Iron Age occupation was characterised by three rectangular pits containing ashy fills and two large, deep postholes. The evaluation identified seven possible Early Saxon burials, of which four were surrounded by ring or penannular ditches.

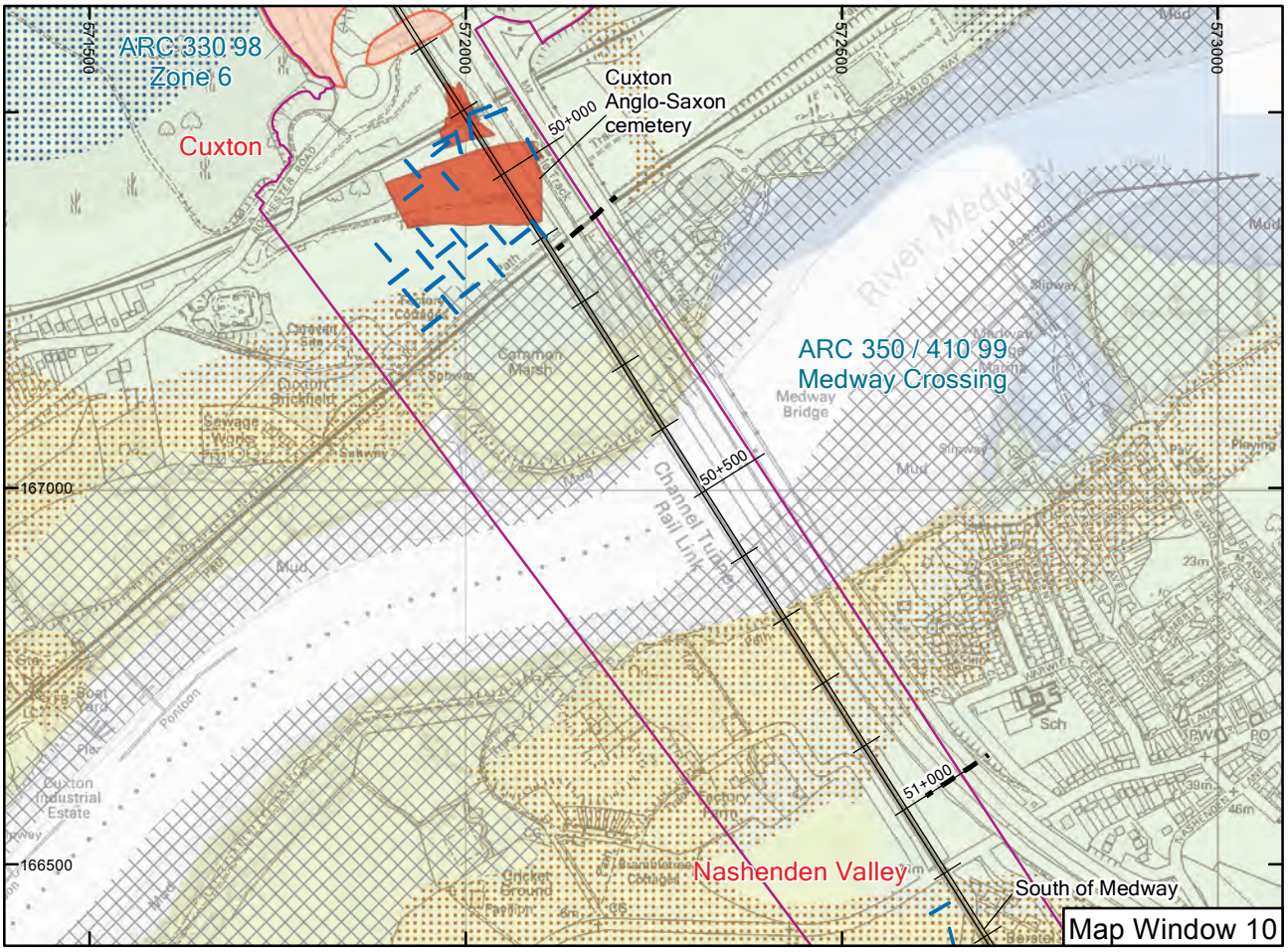
Fieldwork event: Cuxton Anglo-Saxon cemetery
Event code: ARC CXT 98
HS1 chainage: 50+000
NGR: TQ 7200 6735
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: July 1998
End of fieldwork: September 1998
Integrated Site Report reference: Mackinder 2006
Map Window 10

Two principal phases of activity were recorded at the site, which was found on the north-west bank of the River Medway: Traces of an Early–Middle Iron Age settlement comprised evidence for a possible hut within an enclosure and a number of large pits.

The Iron Age site was overlain by an Anglo-Saxon cemetery, in use from *c* AD 580 to 700. The cemetery exhibited a mix of 'pagan' and Christian features. For example, the prominent position of the cemetery on a terrace overlooking the River Medway, perhaps overlooking the settlement, and the inclusion of grave goods with some of the interments, being 'pagan' characteristics. On the other hand the grave alignments, which tend towards an east-west orientation, and the inclusion of two workboxes/reliquaries with Christian symbols attest to Christian influence.

Skeletal remains of 35 individuals were identified, including one individual too poorly preserved for analysis purposes. The majority of the assemblage (77% or 27 individuals) was poorly preserved. All burials were from stratigraphically distinct graves containing a single individual, with the exception of 303 which contained an adult burial and a single intrusive juvenile tooth crown. The remains comprise 24 adults (70% of those analysed), five juveniles (15%), four infants (12%) and an immature individual of unknown age, categorised as 'infant-juvenile' (3%) between 2 and 9 years at death. Of those individuals for which it was possible to determine the sex, 18% (24% of the adults) were female, or probably female, 18% (25% of the adults) male, and the remainder unsexed 35% (51% of the adults).


571000
571500
572000
572500
168500
168000
48+500
49+000
49+500
ARC 330 98
Zone 5
Great Wood
Cobham Golf Course
Magpie Shaw
Recreation Ground
Chalk Pit
(disused)
Workings
(disused)
Map Window 9


571500
572000
572500
573000
167000
166500
ARC 330 98
Zone 6
Cuxton
Cuxton
Anglo-Saxon
cemetery
50+000
50+500
51+000
ARC 350 / 410 99
Medway Crossing
River Medway
Medway
Bridge
Channel Tunnel
Rail Link
Nashenden Valley
South of Medway
Map Window 10

There were nine weapon burials, all with spears, and four of these also had shields. Thirty knives were recovered, but only one (<82>, cxt 300) was close to the typical length of a seax. Five graves had no accompanying artefacts, though one of these (361) had been disturbed by metal detectorists prior to excavation.

The majority of the finds recovered from the graves are thought to have originated in Kent, two of the burials containing Kentish type triangular buckles. The distinctive penannular ditches around 11 of the graves also appear to be a Kentish phenomenon, though they do occur elsewhere in southern England.

PROJECT AREA 350/410

This watching brief Project Area includes all permanent and temporary land-take associated with construction of HS1, from west of the Medway Crossing to the Pilgrim's Way. This includes the trace (at grade, within cuttings and on embankments), bridges and associated works (mitigation earthworks, construction sites, transformer stations etc.).

Project Area 350, which consists of the Medway Crossing and a 650m stretch of the route on ether side of the river, extends from NGR TQ 7200 6770 to NGR TQ 7265 6660. This report considers only the 650m section to the south-east of the river, which ranges from *c* 45m to 90m in width. No significant archaeological discoveries were made. Opportunities for useful observation during construction of the crossing were very limited.

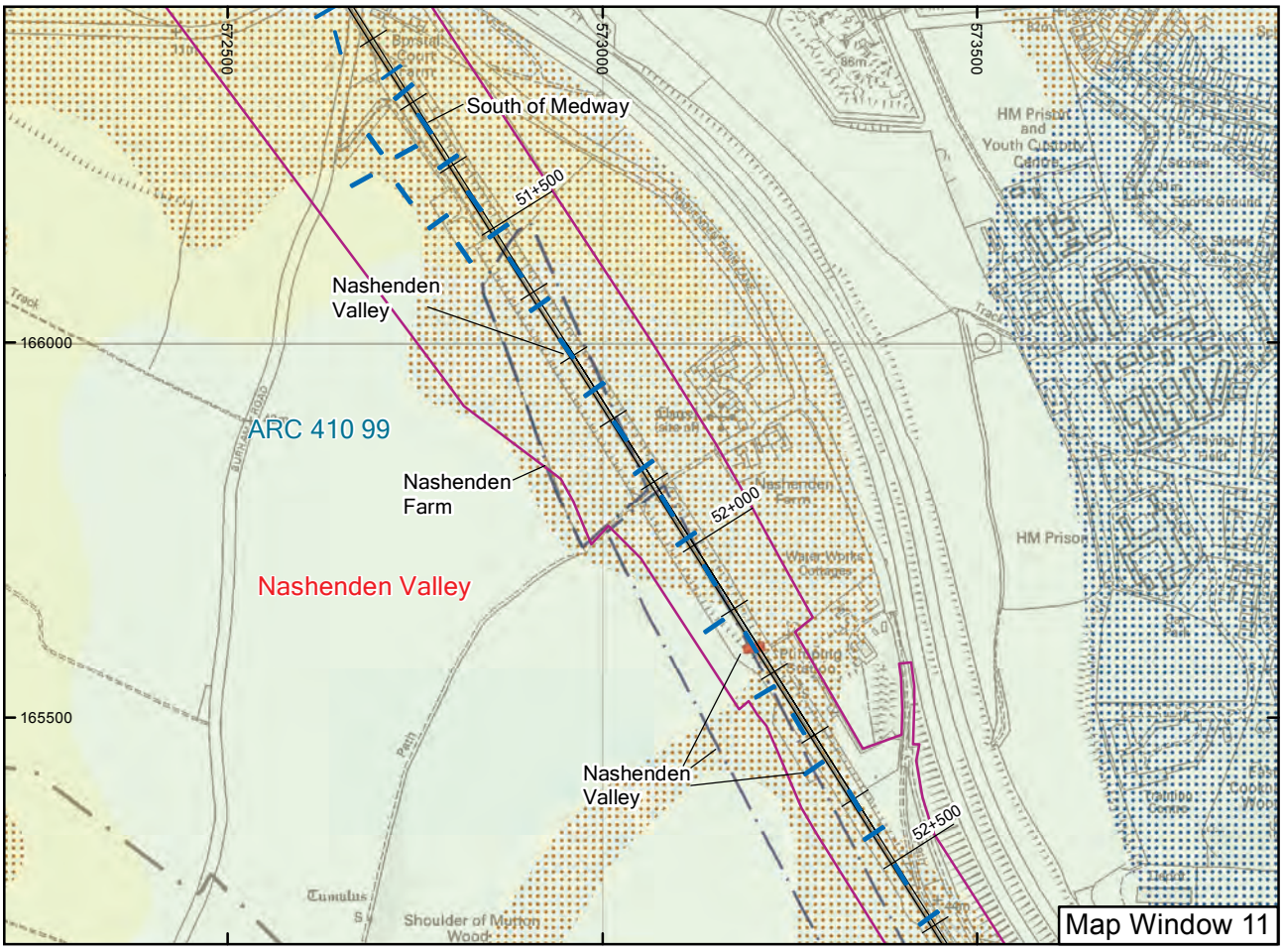
Project Area 410 extends for a distance of 7.2km from NGR TQ 7265 6660 to TQ 7540 6000. The total width of the landtake area in this section ranges from *c* 45m to *c* 300m (generally *c* 200m). Areas previously subject to detailed or strip, map and sample excavation were excluded from the works, as were areas of known large-scale modern disturbance (as detailed in the WSI). No significant individual discoveries were made in this route section. The results from a targeted watching brief during the cutting of the Pilgrim's Way is fully integrated with the White Horse Stone excavation results, so is not listed separately below.

PRINCIPAL SITE: NASHENDEN VALLEY

Project Area 410
Chainage limits: 51+000 - 57+500
Parishes crossed: Rochester
PX assessment report reference (No ISR): URS 2000
Map Windows 11–12

Fieldwork event: South of Medway, Rochester
Event code: ARC MED 98
HS1 chainage: 51+300
NGR: TQ 7270 6650
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: July 1998
End of fieldwork: July 1998
Evaluation report reference: OA 1998d
Map Window 11

The evaluation comprised a total of 10 trenches. The only archaeological feature identified was a ditch of recent origin. The trenches typically revealed a silty Loessic deposit (Swanscombe Loam), although other Pleistocene deposits



were recorded, including Valley gravels and Clay-with-Flints. Colluvium of Holocene date was recorded in all trenches.

Fieldwork event: Nashenden Farm, Rochester
Event code: URL 93
HS1 chainage: 51+500 - 51+900
NGR: TQ 7285 6594
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Survey report reference: URL 1995
Map Windows 11–12

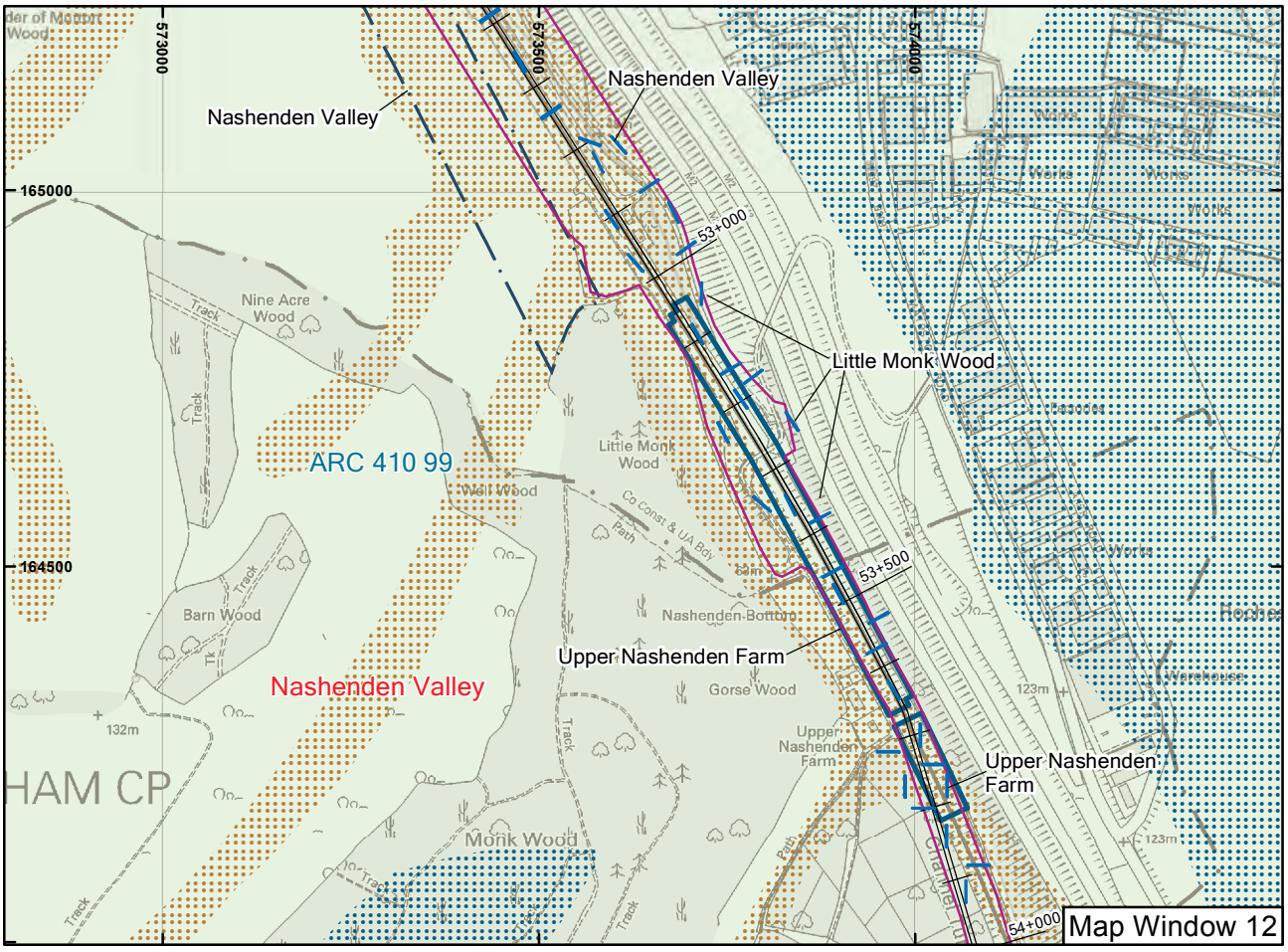
Fieldwork event: Nashenden Valley, Rochester
Event code: URL 93
HS1 chainage: 51+900 - 53-000
NGR: TQ 7285 6594
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Survey report reference: URL 1995
Map Windows 11–12

Fieldwork event: Nashenden Valley, Rochester
Event code: ARC NSH 97
HS1 chainage: 52+200
NGR: TQ 7325 6560
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: May 1997
End of fieldwork: May 1997
Evaluation report reference: WA 1997b
Map Window 11

The evaluation comprised a total of 24 trenches, and revealed a very small number of features, predominantly modern or of natural origin. Colluvial deposits were identified within the valley floor, including a basal horizon containing both Early and Late Bronze Age pottery. Burnt flint from the interface between colluvium and underlying chalk meltwater deposits provided a thermoluminescence date of 790 +/- 350 BC. A soil horizon, located within chalk meltwater deposits, remains undated, but studies elsewhere would suggest that it probably originates in the late glacial Allerød chronozone (*c* 11,000 BP).

Fieldwork event: Nashenden Valley, Rochester
Event code: ARC NSH 98
HS1 chainage: 52+200
NGR: TQ 7325 6560
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Map Window 11

An enlarged trench at the location of the colluvial sequence referred to above was designed to investigate and sample the Allerød soil and any other deposits with palaeoenvironmental potential. The section revealed a Holocene colluvial sequence and Pleistocene Coombe rock deposits, but the



Allerød soil horizon recorded in the evaluation was not identified.

Fieldwork event: Little Monk Wood, Wouldham
Event code: ARC MON 98
HS1 chainage: 53+200
NGR: TQ 7350 6460
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Evaluation report reference: OA 1998c
Map Window 12

The evaluation comprised a total of 23 trenches, and recorded a sequence of solifucted chalk, a late glacial soil horizon and Holocene colluvium. No archaeological features were located, although struck flint, burnt flint and a single sherd of Late Bronze Age pottery was recovered from a deposit near to the base of the colluvial sequence.

Fieldwork event: Upper Nashenden Farm, Rochester
Event code: ARC NSH 95
HS1 chainage: 53+500
NGR: TQ 6450 6560
Contractor: Bartlett-Clarke
Type of investigation: Geophysical survey
Start of fieldwork: 1996
End of fieldwork: 1996
Survey report reference: ABA 1996a
Map Windows 12

Fieldwork event: Upper Nashenden Farm, Wouldham
Event code: ARC NFM 97
HS1 chainage: 53+700
NGR: TQ 7350 6400
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: 28th May 1997
End of fieldwork: 30th May 1997
Evaluation report reference: WA 1997e
Map Window 12

The evaluation revealed a small number of archaeological features, including an undated lynchet, a ditch of probable prehistoric date, two modern building platforms and a number of natural periglacial features. A sequence of up to three colluvial deposits was identified within the valley floor, the primary horizon producing a single sherd of 13th-century pottery. A Mesolithic or Early Neolithic flint pick was recovered from the topsoil.

PRINCIPAL SITE: WHITE HORSE STONE

Project Area 410 / 420
Chainage limits: 57+500 - 60+000
Parishes crossed: Aylesford, Boxley
Integrated Site Report reference: Hayden 2006a
Map Windows 13–14

Fieldwork event: White Horse Stone, Aylesford
Event code: ARC WHS 97
HS1 chainage: 57+800
NGR: TQ 7530 6041
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: May 1997
Integrated Site Report reference: Hayden 2006a
Evaluation report reference: OA 1997k
Map Window 13

The evaluation comprised a total of 36 trenches and a single machine-excavated test pit and was located in a dry valley at the foot of the North Downs escarpment, immediately adjacent to the reputedly megalithic monuments of the White Horse Stone and Smythes' Megalith. The four trenches in the upper part of the valley bottom revealed a thin scatter of archaeological features. Most were boundary or drainage ditches of Late Bronze Age/Early Iron Age date. There was little evidence for surviving archaeological deposits on the western valley slope, or in the central part of the valley bottom.

Thick hillwash deposits were present in the bottom of the valley, becoming deeper towards the southern end, where they were banked up against the boundary formed by the Pilgrim's Way. There was no conclusive evidence that any of the numerous sarsen boulders discovered in the valley bottom had been utilised, although several occurred in close proximity to archaeological features, and many may have been visible features in the prehistoric landscape.

An extensive buried soil horizon, cut by ditches and a large, shallow pit, was identified in five trenches in the south-east corner of the site, sealed beneath as much as 1.2m of hillwash. Although the archaeological features were undated, both the buried soil horizon through which they were cut, and the overlying hillwash, yielded small quantities of Late Bronze Age/Early Iron Age pottery.

The evaluation also investigated the possible line of the Roman Road between Rochester and Hastings. No evidence was found to support or disprove the identification.

Fieldwork event: White Horse Stone, Aylesford
Event code: ARC WHS 98
HS1 chainage: 57+800
NGR: TQ 7530 6041
Contractor: Oxford Archaeology
Type of investigation: Detailed Excavation
Start of fieldwork: August 1998
End of fieldwork: March 1999
Integrated Site Report reference: Hayden 2006a
Map Window 13

The remains of two Early Neolithic, post-built, rectangular structures were found sealed below an Iron Age ploughsoil. Both were associated with very small assemblages of fragmented finds, including small Plain Bowl sherds, flint, animal bone, charred plant remains and charcoal. Radiocarbon dates suggest they date from 4110–3530 cal BC. Although some of the postholes associated with these structures cut tree-throw holes, there is little evidence for any preceding activity. Residual Decorated Bowl sherds suggest activity slightly later in the Early Neolithic. Middle Neolithic activity is evidenced by finds of Mortlake-style Peterborough Ware from two small groups of shallow pits near to one of the Early Neolithic structures. Two small, round, post- and stake-built structures probably date from the Late Neolithic. They were associated with numerous groups of pits distributed widely across the sites. The pits contained varied assemblages consisting of Clacton-style Grooved Ware, worked flint, animal bones, charred plant remains, charcoal, fired clay, a

polished ironstone ball and possibly cremated human remains.

A settlement, characterised by numerous four-post structures and pits, was occupied in the Early–Middle Iron Age. The pits around this settlement are characterised by differing kinds of finds, which include a cremation burial associated with a set of iron tools, iron-working and production debris, human burials and disarticulated remains, as well as large quantities of pottery, animal bone and charred plant remains. In the Late Iron Age–Early Roman period a series of trackways was laid out across the site. A trackway that may have formed part of the Rochester to Hastings Roman road was also identified.

Fieldwork event: Pilgrim's Way, Boxley
Event code: ARC PIL 98
HS1 chainage: 58+000
NGR: TQ 7525 6030
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: July 1998
End of fieldwork: August 1998
Integrated Site Report reference: Hayden 2006a
Evaluation report reference: OA 1998e
Map Window 13

The evaluation comprised a total of 13 trenches. The features in this area comprised six pits, a cremation burial, and two ditches. Both ditches produced Late Bronze Age/Early Iron Age pottery. The cremation burial contained a flat-topped bone pin, which indicates a date in the Iron Age or Roman period. None of the other pits produced artefactual evidence. However, two contained fragments of broken sarsen, which suggests that the pits may be the result of removing sarsen boulders from the ploughsoil.

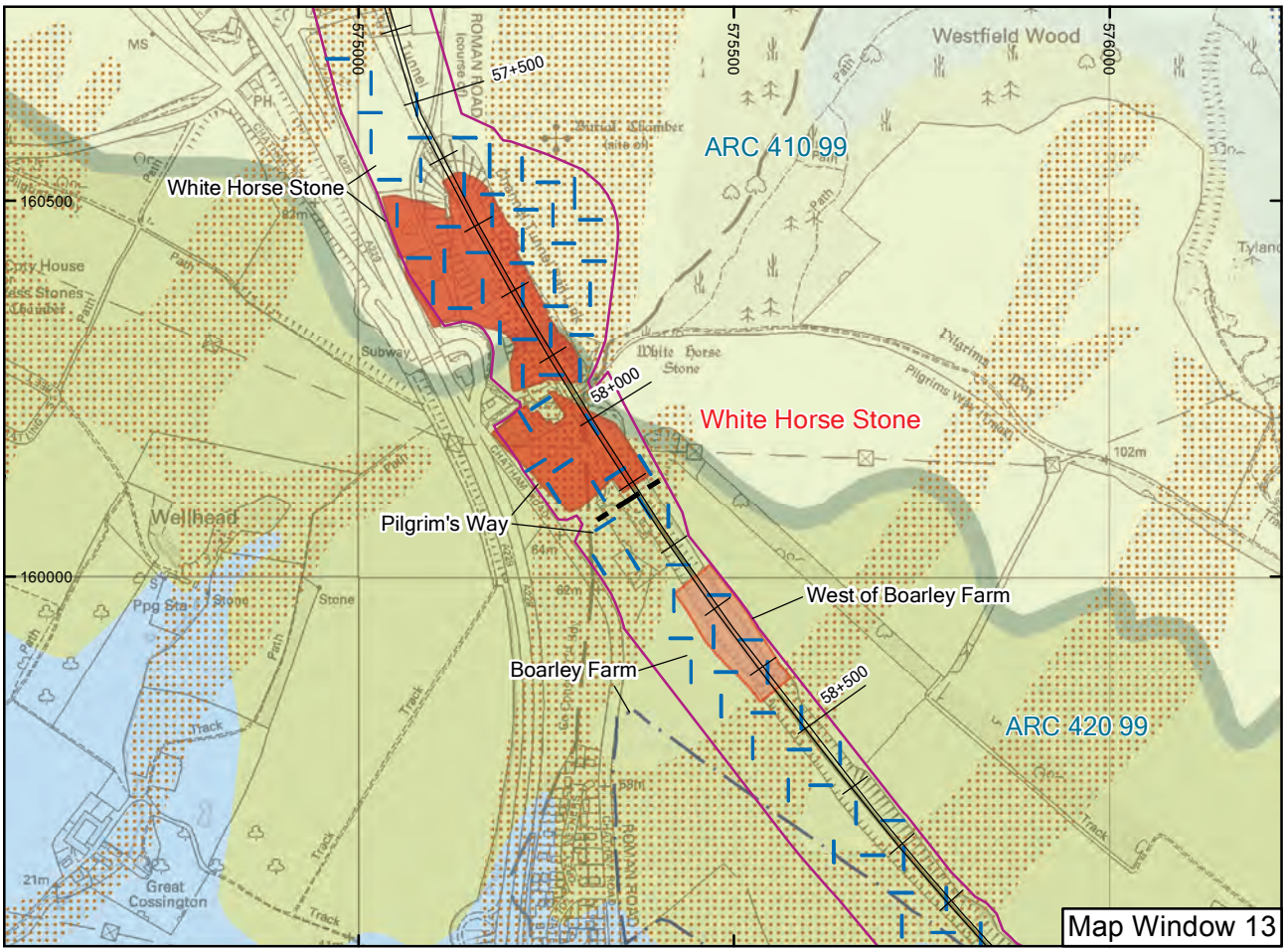
A buried soil was identified in three of the trenches. Two small pottery sherds were recovered from the buried soil, and while the dating of these sherds is inconclusive, an Iron Age date is likely.

Fieldwork event: Pilgrim's Way, Boxley
Event code: ARC PIL 98
HS1 chainage: 58+000
NGR: TQ 7525 6030
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: October 1998
End of fieldwork: February 1999
Integrated Site Report reference: Hayden 2006a
Map Window 13

A possible Early Neolithic structure similar to that at White Horse Stone was located in the south-eastern corner of the site. The distribution of Late Neolithic features recorded at White Horse Stone extended into the western side of the Pilgrim's Way site, but no definite structures could be identified.

A distinct cluster of 81 postholes and two pits dating from the Middle Bronze Age was found near the centre of the site, and included a roughly rectangular structure. A second cluster of postholes near the eastern edge of the Pilgrim's Way site also contained a possible circular structure.

The trackway that may have formed part of the Rochester to Hastings Roman road also extended through this site.



A section cut across the Pilgrim's Way shows that the trackway at this location was probably Anglo-Saxon or medieval in origin. A single female late Saxon burial was found lying close to the Pilgrim's Way. A corn-drier, dating from the 12th–15th centuries, a holloway marking the parish boundary, and other features, provides the latest significant evidence for activity on the sites.

PROJECT AREA 420

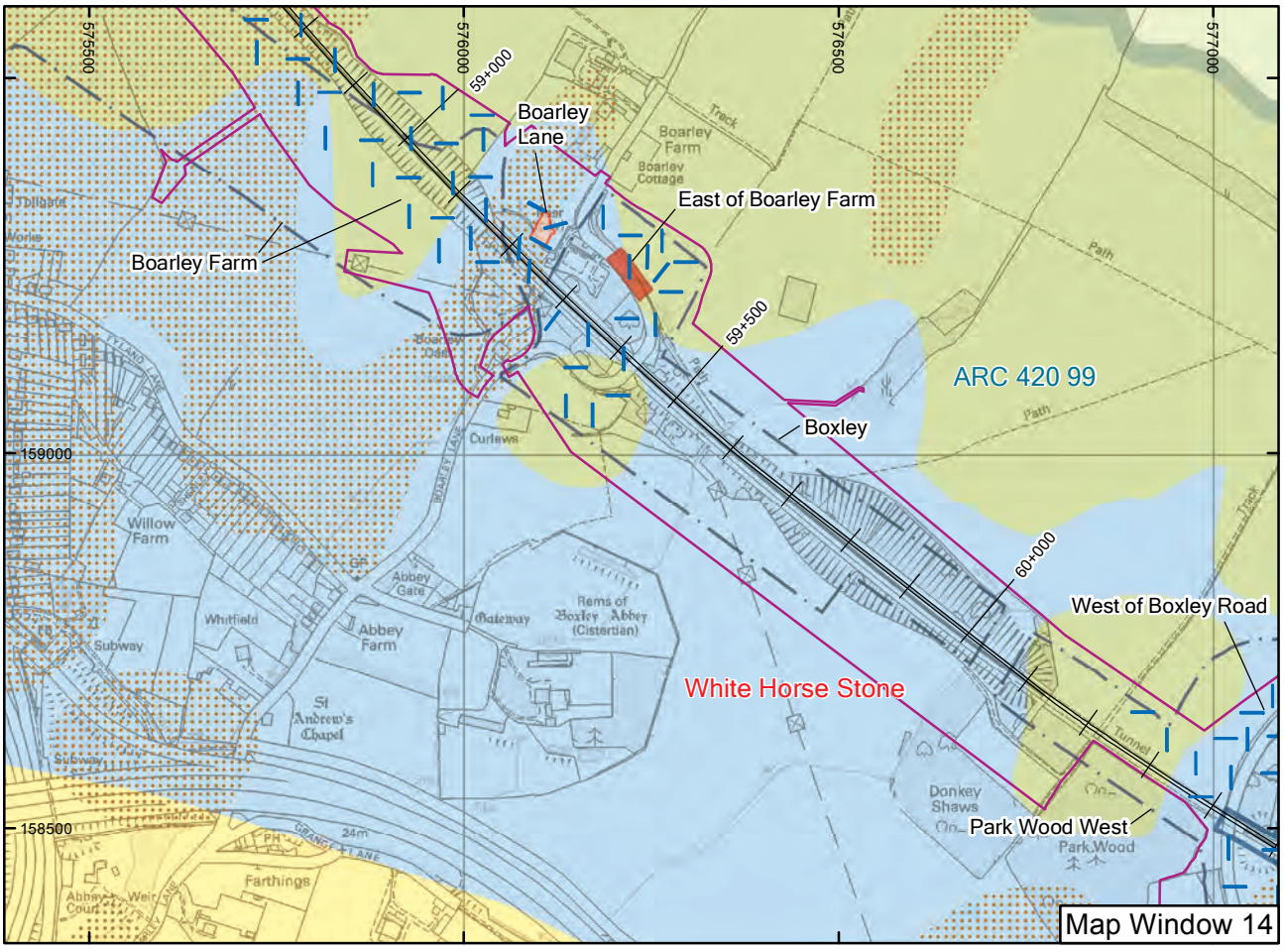
Project Area 420 consists of all permanent and temporary land-take associated with construction of the HS1, from West of Boarley Farm, Boxley (TQ 7530 6010) to East of Lenham Heath (TQ 9180 9200). This includes the railway trace (at grade, within cuttings and on embankments), bridges and associated works (mitigation earthworks, construction sites, transformer stations etc.). Areas previously subject to detailed or strip, map and sample excavation were excluded from the monitoring. Areas that were known not to contain significant deposits (for example tunnels, and areas of known large-scale modern disturbance) were also excluded. All watching brief fieldwork in this route section was undertaken by Oxford Archaeology. Significant individual discoveries are listed as fieldwork events below and in an interim report on the ADS website (WB 2000a). Significant individual discoveries are the subject of Integrated Site Reports (cf. East of Hockers Lane; Eyhorne Street) and/or post-excavation assessments (cf West of Sittingbourne Road). Unlike the areas of chalk geology (Project Area 330), it was generally not possible to obtain a coherent feature map under watching brief conditions except in 'targeted watching brief' areas where soil stripping methods were modified to an archaeological specification (in which excavators were fitted with toothless ditching buckets, and dump trucks were prohibited from running on stripped areas).

Fieldwork event: West of Boarley Farm, Boxley
Event code: ARC BFW 98
HS1 chainage: 58+400
NGR: TQ 7560 5990
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: November 1998
End of fieldwork: December 1998
Integrated Site Report reference: Hayden 2006a
Map Window 13

Dispersed activity on this site included pits, postholes and animal burials, the latter radiocarbon dated to the Mid-Saxon period.

Fieldwork event: Boarley Farm, Boxley
Event code: URL 93
HS1 chainage: 58+400 - 59+200
NGR: TQ 7571 5946
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Windows 13–14

Fieldwork event: Boarley Farm
Event code: ARC BFM 97
HS1 chainage: 58+400



NGR: TQ 7560 5990
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: May 1997
Integrated Site Report reference: Hayden 2006a
Evaluation report reference: MoLA 1997l
Map Windows 13–14

The evaluation comprised a total of 66 trenches, each measuring 30m x 1.5m. Two areas of Late Iron Age–Early Roman occupation were identified. The first was situated on high ground in the western part of the site and comprised two animal burials (a cow and a sheep), a posthole, pit and a ditch. The second area was situated to the east of the site, on low ground, where a concentration of 34 postholes and four pits was recorded.

A very large medieval/post-medieval quarry pit and a boundary ditch were recorded on high ground to the south-west of Boarley Farm. To the east of Boarley Farm a medieval/post-medieval road appeared to be aligned NE-SW along the edge of the site. This road may have connected Boxley Abbey (to the south) with the Pilgrim's Way (to the north) and may predate Boarley Lane.

Fieldwork event: Boarley Lane, Maidstone
Event code: ARC BOL 98
HS1 chainage: 59+200
NGR: TQ 7610 5930
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: December 1998
End of fieldwork: December 1998
Integrated Site Report reference: Hayden 2006a
Evaluation report reference: OA 1999d
Map Window 14

A total of five trenches were excavated. A ditch, tree-throw hole and a possible erosion gully were revealed to the south-west of the site. All of these features contained Late Neolithic and Bronze Age struck flints. The possible erosion gully also contained a single small, abraded sherd of prehistoric pottery, possibly Beaker. A very large feature at the south of the site could not be positively identified due to persistent flooding but it is likely to have been caused by erosion, close to the present stream course. A small, undated pit and a large quarry pit, probably dating to the medieval period, were also recorded.

Fieldwork event: Boarley Lane, Maidstone
Event code: ARC 420 99
HS1 chainage: 59+000
NGR: TQ 7600 5930
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: November 1998
End of fieldwork: September 2000
Integrated Site Report reference: Hayden 2006a
Watching brief report reference: WB 2000a
Map Window 14

An area 22m x 50m was excavated following the discovery of a group of medieval features during construction earthworks near Boarley Farm. The most significant aspect of these features was the large assemblage of mid to late 13th century pottery they contained. Although the precise function of the features is unclear it seems that they were associated with a now demolished structure. No further traces of this structure were found in the watching brief.

Fieldwork event: East of Boarley Farm
Event code: ARC BFE 99
HS1 chainage: 59+200
NGR: TQ 7625 5935
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Integrated Site Report reference: Hayden 2006a
Map Window 14

The trench was located within the trace of the rail link cutting, immediately to the south of an area of Late Iron Age/Early Roman activity, identified to the east of Boarley Farm during the evaluation, that was designated for preservation *in situ*. A single ditch, dated to the Late Iron Age/Early Roman period by a small pottery assemblage, and three undated postholes were the only definite archaeological features identified. Other features and deposits which produced small quantities of residual Late Iron Age/Early pottery and worked flint, are interpreted as resulting from colluvial erosion and deposition.

Fieldwork event: Boxley
Event code: URL 90
HS1 chainage: 59+200 - 60+050
NGR: TQ 7629 5908
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window: 14

Fieldwork event: Park Wood West
Event code: URL 90
HS1 chainage: 59+200 - 60+050
NGR: TQ 7629 5908
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window: 14

PRINCIPAL SITE: SITTINGBOURNE ROAD, BOXLEY
Project Area 420
Chainage limits: 60+000 - 62+200
Parishes crossed: Boxley, Detling
PX assessment report reference (no ISR): URS 2000h
Map Windows 14–15

Fieldwork event: West of Boxley Road, Detling
Event code: ARC BXRW 95
HS1 chainage: 60+400
NGR: TQ 7710 5860
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 15

Fieldwork event: Boxley Road (West of), Maidstone
Event code: ARC BXR 97
HS1 chainage: 60+400
NGR: TQ 7710 5860
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: May 1999
End of fieldwork: May 1999
Evaluation report reference: URS 2000h
Map Window 15

The evaluation comprised a total of 22 trenches, and identified two ditches of Late Iron Age and Roman date, probably representing two phases of the same boundary, and a medieval boundary ditch.

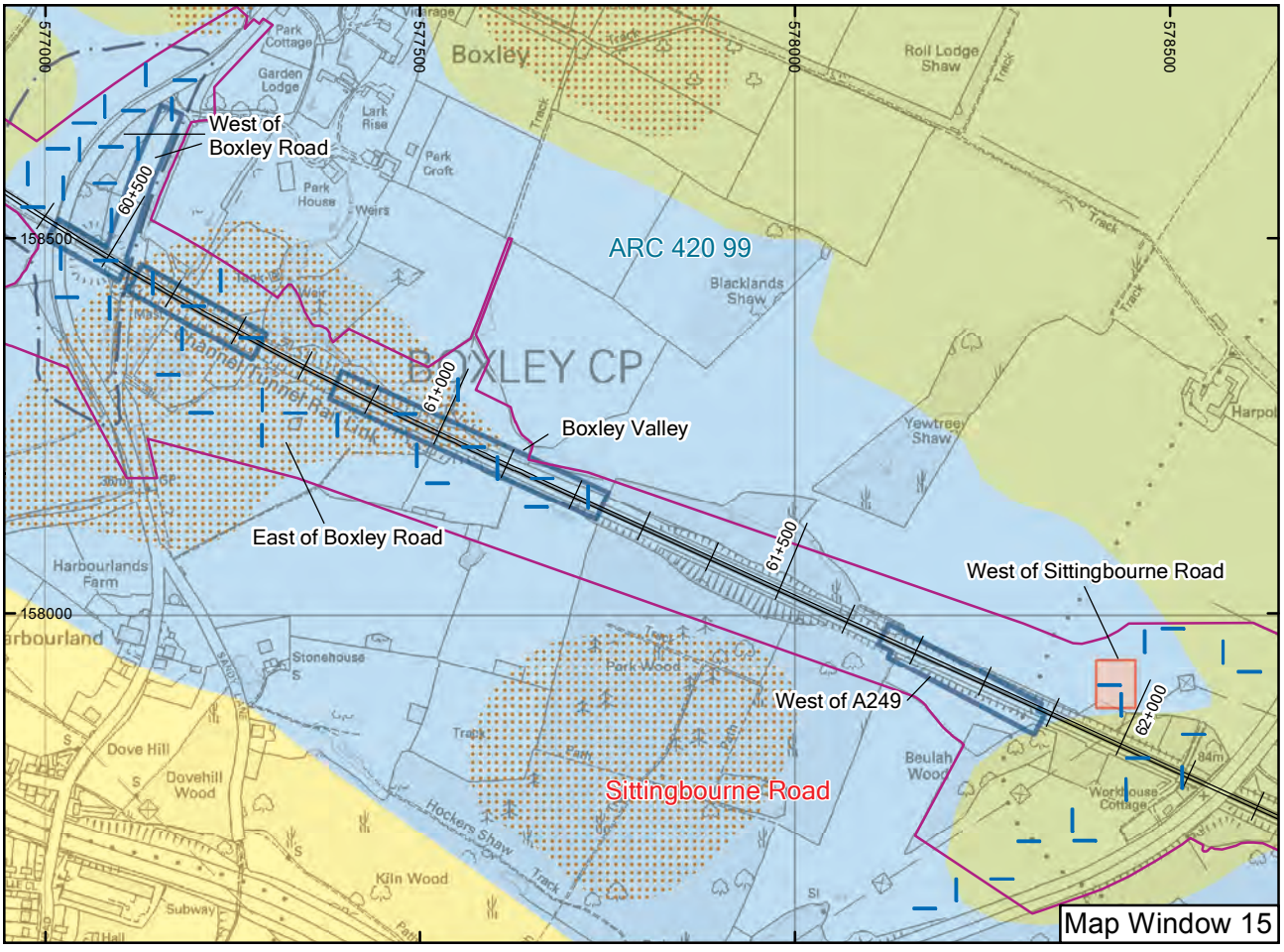
Fieldwork event: Boxley Valley, Detling
Event code: ARC BVX 95
HS1 chainage: 60+900
NGR: TQ 7740 5825
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996b
Map Window 15

Fieldwork event: Boxley Road (East of), Maidstone
Event code: ARC EBR 99
HS1 chainage: 60+900
NGR: TQ 7740 5825
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: March 1999
End of fieldwork: March 1999
Evaluation report reference: OA 1999e
Map Window 15

Twenty evaluation trenches were excavated in an area of *c* 13 hectares. The only archaeological features discovered comprised a small number of shallow ditches mostly concentrated toward the west end of the site and an irregular-linear feature of uncertain function. The only finds recovered consisted of small fragments of post-medieval tile, burnt flint and four sherds of redeposited later prehistoric pottery. A large majority, if not all, of the ditches appeared to be post-medieval in date, and their sterile fills suggested that they were most probably associated with drainage and field boundaries.

Fieldwork event: West of A249, Detling
Event code: ARC DTGW 95
HS1 chainage: 61+900
NGR: TQ 7840 5790
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 15

Fieldwork event: West of Sittingbourne Road, Maidstone
Event code: ARC WEA 99
HS1 chainage: 61+900
NGR: TQ 7840 5790



Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: March 1999
End of fieldwork: March 1999
PX assessment report reference (no ISR): URS 2000h
Map Window 15

The evaluation comprised a total of 19 trenches, and located a sub-circular ditched enclosure dating from the 11th to early 12th century. Other features on the site were post-medieval in date and included two ditches and a large quarry pit. A single undated ditch was situated on the line of the boundary between the parishes of Detling and Boxley.

Fieldwork event: West of Sittingbourne Road, Maidstone
Event code: ARC WEA 99
HS1 chainage: 61+900
NGR: TQ 7840 5790
Contractor: Oxford Archaeology
Type of investigation: Targeted watching brief
Start of fieldwork: March 1999
End of fieldwork: March 1999
PX assessment report reference (no ISR): URS 2000h
Map Window 15

A watching brief on earth-moving operations between Pilgrim's Way and Lenham exposed a medieval sub-circular ditched enclosure at West of Sittingbourne Road. Although the features were heavily truncated by archaeologically unsupervised machine stripping in the south-west quadrant of the enclosure, the investigation revealed the remnants of an entrance and three pits, two within the enclosure and one without. All contained 11th–13th century pottery and small assemblages of animal bones and oyster shells. Subsoil stripping was rapidly halted and the remainder of the enclosure fenced to prevent further damage. The undamaged part of the site will be preserved outside the permanent railway fenceline.

PRINCIPAL SITE: THURNHAM ROMAN VILLA
Project Area 420
Chainage limits: 62+200 - 66+350
Parishes crossed: Detling, Thurnham
Integrated Site Report reference: Lawrence 2006
Map Window 16

Fieldwork event: East of Hockers Lane, Detling
Event code: ARC EHL 99
HS1 chainage: 62+800
NGR: TQ 7920 5750
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: March 1999
End of fieldwork: April 1999
Integrated Site Report reference: Lawrence 2006
Evaluation report reference: OA 1999h
Map Window 16

The evaluation comprised a total of seven trenches. A cluster of ditches, gullies, pits and postholes was identified, some of which were of Late Iron Age/Early Roman date and the remainder undated.

Fieldwork event: East of Hockers Lane, Detling
Event code: ARC EHL 99
HS1 chainage: 62+800
NGR: TQ 7920 5750
Contractor: Oxford Archaeology
Type of investigation: Targeted watching brief
Start of fieldwork: June 1999
End of fieldwork: January 2000
Integrated Site Report reference: Lawrence 2006
Map Window 16

A series of curvilinear settlement enclosures probably dating from the 1st century BC to the mid-1st century AD was discovered by evaluation trenching and investigated during the construction programme as a targeted watching brief. The results are included in the Thurnham Roman Villa report (see below).

Fieldwork event: Honeyhills Wood, Thurnham
Event code: ARC HHW 97
HS1 chainage: 63+400
NGR: TQ 7970 5720
Contractor: Oxford Archaeology
Type of investigation: Earthwork survey
Start of fieldwork: March 1997
End of fieldwork: March 1997
Integrated Site Report reference: Lawrence 2006
Map Window 16

A walkover survey identified a series of low ditch and bank earthworks in Honeyhills Wood. These were surveyed by OA in 1997 and appeared to be part of a layout of rectilinear enclosures. The western ditch and bank alignment corresponds to the historical and existing parish boundary between Thurnham and Detling. The other earthworks do not appear on any maps, possibly indicating that they were of some antiquity by the time the earliest maps of the area were drawn.

Fieldwork event: Honeyhills Wood, Thurnham
Event code: ARC HHW 98
HS1 chainage: 63+400
NGR: TQ 7970 5720
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: November 1998
End of fieldwork: May 1999
Integrated Site Report reference: Lawrence 2006
Map Window 16

Trenches excavated in Honeyhills wood, immediately adjacent to the Thurnham villa complex, demonstrated that Roman occupation did not extend into the wood, and strongly suggest that the wood was in existence when the Iron Age settlement and later villa complex were established. The earthworks in the wood, which do not form a clear pattern, were very shallow and were not associated with subsoil features. Insufficient artefactual material was recovered to indicate their date of origin.

Fieldwork event: Thurnham Roman Villa
Event code: ARC THM 95
HS1 chainage: 63+500
NGR: TQ 7980 5720
Contractor: Stratascan
Type of investigation: Geophysical survey
Start of fieldwork: January 1995
End of fieldwork: January 1995
Integrated Site Report reference: Lawrence 2006

Survey report reference: Stratascan 1995
Map Window 16

Resistivity and magnetometry surveys carried out at the site of Thurnham Roman villa revealed the main villa building and parts of the associated complex including a hitherto unknown aisled building, a number of small anomalies that may represent subsidiary structures or enclosures, and linear features that may be the outer wall or palisade of the villa precinct.

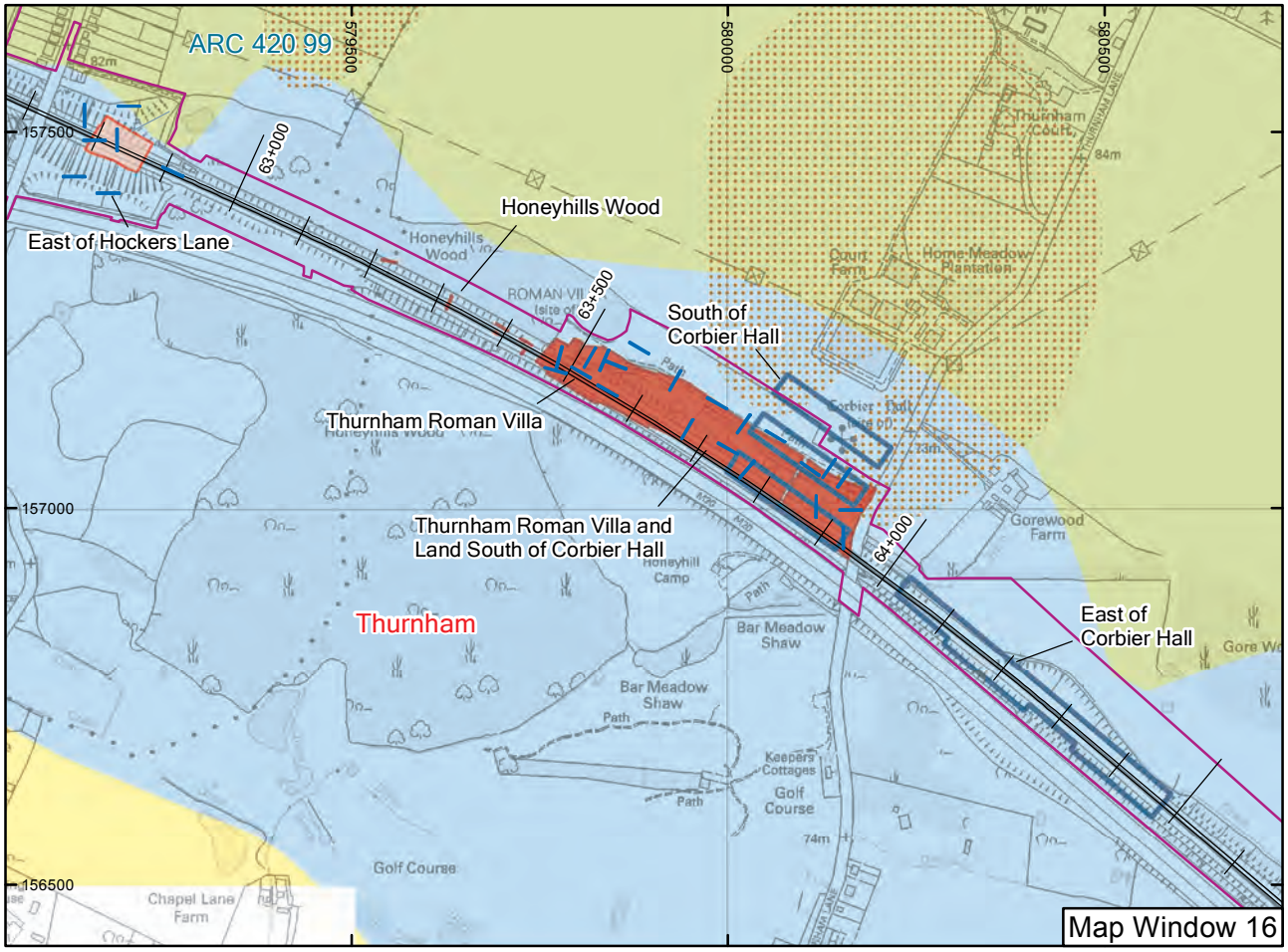
Fieldwork event: Thurnham Roman villa and land south of Corbier Hall, Thurnham
Event code: ARC THM 96
HS1 chainage: 63+500
NGR: TQ 7980 5720
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: November 1996
End of fieldwork: November 1996
Integrated Site Report reference: Lawrence 2006
Evaluation report reference: OA 1997j
Map Window 16

The evaluation comprised a total of 23 trenches. The site of the Scheduled Ancient Monument of Thurnham Roman Villa was examined together with a corridor to the south-east which included land close to the Scheduled Ancient Monument of medieval Corbier Hall. The wall footings of the villa were revealed, together with the footings of an aisled building 50m to the east and evidence of other structures in adjacent trenches. Archaeological deposits, including ditches, pits, cobbled spreads and building debris, were widespread in an area extending for 200m NW-SE. Stratified deposits were found under the villa and aisled building, and in other areas on the slope of the knoll, but were generally absent elsewhere. The pottery was nearly all dateable to the 1st and 2nd centuries AD, with a pre-conquest component almost certainly present. The 'moat' of Corbier Hall was revealed.

Fieldwork event: Thurnham Roman villa
Event code: ARC THM 98
HS1 chainage: 63+500
NGR: TQ 7980 5720
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation and strip, map and sample excavation
Start of fieldwork: November 1998
End of fieldwork: June 1999
Integrated Site Report reference: Lawrence 2006
Map Window 16

The earliest evidence of human activity was represented by individual flint artefacts distributed across the site. No significant *in situ* scatters were present although a single microlith points to an early presence on the site. The first substantive remains were represented by an isolated large ramped waterhole. This appears to be of Middle Bronze Age date (*c* 1600–1100 BC) and contained a pin and a dagger of that period, possibly deposited as part of a closing ritual when the feature was back-filled.

Evidence for permanent settlement first appears in the Late Iron Age, first at Hockers Lane, followed by the establishment of a large enclosed settlement at Thurnham. Activity at Hockers Lane consisted of a sequence of curving gully enclosures. Little



physical remains of structures survived within the enclosed area, although a fairly large material culture assemblage points to probable domestic occupation from the second half of the 2nd century BC at the earliest, extending up to the conquest period but probably not much beyond.

Occupation at Hockers Lane may have been succeeded by, or slightly overlapped with, the earliest settlement at Thurnham. This consisted of a large rectilinear enclosure of two phases, containing traces of two roundhouses and two four-post structures, occupying an area of raised ground. The rectilinear enclosure was modified and extended *c* AD 60. At the same time a Romanised proto-villa building, with a tiled roof and painted plaster walls, was constructed as the settlement focus, complemented by a similar-sized possible temple building to the south. The pottery and other finds from this period hint at continuity of site ownership or tenure on either side of AD 43. Outside the enclosure, another possible religious or ritual focus was present, in the form of a massive free-standing post, raised on the approach to the entrance. The structural changes at this time were accompanied by a large increase in the quantities of charred cereal remains deposited in features, indicating an intensification of agricultural production at the site.

A larger stone-built villa replaced the proto-villa structure in the early 2nd century, and the enclosure was extended and modified at the same time. The stone villa was built over the top of the Iron Age enclosure ditch, which was deliberately in-filled. The replacement enclosure boundary was defined by substantial fences that enclosed the rear and side of the villa building. Slightly after the completion of the villa, an aisled building of similar dimensions was constructed to the north-east. The enclosure was also extended to the north, beyond the limit of excavation, and an evaluation trench in this area suggests that a further building may exist here.

The possible temple was demolished in the later 2nd century, and a large gated entrance was added, roughly central to the axis of the villa. Possibly as part of these changes, or shortly after, a small bath house was added to the southern end of the villa and a large square extension, with a forward projecting apse, was added to the northern end. Relatively good dating evidence places this work in the last quarter of the second century. Further development included the construction of a 14-post timber agricultural building outside the core enclosure.

No further structural additions were made after the early 3rd century, and later activity at the site is characterised by a distinct change in the character of occupation. None of the boundaries were maintained and the bath house was either demolished or allowed to collapse by the late 3rd century. At this point the central room of the villa was converted into a small smithy that was probably engaged in the recycling of collected scrap iron. The aisled building was no longer standing by the turn of the 3rd century and appears to have been deliberately demolished. However, the estate apparently continued to act as a focus of agricultural production, as a corn-drier was built on the site of the 14-post building in the later Roman period. This feature appears to have been the main focus of activity on the site, particularly in the later part of the 4th century and produced large assemblages of associated charred cereals. Combined with the general paucity of clear domestic occupation and associated finds assemblages, these developments suggest that the villa ceased to function as a high status occupation site, possibly being subsumed into a larger estate by this time. A large oven within the main villa building is the only clear evidence for late Roman domestic occupation. The area of the corn-drier seems to have provided the focus for continued ritual activity, as wild animals were deliberately buried in the shaft of a well.

There is no evidence for occupation or land-use after the start of the 5th century, until the establishment of Corbier Hall moated manor (SAM KE 309) on the low lying ground to the east of the former villa. Evidence from this area includes peripheral features of the manor, containing artefacts of 12th to 13th century date. The moat ditch was maintained into the post-medieval period and incorporated into a system of post-medieval land drainage ditches. Post-medieval land use was characterised by pasture and woodland, until the intensification of arable farming after the Second World War, when all upstanding features of Corbier Hall and the surrounding woodland were removed and levelled.

Fieldwork event: South of Corbier Hall
Event code: ARC CHS 95
HS1 chainage: 63+800
NGR: TQ 8015 5700
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995b
Map Window 16

Detailed gradiometer and resistance surveys were undertaken. The resistance survey successfully located anomalies indicating the remains of the medieval moated manor site of Corbier Hall, a Scheduled Ancient Monument. Although a low resistance anomaly suggestive of a moat have been recorded, interpretation is confused by the known presence of an open drain visible on OS maps. The gradiometry data was affected by modern ferrous disturbance and identified no archaeological features.

Fieldwork event: East of Corbier Hall, Thurnham
Event code: ARC CHE 95
HS1 chainage: 64+200
NGR: TQ 8030 5680
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Lawrence 2006
Survey report reference: ABA 1996a
Map Window 16

PRINCIPAL SITE: SNARKHURST WOOD
Project Area 420
Chainage limits: 66+300 - 68+100
Parishes crossed: Hollingbourne
Integrated Site Report reference: Diez 2006c
Map Window 17

Fieldwork event: Crismill Lane, Maidstone
Event code: ARC CSM 98
HS 1 chainage: 64+500
NGR: TQ 8175 5580
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Integrated Site Report reference: Diez 2006c
Evaluation report reference: OA 1999g
Map Window 17

The evaluation comprised a total of nine trenches. A single undated possible pit or ditch was uncovered.

Fieldwork event: Woodcut Farm
Event code: URL 90
HS1 chainage: 64+400 - 65+700
NGR: TQ 8200 5540
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 17

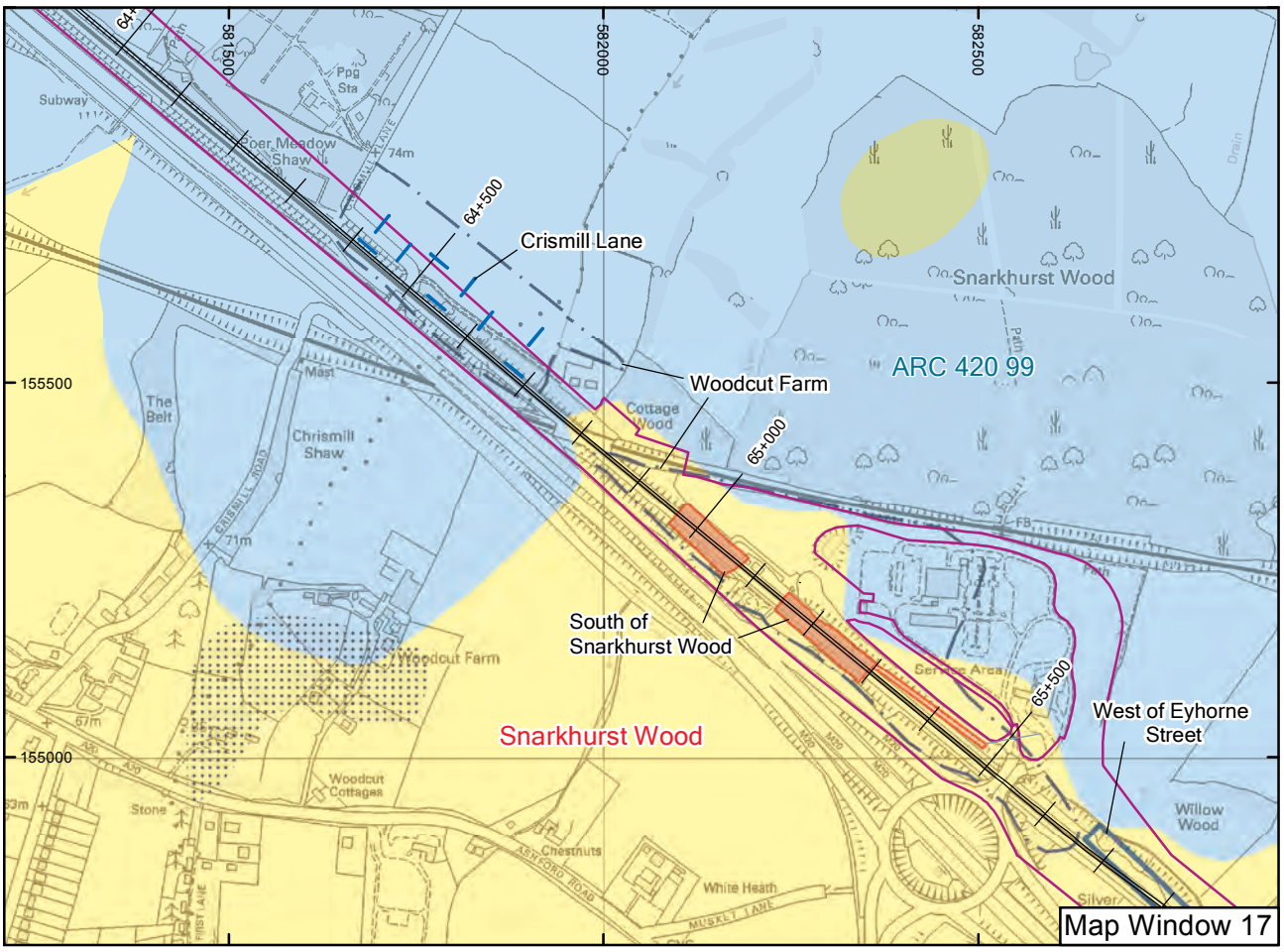
Fieldwork event: Land south of Snarkhurst Wood, Hollingbourne
Event code: ARC SNK 95
HS 1 chainage: 65+100
NGR: TQ 823 552
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: November 1995
End of fieldwork: November 1995
Integrated Site Report reference: Diez 2006c
Evaluation report reference: OA 1996
Map Window 17

The evaluation comprised a total of 19 trenches. A single pit containing Mesolithic or early Neolithic worked flint was identified, and Iron Age and early Roman features of possibly domestic character.

Fieldwork event: Land south of Snarkhurst Wood, Hollingbourne
Event code: ARC SNK 99
HS 1 chainage: 65+100
NGR: TQ 8230 5520
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: January 1999
End of fieldwork: February 1999
Integrated Site Report reference: Diez 2006c
Map Window 17

The excavation produced evidence for a settlement of Late Iron Age and Early Roman date. Features included rectangular and sub-rectangular enclosure ditches and several posthole structures, including one small, circular building with a central post and five four-post structures. Other evidence for occupation included a small kiln or furnace associated with metal-working slag, and several storage or rubbish pits. Burial evidence was restricted to a single cremation. The features were overlain by elements of the post-medieval field system and a possible trackway.

PRINCIPAL SITE: EYHORNE STREET
Project Area 420
Chainage limits: 68+100 - 68+500
Parishes crossed: Hollingbourne
Integrated Site Report reference: Hayden 2006b
Map Window 18



Fieldwork event: West of Eyhorne Street
Event code: ARC ESTW 95
HS1 chainage: 68+000
NGR: TQ 8350 5430
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Hayden 2006b
Survey report reference: GSB 1995c
Map Window 18

Although some areas of enhanced response were noted, they were most likely to be due to modern disturbance or localised contamination.

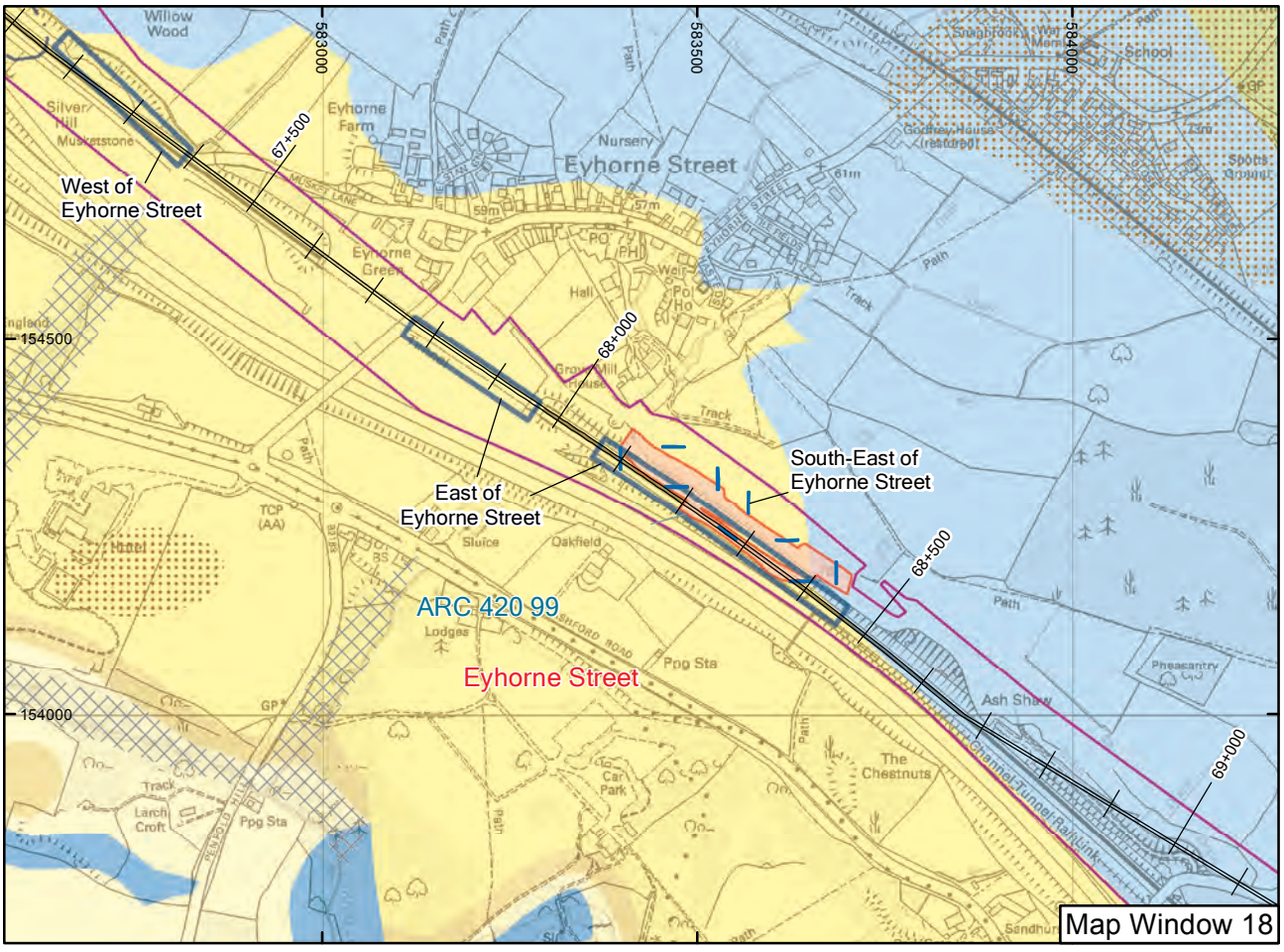
Fieldwork event: East of Eyhorne Street
Event code: ARC ESTE 95
HS1 chainage: 68+400
NGR: TQ 8350 5430
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Hayden 2006b
Survey report reference: GSB 1995c
Map Window 18

Survey of the western half of the site was hindered by modern ferrous debris on the surface and in the topsoil. Given the levels of magnetic noise, it is unlikely that scanning would have located weaker responses of possible archaeological interest, if present. The eastern half was much quieter magnetically and scanning located several responses of possible interest.

Fieldwork event: South-East of Eyhorne Street
Event code: ARC SEE 99
HS1 chainage: 68+000
NGR: TQ 8350 5430
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: May 1999
End of fieldwork: May 1999
Integrated Site Report reference: Hayden 2006b
Evaluation report reference: WA 1999b
Map Window 18

The evaluation revealed a total of fourteen features and deposits of archaeological interest, including six ditches, three pits, one posthole, one tree-throw and an extant lynchet earthwork. Of the datable features, one ditch appears to be post-medieval in date, whilst the remainder have been identified as Late Bronze Age, with the exception of a tree-throw producing a small quantity of Late Iron Age/Roman pottery.

Fieldwork event: SE of Eyhorne Street
Event code: ARC 420 99
HS1 chainage: 68+200
NGR: TQ 8350 5430
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: November 1998
End of fieldwork: September 2000



Integrated Site Report Reference: Hayden 2006b
Map Window 18

This watching brief revealed artefacts and features dating from at least five phases of activity, the most significant of which date from the Neolithic and the Iron Age. The earliest activities on the site are represented by two residual Mesolithic microliths and by a small number of residual Early–Middle Neolithic sherds. Probable Neolithic worked flint was found in a group of pits and a tree-throw hole. A quite dense scatter of tree-throw holes was excavated along the western side of the site. This worked flint provides the only dating evidence for these features. They need not, however, all be of the same date. A distinct group of smaller, circular tree holes, perhaps deriving from deliberate clearance of small trees or shrubs, may post-date this phase. Two pits provide evidence for Late Neolithic activity (*c* 2900–2500 cal BC) associated with Grooved Ware. One of these pits was distinguished by an unusual deposit containing decorated Grooved Ware, a decorated clay object, and a charred crab apple. A pair of small pits containing very small quantities of possibly residual cremated human remains, charred hazelnuts, and Beaker sherds, and another, more distant pit provide evidence for activity between *c* 2300 and 1900 cal BC. Following this, activity on the site resumed only in the Early and Middle Iron Age (*c* 600–200 cal BC). The evidence from this phase consists of some very shallow ditches, a sequence of hollows, and eight pits which may have lain at the edge of a more extensive settlement. As well as rich deposits of charred grain and pottery, and a little animal bone, the pits also contained more exceptional material: a bent iron dagger, a small ceramic cup either imported from or imitating pottery from the Champagne region, and a bowl which was neatly cut in half. Later activity is represented by a post-medieval ditch.

PRINCIPAL SITE: HOLM HILL, HARRIETSHAM
Project Area 420
Chainage limits: 68+500 - 73+000
Parishes crossed: Hollingbourne/ Harrietsham
Integrated Site Report reference: Hayden 2006b
Map Windows 19–20

Fieldwork event: A20 Diversion Holm Hill
Event code: ARC HOL 98
HS1 chainage: 70+000
NGR: TQ 8480 5330
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Integrated Site Report reference: Hayden 2006b
Evaluation report reference: WA 2004a
Map Window 19

The evaluation comprised a total of 39 trenches measuring 30m x 1.8m and two measuring 15m x 1.8m. The evaluation revealed evidence of Late Bronze Age and Roman activity at the site, generally focussed on the main sand ridge crossing the site and the lower ground to the south-east respectively. Insufficient evidence was recorded to characterise the nature of the possible settlement remains.

The absence of significant quantities of finds may suggest that occupation during the Late Bronze Age or Roman periods was not particularly intensive in the immediate area. However, the small concentration of Late Bronze Age pottery and worked flint associated with the features in the general area of trench 3603TT may be considered as more representative of settlement evidence for this period, whilst Roman settlement evidence may be centred on trench 3528TT. The features in the latter trench may be associated with a cropmark complex previously noted in this area.

Other features and finds of note include a possible ditch or palaeochannel that has produced a small assemblage of early prehistoric (ie Mesolithic/earlier Neolithic) worked flint; a large spread of burnt colluvium that may be associated with a former brick industry in the area (suggested by place-name evidence); and stray finds such as a Late Neolithic/Early Bronze Age bullhead flint knife recovered from a topsoil context.

Fieldwork event: A20 Diversion Holm Hill
Event code: ARC HOL 99
HS1 chainage: 70+000
NGR: TQ 8480 5330
Contractor: Wessex Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: March 1999
End of fieldwork: April 1999
PX assessment report reference (no ISR): URS 2001e
Map Window 19

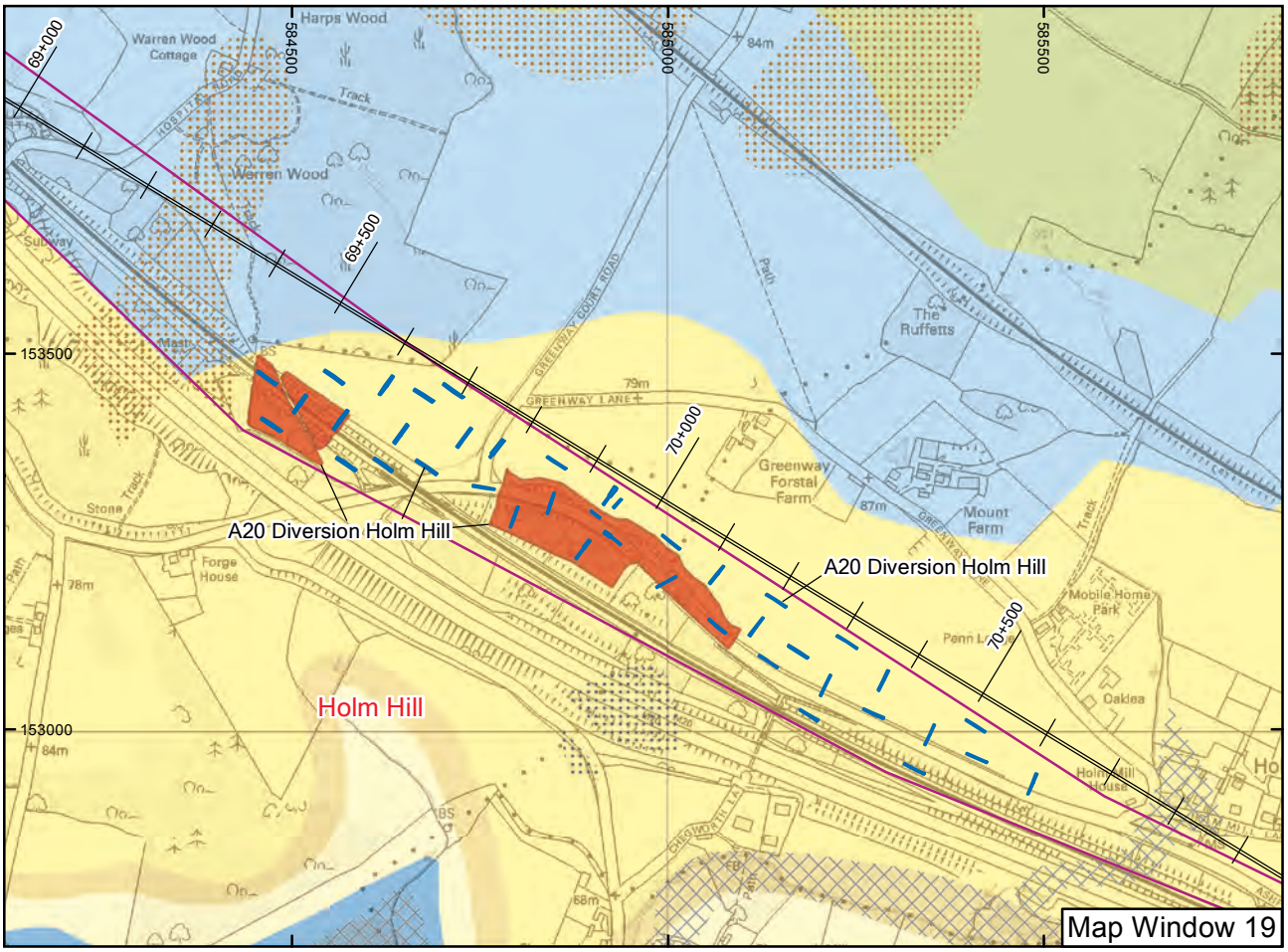
Although relatively few datable artefacts were recovered, sufficient evidence does exist to indicate Early Bronze Age, Late Bronze Age/Early Iron Age, Iron Age, Roman, medieval and post-medieval activity at the site. However, the paucity of datable remains from excavated features restricts opportunities to confidently characterise the nature of such activity

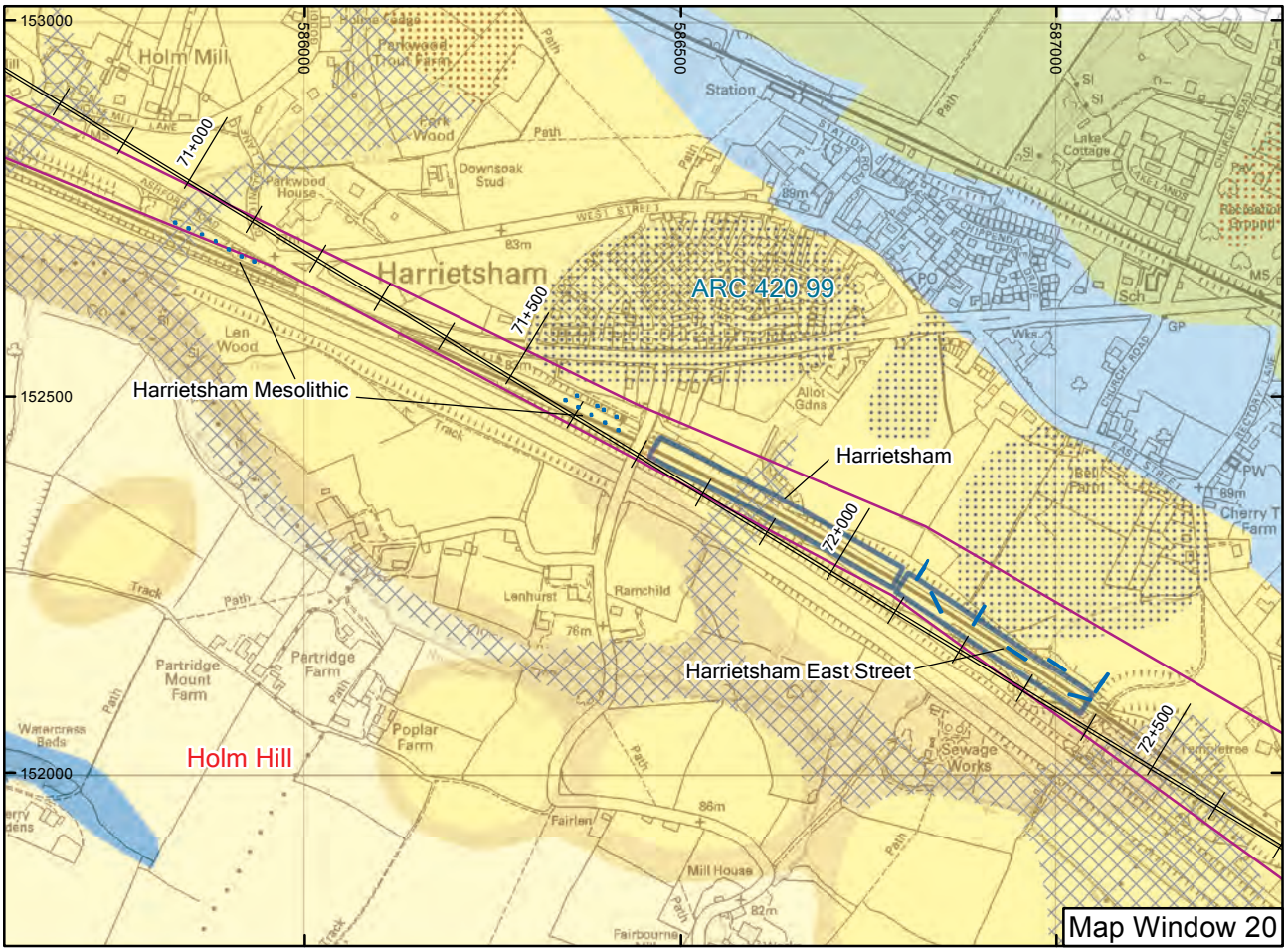
Fieldwork event: Harrietsham
Event code: ARC HRT 95
HS1 chainage: 71+500
NGR: TQ 8635 5250
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1994
End of fieldwork: 1994
Survey report reference (no ISR): GSB 1995d
Map Window 20

Although the magnetic susceptibility varied across this transect, it appeared to be attributable primarily to recent land use and topsoil contamination. One cluster of enhanced readings corresponded to an anomaly located during scanning that may be archaeologically significant but the lack of associated responses makes an archaeological interpretation tentative.

Fieldwork event: Harrietsham Mesolithic
Event code: ARC HRT 97
HS1 chainage: 71+000 and 71+600
NGR: TQ 8590 5270 and TQ 8640 5250
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1997
End of fieldwork: September 1997
Evaluation report reference (no ISR): OA 1997g
Map Window 20

Sixteen one-metre square test-pits were hand excavated to determine the location, extent and composition of any Mesolithic lithic concentrations. The test-pits did not produce the quantity of Mesolithic flints consistent with the earlier recorded flint


69+000
69+500
70+000
70+500
584500
585000
585500
153500
153000
Warren Wood Cottage
Harps Wood
Warren Wood
Track
84m
79m
87m
78m
68m
The Ruffetts
GREENWAY LANE
GREENWAY COURT ROAD
Greenway Forstal Farm
Mount Farm
Forge House
Stone
Mobile Home Park
Oakdea
A20 Diversion Holm Hill
A20 Diversion Holm Hill
Holm Hill
Map Window 19


71+000
71+500
72+000
72+500
586000
586500
587000
153000
152500
152000
Holm Mill
Parkwood Trout Farm
Park Wood
Downsoak Stud
Parkwood House
Harrietsham
ARC 420 99
Station
Lake Cottage
Len Wood
Harrietsham Mesolithic
Harrietsham
Harrietsham East Street
Lenhurst
Ramchild
Partridge Mount Farm
Partridge Farm
Poplar Farm
Watercress Beds
Holm Hill
Sewage Works
Templetree
Fairlen
Mill House
Fairbourne
Cherry T Farm
Map Window 20

scatters in Harrietsham, the bulk of the 194 pieces of worked flint recovered appearing to be Neolithic in date and much of this probably later Neolithic. Colluvial deposits containing medieval pottery were identified on the slopes down to the river.

Fieldwork event: Harrietsham East Street
Event code: ARC HES 98
HS1 chainage: 72+200
NGR: TQ 8690 5220
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Evaluation report reference (no ISR): WA 1999d
Map Window 20

The evaluation comprised a total of seven trenches. Eight archaeological features were recorded, predominantly concentrated within the trenches in the south-east half of the site. These include four ditches and a gully, all undated, a post-medieval palaeochannel and a further two undated palaeochannels.

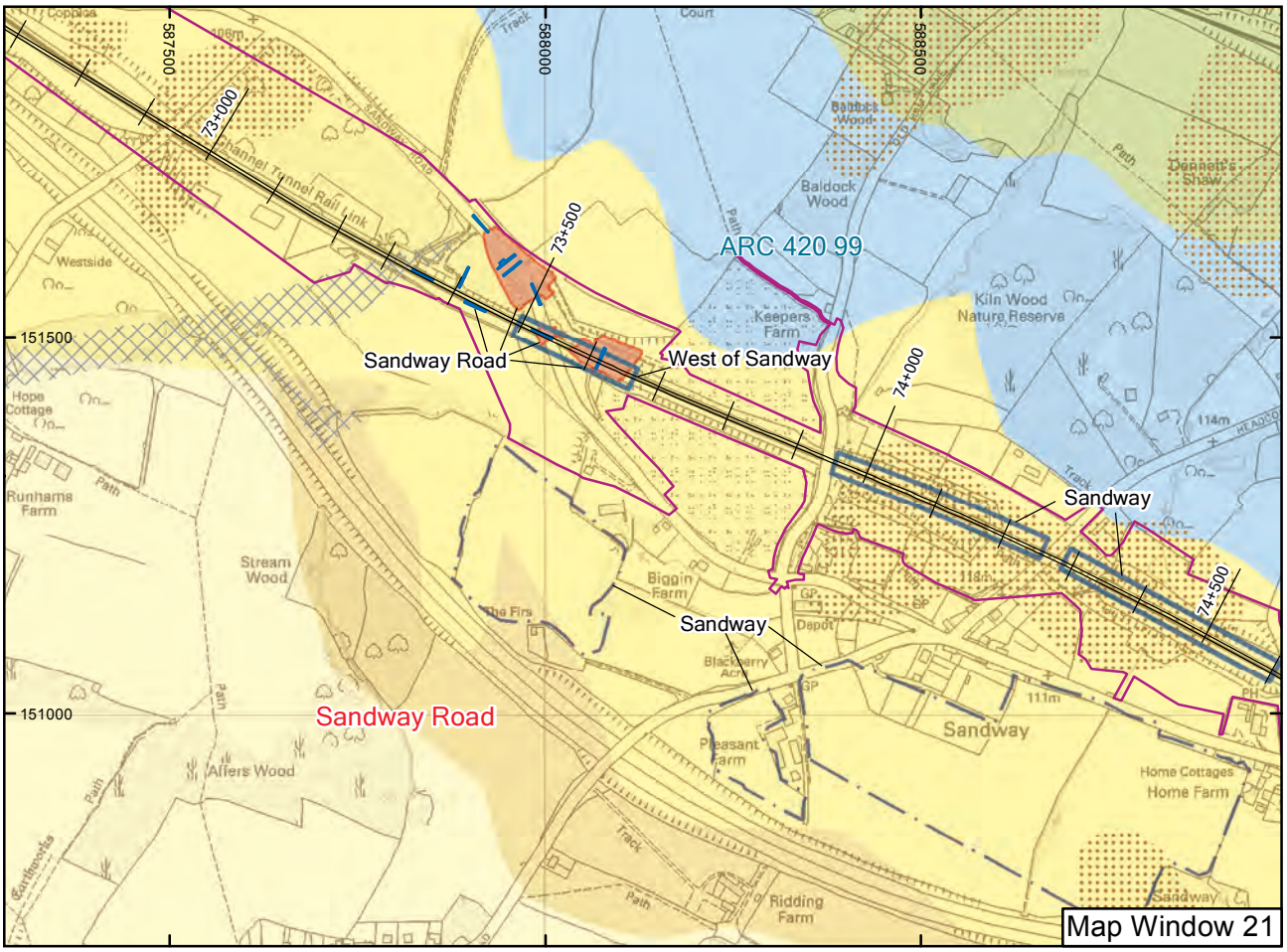
PRINCIPAL SITE: SANDWAY ROAD, LENHAM
Project Area 420
Chainage limits: 73+000 - 74+700
Parishes crossed: Lenham
Integrated Site Report reference: Trevarthen 2006
Map Window 21

Fieldwork event: Sandway
Event code: ARC SND 95
HS1 chainage: 74+000
NGR: TQ 8830 5100
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1994
End of fieldwork: 1994
Integrated Site Report reference: Trevarthen 2006
Survey report reference (no ISR): GSB 1995i
Map Window 21

Although scanning identified a few anomalies of possible archaeological interest, their association with obviously ferrous responses casts some doubt on such an interpretation. The results of the magnetic susceptibility survey showed a great deal of variation. While some of this may be attributable to archaeological factors, recent land use seems to be a more probable cause.

Fieldwork event: West of Sandway
Event code: ARC SNDW 95
HS1 chainage: 73+600
NGR: TQ 8800 5120
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1994
End of fieldwork: 1994
Integrated Site Report reference: Trevarthen 2006
Survey report reference (no ISR): GSB 1995i
Map Window 21

No indication of archaeologically significant responses was identified.



Fieldwork event: Sandway Road, nr Sandway
Event code: ARC SWR 98
HS1 chainage: 73+500
NGR: TQ 8800 5150
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Integrated Site Report reference: Trevarthen 2006
Evaluation report reference: WA 1999h
Map Window 21

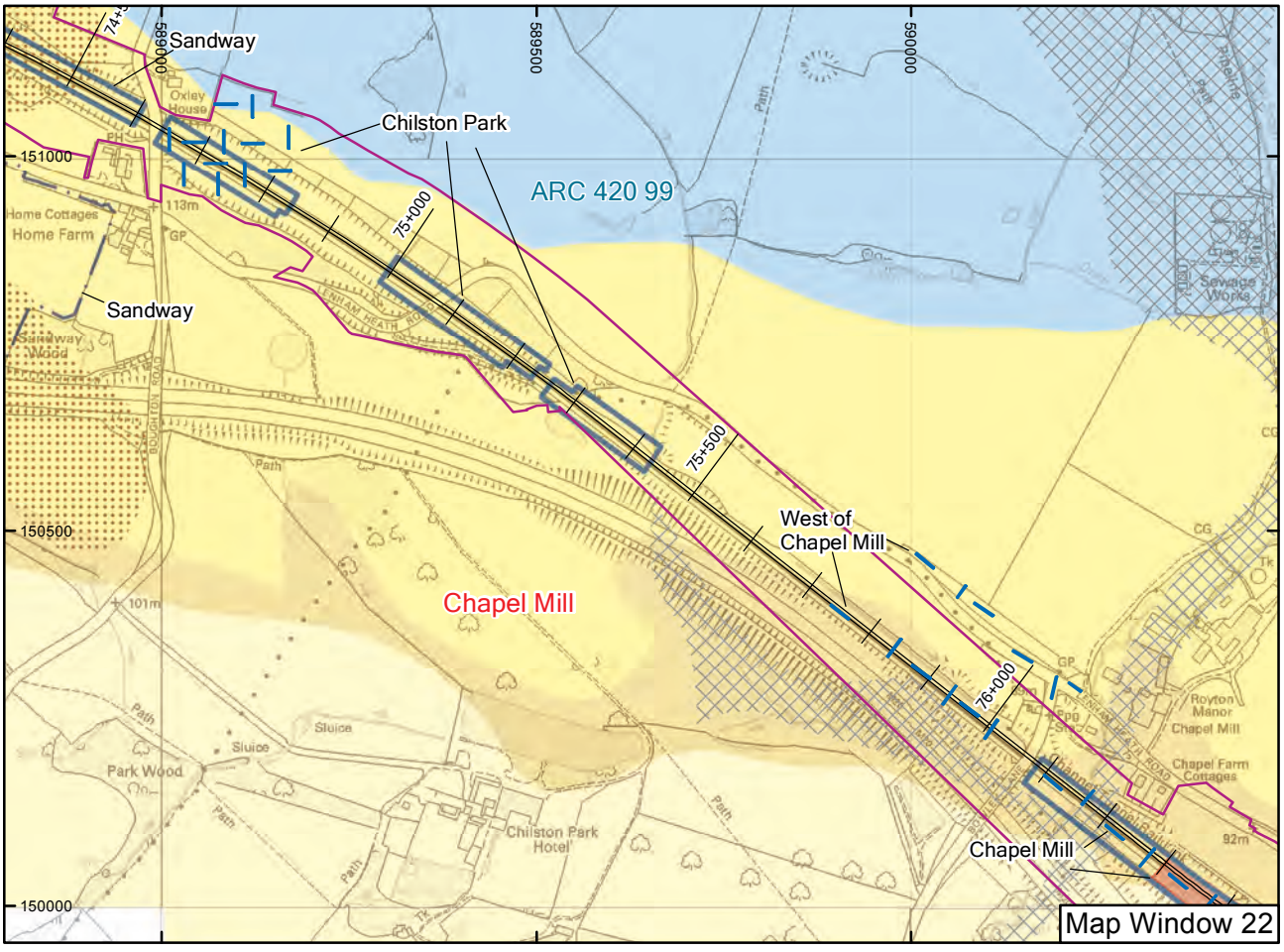
The evaluation comprised a total of nine trenches. Four archaeological features were recorded, comprising a probable tree-throw that may be dated to the Middle Neolithic, a ditch and pit of probable Middle/Late Bronze Age date and an undated possible hearth. Pieces of worked flint and very occasional sherds of Bronze and Iron Age pottery were recovered from colluvial deposits.

Fieldwork event: Sandway Road, nr Sandway
Event code: ARC SWR 99
HS1 chainage: 73+500
NGR: TQ 8800 5150
Contractor: Wessex Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: April 1999
End of fieldwork: May 1999
Integrated Site Report reference: Trevarthen 2006
Map Window 21

Mesolithic remains were recorded, comprising two scatters of worked flint as well as a number of possible features within a concentrated area located on a slight terrace in the west-facing slope of the area. The remains have produced over 7500 pieces of worked flint, the majority of which would not be out of place in a Late Mesolithic assemblage. Earlier Neolithic evidence included dated features and pottery in considerable quantities as residual finds from a number of later features. Elements of the Mesolithic assemblage appear to be diagnostically Earlier Neolithic in origin, and the possibility exists that there may be a transition between the two periods at the site. Neolithic occupation appears to have continued into the Later Neolithic, and continuing into the Early Bronze Age, at which point activity at the site appears to diminish, with the exception of at least one large Late Iron Age/Roman ditch.

Fieldwork event: Sandway
Event code: URL 90
HS1 chainage: 73+500 - 74+650
NGR: TQ 8830 5100
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window: 21

PRINCIPAL SITE: CHAPEL MILL, LENHAM
Project Area 420
Chainage limits: 74+700 - 78+000
Parishes crossed: Lenham
PX assessment report reference (no ISR): URS, 2000d
Map Windows 22–23



Fieldwork event: Chilston Park, Lenham
Event code: ARC CHPK 95
HS1 chainage: 74+700
NGR: TQ 8910 5100
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 16

Fieldwork event: Chilston Park, Lenham
Event code: ARC CHPK 97
HS1 chainage: 74+700
NGR: TQ 8910 5100
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: October 1999
End of fieldwork: October 1999
Evaluation report reference: OA 1997d
Map Window 22

The evaluation comprised a total of 12 trenches. Two ditches were identified, one post-medieval and the other undated.

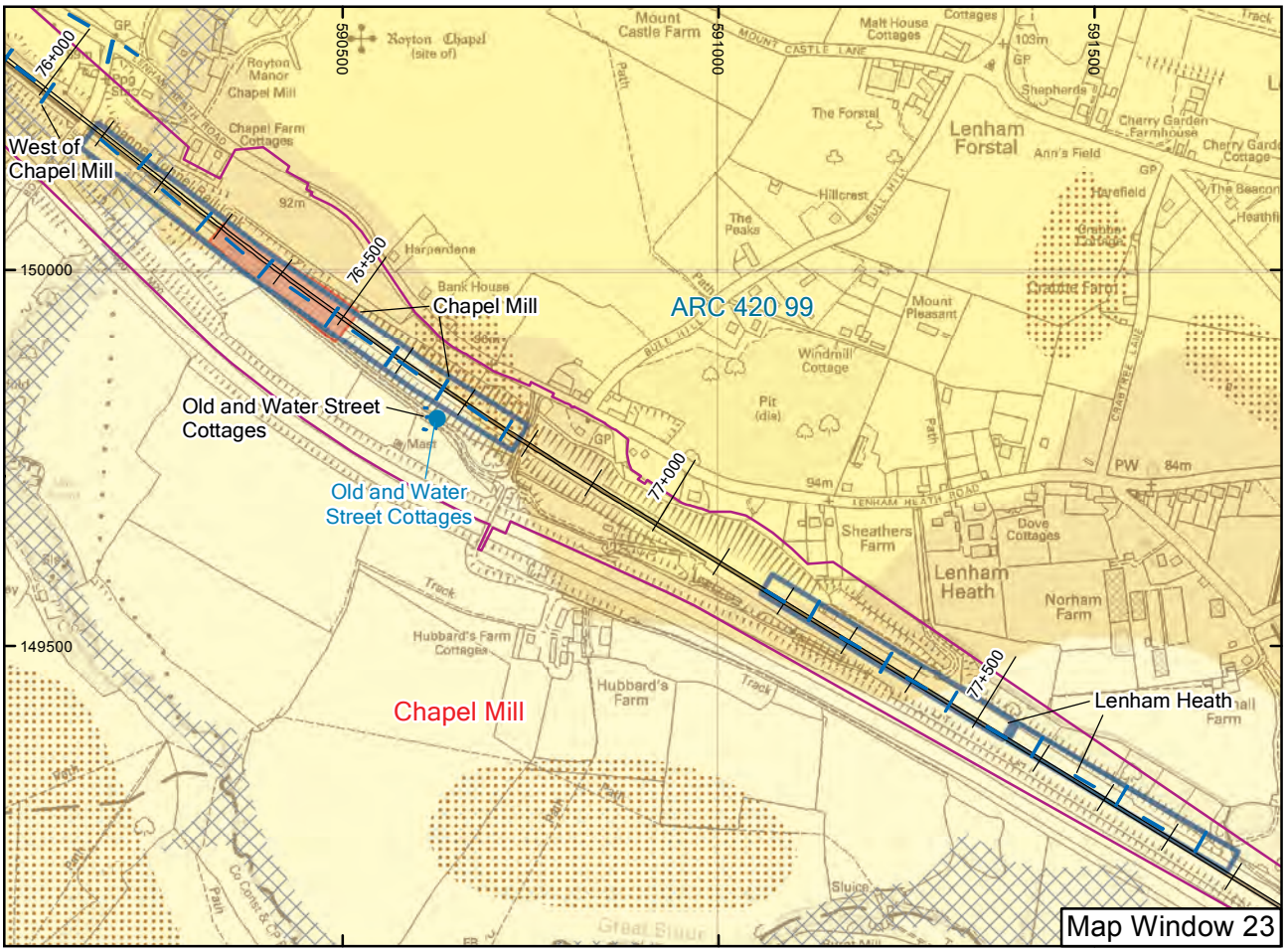
Fieldwork event: West of Chapel Mill, Lenham Heath
Event code: ARC WCM 97
HS1 chainage: 76+000
NGR: TQ 8990 5040
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Evaluation report reference: OA 1999f
Map Window 22

The evaluation comprised a total of 12 trenches. An area of modern disturbance overlying a post-medieval ditch and two undated pits were identified to the north-east of the Lenham Heath Road. Five undated, shallow linear features and an undated curving ditch were identified to the south-west of Lenham Heath Road.

Fieldwork event: Chapel Mill
Event code: ARC CML 95
HS1 chainage: 76+500
NGR: TQ 9040 5000
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996b
Map Window 23

Magnetic susceptibility and magnetometer surveys were carried out, but in both surveys responses were relatively weak and are probably the result of geological variations.

Fieldwork event: Chapel Mill, Lenham
Event code: ARC CML 97
HS1 chainage: 76+500
NGR: TQ 9040 5000
Contractor: Oxford Archaeology
Type of investigation: Evaluation



Start of fieldwork: October 1997
End of fieldwork: November 1997
Evaluation report reference: OA 1997c
Map Window 23

The evaluation comprised a total of 13 trenches. A single Late Bronze Age pit containing a substantial amount of pottery and two Mid–Late Iron Age ditches were identified.

Fieldwork event: Chapel Mill, Lenham
Event code: ARC CML 99
HS1 chainage: 76+500
NGR: TQ 9040 5000
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: March 1999
End of fieldwork: March 1999
PX Assessment report reference (no ISR): OA 1999p
Map Window 23

Two cremation burials, dated on the basis of a small amount of pottery to the Iron Age, were discovered, as well as two linear boundary ditches.

Fieldwork event: Old and Water Street Cottages, Lenham
Event code: ARC WSC 99
HS1 chainage: 74+700
NGR: TQ 9060 4980
Contractor: Canterbury Archaeological Trust
Type of investigation: Evaluation
Start of fieldwork: April 1999
End of fieldwork: May 1999
Evaluation report reference: CAT 1997d
Map Window 23

The evaluation comprised a total of five trenches. Four trenches were devoid of any archaeological features and one trench contained the remnants of a collapsed stone wall and a fragment of chalk floor, on the location of a 'non domestic building' depicted on the Ordnance Survey map of 1867.

Fieldwork event: Old and Water Street Cottages, Lenham
Event code: ARC WSC 99
HS1 chainage: 74+700
NGR: TQ 9060 4980
Contractor: Canterbury Archaeological Trust
Type of investigation: Building survey
Start of fieldwork: 2001
End of fieldwork: 2001
Building survey report reference: Austin 2001
Map Window 23

Fieldwork event: Lenham Heath
Event code: ARC LHT 95
HS1 chainage: 77+700
NGR: TQ 9150 4830
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995e
Map Window 23

Magnetometry and magnetic susceptibility surveys were undertaken. No archaeological features were identified.

Fieldwork event: Lenham Heath
Event code: ARC LHT 97
HS1 chainage: 77+700
NGR: TQ 9150 4830
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: December 1997
End of fieldwork: December 1997
Evaluation report reference: WA 1998
Map Window 23

The evaluation comprised a total of 12 trenches, and revealed a small number of features, all of post-medieval or modern date.

PROJECT AREA 430
The Project Area 430 watching brief included all permanent and temporary land-take associated with construction of the HS1 from East of Lenham Heath to Ashford (NGR TQ 9190 4920 to TR 0345 4050). This includes the railway trace (at grade, within cuttings and on embankments), bridges and associated works (mitigation earthworks, construction sites, transformer stations etc.). Areas previously subject to detailed or strip, map and sample excavation were excluded from the monitoring. Areas that were known not to contain significant deposits (for example tunnels, and areas of known large-scale modern disturbance) were also excluded. All watching brief fieldwork in this route section was undertaken by Oxford Archaeology. Significant individual discoveries are listed as fieldwork events below and in an interim report on the ADS website (URS 2000h). Significant individual discoveries are the subject of Integrated Site Reports (cf Leda Cottages, Tutt Hill, Beechbrook Wood) and/or post-excavation assessments (cf Lodge Wood). Unlike the areas of chalk geology (Project Area 330), it was generally not possible to obtain a coherent feature map under watching brief conditions except in 'targeted watching brief' areas where soil stripping methods were modified to an archaeological specification (in which excavators were fitted with toothless ditching buckets, and dump trucks were prohibited from running on stripped areas).

PRINCIPAL SITE: BROCKTON FARM
Project Area 430
Chainage limits: 78+150 - 78+600
Parishes crossed: Charing
Building investigation report reference (no ISR): OA 2001a
Map Window 24

Fieldwork event: Brockton Farm, Charing
Event code: ARC BRO 98
HS1 chainage: 78+400
NGR: TQ 9205 4890
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1997
End of fieldwork: August 1997
Building survey report reference: OA 1998b
Map Window 24

The evaluation comprised a total of 19 trenches. Two gullies that were sealed by colluvium may have been prehistoric, although neither produced dating evidence. The remaining features, predominantly pits, ditches and gullies, were probably associated with post-medieval agricultural activities.

Fieldwork event: Brockton Farm and Barn, Charing
Event code: ARC BRO 00
HS1 chainage: 78+400
NGR: TQ 9205 4890
Contractor: Oxford Archaeology
Type of investigation: Building investigation (including archaeology)
Start of fieldwork: 2000
End of fieldwork: 2000
Building survey report reference: OA 2001a
Map Window 24

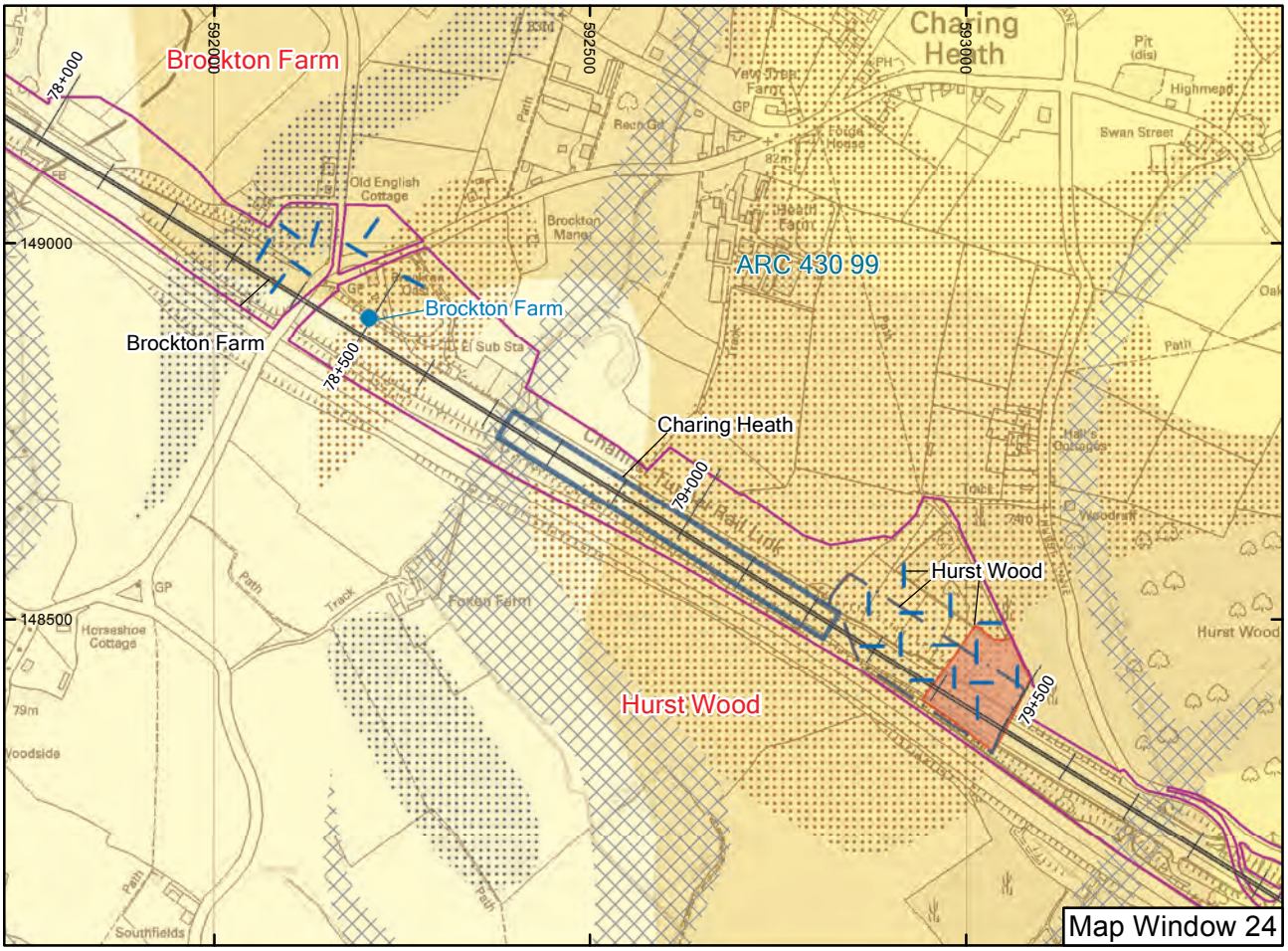
Archaeological recording in advance of, and during the dismantling of the Grade II Listed farmhouse at Brockton Farm (Charing Heath) revealed evidence for a fairly detailed reconstruction of a substantial 17th-century timber framed house built around a surviving brick stack. Within the eastern section of the 17th-century roof structure, elements of a pre-17th-century gabled wing were identified. The structural evidence for a building of relatively high status has been supported by documentary sources which would appear to indicate that Brockton Farm may in fact represent the original medieval manor house. In the late 18th century the plan of the house was enlarged to produce an approximately square plan with an attached pent-roofed extension to the south. The later structural development of the farmhouse has been traced through an analysis of the fabric and a total of seven distinct phases of work have been identified. Of particular interest was a 'spiritual midden' deposit retrieved from behind a studwork partition wall at first floor level; the deposit comprised a selection of leather shoes, garments, personal objects and three 'mummified' cats. Archaeological excavation proved disappointing in adding to our understanding of the building, any trace of early arrangements having been effectively destroyed by previous phases of extension and alteration of the house.

A majority of the 17th-century elements of the building were salvaged during the demolition process and have been deposited with the Weald and Downland Museum, Singleton.

PRINCIPAL SITE: HURST WOOD, CHARING
Project Area 430
Chainage limits: 78+600 - 82+200
Parishes crossed: Charing
PX assessment report reference (no ISR): URS 2000f
Map Windows 24–25

Fieldwork event: Charing Heath
Event code: ARC CHT 95
HS1 chainage: 79+000
NGR: TQ 9260 4860
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 24

Fieldwork event: Hurst Wood, Charing Heath
Event code: ARC HWD 97
HS1 chainage: 79+400
NGR: TQ 9300 4850
Contractor: Wessex Archaeology
Type of investigation: Evaluation



Start of fieldwork: October 1997
End of fieldwork: October 1997
Evaluation report reference: WA 1997a
Map Window 24

The evaluation comprised a total of 14 trenches, and revealed two shallow pits, a small gully, a shallow stake-hole and an irregular feature that may represent the truncated remains of a third pit. A concentration of worked flint, including a Late Neolithic/Early Bronze Age plano-convex flint knife, was recovered from topsoil contexts within the same area.

Fieldwork event: Hurst Wood, Charing Heath
Event code: ARC HWD 98
HS1 chainage: 79+400
NGR: TQ 9300 4850
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: September 1998
End of fieldwork: October 1998
PX assessment report reference (no ISR): OA 1999r
Map Window 24

Postholes and furrows were recorded that may have been associated with post-medieval hop cultivation. A number of pits of uncertain date were excavated, many of which contained evidence of burning and may have been associated with charcoal production, woodland clearance or some other form of woodland management.

Fieldwork event: Hurst Wood
Event code: URL 90
HS1 chainage: 79+200 - 79+500
NGR: TQ 9300 4840
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window: 24

Fieldwork event: Hurst Wood WBG
Event code: ARC 430 99
HS1 chainage: 79+500 to 79+950
NGR: TQ 9330 4820
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Watching brief interim report reference (no ISR): WB 2000b
Map Window 24 (not illustrated)

Thirty-six 2nd World War concrete tank traps were discovered beneath a farm track. They were not *in situ*, and may have been moved from their original position during the construction of the M20.

Fieldwork event: Newlands
Event code: URL 93
HS1 chainage: 80+100 - 81+800
NGR: TQ 9400 4880
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Survey report reference: URL 1995
Map Window: 25

Fieldwork event: East of Newlands, Charing Heath
Event code: ARC NEW 97
HS1 chainage: 80+700
NGR: TQ 9400 4780
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1997
End of fieldwork: May 1997
Evaluation report reference (no ISR): MoLA 1997e
Map Window 25

The evaluation comprised a total of 22 trenches. A possible trackway and two field boundary ditches dating from the Roman period were recorded, as was medieval occupation comprising features filled with domestic pottery and an oven/firepit. Post-medieval activity was represented by a rubble spread over the western field, presumably from refurbishments to the 17th century buildings which now form the existing Newlands Stud.

Fieldwork event: East of Newlands, Charing Heath
Event code: ARC NEW 98
HS1 chainage: 80+700
NGR: TQ 9370 4820
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Evaluation report reference (no ISR): OA 1999t
Map Window 25

A possible Roman trackway, first identified by evaluation trenching, was re-exposed and sectioned. Limited artefactual dating evidence was recovered, confirming the results of the evaluation.

Fieldwork event: East of Newlands
Event code: ARC 430 99
HS1 chainage: 80+100
NGR: TQ 9360 4810
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Watching brief interim report reference (no ISR): WB 2000b
Map Window 25

A holloway that was first discovered during evaluation, and which may form part of the Roman road from Rochester to Dover, was further investigated, and an abraded fragment of samian ware dating to the mid 2nd century was recovered from the stripped surface (80+100).

Two badly disturbed Middle Iron Age cremation burials with the remains of cremation urns were uncovered (79+950), and a shallow Middle Iron Age pit was discovered that contained a charcoal rich fill and pottery and may have been a third cremation pit that had been truncated by ploughing (79+950).

Fieldwork event: Newlands Stud to East of Pluckley Road
Event code: ARC 430 99
HS1 chainage: 81+200

NGR: TQ 9460 4760
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Watching brief interim report reference (no ISR): WB 2000b
Map Window 25 (not illustrated)

Two Late Iron Age pits were investigated that contained slag, charcoal and possible kiln debris. These features were severely plough truncated and consequently poorly defined.

Fieldwork event: East of Pluckley Road
Event code: ARC PRD 97
HS1 chainage: 81+500
NGR: TQ 9490 4750
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: 9th May 1997
End of fieldwork: 21 May 1997
Evaluation report reference (no ISR): MoLA 1997k
Map Windows 25–26

The evaluation comprised a total of 37 trenches. It revealed dispersed prehistoric quarrying, a Roman ditch, possibly associated with a road, and three phases of medieval to post-medieval field boundary ditches.

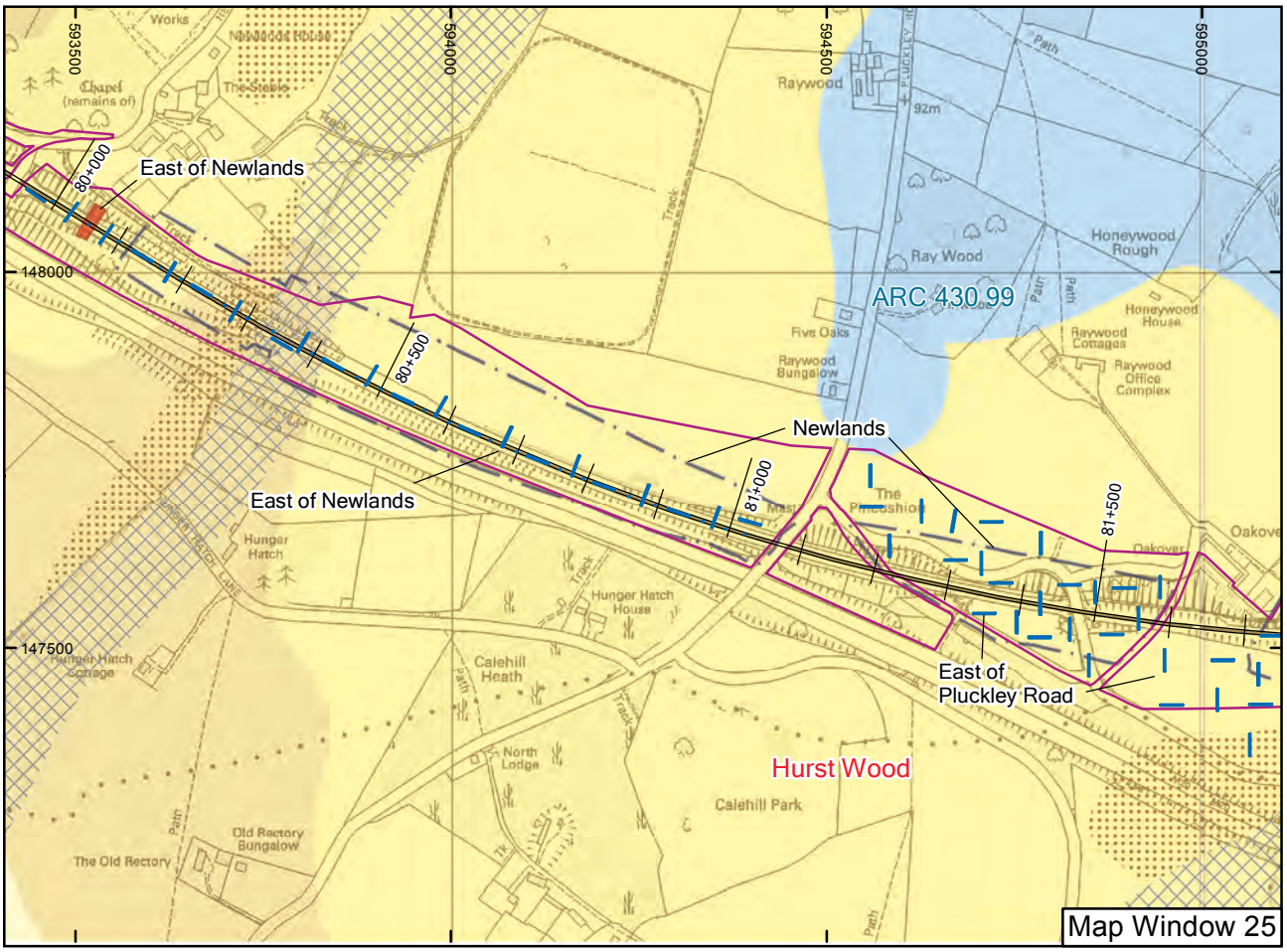
Fieldwork event: Leacon Lane
Event code: ARC 430 99
HS1 chainage: 81+870
NGR: TQ 9525 4750
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Watching brief interim report reference (no ISR): WB 2000b
Map Window 26

A concentration of 160 Late Neolithic/Early Bronze Age worked flint was recovered in the area of Leacon Lane. An area 30m x 20m was stripped under archaeological control to reveal seven undated pits and a ditch that contained Early Roman pottery. Situated on higher ground to the north-east was a small cluster of ten Late Iron Age or Early Roman pits.

Fieldwork event: Leacon Lane
Event code: ARC LLA 98
HS1 chainage: 82+200
NGR: TQ 9550 4750
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: July 1998
End of fieldwork: August 1998
Evaluation report reference (no ISR): MoLA 1999d
Map Window 26

The evaluation comprised a total of 17 trenches. A single undated pit was identified.

Fieldwork event: Westwell Leacon
Event code: ARC WWL 98
HS1 chainage: 82+600
NGR: TQ 9620 4750



Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Evaluation report reference (no ISR): MoLA 1998j
Map Window 26

The evaluation comprised a total of 23 trenches. Three undated ditches were recorded.

Fieldwork event: Westwell Leacon
Event code: URL 90
HS1 chainage: 83+000 - 83+900
NGR: TQ 9670 4740
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1993
End of fieldwork: 1993
Survey report reference: URL 1995
Map Window: 26

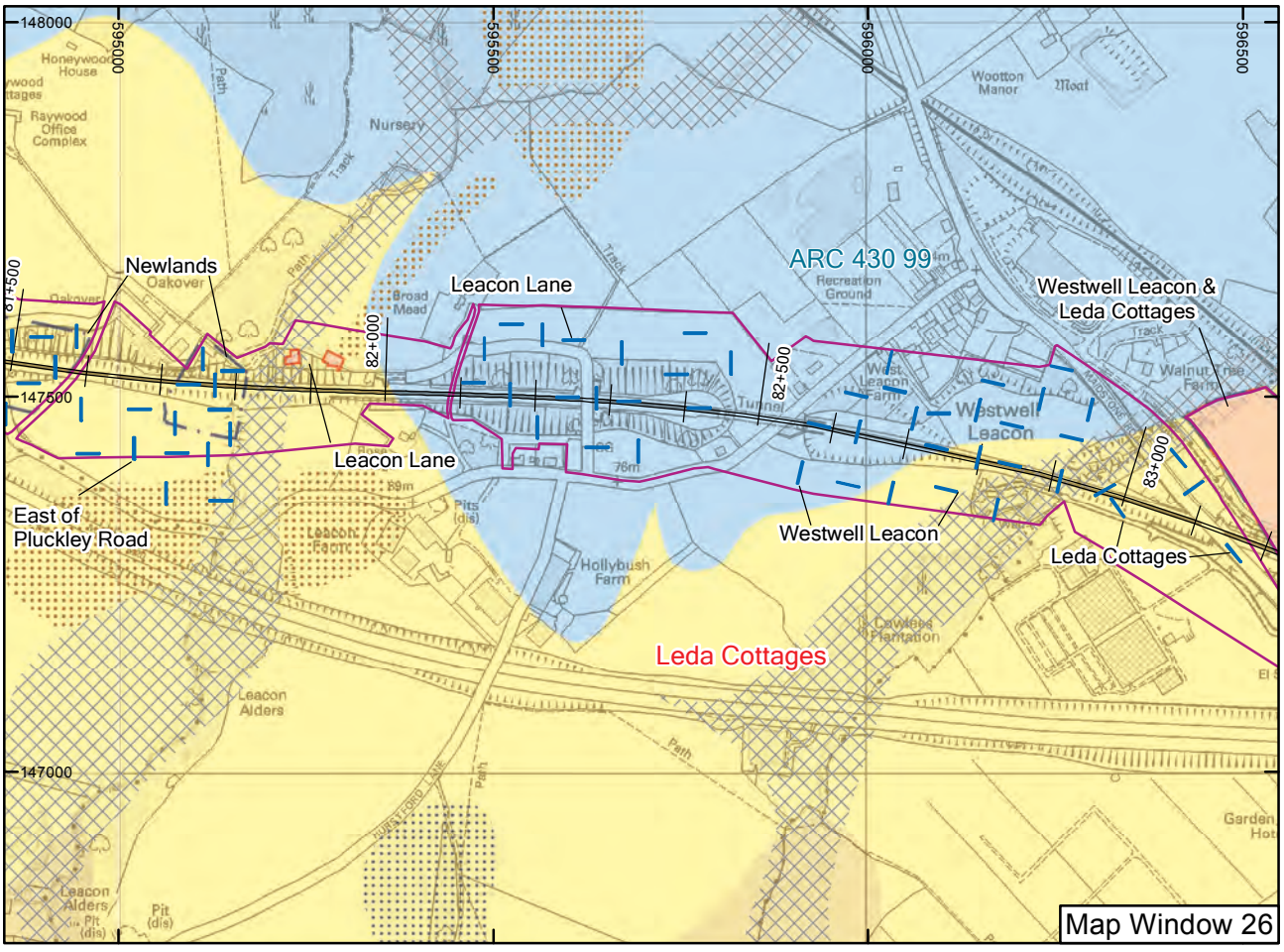
PRINCIPAL SITE: LEDA COTTAGES
Project Area 430
Chainage limits: 82+200 - 83+800
Parishes crossed: Westwell
Integrated Site Report Reference: Diez 2006a
Map Windows 26–27

Fieldwork event: Westwell Leacon
Event code: ARC 430 99
HS1 chainage: 83+300
NGR: TQ 9650 4740
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Integrated Site Report Reference: Diez 2006a
Watching brief interim report reference: WB 2000b
Map Window 27 (within same watching brief strip as Leda Cottages)

Four Late Iron Age pits were excavated, concentrated within an area of 10m x 10m (83+300).

Fieldwork event: Leda Cottages, Charing Heath
Event code: ARC 430 99
HS1 chainage: 83+200
NGR: TQ 9650 4740
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 2001
End of fieldwork: September 2001
Integrated Site Report Reference: Diez 2006a
Map Window 27 (within same watching brief strip as Westwell Leacon)

The features recorded were principally of Roman date. However, a small assemblage of redeposited worked flint, ranging in date from the Mesolithic to the Bronze Age, was also recovered, suggesting some prehistoric activity in the area. Late pre-Roman Iron Age occupation was identified in the form of a rectilinear enclosure, with two apparent entrances. Two four-post structures, yielding evidence of crop processing, and a few



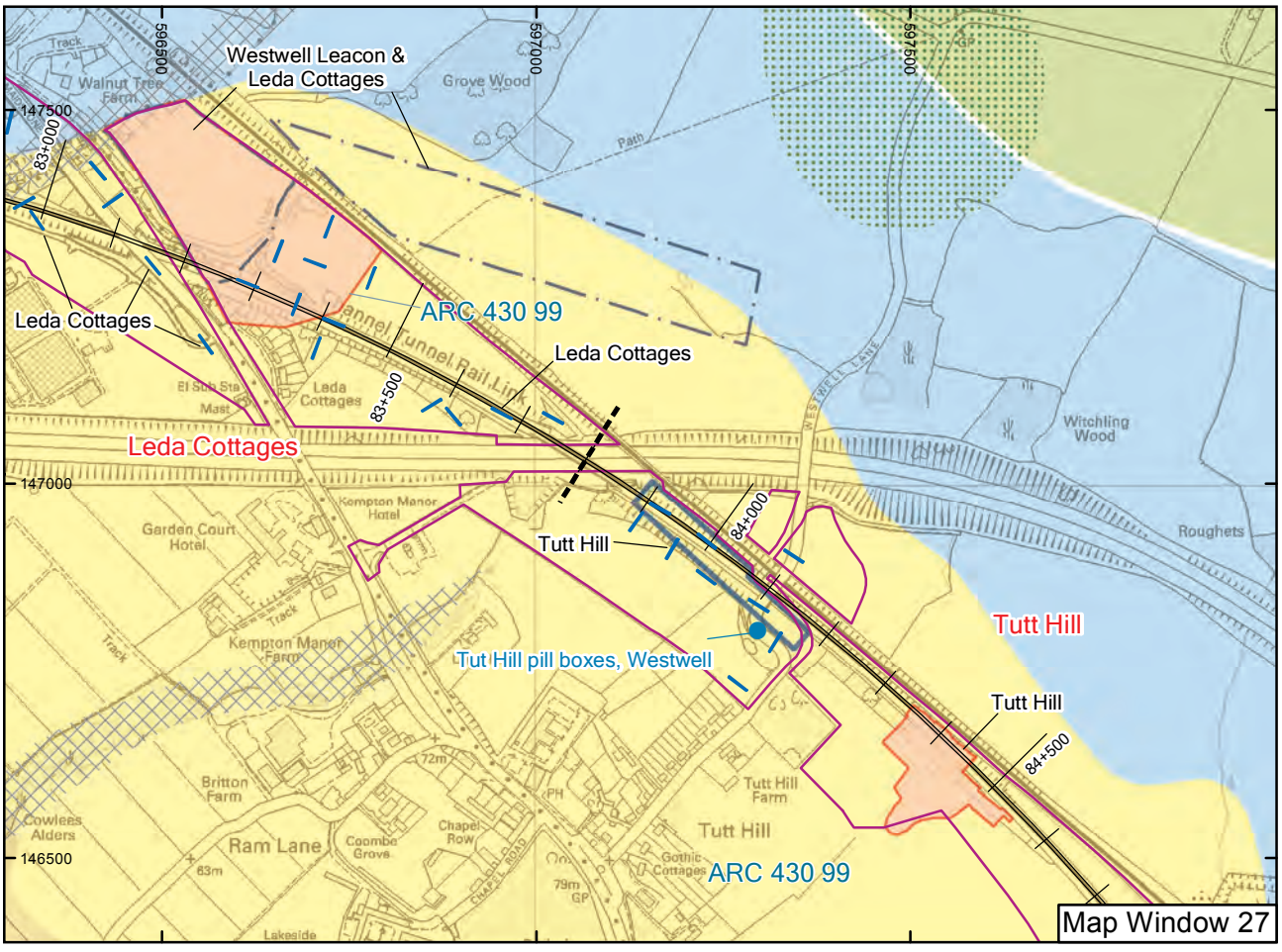
pits were identified within the enclosure. Evidence for iron smelting activity was also tentatively attributed to this period, based on very limited evidence. One furnace was located within the main enclosure but the main cluster of features associated with this activity was situated 100m to the north, in close proximity to the present-day stream. It was composed of four furnaces and three pits. Dating evidence associated with iron-working was very tenuous but quantities of slag found in fills of features of all phases indicate that this activity carried on throughout the three phases of occupation. A second rectangular enclosure was dug, possibly in the second half of the 1st century AD, respecting the alignment of the earlier one, which was therefore probably still in use. There were also a few pits and postholes, a waterhole and a flint lined structure. A series of re-cuts, dated to the 2nd century AD, obliterated most of the original ditches of this second enclosure. The last phase of occupation, from the second half of the 2nd century to AD 270, produced the largest assemblages of pottery. It was mostly represented by a series of discrete features including a rectangular clay structure, several possible rubbish pits and postholes and two waterholes. The site appears to have been abandoned around AD 250–270.

Fieldwork event: Leda Cottages, Charing Heath
Event code: ARC LED 98
HS1 chainage: 83+600
NGR: TQ 9670 4720
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Integrated Site Report Reference: Diez 2006a
Evaluation report reference: MoLA 1999e
Map Window 26–27
The evaluation comprised a total of 18 trenches. The only archaeological feature identified was a pit of post-medieval date

PRINCIPAL SITE: TUTT HILL
Project Area 430
Chainage limits: 83+800 - 84+900
Parishes crossed: Westwell
Integrated Site Report Reference: Brady 2006a
Map Window 27

Fieldwork event: Tutt Hill, Westwell
Event code: ARC THL 95
HS1 chainage: 84+000
NGR: TQ 9720 4695
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 27

Fieldwork event: Tutt Hill pill boxes, Westwell
Event code: ARC TUT 98
HS1 chainage: 84+100
NGR: TQ 9760 4670
Contractor: Oxford Archaeology
Type of investigation: Building investigation
Start of fieldwork: 2000



End of fieldwork: 2000
Building survey report reference: OA 2000b
Map Window 27

Fieldwork event: Tutt Hill, Westwell
Event code: ARC TUT 98
HS1 chainage: 84+100
NGR: TQ 9720 4680
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Integrated Site Report reference: Brady 2006a
Evaluation report reference: MoLA 1998h
Map Window 27

The evaluation comprised a total of nine trenches. An undated stone wall foundation and ditch were recorded.

Fieldwork event: Tutt Hill, Westwell
Event code: ARC 430 99
HS1 chainage: 84+500
NGR: TQ 9760 4660
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: March 1999
End of fieldwork: August 1999
Integrated Site Report reference: Brady 2006a
Map Window 27

In the course of the watching brief, a concentration of archaeological features was exposed at Tutt Hill. The small number of features recorded ranged in date from Middle Neolithic through to the Saxo-Norman period. These demonstrate a sequence of activity of great length, with a possible hiatus of activity in the Early Iron Age and for most of the Late Roman and Saxon period.

The earliest activity identified was in the form of pits that belong to ephemeral and temporary occupation in the Early and Middle Neolithic, followed by a probable period of woodland clearance resulting in the deposition of a layer of colluvium. Four ring-ditches, that almost certainly belonged to round barrows, were constructed in the Late Neolithic to Early Bronze Age (Beaker) period. During the Middle and Late Bronze Age the barrows became a focus for secondary burial (cremated remains) and other ritual offerings – some of which can be interpreted as 'closing' deposits, and part of the landscape was divided and reorganised with the laying out of a field system. After a hiatus in occupation of about 200 years, the site was a focus for industrial activity during the Middle to Late Iron Age. A furnace and pits containing metalworking debris and crucible fragments were clustered in the far north-west of the site and a single pit deposit indicates either small-scale occupation or hints at associated settlement nearby.

In the Late Iron Age to Early Roman period a single cremation burial, again in the vicinity of the ring-ditches, suggests a reuse of the site for funerary activity and is an indicator that the barrow mounds were still extant. The last activity on a substantial scale took place during the Late Iron Age, probably between 50 BC and AD 1, but the site was revisited at least once for the deposition of a cremation burial during the Early Roman period.

A pit dated to the early medieval period, represents ancillary activity almost certainly related to the early phases of the manorial complex at Parsonage Farm, to the south-east.

PRINCIPAL SITE: PARSONAGE FARM
Project Area 430
Chainage limits: 84+900 - 85+250
Parishes crossed: Westwell
Integrated Site Report Reference: Hill 2006
Map Window 28

Fieldwork event: Parsonage Farm
Event code: URL 90
HS1 chainage: 85+000 - 85+200
NGR: TQ 9800 4610
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window: 28

Fieldwork event: West of Station Road, Parsonage Farm, Westwell
Event code: ARC PFM 97
HS1 chainage: 85+000
NGR: TQ 9800 4610
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1997
End of fieldwork: September 1997
Integrated Site Report reference: Hill 2006
Evaluation report reference: MoLA 1997g
Map Window 28

The evaluation comprised a total of 19 trenches. It revealed the stone foundations of a rectangular building of medieval date, associated with a substantial artificial channel, possibly a moat. A number of pits of similar date were also recorded.

Fieldwork event: Parsonage Farm, Westwell
Event code: ARC PFM 98
HS1 chainage: 85+150
NGR: TQ 9805 4605
Contractor: Museum of London Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: September 1998
End of fieldwork: March 1999
Integrated Site Report reference: Hill 2006
Map Window 28

Possibly the first human activity on the site was evidenced by worked timbers and brushwood forming a possible platform in the bed of the stream, with pottery dated to the Late Iron Age–Early Roman period. A possible mill leet or mill race dated by pottery to the period AD 1050–1150 was found, parallel to and possibly associated with the revetted edge of a natural stream.

The main object of the excavation was the site of a moated farmstead or manor-house, containing a hall and outbuildings occupied between *c* 1150–1350.

Fieldwork event: Station Road, Westwell
Event code: ARC SRD 95
HS1 chainage: 85+300
NGR: TQ 9790 4600
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical Survey
Start of fieldwork: 1995

End of fieldwork: 1995
Survey report reference (no ISR): GSB 1995l
Map Window: 28

Magnetometry and magnetic susceptibility surveys were carried out. No archaeological features were identified.

PRINCIPAL SITE: BEECHBROOK WOOD
Project Area 430
Chainage limits: 85+250 - 86+200
Parishes crossed: Westwell
Integrated Site Report Reference: Brady 2006b
Map Windows 28–29

Fieldwork event: Beechbrook Wood, Westwell
Event code: ARC BBW 98
HS1 chainage: 86+000
NGR: TQ 9850 4560
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: August 1998
End of fieldwork: August 1998
Integrated Site Report reference: Brady 2006b
Evaluation report reference: MoLA 1997a
Map Windows 28–29

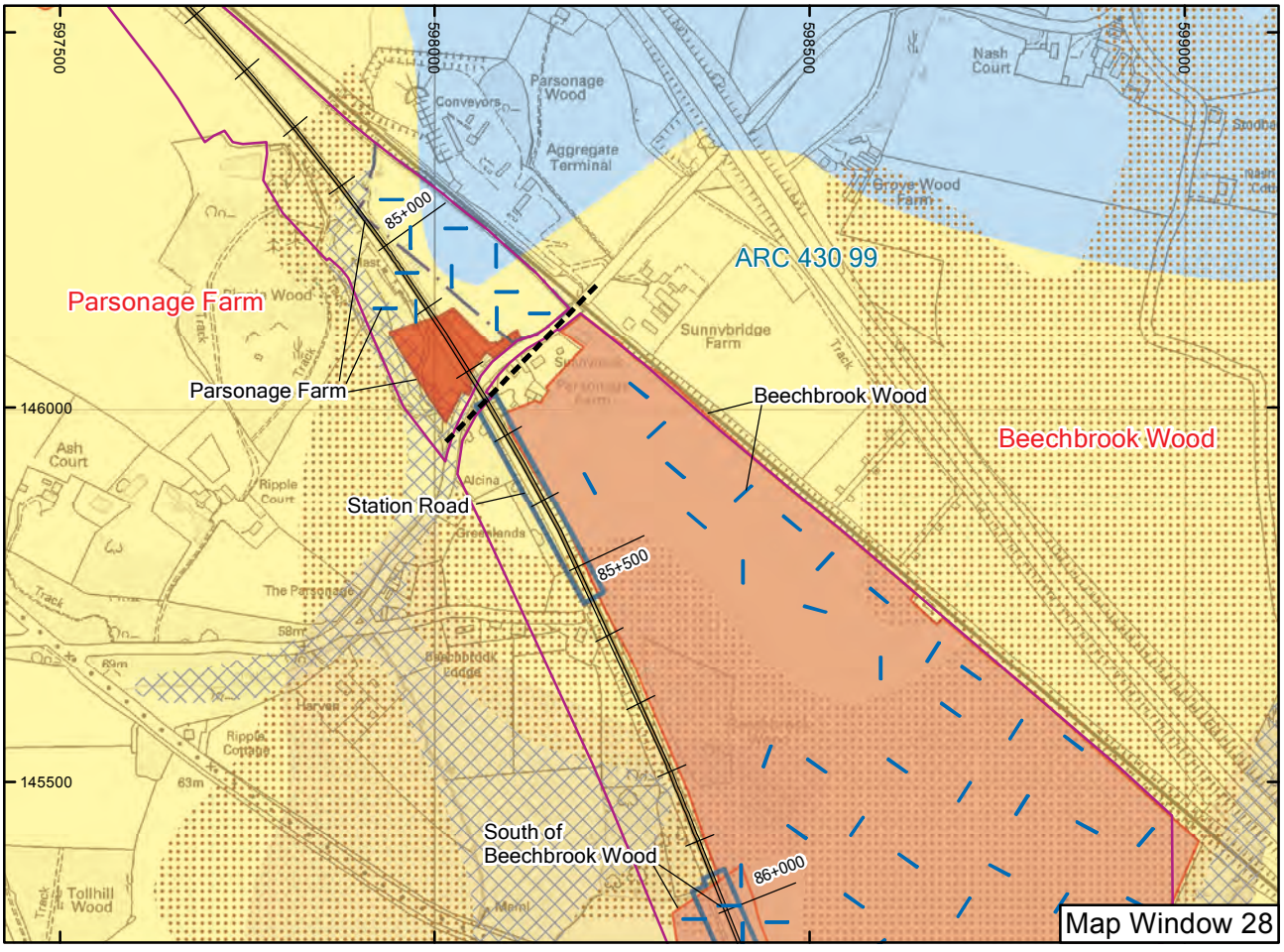
The evaluation comprised a total of 39 trenches, each measuring 30m x 1.5m. Fourteen trenches revealed archaeological features. The majority of features were linear field drains and ditches dating predominantly to the Late Iron Age to Early Roman period. Several tree-throw holes and two possible firepits were also identified. Several late prehistoric sherds and medieval building material was found residually.

Fieldwork event: Beechbrook Wood, Westwell
Event code: ARC BBW 00
HS1 chainage: 86+000
NGR: TQ 9850 4560
Contractor: Oxford Archaeology
Type of investigation: Targeted watching brief and strip, map and sample
Start of fieldwork: October 2000
End of fieldwork: August 2001
Integrated Site Report reference: Brady 2006b
Map Window 28–29

The features recorded range in date from the Late Mesolithic through to the Middle Roman. A brief period of occupation during the Late Mesolithic period is demonstrated by a utilised tree-throw hole, which contained a large lithic assemblage and yielded a single radiocarbon date.

Early Neolithic activity includes an isolated flint rich pit deposit, which also contained a complete quern and the remains of at least two plain bowls. Other Early Neolithic material was recovered as redeposited material from the ring-ditches of two round barrows.

The ring-ditches of four barrows were excavated, although no direct evidence for human burial or extant earthworks survived. A complete Beaker was found in a pit within one of these ring-ditches and is interpreted as a possible votive offering. A radiocarbon date on a deposit of charred hazelnuts indicates that at least one of the remaining ring-ditches is of similar Beaker period date.



During the Middle Bronze Age, two spatially separate activity areas developed. One was a group of cremation burials and pits and a possible building, possibly enclosed on two sides by ditches. Activity in this area included metalworking. The second comprised a group of pits contained large amounts of fired clay, mainly from ovens or hearths, indicating cooking or cereal drying.

The Late Bronze Age saw the development of an E-W and N-S aligned field system. Several pits were also sited along these boundaries. A cremation burial dating to this phase was cut into the fill of the Mesolithic pit.

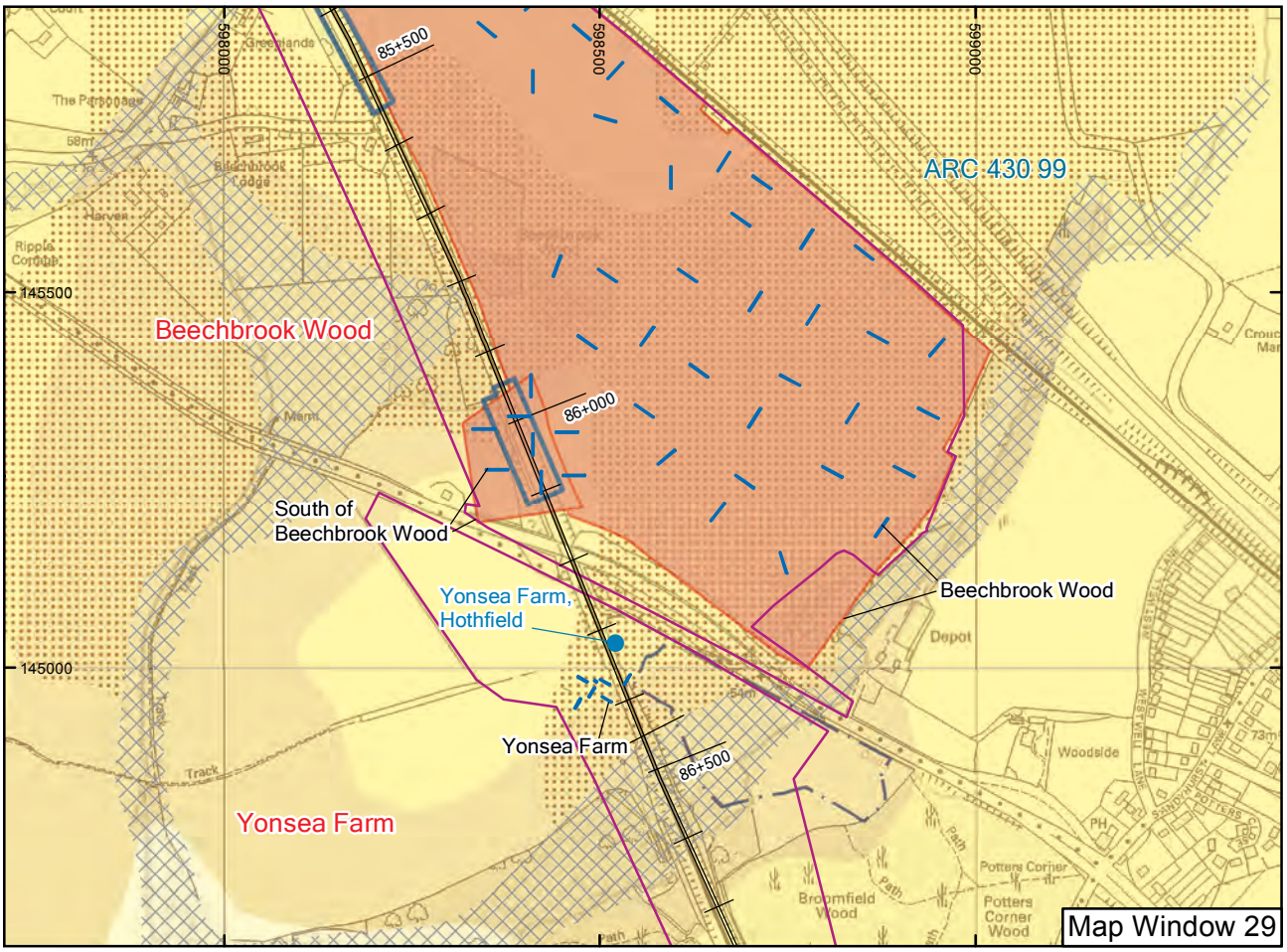
Middle Iron Age activity was concentrated in the far south east of the site. A double-ditched concentric settlement enclosure was constructed, the fills of which contained a very important Middle Iron Age pottery assemblage. A group of pits was situated *c* 100m to the east of the entrance. This type of settlement evidence is very rare for Kent at this date. Activity in the west of the site is demonstrated by a fragmentary rectilinear enclosure, the function of which is not clear, but which may have been an animal corral.

Two contemporaneous industrial enclosures containing features such as furnaces and pits related to metalworking activity are assigned to the Late Iron Age to Early Roman phase. This activity may possibly be associated with a natural spring. A small cremation burial cemetery was established just outside the entrance of the Middle Iron Age enclosure, marking a change in function or the end of its use. Subsequently, the expansion and extended use of the area to the south-west of the Middle Iron Age enclosure during this phase included possible droveways and was probably now functioning as a pastoral enclosure. Activity continued to the south-west of the Middle Iron Age enclosure and included the construction of a new enclosure in the Roman period. Small scale land division, cremation burial and pit digging was also undertaken. Use of the site probably ceased at around AD 250.

Sherds of medieval pottery, recovered from the subsoil, suggest peripheral activity related to the nearby Parsonage Farm and Yonsea Farm manorial complexes.

Fieldwork event: South of Beechbrook Wood, Westwell
Event code: ARC BWD 95
HS1 chainage: 86+000
NGR: TQ 9835 4540
Contractor: A Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Integrated Site Report reference: Brady 2006b
Survey report reference: ABA 1996a
Map Window 29

Fieldwork event: South of Beechbrook Wood, Westwell
Event code: ARC BWD 97
HS1 chainage: 86+000
NGR: TQ 9835 4540
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1997
End of fieldwork: September 1997
Integrated Site Report reference: Brady 2006b
Evaluation report reference: MoLA 1997a
Map Window 29



The evaluation comprised a total of eight trenches, excavated across the crop mark of a square enclosure or building identified from aerial photographs. Archaeological features were found within six of the eight trenches evaluated. These were all interpreted as ditches and were dated to between the early 1st and mid 3rd centuries AD. Roman deposits were also found in two rather ephemeral pits. No evidence of a structural nature was recorded and building material finds were limited to one small piece of faced ragstone.

Fieldwork event: South of Beechbrook Wood, Westwell
Event code: ARC BWD 98
HS1 chainage: 86+000
NGR: TQ 9835 4540
Contractor: Museum of London Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Integrated Site Report reference: Brady 2006b
Map Window 29

Most of the site was covered by a series of enclosure ditches, postholes, firepits, storage and other pits, which appear to belong to the Late Iron Age/Early Roman period. A single vessel possibly containing cremated remains was recorded set into a cut. It is possible that this vessel may be a Middle Bronze Age Deverel-Rimbury urn.

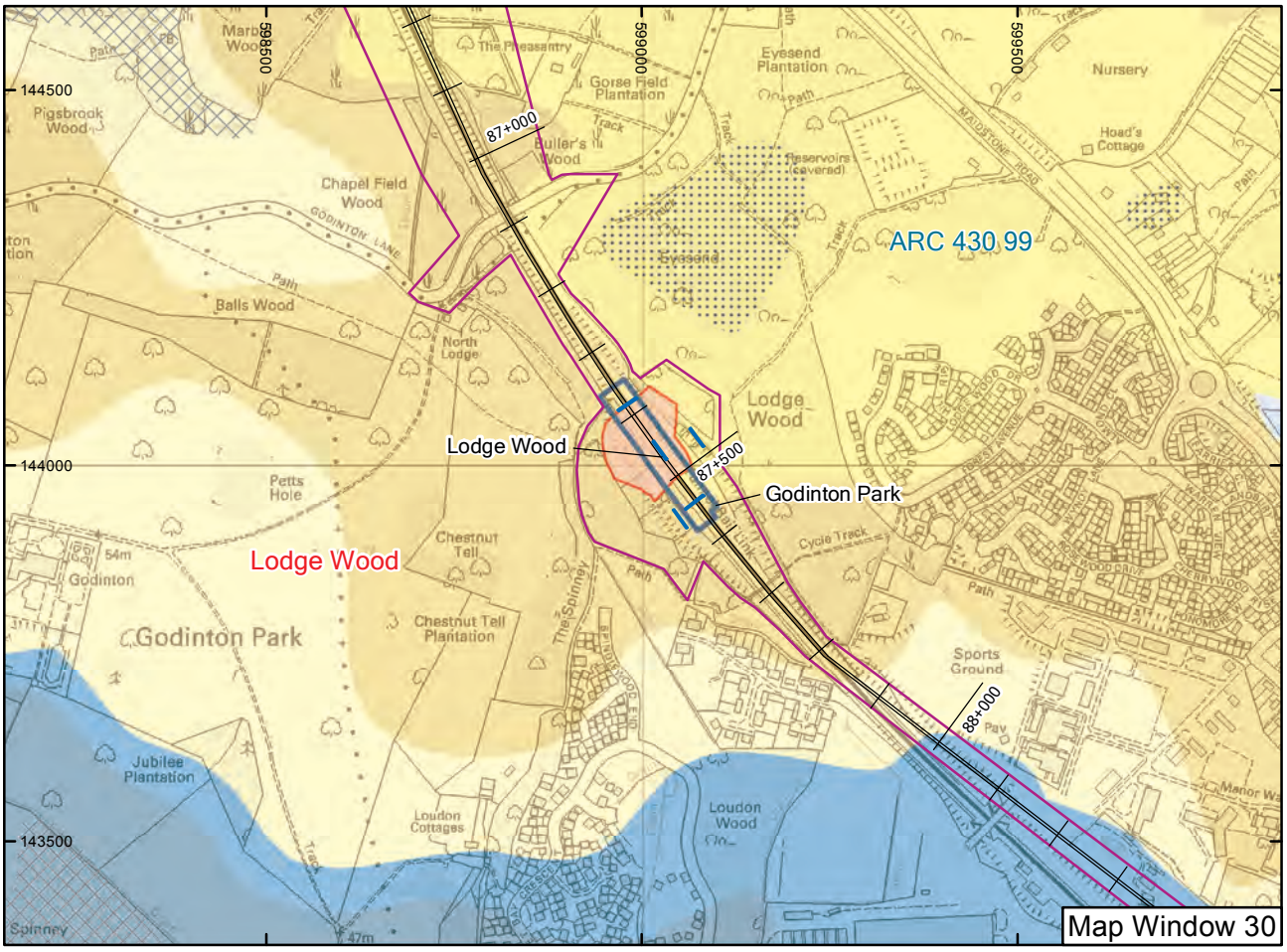
PRINCIPAL SITE: YONSEA FARM
Project Area 430
Chainage limits: 86+200 - 86+500

Parishes crossed: Hothfield
Integrated Site Report Reference: Brady 2006b
Map Window 29

Fieldwork event: Yonsea Farm, Hothfield
Event code: ARC YFM97
HS1 chainage: 78+400
NGR: TQ 9850 4500
Contractor: Museum of London Archaeology
Type of investigation: Evaluation
Start of fieldwork: 1997
End of fieldwork1997
Evaluation report reference: MoLA 1997j
Map Window 29

The evaluation comprised a total of six trenches. The southern arm of a possible moat was located, but on the western side only a shallow drainage ditch containing 19th century material was found. No buildings associated with the moat were identified.

Fieldwork event: Yonsea Farm, Hothfield
Event code: ASYON00
HS1 chainage: 78+400
NGR: TQ 9850 4500
Contractor: Oxford Archaeology
Type of investigation: Building investigation (including archaeology)
Start of fieldwork: 2000
End of fieldwork: 2000
Building survey report reference: OA 2000a
Map Window 29



Fieldwork event: Yonsea Farm
Event code: URL 91
HS1 chainage: 86+300 - 86+600
NGR: TQ 9870 4480
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1991
End of fieldwork: 1991
Survey report reference: URL 1995
Map Window: 29

PRINCIPAL SITE: LODGE WOOD, ASHFORD
Project Area 430
Chainage limits: 86+500 - 87+800
Parishes crossed: Ashford
PX Assessment reference (no ISR): URS 2000i
Map Window 30

Fieldwork event: Godinton Park, Ashford
Event code: ARC GPK95
HS1 chainage: 87+500
NGR: TQ 9900 4400
Contractor: A Bartlett and Associates
Type of investigation: Geophysical Survey
Start of fieldwork: 1995
End of fieldwork: 1995
Evaluation report reference: ABA 1996a
Map Window 30

Fieldwork event: Lodge Wood, Ashford
Event code: ARC LWD 98
HS1 chainage: 87+500
NGR: TQ 9900 4400
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: September 1998
End of fieldwork: October 1998
Evaluation report reference: OA 1999i
Map Window 30

The evaluation comprised a total of five trenches. A pit and a ditch were recorded that produced a small assemblage of Iron Age and Roman pottery.

Fieldwork event: Lodge Wood, Ashford
Event code: ARC 430 99
HS1 chainage: 87+500
NGR: TQ 9900 4400
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 1999
End of fieldwork: September 2000
PX assessment report reference: URS 2000i
Map Window 30

A small group of archaeological features was recorded in the area of Lodge Wood. The features comprised a ditch and two pits of Late Iron Age date, a medieval gully, two undated ditches and a posthole (the undated features are most likely to be Iron Age). Although the number of features identified is small, the presence of significant finds concentrations from some features suggests the presence of a Late Iron Age settlement focus in the near vicinity. Poor visibility during the watching brief prevented recovery of a coherent site plan.

PROJECT AREA 440
Project Area 440 comprised all permanent and temporary land-take associated with construction of HS1, extending for a distance of 15.5km, from North of Sevington Railhead to Frogholt (NGR TR 0350 4045 to TR 1810 3715). This includes the trace (at grade, within cuttings and on embankments), bridges and associated works (mitigation earthworks, construction sites, transformer stations etc.). Areas previously subject to detailed or strip, map and sample excavation were excluded from the works. Areas that were known not to contain significant deposits (for example tunnels, and areas of known large-scale modern disturbance) were also excluded. All watching brief fieldwork in this route section was undertaken by Oxford Archaeology. Significant individual discoveries are listed as fieldwork events below and in an interim report on the ADS website (URS 2003). Significant individual discoveries are the subject of Integrated Site Reports (cf Bower Road, North of Westenhanger Castle). Unlike the areas of chalk geology on the HS1 route (Project Area 330), it was generally not possible to obtain a coherent feature map under watching brief conditions in this zone, except in 'targeted watching brief' areas where soil stripping methods were modified to an archaeological specification (in which excavators were fitted with toothless ditching buckets, and dump trucks were prohibited from running on stripped areas).

PRINCIPAL SITE: BOYS HALL BALANCING POND
Project Area 440
Chainage limits: 92+000 - 93+250
Parishes crossed: Ashford and Sevington
PX Assessment reference (no ISR): URS 2000a
Map Window 31

Fieldwork event: 2 Boys Hall Road
Event code: ARC BOY299
HS1 chainage: 92+000
NGR: TR 0258/4112
Contractor: Oxford Archaeology
Type of investigation: Building investigation (including archaeology)
Start of fieldwork: January 1999
End of fieldwork: January 1999
Building survey report reference (no ISR): OA 1999b
Map Window 31

Structurally, No. 2 Boys Hall Road was not fully investigated prior to its dismantling, since much of the historic fabric was visible within the building, and its interest was clearly apparent. The building is thought to have been constructed around 1600 and reused some medieval timbers. The plan is of two bays, of interest as an unusual small version of the new post-medieval plan type of lobby-entrance house. It has rubble-stone walling in the ground floor and gable ends with clay tile hanging over timber framing in the first floor. There is a modern rendered brick outshot on the north side which conceals an earlier timber framed jetty with original wattle and daub panels. The roof is pitched, clad in clay peg tiles with two hipped dormers.

The excavations of the building footprint revealed five development phases of 2 Boys Road. Evidence of early activity (Phase I) is very slight, and the length of time between the demolition or abandonment of the medieval structures and the construction of the cottage (Phase II) is uncertain. The cottage is thought to have been built consecutively in the early to mid-16th century, and at a later phase possibly in the mid-late 16th century (Phase III), encountered further modfications. To the rear of the house an extension or ancillary structure was added

in the early modern period (Phase IV), and a fireplace inserted in the late-18th or beginning of the 19th century. In the modern period (Phase V) the house was extended to the north-east and the area around the cottage landscaped.

Fieldwork event: 4 Boys Hall Road
Event code: ARC BOY499
HS1 chainage: 92+000
NGR: TR 0258/4112
Contractor: Oxford Archaeology
Type of investigation: Building investigation
Start of fieldwork: May 1999
End of fieldwork: May 1999
Building survey report reference (no ISR): OA 1999c
Map Window 31

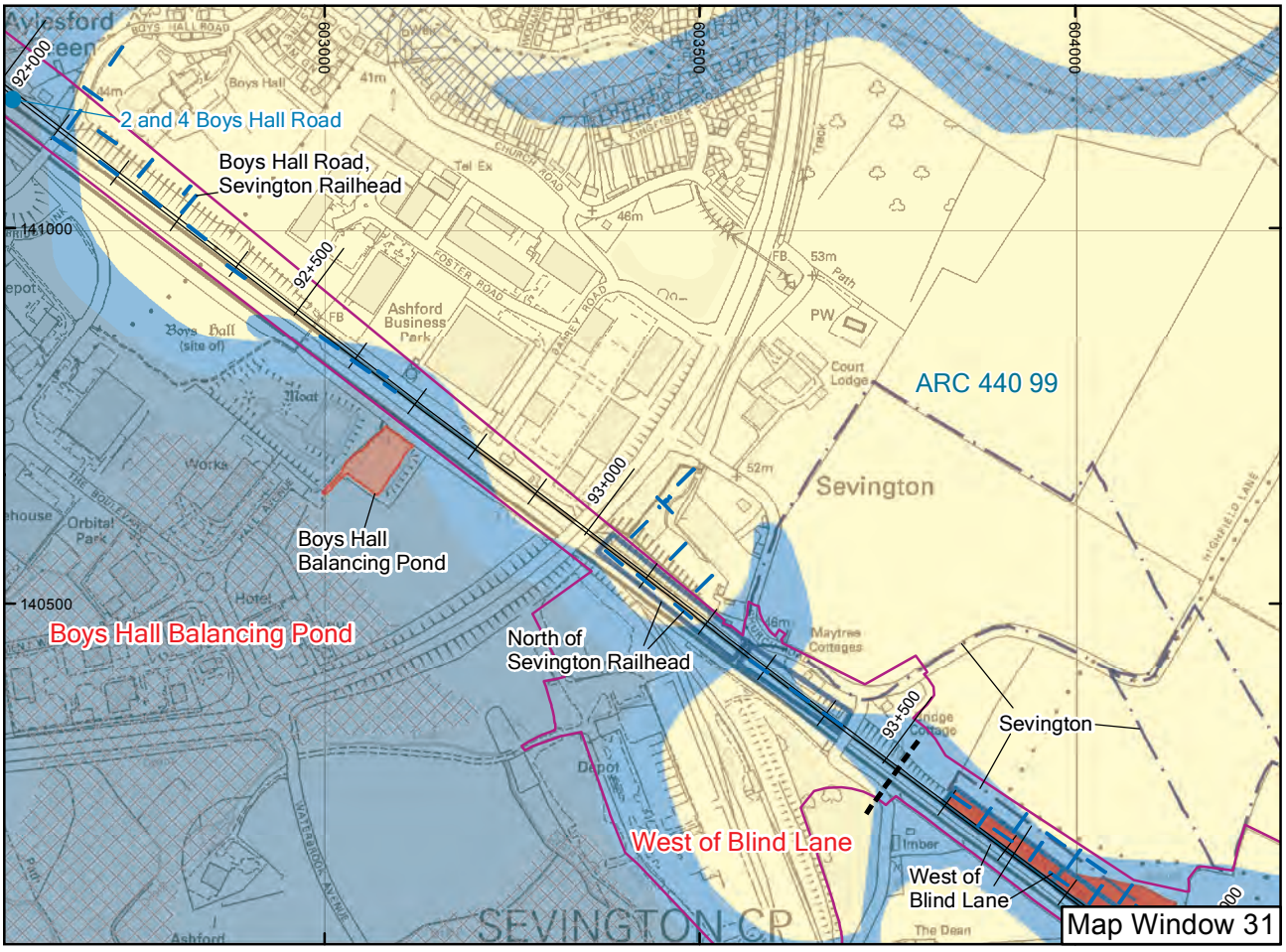
The building would appear to originate, in the early 19th century, as a three-cell, in-line single-storey brick-built structure. The nature of the primary building remains uncertain though the identification of a primary fireplace within the central room would appear to indicate a domestic function. This is perhaps supported by the evidence of a property survey undertaken in advance of the construction of the railway which describes the building as a 'lodge', related to No. 2 Boys Hall Road. In *c* 1890, the building was extended by the addition of a first floor of timber stud construction clad externally with decorative banded tiles and providing three additional rooms. Additional heating was provided in the central, first floor room and by the construction of a second stack to the southern part of the building with fireplaces at ground and first floor levels. During the 20th century, a single-storey, pent-roofed bathroom extension was appended to the north elevation.

Fieldwork event: Boys Hall Road, Sevington Railhead
Event code: ARC BHR 97
HS1 chainage: 92+200
NGR: TR 0290 4100
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: August 1997
End of fieldwork: August 1997
Evaluation report reference (no ISR): MoLA 1997b
Map Window 31

The evaluation comprised a total of 16 trenches. The evaluation revealed concentrations of Late Iron Age ditches, medieval ditches and a small pit. A large ditch or pond was probably associated with the post-medieval Boys Hall Moat site.

Fieldwork event: Boys Hall Balancing Pond
Event code: ARC BHB 99
HS1 chainage: 92+700
NGR: TR 0310 4070
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: April 1999
End of fieldwork: May 1999
PX assessment report reference (no ISR): URS 2000a
Map Window 31

An excavation immediately to the west of Boys Hall Moat revealed a group of four Late Iron Age/Roman cremations and four linear features of similar date. Previous investigations have provided ample evidence for settlement of this date in the vicinity. Two large ditches, and a contemporary cobbled surface, are



almost certainly associated with the adjacent former medieval manor house or the attached post-medieval garden (Boys Hall Moat Scheduled Ancient Monument, Kent SAM 146).

Fieldwork event: Sevington Railhead
Event code: ARC SRH 95
NGR: TR 0400 4050
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference (no ISR): GSB 1995o
Map Window 31

Fieldwork event: North of Sevington Railhead
Event code: ARC SRH 97
HS1 chainage: 93+200
NGR: TR 0370 4040
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: November 1997
End of fieldwork: November 1997
Evaluation report reference (no ISR): MoLA 1998g
Map Window 31

The evaluation comprised a total of 11 trenches. Two centres of medieval activity were identified, including possible buildings, and a post-medieval ragstone and mortar trackway.

Fieldwork event: Sevington
Event code: URL 90
HS1 chainage: 93+200 - 94+000
NGR: TR 0400 4050
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 31

Fieldwork event: Sevington
Event code: ARC 440 99
HS1 chainage: 93+250 to 94+500
NGR: TR 0350 4040
Category: Watching brief discovery
Start of fieldwork: July 1999
End of fieldwork: September 2000
Interim report reference (no ISR): WB 2003
Map Window 31 (not illustrated)

Two boundary ditches and a possible pathway, all dated late 12th to 14th century, were excavated, and further ditches and undetermined features observed, as well as a post-medieval ditch (93+300), a shallow ditch of probable Late Roman date and a small pit dating from the late 12 to 13th century, and a pottery spread of the same date. A number of worked flints of Mesolithic type were also recovered (94+100).

PRINCIPAL SITE: WEST OF BLIND LANE
Project Area 440
Chainage limits: 93+250 - 94+500
Parishes crossed: Sevington
PX Assessment reference (no ISR): URS 2000b
Map Windows 31–32

Fieldwork event: West of Blind Lane
Event code: ARC BLN 95
HS1 chainage: 93+800
NGR: TR 0405 4010
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference (no ISR): GSB 1995p
Map Window 31

Fieldwork event: West of Blind Lane
Event code: ARC BLN 97
HS1 chainage: 93+800
NGR: TR 0405 4010
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: October 1997
End of fieldwork: October 1997
Evaluation report reference (no ISR): MoLA 1998b
Map Window 31

The evaluation comprised a total of 13 trenches, eight of which exposed archaeological features. Curvilinear ditches and slots were concentrated towards the eastern end of the evaluation area and may represent two prehistoric enclosures. Linear ditches were spread more evenly across the site and may indicate the survival of one or more field systems. Occupation appears to cover the Middle and Late Bronze Age.

Fieldwork event: West of Blind Lane
Event code: ARC BLN 98
HS1 chainage: 93+800
NGR: TR 0405 4010
Contractor: Oxford Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: January 1999
End of fieldwork: March 1999
PX assessment report reference (no ISR): URS 2000b
Map Windows 31–32

The excavation area exposed at least 16 ditches, five gullies, three postholes and two undated charcoal-filled pits. A Deverel-Rimbury bucket urn recovered during the evaluation from one of a pair of parallel ditches, indicates that this possible trackway is Middle–Late Bronze Age in date. Pottery from the remaining ditches was sparse. A Late Iron Age or Early Roman date (*c* 100 BC–AD 200) is indicated for eight of the ditches and two smashed vessels were found in adjacent cuts forming part of a single Roman boundary. Some intercutting and recutting of the ditches suggests there are three phases to the Late Iron Age/Early Roman activity, but it probably represents a relatively short-lived period of activity.

PRINCIPAL SITE: MERSHAM
Project Area 440
Chainage limits: 94+500 - 95+900
Parishes crossed: Mersham
Integrated Site Report reference: Helm 2006
Map Window 32

Fieldwork event: West of Mersham
Event code: ARC MSW 97
HS1 chainage: 94+600

NGR: TR 0465 3965
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: November 1997
End of fieldwork: November 1997
Integrated Site Report reference: Helm 2006
Evaluation report reference: MoLA 1998b
Map Window 32

The evaluation comprised a total of five trenches, located to examine a group of geophysical anomalies. Elements of a series of field boundary ditches, probably of post-medieval date, were recorded, as well as a ditch of Late Iron Age date. The Iron Age ditch contained several large unabraded pot sherds which suggested that there was an unlocated contemporary settlement nearby.

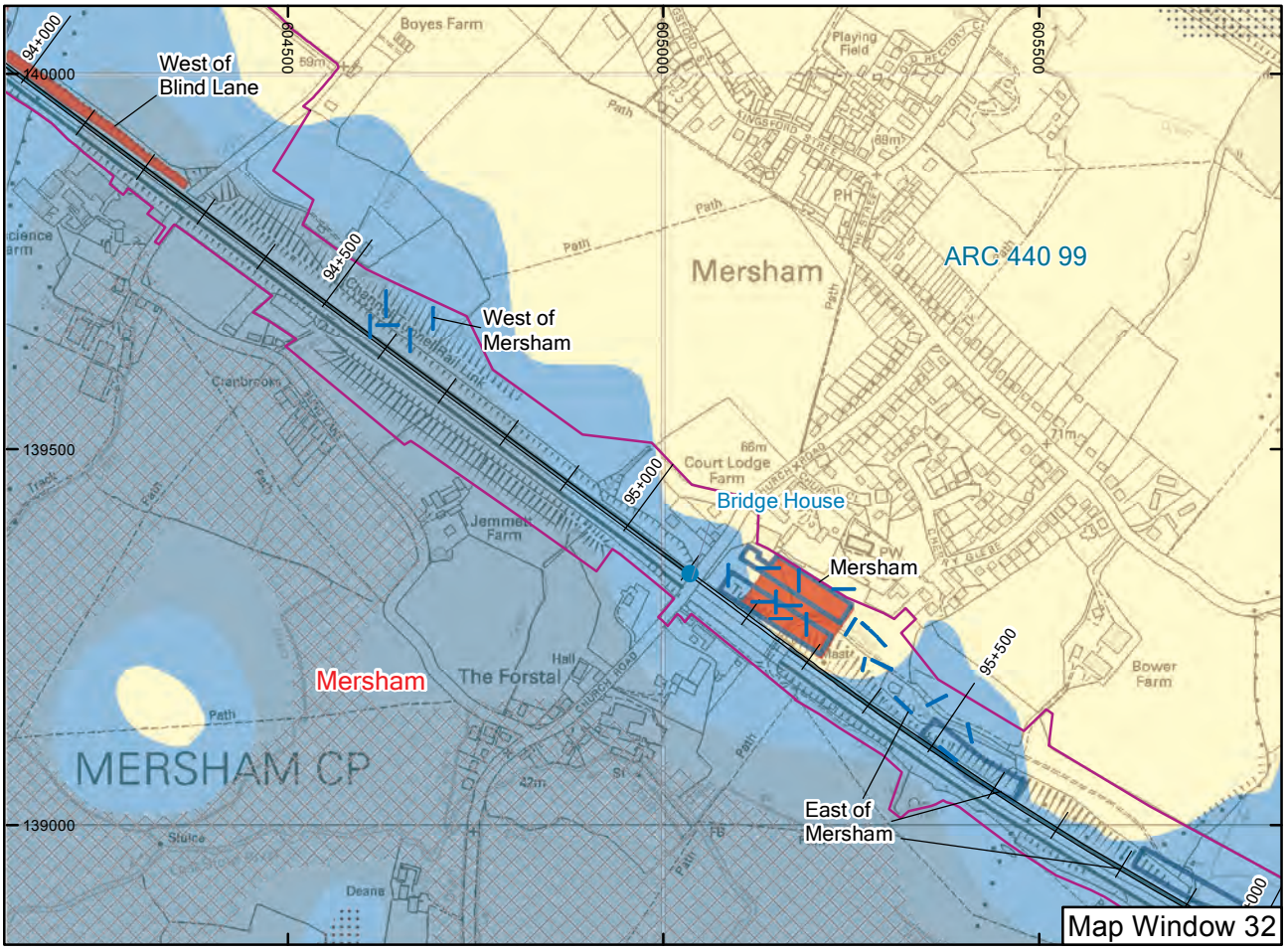
Fieldwork event: Mersham
Event code: ARC MSH 95
HS1 chainage: 95+000
NGR: TR 0500 3940
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995h
Map Window 32

A magnetometry survey recorded a concentration of ditch and pit type responses, but the high level of ferrous disturbance and the limited survey area cast some doubt on their interpretation as archaeological features.

Fieldwork event: Bridge House, Mersham
Event code: ARC BRH 00
NGR: TR 0506 3932
HS1 chainage: 95+100
NGR: TR 0510 3935
Contractor: Oxford Archaeology
Type of investigation: Building investigation (including archaeology)
Start of fieldwork: January 1999
End of fieldwork: January 1999
Building survey report reference (no ISR): OA 1999b
Map Window 32

Fieldwork event: Mersham
Event code: ARC MSH 97
HS1 chainage: 95+200
NGR: TR 0520 3930
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: October 1997
End of fieldwork: November 1997
Integrated Site Report reference: Helm 2006
Evaluation report reference: MoLA 1998f
Map Window 32

The evaluation comprised a total of nine trenches. Industrial activity dating from the medieval period was concentrated in the central southern area of the site with iron slag found in most excavated features, including two large pits almost completely filled with lumps of iron slag, ironstone and cinder. Postholes and beamslots may also suggest the presence of associated timber buildings. Two parallel ditches were aligned



with the southern perimeter of the field. The ditches may have formed part of a land boundary, perhaps associated with Court Lodge Farm.

Fieldwork event: Mersham
Event code: ARC MSH 98
HS1 chainage: 95+200
NGR: TR 0520 3930
Contractor: Canterbury Archaeological Trust
Type of investigation: Detailed excavation
Start of fieldwork: December 1998
End of fieldwork: January 1999
Integrated Site Report reference: Helm 2006
Map Window 32

The principal discovery made during the excavation was an early medieval metalworking site comprising pits backfilled with iron slag, ditches cut to bring water to the site, and an enclosure ditch. A significant proportion of the features contained Late Anglo-Saxon artefacts. This suggests that the origin of the industry may have lain in the period AD 850–1050. Small quantities of Mid Anglo-Saxon and earlier material were also found, but these are thought to be entirely residual. Following the abandonment of the site the southern boundary ditch was retained, while a smaller, parallel, ditch was added in the north. A low-level renewal of activity appears to have taken place during the period 1475–1500, but this ended by *c* AD 1775.

Fieldwork event: East of Mersham
Event code: ARC MSHE 95
HS1 chainage: 95+500
NGR: TR 0540 3910
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995g
Map Window 32

Magnetometry and magnetic susceptibility surveys were carried out. The transect was generally quiet magnetically, although disturbance was encountered in areas close to the fence, south of the centreline. Two pit type responses were identified, but the magnetic susceptibility data did not indicate any significant areas of enhancement.

Fieldwork event: East of Mersham
Event code: ARC EMM 98
HS1 chainage: 95+250
NGR: TR 0535 3915
Contractor: Canterbury Archaeological Trust
Type of investigation: Evaluation
Start of fieldwork: January 1998
End of fieldwork: January 1998
Evaluation report reference: MoLA 1999c
Map Window 32

The evaluation comprised a total of 10 trenches. Archaeological features being identified in two trenches and consisted of a series of pits and a large ditch. The ditch is believed to be the continuation of a ditch observed in the detailed excavation (ARC MSH 98), and thought to represent the southern boundary to the site.

PRINCIPAL SITE: BOWER ROAD
Project Area 440
Chainage limits: 95+900 - 96+400
Parishes crossed: Smeeth
Integrated Site Report reference: Diez 2006b
Map Window 33

Fieldwork event: Bower Road, Smeeth
Event code: ARC 440 99
HS1 chainage: 96+200
NGR: TR 0594 3881
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 1999
End of fieldwork: September 1999
Integrated Site Report Reference: Diez 2006b
Map Window 33

The features recorded were principally of Roman date. However, a small assemblage of redeposited worked flint, ranging in date from the Mesolithic to Early Bronze Age, was also recovered. Late pre-Roman Iron Age activity was indicated by a small quantity of pottery recovered from a pond and a series of drainage ditches. Evidence for Early Roman activity was limited, comprising part of a field system. By the first half of the 2nd century AD, a rural agricultural settlement seems to have been established, represented by the severely truncated remains of a timber structure, with large postholes and associated slight, ragstone wall footings. There were also ditched enclosures, fence lines, a waterhole and several pits. It is possible that the establishment of this settlement represents a shift from the nearby later prehistoric settlement at Little Stock Farm, which lies only 400m away, to the south-east, and appears to have been continuously occupied from the later Bronze Age until the late Iron Age. Ample evidence of crop processing activity and animal husbandry was found in the 2nd-century features. The ditched enclosure boundaries seem to have fallen into disuse in the late 2nd century AD, to be replaced by a large rectangular enclosure and a substantial 20-post timber building. A cremation burial was identified just outside the enclosure. This agricultural complex seems to have been in use until the late 3rd century, and may have continued into the 4th century, although at a much reduced level. Evidence of occupation continuing into the 4th century AD comprised three pits, including one pit with evidence of ritual deposition, and a small amount of pottery and coins deposited in the upper fills of earlier features.

There was limited evidence of post-Roman agricultural activity, including two field boundary ditches running across the main site, a group of slight, ragstone wall footings interpreted as animal pens and a field boundary of medieval or post-medieval date. The latter were discovered during stripping to the south-east of the main excavation area.

PRINCIPAL SITE: LITTLE STOCK FARM
Project Area 440
Chainage limits: 95+500 - 97+100
Parishes crossed: Smeeth
Integrated Site Report reference: Ritchie 2006
Map Window 33

Fieldwork event: Littlestock Farm
Event code: URL 90
HS1 chainage: 96+600 - 97+000
NGR: TR 0650 3870
Contractor: Oxford Archaeology

Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 33

Fieldwork event: Littlestock Farm
Event code: ARC LFM 95
HS1 chainage: 96+700
NGR: TR 0650 3865
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995f
Map Window 33

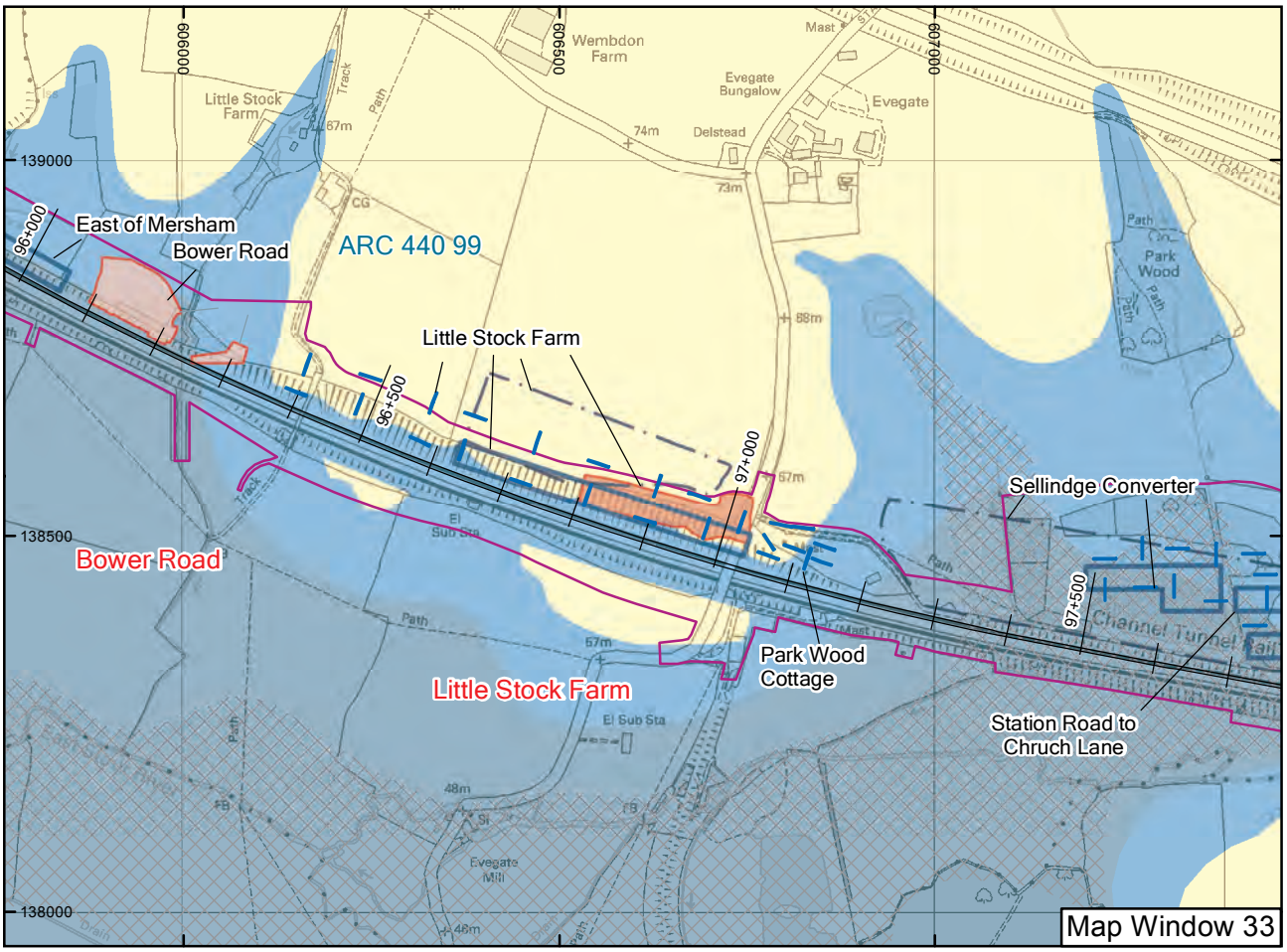
Two bands of increased noise were identified, and while these may be significant, a natural or modern origin seems more plausible.

Fieldwork event: Little Stock Farm
Event code: ARC LSF 98
HS1 chainage: 96+700
NGR: TR 0640 3862
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: January 1999
End of fieldwork: January 1999
Integrated Site Report reference: Ritchie 2006
Evaluation report reference: WA 1999f
Map Window 33

The evaluation comprised a total of 17 trenches, revealing 27 archaeological features, including ditches, pits, post- and stake-holes and other structural remains representing both Late Bronze Age and Late Iron Age settlement activity on the south-east brow of a slight promontory overlooking the East Stour River Valley. Medieval and/or post-medieval activity, possibly including substantial structural remains, appeared to be concentrated to the west of this prehistoric activity.

Fieldwork event: Little Stock Farm
Event code: ARC LSF 99
HS1 chainage: 96+700
NGR: TR 0653 3853
Contractor: Wessex Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: April 1999
End of fieldwork: May 1999
Integrated Site Report reference: Ritchie 2006
Evaluation report reference: WA 1999f
Map Window 33

The earliest activity was represented by isolated pits of Middle Neolithic date and two pits of Late Bronze Age–Early Iron Age date were also found, one containing several pots in a placed deposit. Most of the evidence was of Iron Age date; enclosures, droveways and a small enclosure containing a possible roundhouse were found, as well as two burials. With the exception of a later Iron Age four-post structure, other post-built buildings were difficult to identify from the array of postholes. The enclosures were re-worked several times and it seems likely that ditches found in the evaluation of Park Wood Cottage immediately to the east represent further enclosures. Activity seems to have continued at



Park Wood Cottage into the early Roman period but an apparently isolated cremation burial of Roman date may be associated with the settlement at Bower Road 400m to the west. A single probable sunken-featured building of Anglo-Saxon date was found, as was a medieval quarry and ditches.

Fieldwork event: Park Wood Cottage, Mersham
Event code: ARC PWC 99
HS1 chainage: 97+100
NGR: TR 0682 3847
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: April 1999
End of fieldwork: April 1999
Integrated Site Report reference: Ritchie 2006
Evaluation report reference: WA 1999g
Map Window 33

The evaluation comprised a total of eight trenches. The evaluation revealed a total of 17 archaeological features, comprising ditches and pits dating from the Late Iron Age/Early Roman period and medieval period, which were considered to be indicative of field systems as opposed to settlement remains.

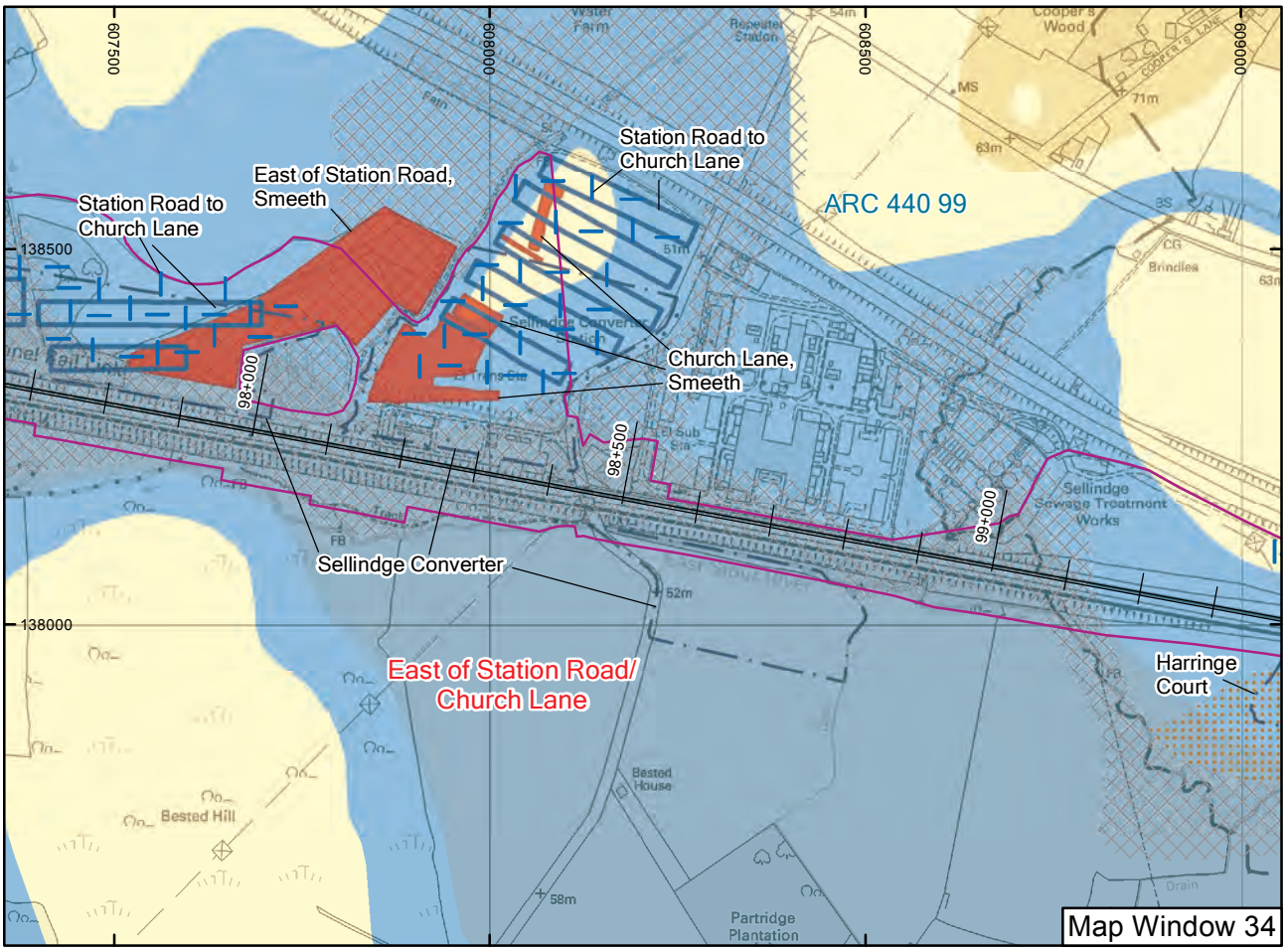
Fieldwork event: Sellindge Converter
Event code: URL 90
HS1 chainage: 97+200 - 98+500
NGR: TR 0400 4050
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Windows 33–4

PRINCIPAL SITE: EAST OF STATION ROAD/ CHURCH LANE
Project Area 440
Chainage limits: 97+150 - 99+000
Parishes crossed: Sellindge and Smeeth
PX Assessment reference (no ISR): URS 2000c
Map Windows 33–34

Fieldwork event: Station Road to Church Lane
Event code: ARC SRCL 95
HS1 chainage: 97+800
NGR: TR 0750 3840
Contractor: Geophysical Surveys of Bradford
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: GSB 1995k
Map Window 34

Magnetometry and magnetic susceptibility surveys were carried out. Linear and pit type responses have been noted together with a large diffuse pit type response towards the southern limit. Whilst these responses could be archaeologically significant, their close proximity to the river could suggest a natural origin such as pockets of magnetic gravels.

Fieldwork event: Station Road to Church Lane, Sellindge
Event code: ARC SCL 97
HS1 chainage: 97+800



NGR: TR 0750 3840
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: October 1997
End of fieldwork: October 1997
Evaluation report reference (no ISR): OA 1998g
Map Window 34

The evaluation comprised a total of 58 trenches. Worked flint of probable Mesolithic date was recovered from alluvial deposits adjacent to a small tributary of the East Stour river. A buried soil horizon, of later prehistoric date, was recorded within colluvial deposits in the eastern part of the area. A number of archaeological features of similar date were also recorded, both within the colluvium and on a bedrock knoll overlooking the East Stour river. Archaeological features of Late Iron Age date were identified on a low ridge overlooking the alluvial floodplain. A number of undated, though probably post-Roman, drainage ditches were found.

Fieldwork event: East of Station Road, Smeeth
Event code: ARC STR 99
HS1 chainage: 98+000
NGR: TR 0780 3850
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: April 1999
End of fieldwork: June 1999
PX assessment report reference (no ISR): URS 2000c
Map Window 34

A number of ditches and gullies were revealed. Finds were sparse and the pottery was mainly Late Iron Age/Early Roman. A small concentration of pottery from the central part of the site, in association with some minor gullies and possible postholes, suggests limited occupation, although no structures could be identified. Limited palaeoenvironmental assessment was undertaken in a minor stream valley.

Fieldwork event: Church Lane, Smeeth
Event code: ARC CHL 98
HS1 chainage: 98+200
NGR: TR 0800 3840
Contractor: Oxford Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: November 1998
End of fieldwork: January 1999
PX assessment report reference (no ISR): URS 2000c
Map Window 34

Two concentrations of mixed Mesolithic and later prehistoric worked flint were recorded. Two ditches were identifies that produced pottery of Middle or Late Bronze Age date. A thin scatter of unstratified Roman, medieval and post-medieval pottery, all showing signs of considerable abrasion, was recovered during the excavation.

Fieldwork event: Sellindge and Barrowhill
Event code: ARC 440 99
HS1 chainage: 98+600 to 102+000
NGR: TR 0900 3800
Contractor: Oxford Archaeology
Type of investigation: Watching brief discovery
Start of fieldwork: July 1999
End of fieldwork: September 2000
Watching brief interim report reference (no ISR): URS 2003
Map Window 34 (not illustrated)

Two concentrations of worked flint, comprising 40 and 33 pieces, were recovered during stripping (at 99+300 and 99+500). The majority of the flint is Neolithic, but occasional Mesolithic blades were also noted. A shallow pit, of possible medieval date, was discovered, containing a charcoal and fired clay rich fill (99+290). A short segment of medieval ditch was investigated (99+780).

PRINCIPAL SITE: TALBOT HOUSE
Project Area 440
Chainage limits: 99+000 - 102+000
Parishes crossed: Sellindge
PX Assessment reference (no ISR): OA 2002
Map Windows 35–36

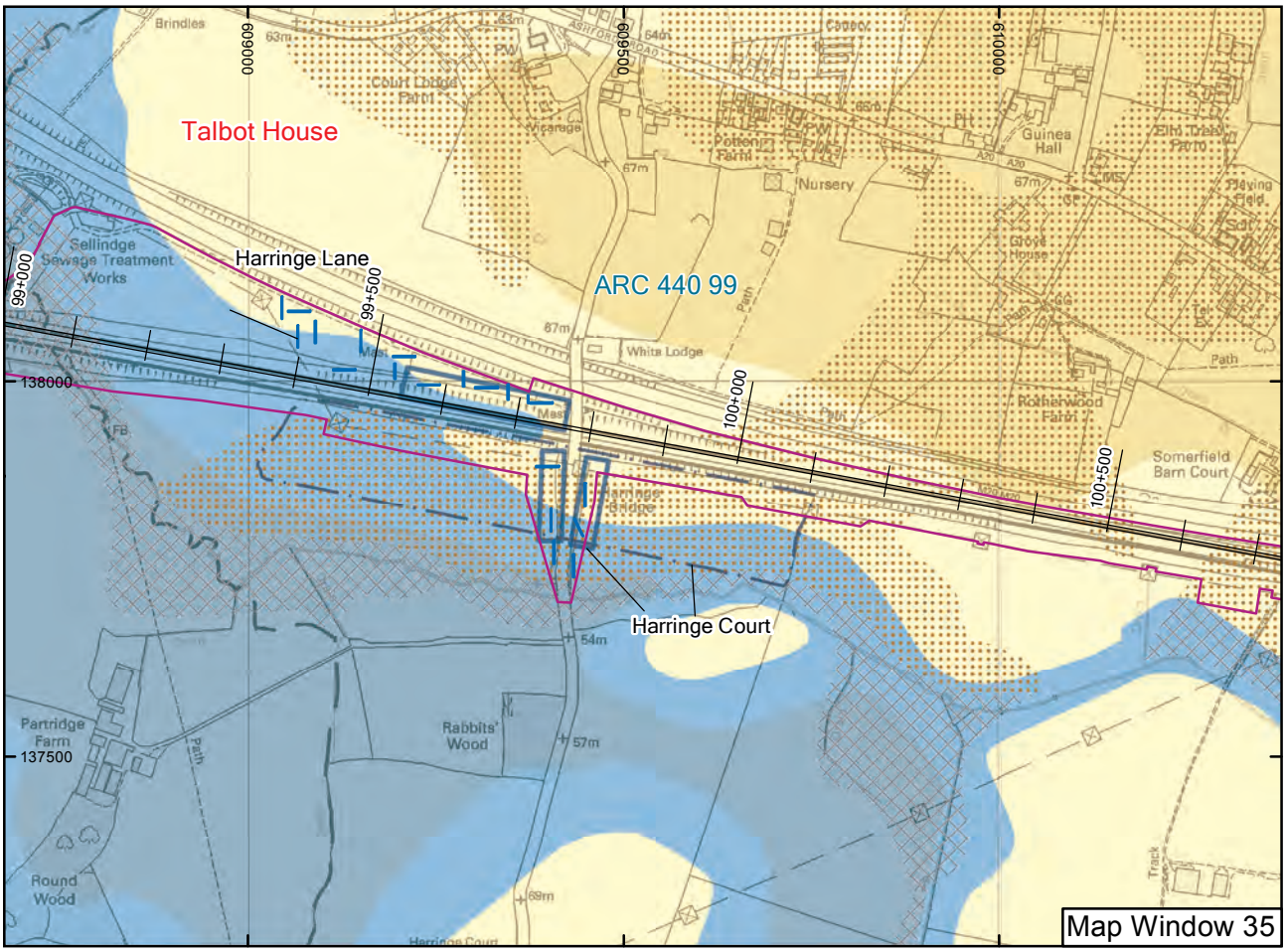
Fieldwork event: Harringe Court
Event code: URL 90
HS1 chainage: 99+400 - 100+100
NGR: TR 0950 3790
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 35

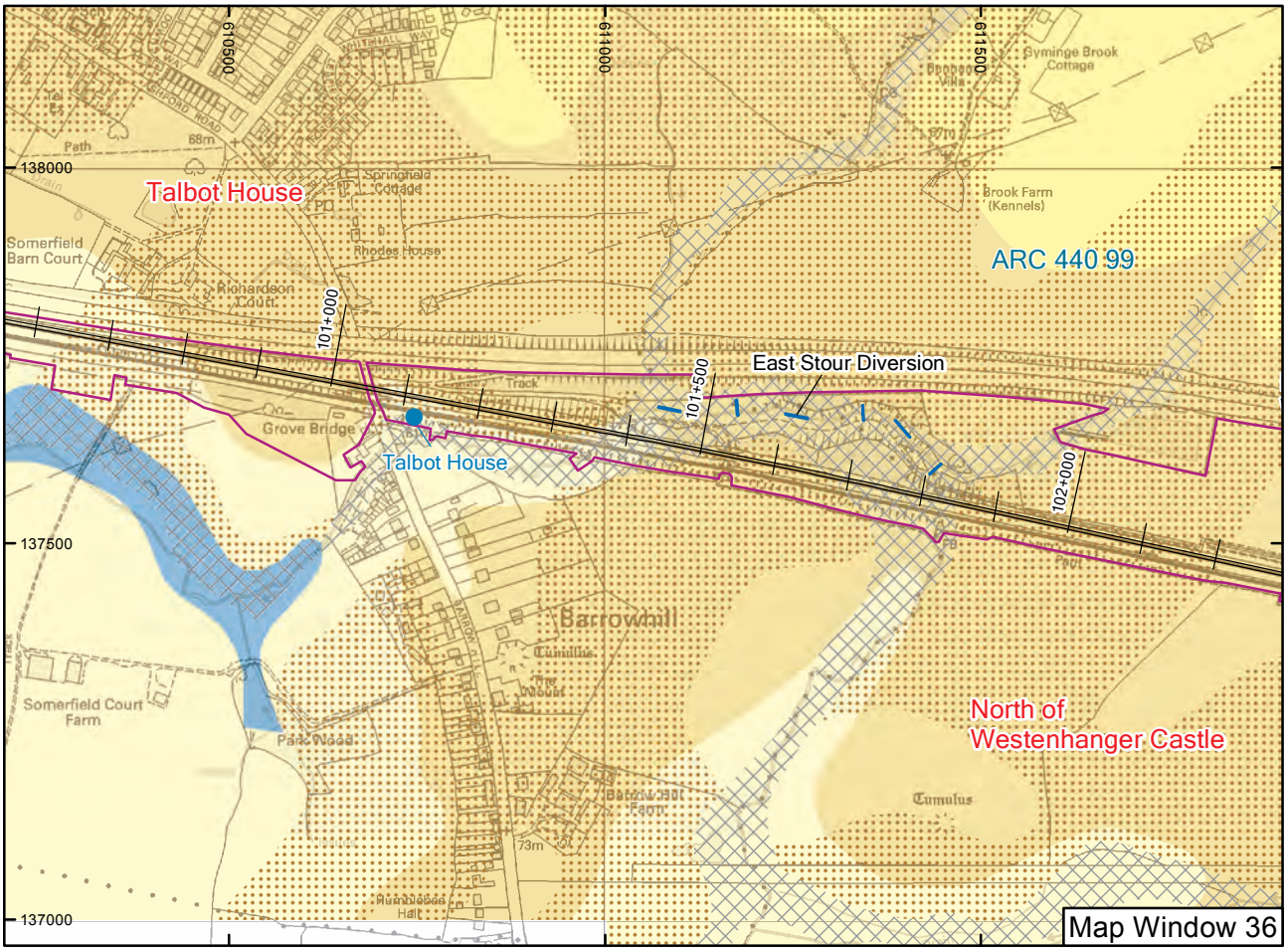
Fieldwork event: Harringe Court
Event code: ARC HNG 95
HS1 chainage: 99+700
NGR: TR 0950 3790
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 35

Fieldwork event: Harringe Lane
Event code: ARC HNG 97
HS1 chainage: 99+400 - 100+100
NGR: TR 0950 3790
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: June 1998
End of fieldwork: July 1998
Evaluation report reference: WA 1999d
Map Window 35

The evaluation comprised a total of 20 trenches. A possible settlement of Late Iron Age/Early Roman date was identified, comprising six shallow ditches and two possible hearths.

Fieldwork event: Talbot House, Sellindge
Event code: ARC TBH 00
NGR: TR 0506 3932
HS1 chainage: 101+100
NGR: TR 1070 3770
Contractor: Oxford Archaeology
Type of investigation: Building investigation (including archaeology)
Start of fieldwork: January 1999


Talbot House
Harringe Lane
ARC 440 99
Harringe Court
Map Window 35
609000
609500
610000
138000
137500
99+000
99+500
100+000
100+500
Sellindge Sewage Treatment Works
Partridge Farm
Rabbits' Wood
Round Wood
Somerfield Barn Court
Rotherwood Farm
White Lodge
Nursery
Guinea Hall


Talbot House
ARC 440 99
East Stour Diversion
Grove Bridge
Talbot House
Barrowhill
North of Westenhanger Castle
Tumulus
Map Window 36
610500
611000
611500
138000
137500
137000
101+000
101+500
102+000
Somerfield Barn Court
Richardson Court
Springfield Cottage
Rhodes House
Brook Farm (Kennels)
Byminge Brook Cottage
Somerfield Court Farm

End of fieldwork: January 1999
Building survey report reference (no ISR): OA 1999b
Map Window 36

Talbot House originated in the middle years of the 15th century as a traditional, timber-framed 'Wealden' house, combining a centrally located 2-bay open hall with storeyed, jettied end bays beneath a single, unitary roof. The building as recorded retains a high proportion of primary structural fabric, including such details as primary wattle and daub infill panels, allowing for a fairly detailed reconstruction of its original appearance. Unfortunately the central 'open' truss with moulded tie beam and crown-post were removed during modifications undertaken in the mid-16th century. The house displays a standard range of structural and decorative features, though it also includes a number of less common structural details. A series of five 'combed' daub panels revealed below the dais beam of the hall during the dismantling of the house represents a discovery of particular, intrinsic interest and the inclusion of a representational human figure would appear to be a unique and unparalleled discovery. These panels were removed prior to conservation and have been deposited with the Weald and Downland Open Air Museum, Singleton, West Sussex.

In the mid-16th century, an upper floor was inserted into the open hall and the former open fire was enclosed within a timber framed, single-flue stack. Such improvements represent a standard development in the evolution from traditional, medieval open hall to post-medieval storeyed house and reflect a contemporary shift in attitudes towards comfort and privacy. The inserted floor at Talbot House includes a number of features of interest and is remarkable for its almost complete survival. A programme of dendrochronological sampling and analysis has allowed for the insertion of the floor to be firmly dated to between 1546–66AD.

The replacement of the simple, single-flue timber stack by the double-flue brick stack in the late 17th century represents the conclusion of the process of conversion begun *c* 150 years earlier, again increasing the comfort of the house to reflect contemporary tastes.

The later phases of modification effectively masked the medieval arrangements of the building externally. Following the construction of the London to Ashford mainline railway in the early 1840s, the property was divided into three 'cottages' and converted for use as labourer's accommodation, in which form it remained up until a programme of conversion undertaken in 1985 restored the house to a single dwelling.

Fieldwork event: East Stour Diversion, Barrowhill, Sellindge
Event code: ARC ESD 98
HS1 chainage: 101+400 - 101+800
NGR: TR 1120 3770
Contractor: Canterbury Archaeological Trust
Type of investigation: Evaluation
Start of fieldwork: February 1999
End of fieldwork: February 1999
Evaluation report reference (no ISR): CAT 1999b
Map Window 36

The evaluation comprised a total of six trenches. No archaeological features were present, but a former channel of the River West Stour was identified.

PRINCIPAL SITE: NORTH OF WESTENHANGER CASTLE
Project Area 440
Chainage limits: 102+000 - 105+500
Parishes crossed: Stanford
Integrated Site Report reference: Gollop 2006
Map Windows 37–38

Fieldwork event: Westenhanger, Stanford
Event code: URL 90
HS1 chainage: 102+300 - 103+100
NGR: TR 1200 1375
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 37

Fieldwork event: North of Westenhanger Castle, Stanford
Event code: ARC WGC 95
HS1 chainage: 102+500
NGR: TR 1210 3750
Contractor: A.Bartlett and Associates
Type of investigation: Geophysical survey
Start of fieldwork: 1995
End of fieldwork: 1995
Survey report reference: ABA 1996a
Map Window 37

Fieldwork event: North of Westenhanger Castle, Stanford
Event code: ARC WGC 97
HS1 chainage: 102+500
NGR: TR 1210 3750
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: October 1997
End of fieldwork: October 1997
Integrated Site Report reference: Gollop 2006
Map Window 37

The evaluation comprised a total of 17 trenches. Archaeological features were found in six of the 17 trenches, consisting of a possible medieval corn-drying oven and a series of probable field ditches of medieval date.

Fieldwork event: North of Westenhanger Castle, Stanford
Event code: ARC WGC 98
HS1 chainage: 102+500
NGR: TR 1210 3750
Contractor: Canterbury Archaeological Trust
Type of investigation: Detailed excavation
Start of fieldwork: March 1999
End of fieldwork: April 1999
Integrated Site Report reference: Gollop 2006
Map Window: 37

See ARC WSG 99 below.

Fieldwork event: North of Westenhanger Castle, Stanford
Event code: ARC WSG 99
HS1 chainage: 102+500
NGR: TR 1210 3750
Contractor: Oxford Archaeology
Type of investigation: Targeted watching brief
Start of fieldwork: May 1999

End of fieldwork: July 2000
Integrated Site Report reference: Gollop 2006
Map Window: 37

Evidence for Bronze Age activity was limited to four features. In the Iron Age, a farming landscape started to emerge including a trackway, a penannular gully and a well defined enclosure. This activity may have extended into the Early Roman period.

The early medieval period represented the main phase of development of the site (*c* AD 1050–1175) with the establishment of a possible small farmstead with associated enclosure system. Although the nature, morphology, and chronological development of the farmstead is difficult to define, as no clear building plans survived, four potential structures have been identified along with associated refuse pits, possible latrines and possible livestock enclosures. This occupation appears to have been short-lived and was abandoned by the late 12th century. No direct evidence for settlement activity was apparent from that date onwards and the site seemed to have been subsequently occupied by successive field systems, showing an eastward shift in activity across the site in the 13th century. Late medieval and post-medieval evidence are represented by a limited number of features, generally in the eastern part of the site, and related to agricultural activities.

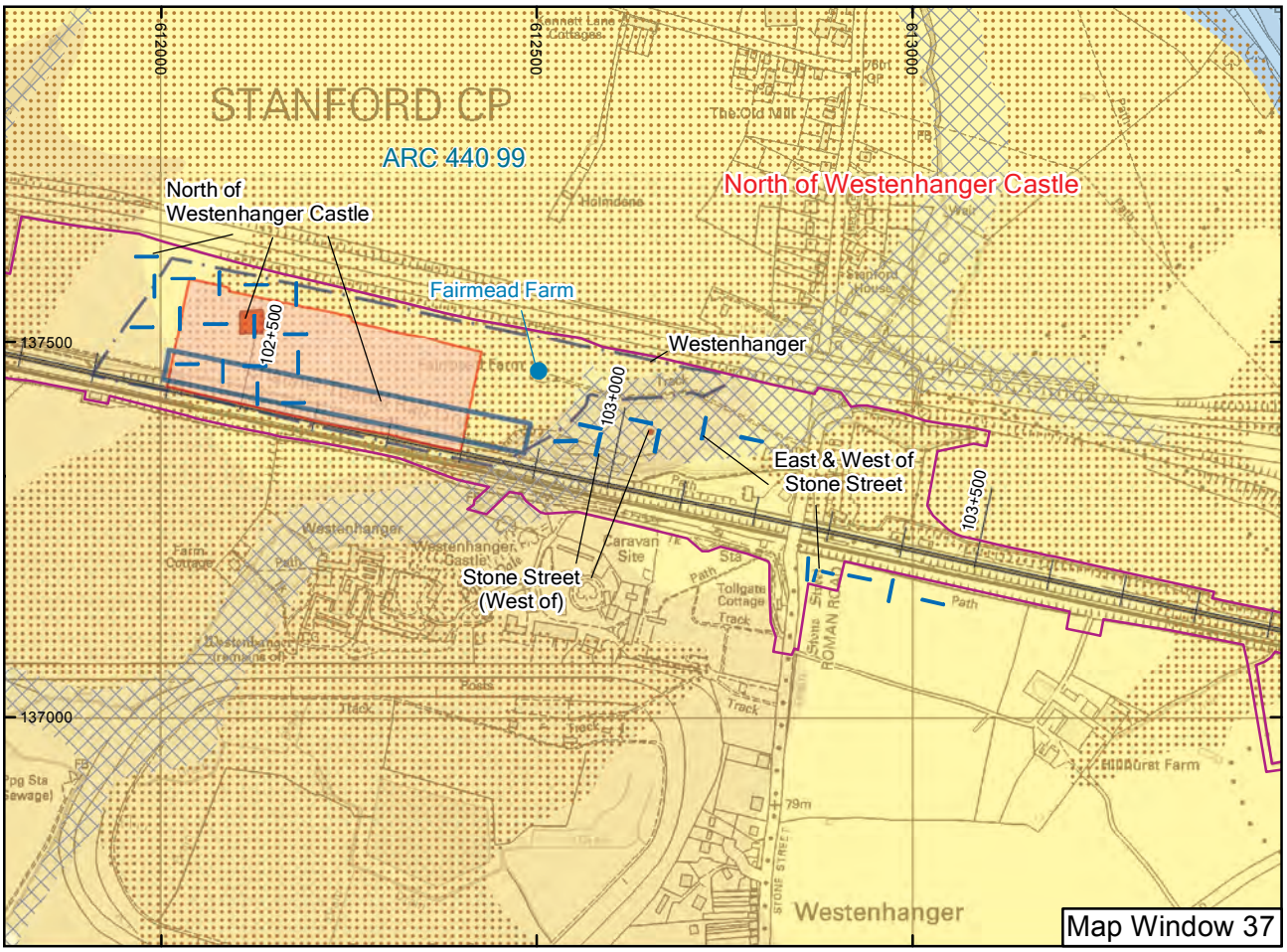
Fieldwork event: East and West of Stone Street, Westenhanger
Event code: ARC SST 98
HS1 chainage: 102+900 - 103+500
NGR: TR 1275 3745 and TR 1290 3705
Contractor: Canterbury Archaeological Trust
Type of investigation: Evaluation
Start of fieldwork: February 1999
End of fieldwork: March 1999
Evaluation report reference: CAT 1999e
Map Window 37

The evaluation comprised a total of 12 trenches. A buried soil layer of Late Bronze Age or Roman date was identified, sealed beneath alluvial deposits, and a number of post-medieval features were recorded.

Fieldwork event: West of Stone Street
Event code: ARC SST 98
HS1 chainage: 103+040
NGR: TR 1275 3735
Contractor: Wessex Archaeology
Type of investigation: Evaluation
Start of fieldwork: February 1999
End of fieldwork: February 1999
Evaluation report reference: WA 1999a
Map Window 37

A sequence of alluvial deposits was recorded, including a buried soil layer that is likely to be of Late Bronze Age or Roman date.

Fieldwork event: Stone Street (West of), Westenhanger
Event code: ARC SST 99
HS1 chainage: 103+040
NGR: TR 1275 3735
Contractor: Wessex Archaeology
Type of investigation: Detailed excavation
Start of fieldwork: February 2001
End of fieldwork: February 2001



Interim report reference (no ISR): WA 2002
Map Window 37

The investigation revealed a 1.3m thick sequence of deposits that was identified in terms of formation process and therefore potential chronological sequence, although no archaeological features or artefacts were recorded during the excavation.

Gravel and sand, identified at the base of the sequence, may be indicative of high-energy water action, and therefore possibly correlate either with seasonal discharge during the Devensian glaciation, or be associated with glacial retreat immediately following this glaciation (*c* 110000–11000 BP). However, the following Late Boreal/Early Atlantic period (*c* 11000–9000 BP) is also associated with a series of high-energy cut and fill phases within alluvial zones. The presence of waterlogged plant macrofossils within later fluvial gravel probably precludes the possibility that this deposit is pre-Holocene, and is more likely to be Neolithic or Bronze Age in date (*c* 4000–700 BC). Parallels with similar sequences recorded elsewhere in Kent suggest the distinct marker-event, probably indicative of a statis/stabilisation horizon, which may either be Late Bronze Age (*c* 1100–700 BC) or Roman (AD 43–410) in date.

Fieldwork event: Sandling Construction Site
Event code: ARC SCS 98
HS1 chainage: 104+300
NGR: TR 1410 3730
Contractor: Museum of London Archaeology Service
Type of investigation: Evaluation
Start of fieldwork: September 1998
End of fieldwork: September 1998
Evaluation report reference: MoLA 1999f
Map Window 38

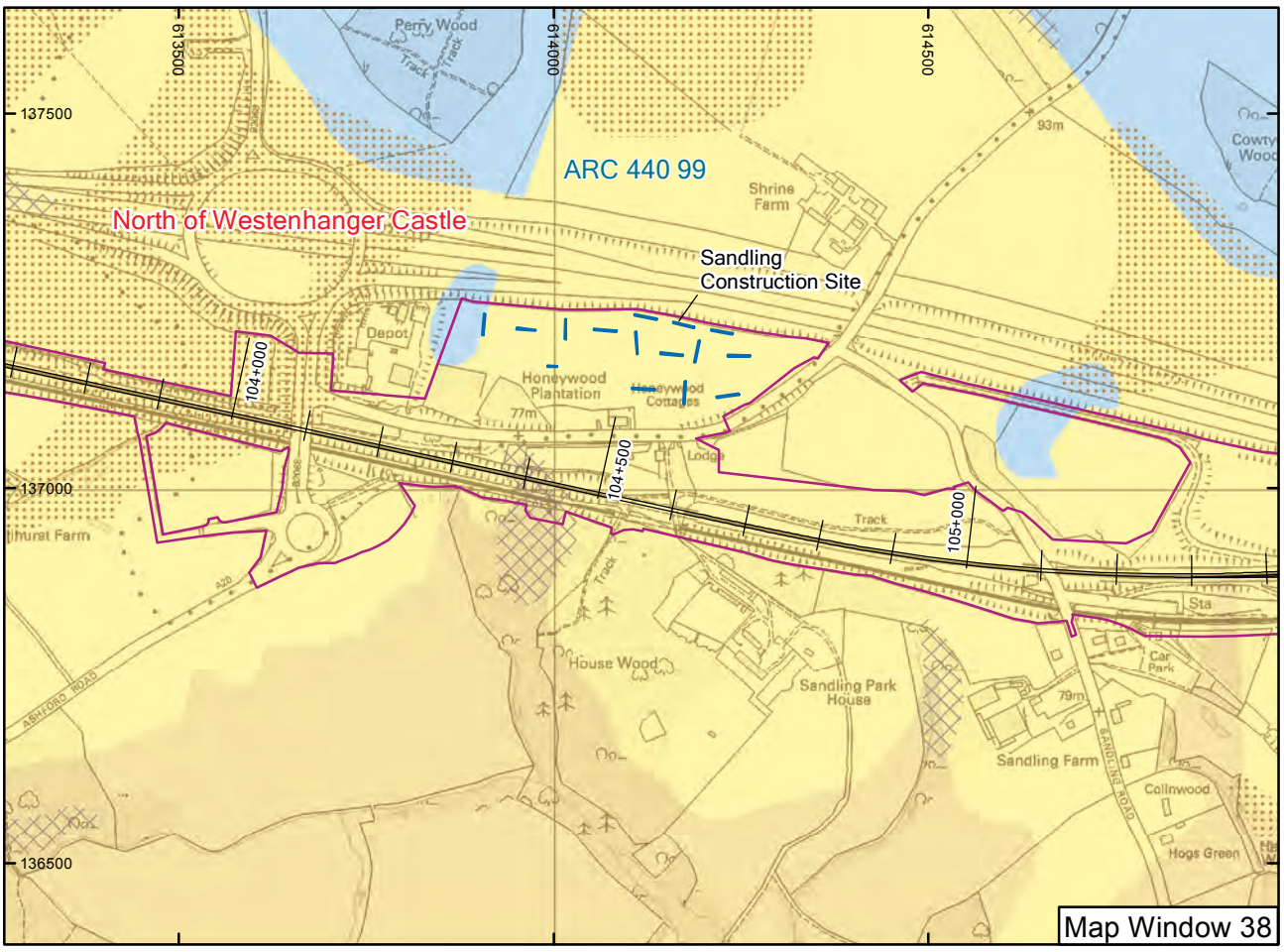
The evaluation comprised a total of 15 trenches. No archaeological remains were encountered.

Fieldwork event: Stanford and Sandling
Event code: ARC 440 99
HS1 chainage: 102+800 to 105+500
NGR: TR 1400 3700
Contractor: Oxford Archaeology
Category: Watching brief discovery
Start of fieldwork: July 1999
End of fieldwork: September 2000
Interim report reference (no ISR): WB 2003
Map Window 38 (not illustrated)

A robbed and backfilled stone well was discovered. It did not produce any dating evidence (104+400). A further 100m to the east, a quarry cut of uncertain date, mainly filled with stone debris, was found. A pit of possible Roman date was found in close proximity (104+500).

An area 38m x 13.5m was stripped under archaeological control, revealing four pits and several ditches. Most of the ditches produced Late Iron Age–Early Roman pottery, although one was medieval (103+500).

PRINCIPAL SITE: SALTWOOD TUNNEL
Project Area 440
Chainage limits: 104+500 - 108+750



Parishes crossed: Saltwood
Integrated Site Report reference: Riddler and Trevarthen 2006
Map Window 39

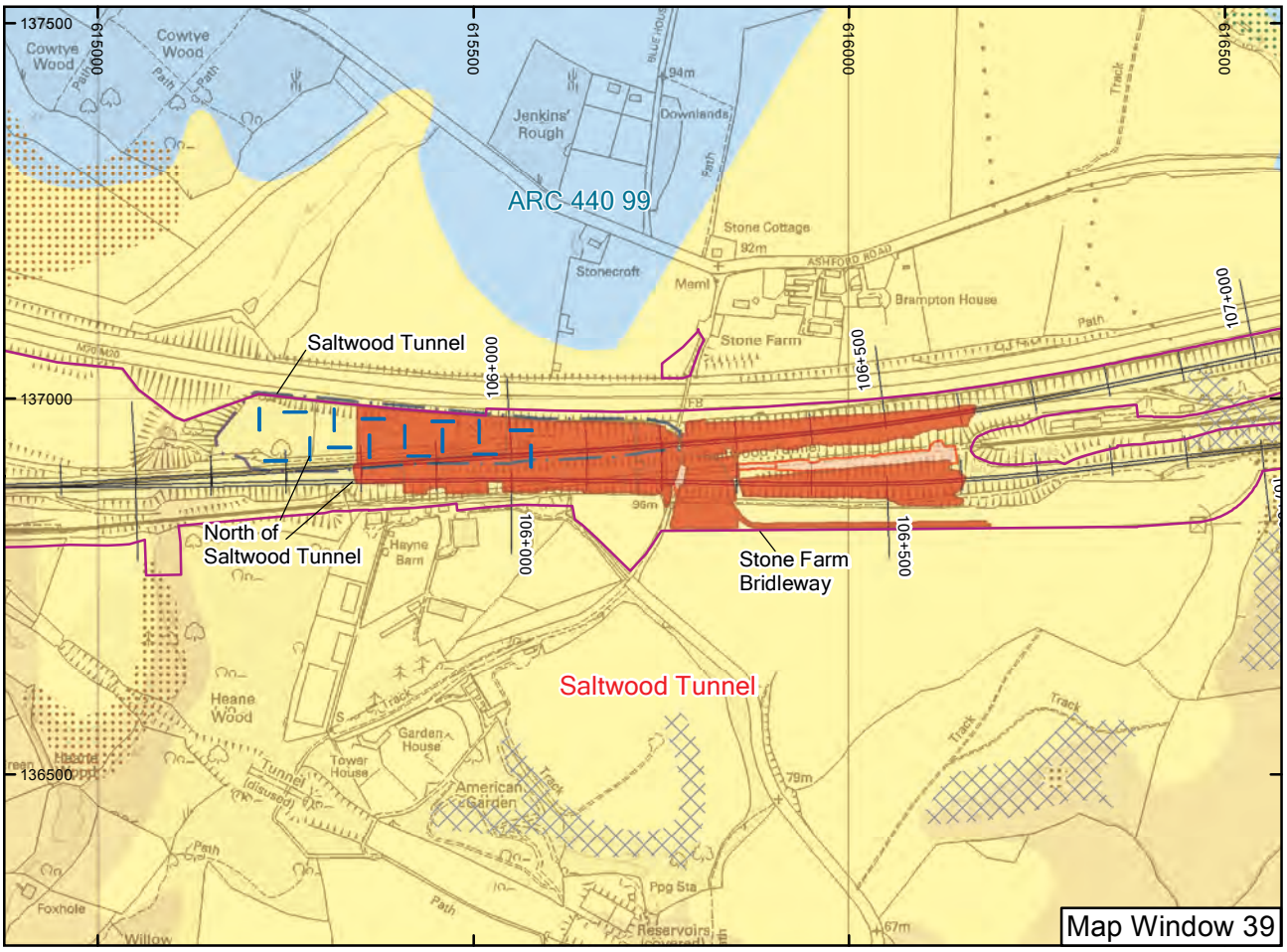
While most of the sites in this gazetteer are summarised at the fieldwork event level, Saltwood Tunnel is summarised at the Principal Site level, as the complex sequence of field investigations would otherwise obscure the archaeological results. Oxford Archaeology undertook initial phases of fieldwalking and evaluation trenching (ARC SLT 97). The first phase of detailed excavation was carried out by the Canterbury Archaeological Trust (CAT) under the event code ARC SLT98. A second phase of evaluation trenching revealed early Anglo-Saxon inhumation burials immediately west of the Stone Farm bridleway, and an area around these was also fully excavated (ARC SLT98C). In 1999 Wessex Archaeology (WA) was commissioned to maintain a rolling 'strip-map-sample' excavation programme on land east of the bridleway (ARC SFB99), whilst CAT concurrently excavated the remaining ground between their previous sites, and beneath the western portion of the Saltwood tunnel bund (ARC SLT99). In the final phase of fieldwork WA recorded remains preserved in three separate areas: under the eastern tunnel-bund, within the footprint of a temporary soil storage area, and beneath the former Stone Farm bridleway (ARC SFB01). This group of sites was combined within the Saltwood Tunnel Principal Site for post-excavation analysis purposes (Riddler and Trevarthen 2006).

A complex multi-period site was revealed, with evidence for ceremonial and funerary land use as well as for settlement and agriculture. Activity earlier than the Bronze Age was mainly restricted to unstratified or residual flint and pottery, but a group of eight Mesolithic Horsham-type retouched points from a small pit-like feature may date to the 7th millennium BC, and three Early Neolithic pits attest to activity, perhaps domestic, in the mid–late 4th millennium BC. In the Early Bronze Age a barrow cemetery developed. Five barrows and a flat grave dated to the late 3rd–early 2nd millennium BC.

Limited Middle Bronze Age evidence, comprising a cremation burial, a small pit and other occasional finds of Deverel-Rimbury pottery, suggest the cemetery was respected until the late 2nd millennium BC but, in the Late Bronze Age, a settlement and field-system were established. Early to Middle Iron Age agriculture is also attested by ditches and at least one track or droveway. No contemporary settlement remains were discovered, but an Early–Middle Iron Age inhumation cemetery and a square enclosure, perhaps a mortuary enclosure, were established at some time between the 8th and 4th centuries BC. A Middle Iron Age inhumation grave of 2nd to 4th century BC date also lay near the western end of the site.

Early Roman domestic finds abounded at the western end of the excavation, mainly near a sunken trackway and in pits and field-enclosures to either side of it. The quantity and range of finds, and the presence of two small cremation cemeteries, strongly suggest a small rural settlement lay close-by. That this settlement waned after the mid–late 3rd century is inferred from a greatly reduced suite of remains, and from progressive infilling of the sunken trackway. Limited occupation, or at least occasional use of the site, is likely to have continued into the later 4th century.

Early Anglo–Saxon evidence from Saltwood Tunnel is dominated by three separate inhumation cemeteries, each located in the vicinity of a Bronze Age barrow. Seventeen graves were excavated within the eastern cemetery, 59 in the western cemetery and 141 in the central cemetery. Both the eastern and



western cemeteries appear to have begun in the early 6th century. The eastern cemetery lasted only for one or two generations, whilst the western cemetery continued well into the 7th century. The central cemetery was established during the late 6th century and continued throughout the 7th century. From the early 6th century onwards there were always two cemeteries in use at the same time. The central cemetery may have begun as a replacement for the eastern cemetery, but its plan subsequently changed with the deposition of four auspicious graves, each set in a north-south line at roughly 40m spacings. Three graves were large weapon burials and the fourth was an inhumation of female gender buried with gold and silver jewellery. The earliest of these graves, at the north of the cemetery, was probably deposited in the early years of the 7th century whilst the latest, at the south, may have been placed there around AD 625. Each burial attracted a range of satellite graves, arranged around it but not encroaching into its burial mound. Later graves spread to the south and the east, with a number of graves placed on the opposite side of the trackway 226. The latest graves within the central and western cemeteries were arranged in neat rows. Three Early Anglo–Saxon sunken-featured buildings were also identified, all of which lay in the vicinity of the cemeteries and a little to the north of them.

Several early medieval ditches and pits towards the eastern end of the excavation mark the location of a small rural site, probably 10th or 11th century in date. Other medieval and post-medieval pottery was recovered from features and topsoil in the north-western corner of the excavation, where elements of the ancient Roman landscape may have been exploited as rectilinear fields, or possibly stock-pens. Remains associated with construction of the Saltwood railway tunnel in the early 1840s and relating to the presence of a military barracks in the earlier 20th century were recorded.

Fieldwork event: Saltwood Tunnel
Event code: URL 90
HS1 chainage: 105+600 - 106+200
NGR: TR 1550 3695
Contractor: Oxford Archaeology
Type of investigation: Surface artefact collection survey
Start of fieldwork: 1990
End of fieldwork: 1990
Survey report reference: URL 1995
Map Window 39

Fieldwork event: North of Saltwood Tunnel
Event code: ARC SLT 97
HS1 chainage: 105+700
NGR: TR 1410 3730
Contractor: Oxford Archaeology
Type of investigation: Evaluation
Start of fieldwork: October 1997
End of fieldwork: October 1997
Integrated Site Report reference: Riddler and Trevarthen 2006
Evaluation report reference: OA 1997i
Map Window 39

The evaluation comprised a total of 16 trenches. A concentration of Roman features was located within a well defined area towards the centre of the evaluation area. The features comprised mainly ditches with several pits and a linear hollow. A cremation burial was located at the eastern limits of the site.

Fieldwork event: North of Saltwood Tunnel
Event code: ARC SLT 98
HS1 chainage: 105+900
NGR: TR 1545 3695
Contractor: Canterbury Archaeological Trust
Type of investigation: Detailed excavation
Start of fieldwork: January 1999
End of fieldwork: March 1999
Integrated Site Report reference: Riddler and Trevarthen 2006
Map Window 39

See summary above.

Fieldwork event: North of Saltwood Tunnel
Event code: ARC SLT 98C
HS1 chainage: 106+100
NGR: TR 1575 3695
Contractor: Canterbury Archaeological Trust
Type of investigation: Detailed excavation
Start of fieldwork: May 1999
End of fieldwork: August 1999
Integrated Site Report reference: Riddler and Trevarthen 2006
Map Window 39

See summary above.

Fieldwork event: North of Saltwood Tunnel
Event code: ARC SLT 99
HS1 chainage: 106+100
NGR: TR 1575 3690
Contractor: Canterbury Archaeological Trust
Type of investigation: Detailed excavation
Start of fieldwork: August 1999
End of fieldwork: April 2000
Integrated Site Report reference: Riddler and Trevarthen 2006
Map Window 39

See summary above.

Fieldwork event: Stone Farm Bridleway, Saltwood
Event code: ARC SFB 99
HS1 chainage: 106+400
NGR: TR 1595 3695
Contractor: Wessex Archaeology
Type of investigation: Strip, map and sample excavation
Start of fieldwork: August 1999
End of fieldwork: April 2000
Integrated Site Report reference: Riddler and Trevarthen 2006
Map Window 39

See summary above.

Appendix 2

List of HS1 Section 1 digital reports

The organisation and component parts of the HS1 analysis and reporting structure have been described in Chapter 1. Presented here is a full list of the HS1 Section 1 digital reports that have been deposited with the Archaeology Data Service (ADS). The ADS uses the Digital Object Identifier (DOI) System for uniquely identifying its digital content, which are persistent identifiers used to consistently and accurately reference digital objects and/or content. The HS1 (formerly known as CTRL) archive has the following DOI:

ADS 2006 Collection: 335 doi:10.5284/1000230

http://ads.ahds.ac.uk/catalogue/projArch/ctrl

Part 1: Printed interim publications

Glass, H, 2000 The Channel Tunnel Rail Link, *Current Archaeology* 168, 189-220 (interim summary on conclusion of main fieldwork phase)

Glass, H, 1999 Archaeology of the Channel Tunnel Rail Link, Archaeologia Cantiana 119, 189-220 (interim summary on conclusion of main fieldwork phase)

HS1, 2003 *Tracks and Traces: The Archaeology of the Channel Tunnel Rail Link*, Oxford Wessex Archaeology. ISBN 13-9780954597009, ISBN 10-0954597001

HS1, 2011 *Tracks and Traces: The Archaeology of High Speed 1*. Published by IC Art and Design for HS1 Limited. London. ISBN: 978-0-9556497-1-4 (popular booklet)

Printed volumes for HS1 Section 2 form an entirely separate set of publications, included in the bibliography.

Part 2: Integrated site report series

Phase 2 digital archive

Askew, P, 2006 The Prehistoric, Roman and Medieval landscape at Northumberland Bottom, Gravesend, Kent, *CTRL integrated site report series*, in ADS 2006

Biddulph, E, 2006 The Roman cemetery at Pepper Hill, Southfleet, Kent, *CTRL integrated site report series*, in ADS 2006

Brady, K, 2006a The prehistoric landscape at Tutt Hill, Westwell, Kent, *CTRL integrated site report series*, in ADS 2006

Brady, K, 2006b The prehistoric and Roman landscape at Beechbrook Wood, Westwell, Kent, *CTRL integrated site report series*, in ADS 2006

Bull, R, 2006a The prehistoric landscape at Whitehill Road, Longfield and New Barn, Kent, *CTRL integrated site report series*, in ADS 2006

Bull, R, 2006b The prehistoric, Roman and medieval landscape at Tollgate, Cobham, Kent, *CTRL integrated site report series*, in ADS 2006

Davis, S, 2006 The prehistoric landscape at Cobham Golf Course, Cobham, Kent, *CTRL integrated site report series*, in ADS 2006

Diez, V, 2006a The late Iron Age and Roman settlement at Leda Cottages, Ashford, Kent, *CTRL integrated site report series*, in ADS 2006

Diez, V, 2006b The Roman settlement at Bower Road, Smeeth, Kent, *CTRL integrated site report series*, in ADS 2006

Diez, V, 2006c The late prehistoric and Roman landscape at Snarkhurst Wood, Maidstone, Kent, *CTRL integrated site report series*, in ADS 2006

Gollop, A, 2006 The late Iron Age and medieval landscape to the north of Westenhanger Castle, Stanford, Kent, *CTRL integrated site report series*, in ADS 2006

Hayden, C, 2006a The prehistoric landscape at White Horse Stone, Aylesford, Kent, *CTRL integrated site report series*, in ADS 2006

Hayden, C, 2006b The prehistoric landscape at Eyhorne Street, Hollingbourne, Kent, *CTRL integrated site report series*, in ADS 2006

Helm, R, 2006 Medieval ironworking evidence from Mersham, Kent, *CTRL integrated site report series*, in ADS 2006

Hill, J, 2006 The medieval manor at Parsonage Farm, Westwell, Kent, *CTRL integrated site report series*, in ADS 2006

Lawrence, S, 2006 The Iron Age settlement and Roman villa at Thurnham, Kent, *CTRL integrated site report series*, in ADS 2006

Mackinder, T, 2006 Iron Age settlement and an Anglo-Saxon cemetery at Cuxton, Kent, *CTRL integrated site report series*, in ADS 2006

Riddler, I, and Trevarthen, M, 2006 The prehistoric, Roman and Anglo-Saxon funerary landscape at Saltwood Tunnel, Kent, *CTRL integrated site report series*, in ADS 2006

Ritchie, K, 2006 The prehistoric settlement at Little Stock Farm, Mersham, Kent, *CTRL integrated site report series*, in ADS 2006

Trevarthen, M, 2006 The late Mesolithic and early Neolithic landscape at Sandway Road, Lenham, Kent, *CTRL integrated site report series*, in ADS 2006

Part 3: Scheme wide specialist report series

Phase 2 digital archive

Allen, M, 2006, Dating prehistoric to early medieval activity in Kent; a review of the radiocarbon dating, *CTRL scheme-wide specialist report series*, in ADS 2006

Barclay, A, Booth, P, Edwards, E, Mepham, L, and Morris, E L, 2006, Ceramics from Section 1 of the Channel Tunnel Rail Link, Kent, *CTRL schemewide specialist report series*, in ADS 2006

Giorgi, J and Stafford, E (eds) 2006 Palaeoenvironmental evidence from Section 1 of the Channel Tunnel Rail Link, Kent, *CTRL scheme-wide specialist report series*, in ADS 2006

Harding, P (ed) 2006 Prehistoric worked flint from Section 1 of the Channel Tunnel Rail Link, Kent, *CTRL scheme-wide specialist report series*, in ADS 2006

Mckinley, J, I (ed) 2006 Human Remains from Section 1 of the Channel Tunnel Rail Link, Kent, *CTRL Scheme-wide specialist report series*, in ADS 2006

Part 4: Specialist research report series

Phase 2 digital archive

Ceramics reports

Betts, I M, 2006 Thurnham Roman Villa: Ceramic Building Material and Stone, *CTRL Specialist Report Series*, in ADS 2006

Betts, I M, and Smith, T P, 2006 Parsonage Farm: Ceramic Building Material, *CTRL Specialist Report Series*, in ADS 2006

Biddulph, E, 2006 The Roman Pottery from Pepper Hill, Northfleet, Kent (ARC PHL97, ARC NBR98), *CTRL Specialist Report Series*, in ADS 2006

Blinkhorn, P, 2006 The Anglo-Saxon Pottery from Cuxton Anglo-Saxon Cemetery, Cuxton, Kent (ARC CXT 98), *Specialist Report Series*, in ADS 2006

Brown, L, 2006a The Late Iron Age and Roman pottery from Tollgate, Cobham, Kent (ARC TLG 98), *CTRL Specialist Report Series*, in ADS 2006

Brown, L, 2006b The Late Iron Age and Roman pottery from Bower Road, Smeeth, Kent (ARC 440/99), *CTRL Specialist Report Series*, in ADS 2006

Bryan, E, 2006 The later prehistoric pottery from Little Stock Farm, Mersham, Kent (ARC LSF99), *CTRL Specialist Report Series*, in ADS 2006

Bryan, E and Morris, E L, 2006 The later prehistoric pottery from Northumberland Bottom, Southfleet, Kent (ARC330 98, ARCWNB 98, ARCHRD98 Zone 3), *CTRL Specialist Report Series*, in ADS 2006

Edwards, E, 2006a The early prehistoric pottery from Northumberland Bottom, Southfleet, Kent, *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006b The early prehistoric pottery from Cobham Golf Course, Cobham, Kent (ARC CGC 98), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006c The early pehistoric pottery from White Horse Stone, Aylesford; Boxley, Kent (WHS98), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006d The early prehistoric pottery from Eyhorne Street, Hollingbourne, Kent (ARC 420 68+100-68+500 99), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006e The early prehistoric pottery from Sandway Road, Lenham, Kent (ARC SWR99), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006f The early prehistoric pottery from Tutt Hill, Westwell, Kent (ARC 430 83+800-84+900 99), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006g The early prehistoric pottery from Beechbrook Wood, Hothfield, Kent, *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006h The early prehistoric pottery from Little Stock Farm, Mersham, Kent (ARC LSF99), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006i The early prehistoric pottery from North of Westenhanger Castle, Stanford, Kent (ARC WGC 98), *CTRL Specialist Report Series,* in ADS 2006

Edwards, E, 2006j The early prehistoric pottery from North of Saltwood Tunnel, Saltwood, Kent (ARC SLT 98, ARC SLT 98C, ARC SLT 99, ARC SFB 99 and ARC SFB 01), *CTRL Specialist Report Series,* in ADS 2006

Every, R, 2006a The Late Iron Age and Roman pottery from Package 330/350 Chainage Zone 1, Whitehill Road, Longfield and Hook Green, Kent (ARC WHR 99), *CTRL Specialist Report Series*, in ADS 2006

Every, R, 2006b The Late Iron Age and Roman pottery from Zone 2 South of Station Road and Springhead Temple, Southfleet, Kent, *CTRL Specialist Report Series*, in ADS 2006

Every, R, 2006c The Late Iron Age and Roman pottery from Northumberland Bottom, Southfleet, Kent (ARC WNB 98), *CTRL Specialist Report Series*, in ADS 2006

Every, R, 2006d The Late Iron Age and Roman pottery from North of Saltwood Tunnel, Saltwood, Kent (ARC SLT 98), *CTRL Specialist Report Series*, in ADS 2006

Harris, A, Blinkhorn, P, Evison, V I, and Riddler I D, 2006 Early Anglo-Saxon Vessels and Containers from Saltwood Tunnel, *CTRL specialist report series*, in ADS 2006

Jones, G P, 2006a The late prehistoric pottery from Tollgate, Cobham, Kent (ARC TLG 98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006b ARC SNK 99 South of Snarkhurst Wood later prehistoric pottery, *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006c The later prehistoric pottery from Eyhorne Street, Hollingbourne, Kent (420 68+100-68+500 99), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006d ARC HOL 98/99 Holm Hill later prehistoric pottery, *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006e The later prehistoric pottery from Sandway Road, Lenham, Kent (ARC SWR98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006f The later prehistoric pottery from Hurst Wood, Charing, Kent (430 79+200-79+500 98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006g The later prehistoric pottery from Chapel Mill, Lenham, Kent (ARC CML99), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006h The later prehistoric pottery from East of Newlands, Charing, Kent (ARC 430 99/80+000), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006i The later prehistoric pottery from West of Blind Lane, Sevington, Kent (ARC BLN 98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006j The later prehistoric pottery from Mersham, Kent (MSH 98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006k The later prehistoric pottery from Church Lane, Smeeth, Kent (ARC CHL98), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006l The later prehistoric pottery from Saltwood Tunnel, Saltwood, Kent (ARC SLT 98, ARC SLT 98C, ARC SLT 99, ARC SFB 99, ARC SFB 01), *CTRL Specialist Report Series*, in ADS 2006

Jones, G P, 2006m The later prehistoric pottery from Beechbrook Wood, Hothfield, Kent, *CTRL Specialist Report Series*, in ADS 2006

Jones, G P and Morris, E L, 2006 Pepper Hill prehistoric pottery, *CTRL Specialist Report Series*, in ADS 2006

Keily, J, 2006a Report on the ceramic and stone finds, in Keily, J, Morris, E and Shaffrey, R, 2006

Keily, J, 2006b Small finds from Tollgate, *CTRL specialist report series*, in ADS 2006

Lyne, M, 2006a The Late Iron Age and Roman pottery from Hocker's Lane, Thurnham, Kent (ARC 420 62+200-63+000 99), *CTRL Specialist Report Series*, in ADS 2006

Lyne, M, 2006b The Late Iron Age and Roman pottery from Thurnham Roman Villa, Thurnham, Kent, *CTRL Specialist Report Series*, in ADS 2006

Lyne, M, 2006c The Late Iron Age and Roman Pottery from South of Snarkhurst Wood, Hollingbourne, Kent (ARC

SNK99), *CTRL Specialist Report Series*, in ADS 2006
Lyne, M, 2006d The Late Iron Age and Roman pottery from Leda Cottages, Westwell, Kent (ARC 430/83+200), *CTRL Specialist Report Series*, in ADS 2006
Lyne, M, 2006e The Late Iron Age and Roman pottery from Beechbrook Wood, Hothfield, Kent, *CTRL Specialist Report Series*, in ADS 2006
McNee, B and Morris, E L, 2006a The later prehistoric pottery from Zone 2, Southfleet, ARC 330 98 and ARC SSR 99, Zone 2, *CTRL Specialist Report Series*, in ADS 2006
McNee, B and Morris, E L, 2006b The later prehistoric pottery from Cobham Golf Course, Cobham, Kent (ARC CGC 98), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006a The post-Roman pottery from Northumberland Bottom, Southfleet, Kent (WNB 98), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006b The post-Roman pottery from Tollgate, Cobham, Kent (ARC TLG 98), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006c The post-Roman pottery from Boarley Farm and Pilgrim's Way, Aylesford; Boxley, Kent, *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006d The post-Roman pottery from Thurnham, Thurnham, Kent (ARC THM 98), *CTRL Specialist Report Series*, in ADS 200
Mepham, L, 2006e The medieval pottery from Parsonage Farm, Westwell, Kent (ARC 430 84+900-85+100 99), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006f The post-Roman pottery from Beechbrook Wood, Hothfield, Kent, *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006g The post-Roman pottery from Mersham, Mersham, Kent (ARC MSH 98), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006h The post-Roman pottery from Bower Road, Smeeth, Kent (ARC 440/99), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006i The post-Roman pottery from Little Stock Farm, Mersham, Kent (ARC LSF 99), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006j The post-Roman pottery from North of Westenhanger Castle, Stanford, Kent (ARC WGC 98), *CTRL Specialist Report Series*, in ADS 2006
Mepham, L, 2006k The medieval pottery from North of Saltwood Tunnel, Saltwood, Kent (ARC SLT 98), *CTRL Specialist Report Series*, in ADS 2006
Morris, E L, 2006a Briquetage, in Keily, J, Morris, E, Shaffrey, R 2006
Morris, E L, 2006b The later prehistoric pottery from Cuxton Anglo-Saxon Cemetery, Cuxton, Kent (ARC CXT 98), *CTRL Specialist Report Series*, in ADS 2006
Morris, E L, 2006c The later prehistoric pottery from White Horse Stone (ARC WHS 98), Pilgrims Way (ARC PIL 98), Boarley Farm East (ARC BFE 98), Boarley Farm West (ARC BFW 98) and Boarley Farm (ARC 420 58+200, 59+000, 59+300 98/9), *CTRL Specialist Report Series*, in ADS 2006
Morris, E L, 2006d The later prehistoric pottery from Tutt Hill, Westwell, Kent (ARC 430 83+800-84+900 99), *CTRL Specialist Report Series*, in ADS 2006
Poole, C, 2006 The prehistoric and Roman fired clay from Beechbrook Wood, Hothfield Kent (ARC BBW00), in ADS 2006
Smith, T P, 2006a West of Northumberland Bottom: Building material, *CTRL Specialist Report Series*, in ADS 2006
Smith, T P, 2006b Building Material and fired clay from Bower Road, Smeeth, Kent, *CTRL Specialist Report Series*, in ADS 2006
Stansbie, D, 2006 The Late Iron Age and Roman pottery from White Horse Stone, Aylesford; Boxley, Kent, *CTRL Specialist Report Series*, in ADS 2006

Flint reports

Cramp, K, 2005a The flint from Beechbrook Wood, Westwell, Kent, *CTRL Specialist Report Series*, in ADS 2006
Cramp, K, 2005b The flint from White Horse Stone, Boxley, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005a The flint from Northumberland Bottom, Southfleet, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005b The flint from Tollgate, Cobham, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005c The flint from Cobham Golf Course, Cobham, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005d The flint from Leda Cottages, Ashford, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005e The flint from Eyhorne Street, Hollingbourne, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005f The flint from Snarkhurst Wood, Maidstone, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005g The flint from Saltwood Tunnel, Kent, *CTRL Specialist Report Series*, in ADS 2006
Devaney, R, 2005h The flint from Little Stock Farm, Mersham, Kent, *CTRL Specialist Report Series*, in ADS 2006
Harding, P, 2005 The flint from Sandway Road, Lenham, Kent, *CTRL Specialist Report Series*, in ADS 2006

Small finds reports

Andrews, P, Riddler, I, 2006 Medieval small finds from Mersham, Kent, *CTRL specialist report series*, in ADS 2006
Blackmore, L, 2006 Small finds from Cuxton Anglo-Saxon cemetery, Kent, *CTRL specialist report series*, in ADS 2006
Booth, P, Keily, J, Richardson, B, 2006 Small finds from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, in ADS 2006
Booth, P, and Cool, H, 2006 Small finds from a Roman settlement at Bower Road, Smeeth, Kent, *CTRL specialist report series*, in ADS 2006
Booth, P, Cool, H, Keys, L, Northover, P, and Shaffrey, R, 2006 Small finds from Thurnham Roman Villa, Kent, *CTRL specialist report series*, in ADS 2006
Booth, P, and Cool, H, 2006 Small finds from Pepper Hill Roman Cemetery, Southfleet, Kent, *CTRL specialist report series*, in ADS 2006
Cool, H, and Keys, L, 2006 Small finds from Snarkhurst Wood, Hollingbourne, Kent, *CTRL specialist report series*, in ADS 2006
Diez, V, Northover, P, and Shaffrey, R, 2006 Small finds from Beechbrook Wood, Hothfield, Kent, *CTRL specialist report series*, in ADS 2006
Edwards, E, and Fell, V, 2006 Small finds from Eyhorne Street, Hollingbourne, Kent, *CTRL specialist report series*, in ADS 2006
Fell, V, Keys, L, and Shaffrey, R, 2006 Small finds from White Horse Stone, Aylesford, Kent, *CTRL specialist report series*, in ADS 2006
Fitzpatrick, A, 2006 Small finds from Little Stock Farm, Mersham, *CTRL specialist report series*, in ADS 2006

Keily, J, Morris, E, Shaffrey, R, 2006 Small finds from Cobham Golf Course, Cobham, Kent, *CTRL specialist report series*, in ADS 2006
Keily, J, 2006 Small finds from Tollgate, Cobham, Kent, *CTRL specialist report series*, in ADS 2006
Keily, J, 2006 Small finds from Whitehill Road Barrow, Longfield and New Barn, Kent, *CTRL specialist report series*, in ADS 2006
Keily, J, and Richardson, B, 2006 Small finds from Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Keily, J, and Richardson, B, 2006 Small finds from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, in ADS 2006
Keys, L, and Shaffrey, R, 2006 Small finds from Leda Cottages, Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Keys, L, 2006 Small finds from Tutt Hill, Westwell, Kent, *CTRL Specialist Report Series*, in ADS 2006
Northover, P, and Shaffrey, R, 2006 Small finds from Sandway Road, Lenham, Kent, *CTRL specialist report series*, in ADS 2006
Riddler, I, 2006 Small finds from North of Westenhanger Castle, Stanford, Kent, *CTRL specialist report series*, in ADS 2006

Saltwood Tunnel small finds
Ager, B, Cameron, E, Riddler, I D, and Spain, S, 2006 Early Anglo-Saxon weaponry from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Gilmour, B, 2006 Metallurgical analyses on Early Anglo-Saxon grave goods from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Harris, A, Blinkhorn, P, Evison, V I, and Riddler I D, 2006 Early Anglo-Saxon vessels and containers from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Riddler, I D, Cameron, E, and Marzinzik, S, 2006 Early Anglo-Saxon personal equipment and structural ironwork from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Riddler, I D, McKinley, J, Walton Rogers, P, Skittrell, S, Diack, M, 2006 Saltwood Tunnel, Kent: Inhumation and cremation grave catalogues, *CTRL specialist report series*, in ADS 2006
Walton Rogers, P, 2006 Early Anglo-Saxon costume from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Walton Rogers, P, Henig, M, Hirst, S, and Marzinzik, S, 2006 Early Anglo-Saxon dress accessories from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006
Walton Rogers, P, and Riddler I D, 2006 Early Anglo-Saxon textile manufacturing implements from Saltwood Tunnel, Kent, *CTRL specialist report series*, in ADS 2006

Dating reports
Allen, M J, 2006 The radiocarbon dates from Hurst Wood, Charing, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, 2006 The radiocarbon dates from Parsonage Farm, Westwell, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, 2006 The radiocarbon dates from Tollgate, Gravesham, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Askew, P, and Jones, G, 2006 The radiocarbon dates from Northumberland Bottom, Gravesend, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Barclay, A, 2006 The radiocarbon dates from Whitehill Road Barrow, Longfield and Newbarn, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Barclay, A, Bayliss, A, and Hayden, C, 2006 The radiocarbon dates from White Horse Stone, Aylesford, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Beavan-Athfield, N, and Biddulph, E, and Marshall, P, 2006 The radiocarbon dates from Pepper Hill, Southfleet, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Beavan-Athfield, N, Diack, M, Riddler, I, and Trevarthen, M, 2006 The radiocarbon dates from Saltwood Tunnel, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Brady, K, 2006a The radiocarbon dates from Tutt Hill, Westwell, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Brady, K, 2006b The radiocarbon dates from Beechbrook Wood, Hothfield, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Brady, K, and Hayden, C, 2006 The radiocarbon dates from Eyhorne Street, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Crockett A D, Macphail, R I, Stevens, C J, and Trevarthen, M, 2006 The radiocarbon dates from Sandway Road, Lenham, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Davis, S, 2006 The radiocarbon dates from Cobham Golf Course, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Hayden, C, 2006 The radiocarbon dates from East of Station Road, Smeeth, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Lawrence, S, 2006 The radiocarbon dates from Thurnham Roman Villa, Kent
by Michael J. Allen and Steve Lawrence, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, Mackinder, T, and Morris, E, 2006 The radiocarbon dates from Cuxton, Kent, *CTRL Specialist Report Series*, ADS 2006
Allen, M J, and Ritchie, K, 2006 The radiocarbon dates from Little Stock Farm, Smeeth, Kent, *CTRL Specialist Report Series*, ADS 2006

Human remains reports
Márquez-Grant, N 2006 Human remains from Boys Balancing Pond, Sevington, Kent, *CTRL specialist report series*, in ADS 2006
McKinley, J I, 2006a Human remains from Saltwood Tunnel, Kent *CTRL specialist report series*, in ADS 2006
McKinley, J I, 2006b Human remains from Little Stock Farm, Smeeth, Kent, *CTRL specialist report series*, in ADS 2006
Powers, N. 2006 Human remains from an Anglo-Saxon cemetery at Cuxton, Kent, *CTRL specialist report series,* in ADS 2006
White, B. 2006a Human remains from Northumberland Bottom, Gravesend, Kent, *CTRL specialist report series*, in ADS 2006
White, B. 2006b Human remains from Whitehill Road Barrow, Longfield and New Barn, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A, 2006a Human remains from a Roman settlement at Bower Road, Smeeth, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A. 2006b Human remains from Beechbrook Wood, Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A. 2006c Human remains from Eyhorne Street,

Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A. 2006d Human remains from Chapel Mill, Westwell Leacon and Leda Cottages, Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A, 2006e Human remains from Snarkhurst Wood, Hollingbourne, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A, 2006f Human remains from Thurnham Roman Villa, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A. 2006g Human remains from Tutt Hill, Westwell, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A, 2006h Human remains from White Horse Stone, Aylesford, Kent, *CTRL specialist report series*, in ADS 2006
Witkin, A. and Boston, C 2006 Human remains from the Roman cemetery at Pepper Hill, Southfleet, Kent, *CTRL specialist report series*, in ADS 2006

Environmental reports

Alldritt, D, 2006a The wood charcoal from Beechbrook Wood, Hothfield, Kent, *CTRL specialist report series*, ADS 2006
Alldritt, D, 2006b The wood charcoal from North of Saltwood Tunnel, Saltwood, Kent, *CTRL specialist report series*, ADS 2006
Alldritt, D, 2006c The archaeological wood charcoal from White Horse Stone, Aylesford, Kent, *CTRL specialist report series*, ADS 2006
Allen, M J, 2006b The land snails from North of Saltwood Tunnel, Saltwood, Kent, *CTRL specialist report series*, ADS 2006
Cameron, N, 2006 An assessment of diatoms from waterlogged sediments at Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Challinor, D, 2006a The wood charcoal from Pepper Hill, Northfleet, Kent, *CTRL specialist report series*, ADS 2006
Challinor, D, 2006b The wood charcoal from Leda Cottages, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Challinor, D, 2006c The wood charcoal from Thurnham Roman Villa, Thurnham, Kent, *CTRL specialist report series*, ADS 2006
Challinor, D, 2006d The wood charcoal from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006a Geoarchaeological recording at Cobham Golf Course, Cobham, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006b Geoarchaeological recording at Cuxton Anglo-Saxon Cemetery, Cuxton, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006c Geoarchaeological recording at Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006d Geoarchaeological recording at Tollgate, Cobham, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006e Geoarchaeological recording at Whitehill Road (CTRL Zones 1 and 2), Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Corcoran, J, 2006f Geoarchaeological recording at Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Crowther, J, and Macphail, R I, 2006 The soil micromorphology, phosphate and magnetic susceptibility evidence from White Horse Stone, Boxley, Kent, *CTRL specialist report series*, ADS 2006
Davis, A, 2006a The charred plant remains from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Davis, A, 2006b The charred plant remains from Pepper Hill, Northfleet, Kent, *CTRL specialist report series*, ADS 2006
Davies, A, 2006c The charred plant remains from Cobham Golf Course, Cobham, Kent, *CTRL specialist report series*, ADS 2006
Davies, A, 2006d The charred plant remains from Eyhorne Street, Hollingbourne, Kent, *CTRL specialist report series*, ADS 2006
Davis, A, 2006e The charred plant remains from, Cuxton, Kent, *CTRL specialist report series*, ADS 2006
Davis, A, 2006f The charred and waterlogged plant remains from Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Davis, A, 2006g The charred plant remains from Tollgate, Cobham, Kent, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006a The charred plant remains from Beechbrook Wood, Hothfield, Kent, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006b The charred plant remains from Sandway Road, Lenham, Kent, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006c The waterlogged plant remains from well 11010 at Thurnham Roman Villa, Kent, CTRL specialist report series, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006d The charred plant remains from Tutt Hill, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006e The charred plant remains from Whitehill Road (CTRL Zones 1 and 2), Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Giorgi, J, 2006f The plant remains from White Horse Stone, Aylesford, Kent, *CTRL specialist report series*, ADS 2006
Scaife, R, 2006a An assessment of pollen from Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Scaife, R, 2006b An assessment of pollen from waterlogged sediments at Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Scaife, R, 2006c Pollen analysis of sediment fills from well 11010 at Thurnham Roman Villa, Kent, *CTRL specialist report series*, ADS 2006
Smith, W, and Davis, A, 2006 The charred plant remains from Thurnham Roman Villa, Kent, *CTRL specialist report series*, ADS 2006
Stafford, E C, 2006a The land and freshwater mollusca from well 11010 at Thurnham Roman Villa, Kent, *CTRL specialist report series*, ADS 2006
Stafford, E C, 2006b The land mollusca from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Stafford, E C, 2006c White Horse Stone: Land Mollusca, *CTRL specialist report series*, ADS 2006
Stafford, E, 2006d The geoarchaeology of White Horse Stone and Pilgrim's Way, Aylesford, Kent, *CTRL specialist report series*, ADS 2006
Stafford, E C, 2006e White Horse Stone: Geoarchaeology, *CTRL specialist report series*, ADS 2006
Stevens, C, 2006a The charred plant remains from Bower Road, Smeeth, Kent, *CTRL specialist report series*, ADS 2006
Stevens, C, 2006b The charred plant remains from Little Stock Farm, Mersham, Kent, *CTRL specialist report series*, ADS 2006
Stevens, C, 2006c The charred plant remains from Mersham, Kent, *CTRL specialist report series*, ADS 2006
Stevens, C, 2006d The charred plant remains from North of

Saltwood Tunnel, Saltwood, Kent, *CTRL specialist report series*, ADS 2006
Stevens, C, 2006e The charred plant remains from Westenhanger Castle, Stanford, Kent, *CTRL specialist report series*, ADS 2006
Stow, L, 2006 The mosses from well 11010 at Thurnham Roman Villa, Kent, *CTRL specialist report series*, ADS 2006

Faunal remains reports

Kitch, J, 2006a Animal bone from Bower Road, Smeeth, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006b Animal bone from Cobham Golf Course, Cobham, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006c Animal bone from Cuxton, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006d Animal bone from Eyhorne Street, Hollingbourne, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006e Animal bone from Little Stock Farm, Mersham, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006f Animal bone from Pepper Hill Roman cemetery, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006g Animal bone from Tollgate, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006h Animal bones from CTRL Area 330, Zones 1 and 2, Kent, (Whitehill Road Barrow Principal Site) *CTRL specialist report series*, ADS 2006
Kitch, J, 2006i Animal bones from Animal bone from White Horse Stone, Pilgrim's Way and Boarley Farm, Aylesford, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, 2006j Animal bone from Northumberland Bottom, Southfleet, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, and Hamilton-Dyer, S, 2006a Animal bone from Mersham, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, and Hamilton-Dyer, S, 2006b Animal bone from Parsonage Farm, Westwell, Kent, *CTRL specialist report series*, ADS 2006
Kitch, J, and Hamilton-Dyer, S, 2006c Animal bone from the Iron Age settlement and Roman Villa at Thurnham, Kent, *CTRL specialist report series*, ADS 2006
Nicholson, R, and Worley, F, 2006 Animal bone from Saltwood Tunnel, Kent, *CTRL specialist report series*, ADS 2006

Part 5: Grey literature designs and reports

Research strategy, scheme wide methodologies

Phase 2 digital archive

Drewett, P, L, 1997 CTRL: Archaeological research strategy, prepared for Rail Link Engineering, on behalf of Union Railways Limited, in ADS 2006
Boast, R, B, 1996 CTRL: Guide to the production of electronic datasets for archaeological fieldwork, prepared for Rail Link Engineering, on behalf of Union Railways Limited, in ADS 2006
URS, 2000 CTRL Section 1 Archaeology Post-Excavation Assessment Instruction, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006
URS, 2003a CTRL Section 1: Updated project design for archaeological analysis and publication, volume 1, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006
URS, 2003b CTRL Section 1: Updated project design for archaeological analysis and publication, volume 2 - Contractor's method statements, unpubl. report prepared by RLE and Oxford Wessex Archaeology Joint Venture, for Union Railways (South) Limited, in ADS 2006

Desk-based assessments ('Assessment of historic and cultural effects') and non-intrusive survey reports

Phase 2 digital archive

URL, 1994 CTRL: Assessment of historic and cultural effects, final report, unpubl. report prepared by OAU for Union Railways Limited, Vols 1-4, CTRL Environmental Statement, in ADS 2006
URL, 1995 CTRL: Assessment of historic and cultural effects, Supplementary fieldwork report, (surface collection survey), unpubl. report prepared by OAU for Union Railways Limited, Parts 1 and 2, CTRL Environmental Statement, in ADS 2006

Geophysical survey reports

Phase 1 digital archive

ABA, 1996a CTRL: Geophysical surveys, final report, unpubl. report prepared by A Bartlett Associates for Union Railways Limited, in ADS 2006, Vol. 1 (first tranche of 13 sites)
ABA, 1996b CTRL: Geophysical surveys, final report, unpubl. report prepared by A Bartlett Associates for Union Railways Limited, in ADS 2006, Vol. 2 (second tranche of 7 sites)
GSB, 1995a East of Eyhorne Street (ARC ESTE 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995b South of Corbier Hall (ARC CHS 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995c West of Eyhorne Street (ARC ESTW 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995d Harrietsham (ARC HRT 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995e Lenham Heath (ARC LHT 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995f Littlestock Farm (ARC LFM 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995g East of Mersham (ARC MSHE 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995h Mersham (ARC MSH 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995i West of Sandway (ARC SNDW 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995j Sandway (ARC SND 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995k Station Road to Church Lane (ARC SRCL 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995l Station Road (ARC SRD 95). Grey literature survey results by Geophysical Surveys of Bradford for

Union Railways (South) Ltd, in ADS 2006
GSB, 1995m Temple East of Springhead (ARC STP 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995n Northfleet (South of A2) (ARC NFT 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995o North of Sevington Railhead (ARC SRH 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
GSB, 1995p West of Blind Lane (ARC BLN 95). Grey literature survey results by Geophysical Surveys of Bradford for Union Railways (South) Ltd, in ADS 2006
Stratascan, 1995 Geophysical survey carried out at Thurnham Roman Villa. Grey literature report by Stratascan Limited for Union Railways (South) Ltd, in ADS 2006

Written schemes of investigation

Phase 2 digital archive

URL, 1998a CTRL: Archaeology programme written scheme of investigation Southern Project: Areas 330-350 unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for 330 Z1 and Z2, Northumberland Bottom, Tollgate, Cobham Golf Course, Cuxton]
URL, 1998b CTRL: Archaeology programme written scheme of investigation: Waterloo Connection unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for Pepper Hill]
URL, 1998c CTRL: Archaeology programme written scheme of investigation: River Medway to Pilgrim's Way Area 410 unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for Nashenden Valley, White Horse Stone]
URL, 1998d CTRL: Archaeology programme written scheme of investigation: Pilgrim's Way to Charing Heath Area 420 unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for Boarley Farm, Thurnham, Snarkhurst Wood, Chapel Mill, Sandway Road]
URL, 1998e CTRL Archaeology programme written scheme of investigation: Charing Heath to Sevington Area 430 unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for Hurst Wood, East of Newlands, Parsonage Farm, South of Beechbrook Wood, Boys Hall Balancing Pond]
URL, 1998f CTRL Archaeology programme written scheme of investigation: Sevington to Eurotunnel Area 440, unpubl. report prepared by RLE for Union Railways Limited, in ADS 2006 [WSI for W of Blind Lane, Mersham, E of Station Road, E of Station Road/ Church Lane, N of Westenhanger Castle, N of Saltwood Tunnel]
URS, 1998g CTRL Section 1: Archaeological watching brief, written scheme of investigation, Project Areas 350, 410 and 430, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006 [WSI for Leda Cottages, Lodge Wood]
URS, 1999a CTRL Section 1: Archaeological watching brief, written scheme of investigation, Project Area 330/350, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006 [WSI for WBs at 330 Z1 and Z2, Northumberland Bottom, Tollgate, Cobham Golf Course, Cuxton]
URS, 1999b CTRL Section 1: Archaeological watching brief, written scheme of investigation, Pilgrim's Way to Charing Heath Area 420, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006 [WSI for W of Sittingbourne Road, Eyhorne Street, A20 Diversion Holm Hill]
URS, 1999b CTRL Section 1: Archaeological watching brief, written scheme of investigation, North of Sevington Railhead to Frogholt Area 440, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006 [WSI for Bower Road]
URS, 2000k CTRL Section 1: Archaeology programme, Contract 430 and 570, Beechbrook Farm Railhead, written scheme of investigation, targeted watching brief, unpubl. report prepared by RLE for Union Railways (South) Limited, in ADS 2006 [WSI for Beechbrook Wood TWB]

Post-excavation assessment reports

Phase 2 digital archive

URS, 2000a Boys Hall Balancing Pond, Sevington, Kent (ARC BHB98): Strip, map and sample excavation assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000b West of Blind Lane, Sevington, Kent (ARC BLN98): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000c East of Station Road/Church Lane, Smeeth, Kent (ARC STR99/ ARC CHL98): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000d Chapel Mill, Lenham, Kent (ARC CML99): Strip, map and sample excavation assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited in ADS 2006
URS, 2000e CTRL Project Area 430 Archaeological watching briefs: Interim report (ARC 430/99), unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000f South of Snarkhurst Wood, Hollingbourne, Kent (ARC SNK99): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000g Nashenden Valley, Borstal, Kent (ARC NSH98): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2000h West of Sittingbourne Road, Boxley, Kent (ARC 420/61+900-62+000/99): Watching brief assessment report, unpubl. report prepared for Union Railways (South) Limited for OAU, in ADS 2006
URS, 2000i Lodge Wood, Ashford, Kent (ARC 430/87+300-87+800/99): Watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001a Waterloo Connection, Southfleet, Kent (ARC PHL97, ARC NBR98): Detailed archaeological works assessment report, vol 1: text, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001b White Horse Stone, Aylesford, Kent (ARC WHS98): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001c Thurnham Roman Villa, Thurnham, Kent (ARC THM98): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001d Eyhorne Street, Hollingbourne, Kent (ARC 420/68+100-68+500/99): Targeted watching brief

assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001e A20 Diversion Holm Hill, Harrietsham, Kent (ARC HOL99): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001f Tutt Hill, Westwell, Kent (ARC 430/83+800-84+900/99): Detailed archaeological works assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001g Hurst Wood, Charing Heath, Kent (ARC HWD 99): Targeted watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2001h CTRL Area 330 (Zone 1) Whitehill Barrow (ARC WHR99): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001i CTRL Area 330 (Zone 2) watching brief (ARC 330 98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001j CTRL Area 330 (Zone 3) Northumberland Bottom (ARC WNB98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001k CTRL Area 330 (Zone 4) Tollgate (ARC TLG98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001l CTRL Area 330 (Zone 5) Cobham Golf Course (ARC CGC98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001i CTRL Area 350 (Zone 6) Cuxton (ARC CXT98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001j CTRL Area 330 Parsonage Farm (ARC PFM98): Archaeological post-excavation assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2001k Merhsam, Kent (ARC MSH98): Detailed archaeological works assessment report, unpubl. report prepared by CAT for Union Railways (South) Limited, in ADS 2006
URS, 2001l North of Westenhanger Castle, Kent (ARC WGC98): Detailed archaeological works assessment report, unpubl. report prepared by CAT for Union Railways (South) Limited, in ADS 2006
URS, 2001m Sandway Road (ARC SWR99): Archaeological post-excavation assessment report, unpubl. report prepared by WA for Union Railways (South) Limited, in ADS 2006
URS, 2001n Little Stock Farm, Mersham, Kent (ARC LSF99): Detailed archaeological works assessment report, unpubl. report prepared by WA for Union Railways (South) Limited, in ADS 2006
URS, 2002a Saltwood Tunnel, Folkestone, Kent (ARC SLT98, ARC SLT98C, ARC SLT99, ARC SFB99): Detailed archaeological works assessment report, unpubl. report prepared by CAT and WA for Union Railways (South) Limited, in ADS 2006
URS, 2002b Bower Road, Smeeth, Kent (ARC 440/95+900-97+100/99): Watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006
URS, 2003a West of Leda Cottages, Westwell, Kent (ARC 430/83+200): Watching brief assessment report, unpubl. report prepared by MoLAS for Union Railways (South) Limited, in ADS 2006
URS, 2003b Beechbrook Wood, Hothfield, Kent (ARC BBW00): Targeted watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

Watching brief interim reports

Phase 2 digital archive

OA watching briefs:

WB, 2000a, CTRL Project Areas 420, Archaeological Watching Brief, Interim Report, ARC 420 99, unpubl. report prepared by Oxford Archaeological Unit for Union Railways (South) Limited, October 2000, in ADS 2006
WB, 2000b, CTRL Project Areas 430, Archaeological Watching Brief, Interim Report, ARC 430 99, unpubl. report prepared by Oxford Archaeological Unit for Union Railways (South) Limited, October 2000, in ADS 2006
WB, 2001, CTRL Project Areas 350/410, Archaeological Watching Brief, Interim Report, ARC 350 99 and ARC 410 99, unpubl. report prepared by Oxford Archaeological Unit for Union Railways (South) Limited, February 2001, in ADS 2006
WB, 2003, CTRL Project Areas 440, Archaeological Watching Brief, Interim Report, ARC 440 99, unpubl. report prepared by Oxford Archaeological Unit for Union Railways (South) Limited, November 2003, in ADS 2006

MoLAS watching briefs:

Watching Brief Area 330 results (MoLAS) were fully incorporated in post-excavation assessment reports covering the whole of each Project Area (Area 330 Zones 1 to 6). This approach was possible in Area 330 because site conditions allowed very large continuous areas to be planned under watching brief conditions.

The watching brief results are reported in the following Integrated Site Reports:

Area 330 Zones 1 and 2: Whitehill Road Barrow
Area 330 Zone 3: Northumberland Bottom
Area 330 Zone 4: Tollgate
Area 330 Zone 5: Cobham Golf Course
Area 330 Zone 6: Cuxton

Standing building reports

Phase 1 digital archive

CAT, 1999 An Archaeological Interpretative Survey of Old and Water Street Cottages, Lenham, Kent. Grey literature report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

MoLA, 1999a Ashenbank Wood Army Camp (ARC AWC 98). Grey literature interim report by Museum of London Archaeological Service for Union Railways (South) Ltd.

MoLA, 1999b Northumberland Bottom Army Camp (ARC NBAC 98). Grey literature interim report by Museum of London Archaeological Service for Union Railways (South) Ltd.

OA, 1999a Bridge House, Mersham, Kent. Archaeological record in advance of relocation. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999b 2 Boys Hall Road, Willesborough, Kent. Archaeological record in advance of demolition. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999c 4 Boys Hall Road. Willesborough, Kent. Archaeological record in advance of demolition. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 2000a Yonsea Farm, Hothfield, Kent. Archaeological Analysis during Dismantling. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 2000b Pill Boxes at Tutt Hill, Westwell Leacon, Kent. Archaeological record and photographic survey. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 2001a Brockton Farm, Charing Heath, Kent. Archaeological record in advance of and during dismantling. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 2001b WW2 Munitions Store at Fairmead Farm, Westenhanger, Kent. Archaeological record in advance of and during dismantling. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 2002 Talbot House, Sellindge, Kent. Archaeological record in advance of dismantling. Grey literature report by Oxford Archaeology for Union Railways (South) Ltd.

Evaluation reports

Phase 1 digital archive

CAT, 1996 Pepper Hill (ARC THB 95). Grey literature archaeological evaluation report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

CAT, 1999b East Stour Diversion Barrowhill, Sellindge (ARC ESD 98). Grey literature archaeological evaluation report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

CAT, 1999c East of Mersham (ARC EMM 98). Grey literature archaeological evaluation report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

CAT, 1999d Land Around Old and Water Street Cottages, Lenham (ARC WSC 99). Grey literature archaeological evaluation report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

CAT, 1999e East and West of Stone Street, Westenhanger (ARC SST 98). Grey literature archaeological evaluation report by Canterbury Archaeological Trust for Union Railways (South) Ltd.

MoLA, 1997a South of Beechbrook Wood (ARC BWD 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997b Boys Hall Road – Sevington Railhead (ARC BHR97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997c Cuxton Anglo-Saxon Burial, Phase 1 and 2 (ARC CXT 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997d Cuxton Anglo-Saxon Burial, Phase 3 (ARC CXT 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997e East of Newlands (ARC NEW 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997f West of Northumberland Bottom (ARC WNB 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997g West of Station Road, Parsonage Farm (ARC PFM 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997h South-East of Tollgate (ARC TGS 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997i Area of Neolithic Potential West of Tollgate (ARC TGW 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997j Yonsea Farm (ARC YFM 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997k East of Pluckley Road (ARC PRD 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1997l Boarley Farm (ARC BFM 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998a South of Beechbrook Wood (ARC BBD 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998b West of Blind Lane (ARC BLN 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998c Cobham Park (ARC CPK 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998d Knights Place Farm, Area 20 (ARC KPF 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998e West of Mersham (ARC MSW 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998f Mersham (ARC MSH 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998g North of Sevington Railhead (ARC SRH 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998h Tutt Hill (ARC TUT 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998i North of Westenhanger Castle (ARC WGC 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.

MoLA, 1998j Westwell Leacon (ARC WWL 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999c Thames Valley Archaeological Mitigation Works – Area 16, Great Wood Kent (ARC GWE 98). Grey literature archaeology evaluation report by Museum of London Archaeological Service for Union Railways (South) Ltd.
MoLA, 1999d Leacon Lane (ARC LLA 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999e Leda Cottages (ARC LED 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999f Sandling Construction Site, Kent (ARC SCS 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 2000a Knights Place Construction Site (ARC KCS 98). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 2000b Scalers Hill to Cobham, Kent (ARC SCC 97). Grey literature archaeological evaluation report by Museum of London Archaeology Service for Union Railways (South) Ltd.
OA, 1995a Purfleet, Thurrock, Essex (ARC THPE 94). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1995b Tollgate Cropmark Complex, Gravesham, Kent (ARC TLG 95). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1996 Land South of Snarkhurst Wood, Eyhorne Street, Hollingbourne, Kent (ARC SNK 95). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997a East of Boarley Farm, Boxley, Kent (ARC BFE 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997b West of Boxley Road, Boxley, Kent (ARC BXR 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997c Chapel Mill, Lenham, Kent (ARC CML 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997d Chilston Park, Lenham, Kent (ARC CHPK 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997e West of Church Road Singlewell, Kent (ARC CRS 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997f Cobham Park Golf Course, Kent (ARC CGC 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997g Harrietsham Mesolithic, Harrietsham, Kent (ARC HRT 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997i North of Saltwood Tunnel, Saltwood, Kent (ARC SLT 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1997j White Horse Stone, Aylesford, Kent (ARC WHS 97). Grey literature archaeological evaluation report by Museum of London Archaeological Service for Union Railways (South) Ltd.
OA, 1997k Thurnham Roman Villa and Land South of Corbier Hall, Thurnham, Kent (ARC THM 96). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998a West of Blind Lane, Sevington, Kent (ARC BLN 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998b Brockton Farm, Charing, Kent (ARC BRO 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998c Little Monk Wood, Rochester, Kent (ARC MON 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998d South of Medway, Chatham, Kent (ARC MED 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998e Pilgrims Way, Aylesford, Kent (ARC PIL 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998f West of Scalers Hill, Cobham, Kent (ARC WSH 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998g Station Road to Church Lane, Sellindge, Kent (ARC SCL 97). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1998h Waterloo Connection, Southfleet, Kent (ARC SSR 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999d Boarley Lane, Maidstone, Kent (ARC BOL 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999e East of Boxley Road, Boxley, Kent (ARC EBR 99). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999f West of Chapel Mill, Lenham Heath, Kent (ARC WCM 99). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999g Crismill Lane, Maidstone, Kent (ARC CSM 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999h East of Hockers Lane, Detling, Kent (ARC EHL 99). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999i Lodge Wood, Ashford, Kent (ARC LWD 98). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999j West of Sittingbourne Road, Maidstone, Kent (ARC WEA 99). Grey literature archaeological evaluation report by Oxford Archaeology for Union Railways (South) Ltd.
WA, 1997a Archaeological Evaluation at Hurst Wood, Charing Heath, Kent (ARC HWD 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1997b Archaeological Evaluation at Nashenden Valley, Borstal, Rochester, Kent (ARC NSH 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1997c Archaeological Evaluation at Temple East of Springhead, Gravesend, Kent (ARC STP 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1997d Archaeological Evaluation at Springhead, Gravesend, Kent (ARC SPH 95). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1997e Archaeological Evaluation at Upper Nashenden

Farm, Stony Lane, Rochester, Kent (ARC NFM 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1998 Archaeological Evaluation at Lenham Heath, Kent (ARC LHT 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999a Archaeological Evaluation at East Stour Diversion (ARC ESD 98). Grey literature alluvial deposit report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999b Archaeological Evaluation South-East of Eyhorne Street, Hollingbourne, Kent (ARC SEE 99). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999c Archaeological Evaluation at Harrietsham East Street, Harrietsham, Kent (ARC HES 98). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999d Archaeological Evaluation at Harringe Lane, Kent (ARC HNG 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999e Archaeological Evaluation at High House, Purfleet, Essex (ARC HHP 97). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999f Archaeological Evaluation at Little Stock Farm, nr Mersham, Kent (ARC LSF 98). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999g Archaeological Evaluation at Park Wood Cottage, nr Mersham, Kent (ARC PWC 99). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999h Archaeological Evaluation at Sandway Road, nr Sandway, Kent (ARC SWR 98). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 1999i Archaeological Evaluation at West of Stone Street (ARC SST 98). Grey literature alluvial deposit report by Wessex Archaeology for Union Railways (South) Ltd.
WA, 2004a Archaeological Evaluation at A20 Diversion Holm Hill, nr Harrietsham, Kent (ARC HOL 98). Grey literature final fieldwork report by Wessex Archaeology for Union Railways (South) Ltd.

Excavation interim reports

Phase 1 digital archive

CAT, 1999f Mersham, Kent (ARC MSH 98). Grey literature detailed archaeological works interim report by Canterbury Archaeological Trust for Union Railways (South) Ltd.
CAT, 1999g North of Saltwood Tunnel, Kent (ARC SLT 98). Grey literature detailed archaeological works interim report by Canterbury Archaeological Trust for Union Railways (South) Ltd.
CAT, 1999h North of Saltwood Tunnel, Kent (ARC SLT 98C). Grey literature detailed archaeological works interim report by Canterbury Archaeological Trust for Union Railways (South) Ltd.
CAT, 1999i North of Saltwood Tunnel, Kent (ARC SLT 99). Grey literature detailed archaeological works interim report by Canterbury Archaeological Trust for Union Railways (South) Ltd.
CAT, 1999j North of Westenhanger Castle, Kent (ARC WGC 98). Grey literature detailed archaeological works interim report by Canterbury Archaeology Trust for Union Railways (South) Ltd.
MoLA, 1999g South of Beechbrook Wood (ARC BWD 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999h Brewers Gate, Cobham Park (ARC BG 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999i West of Church Road, Singlewell (ARC CRS 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999j Cobham Golf Course (ARC CGC 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999k Cuxton Anglo-Saxon Cemetery (ARC CXT 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999l Northumberland Bottom (ARC WNB 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999m Parsonage Farm (ARC PFM 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999n Tollgate (ARC TLG 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
MoLA, 1999o Watling Street (ARC WS 98). Grey literature archaeological excavation interim report by Museum of London Archaeology Service for Union Railways (South) Ltd.
OA, 1999m West of Blind Lane, Sevington, Kent (ARC BLN 98). Grey literature detailed archaeological works interim report, final by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999n East of Boarley Farm, Boxley, Kent (ARC BFE 99). Grey literature detailed archaeological works interim report, final by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999o Boys Hall Balancing Pond, Sevington, Kent (ARC BHB 99). Grey literature strip map and sample archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999p Chapel Mill, Lenham, Kent (ARC CML 99). Grey literature strip map and sample archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999q Church Lane, Smeeth, Kent (ARC CHL 98) and East of Station Road, Smeeth, Kent (ARC STR 99). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999r Hurst Wood, Charing Heath, Kent (ARC HWD 98). Grey literature strip map and sample archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999s Nashenden Valley, Borstal, Kent (ARC NSH 97). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.
OA, 1999t East of Newlands, Charing Heath, Kent (ARC NEW 98). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999u South of Snarkhurst Wood, Hollingbourne, Kent (ARC SNK 99). Grey literature strip map and sample archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999v Thurnham Roman Villa, Thurnham, Kent (ARC THM 98). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999w White Horse Stone, Pilgrim's Way and West of Boarley Farm (ARC WHS 98, ARC PIL 98 and ARC BFW 98). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.

OA, 1999x Waterloo Connection, Northfleet, Kent (ARC NBR 98). Grey literature detailed archaeological works interim, final report by Oxford Archaeology for Union Railways (South) Ltd.

WA, 1999m Archaeological Excavation at Little Stock Farm, nr Mersham, Kent (ARC LSF 99). Grey literature interim, final report by Wessex Archaeology for Union Railways (South) Ltd.

WA, 1999n Archaeological Excavation at Sandway Road, nr Sandway, Kent (ARC SWR 99). Grey literature interim, final report by Wessex Archaeology for Union Railways (South) Ltd.

WA, 2000 Archaeological Excavation at Stone Farm Bridleway, nr Saltwood, Kent (ARC SFB 99). Grey literature interim, final report by Wessex Archaeology for Union Railways (South) Ltd.

WA, 2002 Archaeological Excavation at Stone Street West, nr Westenhanger, Kent (ARC SST 99). Grey literature interim, final report by Wessex Archaeology for Union Railways (South) Ltd.

WA, 2004b Archaeological Excavation at A20 Diversion Holm Hill, nr Harrietsham, Kent (ARC HOL 99). Grey literature interim report by Wessex Archaeology for Union Railways (South) Ltd.

Appendix 3

Radiocarbon results from High Speed 1 (Section 1)

The radiocarbon dates provided here have been ordered chronologically

Site	*Site Code*	*Feature type and no*	*Material*	*Result no*	*Result BP*	*Cal*
Pepper Hill	NBR 98	Cremation 11053	*Hordeum* sp. + rhizome	KIA 23926	140±27	AD 1670-1960
Pepper Hill	NBR 98	Grave 11731	lower limb	KIA 23948	899±51	AD 1020-1250
Cobham Golf Cse	CGC 98	Ring-ditch 61	*Corylus/Alnus*	NZA-20963	914±30	AD 1030-1210
Tutt Hill	430/99 83+900	Pit 35	Maloideae r/w	NZA-21142	960±35	AD 1000-1170
Thurnham	THM 98	Waterhole 10288	red deer metatarsal	AA-39808; GU-9083	1010±40	AD 900-160
Hurst Wood	HWD 98	Pit 104	*Clematis vitalba*	NZA-12274	1076±60	AD 780-1160
Boarley Farm West	BFW 98	Animal burial 1021	horse tibia	GU-9086	1130±50	AD 700-1000
White Horse Stn	PIL 98	Inhumation in ditch 9011	human bone, femur	GU-9013	1190±60	AD 680-980
Boarley Farm West	BFW 98	Animal burial in pit 1060	horse radius	GU-9087	1210±50	AD 680-900
Saltwood Tunnel	SLT 98C	Horse burial grave 1244	horse r humerus	NZA-19887	1336±35	AD 640-780
Saltwood Tunnel	SFB 99	Saxon Grave 1216	long bone	NZA-19638	1352±35	AD 620-780
Saltwood Tunnel	SFB 99	Saxon Grave 1491	human femur frags + pelvis frags	NZA-20446	1395±35	AD 560-700
Saltwood Tunnel	SLT 98C	Saxon Grave 6421	foot frags	NZA-19719	1415±35	AD 560-680
Saltwood Tunnel	SLT 99	Saxon Grave 4614	r femur + l radius	NZA-19885	1435±40	AD 540-670
Saltwood Tunnel	SLT 98C	Saxon Grave 6635	lower limb	NZA-19639	1446±35	AD 540-660
Saltwood Tunnel	SFB 99	Non-Saxon Grave 1391	human bone frags inc mandible	NZA-20448	1455±35	AD 540-660
Saltwood Tunnel	SLT 99	Saxon Grave (rich) 3885	Human femur and other bone	NZA-20445	1474±40	AD 430-660
Saltwood Tunnel	SLT 99	Saxon Grave 6321	femur/pelvis frag	NZA-19640	1560±35	AD 420-600
Saltwood Tunnel	SFB 99	Saxon Grave 1577	human long bone frags	NZA-20447	1596±45	AD 340-600
Thurnham	THM 98	Well 11010	coppiced hazel stake. *Corylus avellana*	GU-9077	1640±50	AD 250-540
Saltwood Tunnel	SLT 98C	Saxon Grave 1048	gaming counters	NZA-21511	1701±30	AD 250-420
Beechbrook Wood	BBW 00	Cremation event 1344	charcoal *Alnus/Corylus*	NZA-20051	1728±40	AD 220-420
Pepper Hill	NBR 98	Bustum 10603	grain *T. spelta/dicoccum*	KIA 23931	1759±28	AD 170-390
Pepper Hill	NBR 98	Grave 11589	human bone frags	NZA-20650	1764±25	AD 170-390
Pepper Hill	PHL 98	Cremation 142	charcoal Maloideae, *Alnus/Corylus*	KIA 23933	1806±26	AD 130-320
Little Stock Farm	LSF 99	Cremation burial 2408	monocot stem, hawthorn thorns	NZA-19917	1828±40	AD 80-330
Pepper Hill	NBR 98	Cremation 10999	charcoal Maloideae	KIA 23930	1908±31	AD 20-220
Pepper Hill	NBR 98	Bustum 11702	*A. elatius*/oak sapwood	KIA 23925	1927±27	AD 20-140
Pepper Hill	NBR 98	Pyre site 11009	oak sapwood	KIA 23924	1933±28	AD 1-140
Pepper Hill	PHL 97	Grave 837	l femur frags	KIA 23947	1946±28	AD 20-120
N'umberland Btm	WNB 98	Cremation burial 2163	charred *Clematis vitalba*	NZA-20596	1968±30	50 BC-AD 130
Pepper Hill	NBR 98	Grave 10961	l femur frags	NZA-20649	1971±30	50 BC-AD 120
Pepper Hill	NBR 98	Pyre site 11502	Maloideae	KIA 24213	1972±22	40 BC- AD 90
Pepper Hill	NBR 98	Grave 11386	l femur and skull frags	KIA 24643	1974±28	50 BC-AD 120
Pepper Hill	NBR 98	Pyre site 11708	charcoal Maloideae roundwood	KIA 23929	1978±33	50 BC-AD 120
Pepper Hill	NBR 98	Grave 10863	teeth	KIA 23944	2016±30	60 BC- AD 80
Beechbrook Wood	BBW 00	Enclosure ditch 1022	charcoal Betulaceae (cf *Betula pendula/ pubescens*)	NZA-21220	1989±45	100 BC-AD 130
Pepper Hill	NBR 98	Pyre site 10857	charcoal *Fraxinus* roundwood	KIA 23934	2027±29	120 BC-AD 60
Pepper Hill	NBR 98	Grave 10404	l femur frags	KIA 23946	2012±32	350-40 BC
Pepper Hill	NBR 98	Cremation 11272	charcoal Maloideae	KIA 23927	2119±29	350-40 BC
Pepper Hill	NBR 98	Grave 10961	r femur frags	KIA 23945	2120±28	350-50 BC

Site	Site Code	Feature type and no	Material	Result no	Result BP	Cal
Beechbrook Wood	BBW 00	Pit 504	charcoal *Quercus* roundwood	NZA-21171	2155±45	360-50 BC
Saltwood Tunnel	SLT 98	Grave 24	human bone	NZA-22734	2185±35	370-110 BC
Little Stock Farm	LSF 99	Grave 2031	l radius	NZA-19987	2203±35	380-170 BC
Beechbrook Wood	BBW 00	Enclosure ditch 3072	charcoal *Ilex*	NZA-20052	2207±40	390-170 BC
N'umberland Btm	330 98	Pit 147	red deer tibia	NZA-22748	2222±30	370-190 BC
Cuxton		Pit 343	Pomioidea charcoal <15 yrs	NZA-22593	2267±30	400-200 BC
White Horse Stn	WHS 98	Inhumation in ditch 2184 nr Pilgrims Way	human femur	GU-9089	2250±70	410-90 BC
White Horse Stn	WHS 98	Cremation burial pit 6132	charred grain (2)	GU-9088	2270±60	460-160 BC
Eyhorne St	420 99 68+200	Pit 226	*Hordeum vulgare*	NZA-22594	2295±30	400-260 BC
White Horse Stn	WHS 98	IA pit 226, area 9	*Hordeum vulgare*	NZA-22039	2337±40	800-200 BC
White Horse Stn	WHS 98	4-post str 4503, phole 4350	*Hordeum vulgare*	NZA-22036	2349±40	800-200 BC
White Horse Stn	WHS 98	IA pit 2130, area 9	*Hordeum vulgare*	NZA-22041	2367±40	760-370 BC
White Horse Stn	WHS 98	IA pit 2155, area 9	pig mandible	NZA-22038	2377±45	760-370 BC
Tollgate	330 98	Pit 387	pottery PRN 1264	NZA-22886	2384±35	760-380 BC
White Horse Stn	WHS 98	Metalworking pit 7009	*Prunus spinosa*	NZA-21958	2394±25	760-390 BC
White Horse Stn	WHS 98	IA pit 2119, area 9	human fibula	NZA-22042	2397±50	770-380 BC
Saltwood Tunnel	SFB 99	Unurned cremation burial 1699	32 grass bases	NZA-20597	2402±30	760-390 BC
White Horse Stn	WHS 98	4-post str 4391, phole 4353	*Triticum* cf *diococcum*	NZA-22037	2409±40	770-390 BC
White Horse Stn	WHS 98	IA pit 4067/fowl, area 18	fowl femur	NZA-22045	2429±55	770-390 BC
White Horse Stn	WHS 98	Metalworking pit 7011	*Prunus spinosa*	NZA-21841	2438±30	770-400 BC
Little Stock Farm	LSF 99	Grave 2031	l radius	NZA-19915	2447±35	770-400 BC
White Horse Stn	WHS 98	IA pit 4561, area 14	cattle humerus	NZA-22044	2469±40	770-400 BC
Saltwood Tunnel	SFB 99	Cremation burial 1726	onion couch grass tubers	NZA-20598	2499±30	790-450 BC
White Horse Stn	WHS 98	IA pit 2130, area 9	human fibula	NZA-22040	2507±50	800-410 BC
N'umberland Btm	330 98	Pit 156	charcoal *Prunus* + Maloideae	NZA-22728	2509±35	800-420 BC
Little Stock Farm	LSF 99	Pit 2441	skull frag	NZA-19916	2522±35	800-510 BC
White Horse Stn	WHS 98	IA pit 8037, area 21	sheep/goat foot (articulated)	NZA-22043	2527±40	800-510 BC
Tollgate	330 98	Pit 374	pottery PRN 1186	NZA-22880	2624±35	850-760 BC
Pepper Hill	NBR 98	Cremation 10314	*Vicia/Lathyrus* + charcoal Maloideae, *Alnus/Corylus*	KIA 23932	2712±28	920-800 BC
Cobham Golf Cse	CGC 98	Pit 137	pottery PRN 1022	NZA-21143	2741±30	980-820 BC
Hurst Wood	HWD 98	Pit 140	Maloidea	NZA-12284	2742±45	1000-800 BC
Saltwood Tunnel	SLT 99	Pit 3910	emmer/spelt grain	NZA-22595	2746±30	980-820 BC
Saltwood Tunnel	SFB 01	Pit 6658	emmer/spelt grain	NZA-22727	2769±30	990-820 BC
White Horse Stn	PIL 98	Cremation burial 948	onion couch grass	NZA-21492	2791±35	1010-830 BC
White Horse Stn	WHS 98	LBA pit 5421	pottery residue	NZA-22006	2804±40	1130-890 BC
Saltwood Tunnel	SFB 99	BA pit W207	charred *Vicia faba*	NZA-19637	2847±35	1130-900 BC
White Horse Stn	PIL 98	Cremation burial 852	onion couch grass	NZA-21505	2868±35	1190-920 BC
Beechbrook Wood	BBW 00	Cremation burial 1290	onion couch grass	NZA-21507	2870±30	1190-920 BC
Beechbrook Wood	BBW 00	Cremation event 1294	Parenchyma + roundwood bark	NZA-20050	2921±40	1270-990 BC
Saltwood Tunnel	SFB 99	Unurned cremation burial 3602	Maloideae charcoal <50 yrs	NZA-20655	3063±30	1410-1210 BC
White Horse Stn	WHS 98	Decorated bowl posthole 5415	charred hulled *Hordeum*	NZA-21490	3064±50	1440-1130 BC
White Horse Stn	PIL 98	Pil Str - p/hole 571	*Hordeum vulgare*	NZA-21840	3079±30	1430-1260 BC
Beechbrook Wood	BBW 00	Pit 245	pottery PRN 1017	NZA-22877	3081±30	1410-1260 BC
Tutt Hill	430/84+ 440/98	Cremation burial 98	*Aluns/Corylus*	NZA-20102	3094±40	1440-1210 BC
Beechbrook Wood	BBW 00	Pit 1220	pottery PRN 1053	NZA-22878	3112±30	1430-1260 BC
White Horse Stn	WHS 98	Pit/treehole 5454	sheep/goat tibia	NZA-22035	3140±40	1520-1310 BC
Saltwood Tunnel	SFB 99	Pit 5366	pottery PRN 2474	NZA-22879	3146±35	1520-1310 BC
White Horse Stn	WHS 98	Ditch 4025	horse humerus	NZA-21326	3151±35	1520-1310 BC
Cobham Golf Cse	CGC 98	Ditch 197	pottery PRN 1094	NZA-23006	3191±40	1530-1390 BC
White Hill Road Barrow	WHR 99	Grave	human bone frags	NZA-22740	3273±30	1620-1440 BC
Tutt Hill	430/84 + 300/99	Ring-ditch 89	*Prunus*	NZA-21140	3383±30	1750-1530 BC

Site	*Site Code*	*Feature type and no*	*Material*	*Result no*	*Result BP*	*Cal*
White Horse Stn	WHS 98	Decorated bowl feature 5415	*Prunus* charcoal	NZA-21281	3415±30	1870-1620 BC
Sandway Road	SWR 99	Mesolithic hollow 558 (72)	grain cf. *Triticum* sp.	NZA-11936	3523±45	1960-1690 BC
N'umberland Btm	WNB	Grave	r femur human	NZA-22735	3601±40	2120-1780 BC
Eyhorne St	420/68 +100	Pit 60	hazelnut	NZA-20420	3648±35	2140-1910 BC
Saltwood Tunnel	SFB 99	BA Grave C4619	lower limb	NZA-19641	3683±35	2200-1940 BC
Saltwood Tunnel	SLT 99	BA Grave C4507	r femur	NZA-19886	3722±45	2290-1970 BC
Eyhorne St	420/68 +100	Pit 23	hazelnut	NZA-20419	3742±40	2290-2020 BC
N'umberland Btm	WNB	Grave	r femur human	NZA-22736	3743±40	2280-1980 BC
Beechbrook Wood	BBW 00	Pit 1374	charred crab apple	NZA-22738	3747±35	2280-2030 BC
Beechbrook Wood	BBW 00	Pit 1374	*Corylus* charcoal	NZA-22739	3762±35	2290-2030 BC
Eyhorne St	EHY	Posthole 70	charred plant	NZA-12233	3773±60	2410-1980 BC
Beechbrook Wood	BBW 00	Ring-ditch 851	hazelnut shells	NZA-20027	3774±40	2310-2030 BC
Tutt Hill	430/99 84 + 300	Ringditch 156	*Fraxinus excelsior*	NZA-21141	3789±35	2340-2040 BC
Beechbrook Wood	BBW 00	Pit 1374	hazelnut shells	NZA-21170	3864±35	2470-2200 BC
Eyhorne St	420/68 +100	Posthole 19	charred crab apple (*Malus sylvestris*)	NZA-20417	4044±35	2840-2460 BC
White Horse Stn	PIL 98	GW pit 904	pig radius (left)	NZA-21324	4046±35	2840-2460 BC
Saltwood Tunnel	SLT 98C	Saxon Grave 6653	unident mineralised roundwood wood from spearhead	NZA-21688	4054±55	2870-2460 BC
White Horse Stn	WHS 98	GW pit 4994	cattle scapula	NZA-21325	4080±35	2860-2490 BC
White Horse Stn	PIL 98	GW pit 911	pig mandible	NZA-21282	4097±30	2870-2490 BC
White Horse Stn	PIL 98	GW pit 958	cattle phalanx	NZA-21589	4113±35	2870-2500 BC
Eyhorne St	420/68 +100	Posthole 19	residue on pot	NZA-20418	4113±40	2880-2500 BC
White Horse Stn	PIL 98	GW pit 958	aurochs vertebra	NZA-21327	4120±35	2880-2570 BC
White Horse Stn	WHS 98	Longhouse posthole 5008	Maloideae charcoal	NZA-21280	4137±30	2880-2580 BC
White Horse Stn	PIL 98	GW pit 913	cattle phalanx	NZA-21508	4153±40	2880-2590 BC
White Horse Stn	WHS 98	GW pit 4943	charred hazelnuts	NZA-21493	4155±30	2880-2620 BC
White Horse Stn	WHS 98	Pit/hollow 5072	pig scapula	NZA-22749	4161±30	2880-2610 BC
White Horse Stn	WHS 98	FV deposit/pit 5125	cattle radius	NZA-21831	4189±30	2890-2630 BC
White Horse Stn	PIL 98	Pit/treehole 861	cattle tibia	NZA-21959	4193±25	2890-2660 BC
White Horse Stn	WHS 98	Pit/hollow 5072	cow calcaneum	NZA-22751	4195±35	2890-2620 BC
White Horse Stn	WHS 98	GW pit 5256	charred hazelnuts	NZA-21491	4196±60	2910-2580 BC
White Horse Stn	PIL 98	Pit 952	aurochs tibia	NZA-21328	4228±35	2910-2670 BC
White Horse Stn	WHS 99	Pit 4956	cow calcaneum	NZA-22737	4230±35	2920-2660 BC
White Horse Stn	WHS 99	Pit 5094	red deer antler	NZA-22813	4238±35	2920-2690 BC
White Horse Stn	WHS 98	Pit/hollow 5072	cow skull	NZA-22750	4271±35	2930-2690 BC
Little Stock Farm	LSF 99	Pit 2507	hazelnuts	NZA-19918	4482±35	3350-3030 BC
Saltwood Tunnel	SFB 99	Neolithic pit SG 175	hazelnuts	NZA-20600	4742±30	3640-3370 BC
Saltwood Tunnel	SFB 99	Neolithic pit SG 136	hazelnuts	NZA-20599	4775±30	3650-3380 BC
White Horse Stn	WHS 98	Longhouse posthole 4817	charred cereal	NZA-11463	4911±60	3920-3530 BC
Tutt Hill	430/99	Pit 14	pottery PRN 1139	NZA-23008	4926±40	3790-3640 BC
White Horse Stn	WHS 98	Longhouse posthole 4820	calcined animal bone	NZA-21769	4949±30	3790-3650 BC
White Horse Stn	WHS 98	Longhouse posthole 4817	*Alnus/Corylus* charcoal	NZA-11464	4974±60	3950-3640 BC
White Horse Stn	WHS 98	Longhouse posthole 5280	charred *Triticum* sp	NZA-21504	5007±75	3960-3660 BC
White Horse Stn	WHS 98	Longhouse posthole 4902	cow molar	NZA-21278	5028±30	3950-3710 BC
White Horse Stn	WHS 98	Hearth in longhouse 4874	charred cereal grain	NZA-21506	5039±25	3950-3760 BC
White Horse Stn	WHS 98	Longhouse posthole 4817	calcined animal bone	NZA-21770	5067±30	3960-3790 BC
White Horse Stn	WHS 98	Longhouse posthole 4820	Maloideae charcoal	NZA-21279	5123±30	3980-3800 BC
White Horse Stn	WHS 98	Hearth in longhouse 4830	Maloideae charcoal	KIA-25383	5165±31	4050-3810 BC
Tutt Hill	430/98	Pit 5	PRN 1063	NZA-23007	5996±45	4990-4780 BC
Sandway Road	SWR 99	Mesolithic hollow 558 (72)	grain *Triticum/ Hordeum sp*	NZA-11935	6920±45	5900-5710 BC
Beechbrook Wood	BBW 00	Ring-ditch 1021	charcoal *Alnus/Corylus*	NZA-20049	7072±35	6020-5840 BC
E Station Rd	STR 99	Palaeochannel	oak branch (sapwood)	NZA-12234	7968±60	7060-6680 BC
White Horse Stn	WHS 98	Longhouse posthole 4834	*Pinus* charcoal	NZA-21381	8516±35	7600-7520 BC
White Horse Stn	WHS 98	Longhouse posthole 5113	*Pinus* charcoal	NZA-21349	9182±40	8530-8280 BC
Sandway Road	SWR 99	Mesolithic hollow 558 (72)	hazelnuts	NZA-11934	9318±50	8740-8330 BC
Pepper Hill	NBR 98	Cremation 11271	tuber	KIA 23928	10302±46	10,750-9800 BC
White Horse Stn	WHS 98	Allerod soil	uniseriate dicotyledenous material	NZA-22046	11130±48	11,500-10,900 BC
Pepper Hill	NBR 98	Cremation 11091	charred parenchyma	KIA 23923	12111±56	13,400-11,700 BC

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

Abercromby, J, 1912 *A Study of Bronze Age Pottery of Great Britain and Ireland* Oxford

Adams, M, 2007 Westwell – the establishment of a village, *Archaeol Cantiana* **127**, 175-95

Adkins, L and Needham, S, 1985 New research on a Late Bronze Age enclosure at Queen Mary's Hospital, Carshalton, *Surrey Archaeol Collect* **76**, 11-50

Ager, B M, 1987 Late Roman belt-fittings from Canterbury, *Archaeol Cantiana* **104**, 25-31

Ager, B, 2006 Swords, in B Ager, E Cameron, S Spain and I Riddler (eds), *Saltwood Funerary Landscape: Early Anglo-Saxon Weapons*, 1-10, *HS1 Integrated Site Report Series*, ADS 2006

Aldridge, N, 1998 The impenetrable forest? Pre-historic and Romano-British settlement in the Weald, an account of some recent fieldwork, *Kent Archaeol Soc Newsletter* **37**, 6-7

Aldridge, N, 2001 Little Farningham Farm, Cranbrook, revisited, *Archaeol Cantiana* **121**, 135-56

Aldridge, N, 2005 A Belgic cremation cemetery and iron bloomery furnace at Jubilee Corner, Ulcombe, *Archaeol Cantiana* **125**, 173-82

Aldridge, N, 2006 The Roman road from Sutton Valence to Ashford: evidence for an alternative route to that proposed by Margary, *Archaeol Cantiana* **126**, 171-83

Alexander, J, 1961 The excavation of the Chestnuts megalithic tomb at Addington, Kent, *Archaeol Cantiana* **76**, 1-57

Allen, D F, 1967 Iron currency bars in Britain, *Proc Prehist Soc* **33**, 307-35

Allen, D, 1981 The excavation of a Beaker burial monument at Ravenstone, Buckinghamshire, in 1978, *Archaeol J* **138**, 72–117

Allen, J R L and Fulford, M G, 1999 Fort building and military supply along Britain's eastern channel and North Sea coasts: the later second and third centuries, *Britannia* **30**, 163-84

Allen, M J, 1997 Environment and land-use: the economic development of the communities who built Stonehenge an economy to support the stones, in B Cunliffe and C Renfrew (eds), *Science and Stonehenge*, Proc British Academy **92**, Oxford, 115-44

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 specialist report series*, in ADS 2006

Allen, M J and Gardiner, J, 2000 *Our Changing Coast: a survey of the intertidal archaeology of Langstone Harbour, Hampshire,* CBA Res Rep **124**, London

Allen, M and Lawrence, S, 2006 The radiocarbon dates from Thurnham Roman Villa, Kent, *HS1 Specialist Report Series*, in ADS 2006

Allen, M J, Barclay, A, Bayliss, A and Hayden, C, 2006 The radiocarbon dates from White Horse Stone, Aylesford, Kent, *HS1 specialist report series*, in ADS 2006

Allen, M, Riddler, I, Trevarthen, M and Diack, M, with Beaven Athfield, N, 2006 The radiocarbon dates from Saltwood Tunnel, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Allen, M J, Leivers, M and Ellis, C, 2008 Neolithic causewayed enclosures and later prehistoric farming: duality, imposition and the role of predecessors at Kingsborough, Isle of Sheppey, Kent, UK, *Proc Prehist Soc* **74**, 235-322

Allen, T, 1990 *An Iron Age and Romano-British enclosed settlement at Watkin's Farm, Northmoor, Oxon,* Oxford Archaeological Unit Thames Valley Landscapes, The Windrush Valley, Vol **1**, Oxford

Allen, T, 2002 Churchwood Drive, Chestfield, *Canterbury's Archaeology 1999-2000*, 23-7

Allen, T, 2009 Prehistoric settlement patterns on the north Kent coast between Seasalter and the Wantsum, *Archaeol Cantiana* **129**, 189-207

Allen, T, Parfitt, K and Rady, J, 1997 Thanet Way, *Canterbury's Archaeology 1995-1996*, 24-7

Allen, T and Donnelly, M, 2009 A2 Pepperhill to Cobham widening scheme: post-excavation assessment and research design. Unpublished report, Oxford Archaeology

Allen, T G and Robinson, M A, 1993 *The prehistoric landscape and Iron Age enclosed settlement at Mingies Ditch, Hardwick-with-Yelford, Oxon,* Oxford Archaeological Unit Thames Valley Landscapes: The Windrush Valley Vol **2**, Oxford

Allen, T, 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,* Univ Oxford Committee for Archaeology Monogr **2**, 89-101

Allen, T, Barclay, A and Lamdin-Whymark, H, 2004

Opening the wood, making the land: the study of a Neolithic landscape in the Dorney area of the Middle Thames valley, in Cotton and Field 2004, 82-98
Allen, T, with Donnelly, M, Hayden, C and Powell, K, forthcoming *A Road through the Past: high status Late Iron Age and early Roman burials, Bronze Age enclosures, Iron Age, Roman and medieval settlements on the line of the A2 Pepperhill to Cobham Widening Scheme, Gravesend, Kent*, Oxford Archaeology Monogr
Allison, E, 1997 Site 2, Whitfield-Eastry By-pass, *Canterbury's Archaeology 1995-1996*, 87
Allison, E, 2005 Environmental archaeology, *Canterbury's Archaeology 2003-04*, 59-61
Andersen, N H, 1997 *Sarup Volume 1: the Sarup enclosures*, Jutland Archaeological Society Publications **23.1**, Moesgaard
Anderson, O S, 1939 *The English hundred names: the south-eastern counties*, Lund
Anderson, T, 1995 The human skeletons, in Parfitt 1995, 114-45
Anderson, T, 1998 The human remains, in A J Hicks, Excavations at Each End, Ash, 1992, *Archaeol Cantiana* **158**, 119-30
Andrews, C, 2001 Romanisation: a Kentish perspective, *Archaeol Cantiana* **121**, 25-42
Andrews, C, 2004 Roman Kent, in Lawson and Killingray 2004, 20-4
Andrews, P, 1996 Prospect Park, Harmondsworth, London Borough of Hillingdon: settlement and burial for the Neolithic to the early Saxon periods, in P Andrews and A Crockett, *Three Excavations Along the Thames and its Tributaries, 1994*, Wessex Archaeology Report **10**, Salisbury, 1-50
Andrews, P and Riddler, I, 2006 Small finds from Mersham, *HS1 Specialist Report Series*, in ADS 2006
Andrews, P, Biddulph, E, Hardy, A and Brown, R, 2011 *Settling the Ebbsfleet Valley: High Speed 1 excavations at Springhead and Northfleet, Kent. The Late Iron Age, Roman, Saxon and medieval landscape*, *Volume 1: the sites*, Oxford Wessex Archaeology Monogr Oxford and Salisbury
Anker, K and Biddulph, E, 2011 Orbital Park, Ashford, Kent: post-excavation assessment, Oxford Archaeology unpublished report
Annable, F K and Simpson, D D A, 1964 *Guide Catalogue of the Neolithic and Bronze Age Collections in Devizes Museum*, Wiltshire Archaeological and Natural History Society, Devizes
Anon, 1991 *Identité du Chasséen*, Actes du Colloque International de Nemours, 1989, Memoires du Musée de Préhistoire d'Île de France **4**, Paris
ApSimon, A M, 1969 An early Neolithic house in Co. Tyrone, *J Royal Soc Antiq Ireland* **99**, 165-8
ApSimon, A M, 1976 Ballynagilly and the beginning and end of the Irish Neolithic, in S J de Laet (ed.), *Acculturation and continuity in Atlantic Europe*, Dissertationes Archaeologicae Gandenses **16**, Bruges, 15-30
Ashbee, P, 1957 The Great Barrow at Bishop's Waltham, Hampshire, *Proc Prehist Soc* **23**, 137-66
Ashbee, P, 1975/76 Amesbury barrow 51: excavation 1960, *Wiltshire Archaeol Nat Hist Mag* **70/71**, 1-60
Ashbee, P, 1993 The Medway megaliths in perspective, *Archaeol Cantiana* **111**, 57-111
Ashbee, P, 1998 Coldrum revisited and reviewed, *Archaeol Cantiana* **118**, 1-43
Ashbee, P, 2000 The Medway's megalithic long barrows, *Archaeol Cantiana* **120**, 319-45
Ashbee, P, 2005 *Kent in prehistoric times*, Stroud
Ashwin, T M, 1998 Excavations at Salter's Lane, Longham, 1990: Neolithic and Bronze Age features and finds, *Norfolk Archaeol* **43(1)**, 1-29
Askew, P, 2006 The Prehistoric, Roman and Medieval landscape at Northumberland Bottom, Southfleet, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Atkinson, M and Preston, S J, 1998 The Late Iron Age and Roman settlement at Elms Farm, Heybridge, Essex, excavations 1993-5: an interim report, *Britannia* **29**, 85-110
Attenborough, F L, 1922 *The Laws of the Earliest English Kings*, Cambridge
Austin, P, 2000 The emperor's new garden: woodland, trees, and people in the Neolithic of southern Britain, in A Fairbairn (ed.), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, Oxford, 65-78
Austin, R, 2001 Old and Water Street Cottage, unpublished report, Canterbury Archaeological Trust
Babb, L, 2001 An Early Iron Age dagger from Castlethorpe, Buckinghamshire, *Archaeol J* **158**, 325-47
Bailey, C J, 1980 Excavation of three round barrows in the parish of Kingston Russell, *Proc Dorset Nat Hist Archaeol Soc* **102**, 19-32
Baker, L, Sheridan, A and Cowie, T, 2003 An Early Bronze Age 'dagger grave' from Rameldry Farm, near Kingskettle, Fife, *Proc Soc Antiq Scotland* **133**, 85-123
Baldwin Brown, G, 1903 *The Arts in Early England 2: Ecclesiastical Architecture in England from the Conversion of the Saxons to the Norman Conquest*, London
Bamford, H M, 1982 *Beaker Domestic Sites in the Fen Edge and East Anglia,* E Anglian Archaeol **16**, Norwich
Banyard, G, 2004 Duke William's Conquest of Kent 1066, in Lawson and Killingray 2004, 34-5
Barber, A, McSloy, E and Holbrook, N, 2004 Excavations in 2000 on the line of the Thames Water North-West Oxfordshire Supply Improvement pipeline, in A R Hands and Cotswold Archaeology (eds), *The Romano-British roadside settlement at Wilcote, Oxfordshire III. Excavations*

1997-2000, Brit Archaeol Rep (Brit Ser) **370**, 260-340, Oxford

Barber, B and Bowsher, D, 2000 *The eastern cemetery of Roman London, excavations 1983-1990,* Museum of London Archaeology Service Monogr **4**, London

Barber, M, 1997 Landscape, the Neolithic, and Kent, in P Topping (ed.), *Neolithic Landscapes*, Oxford, 77-86

Barber, M, 2003 *Bronze and the Bronze Age: metalwork and society in Britain c.2500-800 BC,* Stroud

Barber, M, Field, D and Topping, P, 1999 *The Neolithic Flint Mines of England,* Swindon

Barclay, A, 1995 A review of Neolithic and Bronze Age sites in the Devil's Quoits area, in A Barclay, M Grey and G Lambrick (eds), *Excavations at the Devil's Quoits, Stanton Harcourt, Oxfordshire, 1972-3 and 1988*), Oxford Archaeological Unit; Thames Valley Landscapes, the Windrush Valley, Volume **3,** Oxford, 78-105

Barclay, A, 1999a Final Neolithic/Early Bronze Age, in Barclay and Halpin 1999, 35-148

Barclay, A, 1999b The monument complex: monument forms, functions and internal spatial organisation, in Barclay and Halpin 1999, 309-20

Barclay, A, 2000 Nashenden Valley, Borstal, Kent (ARC NSH 98): detailed archaeological works assessment report

Barclay, A, 2010 Excavating the living dead, *British Archaeology* **115**

Barclay, A and Edwards, E, 2006 Earlier prehistoric pottery, in Booth 2006a, 10-33

Barclay, A, and Halpin, C, 1999 *Excavations at Barrow Hills, Radley, Oxfordshire. Volume 1: The Neolithic and Bronze Age monument complex*, Oxford Archaeological Unit Thames Valley Landscapes Monogr No. **11**, Oxford

Barclay, A and Harding, J (eds), 1999 *Pathways and Ceremonies: the cursus monuments of Britain and Ireland,* Neolithic Studies Group Seminar Papers **4**, Oxford

Barclay, A and McCulloch, P, 2009 The Horton Neolithic house. Unpublished paper presented at *The Neolithic of the Thames Valley* conference, London, 7th February 2009

Barclay, G J, Brophy, K, and MacGregor, 2002 Claish, Stirling: an early Neolithic structure in its context, *Proceedings of the Society of Antiquaries of Scotland* **132**, 65-137

Barfield, L, 2006 Bays Meadow villa, Droitwich: excavations 1967-77, in D Hurst (ed.), *Roman Droitwich: Dodderhill fort, Bays Meadow villa, and roadside settlement*, CBA Res Rep **146**, York, 78-242

Barford, P M, 1982 A new type of Kent briquetage, *Kent Archaeol Review* **69**, 204-5

Barford, P M, 1990 Appendix 2: Salt production in Essex before the Red Hills, in Fawn *et al.* 1990, 81-4

Barford, P M, 1995 Briquetage or 'chaff-tempered ware', in Blockley *et al.* 1995, 672-3

Barker, W R, 1901 *Account of a Roman Villa Discovered at Brislington, Bristol, December 1899*, Bristol

Barnard, A, 2007 From Mesolithic to Neolithic modes of thought, in Whittle and Cummings 2007, 5-19

Barnwell, P S and Adams, A T, 1994 *The House Within: Interpreting Medieval Houses in Kent*, London

Barnwell, P S and Giles, C, 1997 *English Farmsteads, 1750-1914*, Swindon

Barrett, J, 1980 The pottery of the later Bronze Age in lowland England, *Proc Prehist Soc* **46**, 297-319

Barrett, J, 1988 The living, the dead and the ancestors: Neolithic and early Bronze Age mortuary practices, in J Barrett and I Kinnes (eds), *The Archaeology of Context in the Neolithic and Bronze Age: recent trends*, Sheffield, 30-41

Barrett, J, 1989 Food, gender and metal: questions of social reproduction, in M L Sørensen and R Thomas (eds), *The Bronze Age-Iron Age transition in Europe: aspects of continuity and change in European societies c 1200 to 500 BC,* Brit Archaeol Rep (Brit Ser) **483**, Oxford, 304-20

Barrett, J, 1990 The monumentality of death: the character of Early Bronze Age mortuary mounds in southern England, *World Archaeology* **22**, 179-89

Barrett, J, 1994 *Fragments from Antiquity: an archaeology of social life in Britain 2900-1200 BC,* Oxford

Barrett, J C, 1997 Romanization: A critical comment, in Mattingly 1997, 51-66

Barrett, J, Bradley, R and Green, M, 1991 *Landscape, Monuments and Society: the prehistory of Cranborne Chase,* Cambridge

Barrett, J C, Freeman, P W M and Woodward, A, 2000 *Cadbury Castle, Somerset: the later pehistoric and early historic archaeology,* English Heritage Archaeol Rep **20**, London

Barton, R N E, 1992 *Hengistbury Head, Dorset, vol 2: The Late Upper Palaeolithic and Early Mesolithic Sites*, Oxford University Committee for Archaeology Monogr **34**, Oxford

Barton, R N E, 2005 *Ice Age Britain,* London

Barton, R N E, 2009 The Late glacial or latest Paleolithic occupation of Britain, in J Hunter and I Ralston (eds), *The Archaeology of Britain: an introduction from the earliest times to the twenty-first century* (2nd edn), London, 18-52

Bates, M and Whittaker, K, 2004 Landscape evolution in the Lower Thames Valley: implications for the archaeology of the earlier Holocene period, in Cotton and Field 2004, 50-70

Bauchhenß, G and Noelke, P, 1981 *Die Iupitersäulen in den germanischen Provinzen*, Bonner Jahrbuch Beiheft **41**

Baxter, R and Mills, R, 1978 The Romano-British site at Radfield, Sittingbourne, *Archaeol Cantiana* **94**, 239-47

Bayliss, A, Whittle, A and Healy, F, 2008 Timing, tempo and temporality in the Neolithic of southern Britain, in H Fokkens, B J Cikes, A van Gijn, J P Kleijne, H H Ponjee and C G Slapp Endel (eds), *Between Foraging and Farming: an extended broad spectrum of papers presented to Lendert Louwe Kooijmans*, Analecta Praehistorica Leidensia **40**, Leiden, 25-42

Beck, C and Shennan, S, 1991 *Amber in Prehistoric Britain,* Oxbow Monogr **8**, Oxford

Bedwin, O, 1991 Asheldham Camp – an Early Iron Age hill fort: the 1985 excavations, *Essex Archaeol Hist* **22**, 13-37

Bell, M, 1977 Excavations at Bishopstone, *Sussex Archaeol Collect* **115**, 1-299

Bell, M G, 1983 Valley sediments as evidence of prehistoric landuse on the South Downs, *Proc Prehist Soc* **49**, 119-50

Bell, M, 1992 The prehistory of soil erosion, in M Bell and J Boardman (eds), *Past and Present Soil Erosion Archaeological and Geographical Perspectives*, Oxbow Monogr **22**, Oxford, 21-36

Bell, M, 2007 *Prehistoric Coastal Communities: the Mesolithic in western Britain,* CBA Res Rep **149**, York

Bennell, M and Stump, D, 2007 Evidence for Middle Saxon Occupation at Otford, *Archaeol Cantiana* **127**, 432-34

Bennett, P, 1978 A Roman building near Sandwich, *Archaeol Cantiana* **94**, 191-4

Bennett, P, 1988 Archaeology and the Channel Tunnel, *Archaeol Cantiana* **106**, 1-24

Bennett, P, 2008 Introduction, in Bennett *et al*. 2008, 1-7

Bennett, P, Ouditt, S and Rady, J, 1998 The prehistory of Holywell Combe, in Preece and Bridgland 1998, 261-314

Bennett, P, Hicks, A and Houliston, M, 2003 Canterbury Whitefriars: 'The Big Dig', *Current Archaeol* **185**, 190-6

Bennett, P, Macpherson-Grant, N and Couldrey, P, 2007 *Highstead, near Chislet, Kent: excavations 1975-1977,* Canterbury

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 1994-95*, Canterbury Archaeological Trust Occasional Paper No. **4**

Bennett, P, Riddler, I and Sparey Green, C, 2010 *The Roman watermills and settlement at Ickham, Kent*, The Archaeology of Canterbury New Ser Vol **V**, Canterbury

Beresford, M and Hurst, J G, 1971 *Deserted Medieval Villages*, London

Bergsvik, K A, 2003 Mesolithic ethnicity – too hard to handle? in L Larsen, H Kindgren, K Knutsson, D Loeffler and A Åkelund (eds), *Mesolithic on the Move*, Oxford, 290-301

Bersu, G, 1936 Rössener Wohnhäuser vom Goldberg, OA, Neresheim, Württemberg, *Germania* **20**, 229-43

Bertemes, F, 1991 Untersuchungen zur function der erdwerke der Michelsberger kultur im rahmen der kupferzeitlichen zivilisation, in J Lichardus (ed.), *Die Kupferzeit als Historische Epoche*, Saarbrücker Beiträge zur Altertumskunde **55**, 441-64

Betts, I M, 2003 Stone and ceramic building materials, in C Cowan (ed.), *Urban development in north-west Roman Southwark*, MoLAS Monogr **16**, London, 105-19

Betts, I M, 2006 Thurnham Roman Villa: Ceramic Building Material and Stone, *HS1 Scheme wide Specialist Report Series*, in ADS 2006

Bewley, B, Crutchley, S and Grady, D, 2004 Aerial survey and its contribution to understanding the Neolithic of the South East, in Cotton and Field 2004, 71-5

BGS, 2010 British Geological Survey online, Natural Environment Research Council, http://maps.bgs.ac.uk/geologyviewer/

Biddulph, E, 2002 One for the road? Providing food and drink for the final journey, *Archaeol Cantiana* **122**, 101-12

Biddulph, E, 2003 Iron Age and Roman pottery, in Booth and Howard-Davis 2003, 15-21

Biddulph, E, 2006a The Roman cemetery at Pepper Hill, Southfleet, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Biddulph, E, 2006b Last orders: choosing pottery for funerals in Roman Essex, *Oxford J Archaeol* **24** (**1**), 23-45

Biddulph, E, 2011 A Late Iron Age and early Roman settlement at Leybourne Grange, West Malling, Oxford Archaeology unpublished draft report

Biek, L, 1979 Metalworking residues, in Rahtz 1979, 252-8

Biel, J, Schlichtherle, H, Strobel, M and Zeeb, A, 1998 *Die Michelsberger Kultur und ihre Randgebiete: Probleme der Enstehung, Chronologie und des Siedlungswesens: Kolloquium Hemmenhofen, 1997,* Materialhefte zur Archäologie in Baden-Württemberg **43,** Stuttgart

Bird, D G, 2000 The environs of *Londinium*: roads, roadside settlements and the countryside, in I Haynes, H Sheldon and L Hannigan (eds), *London under ground: The archaeology of a city*, Oxbow, Oxford, 151-74

Bird, D, 2004a *Roman Surrey*, Tempus, Stroud

Bird, D, 2004b Roman religious sites in the landscape, in J Cotton, G Crocker and A Graham (eds), *Aspects of archaeology and history in Surrey*, Surrey Archaeological Society, 77-90, Guildford

Bishop, B and Bagwell, M, 2005 *Iwade: occupation of a North Kent village from the Mesolithic to the medieval period*, Pre-Construct Archaeology Monogr **3**, London

Black, E W, 1987 *The Roman villas of South-East England*, Brit Archaeol Rep (Brit Ser) **171**, Oxford

Black, E W, 1994 Villa-owners: Romano-British gentlemen and officers, *Britannia* **25**, 99-110

Blackmore, L, 2006 Small finds from Cuxton Anglo-

Saxon cemetery, *HS1 Specialist Report Series*, in ADS 2006
Blagg, T F C, 1979 The votive column from the Roman temple precinct at Springhead, *Archaeol Cantiana* **95**, 223-9
Blagg, T F C, 1982 Roman Kent, in Leach 1982, 51-60
Blagg, T F C, 1984 Roman architectural ornament in Kent, *Archaeol Cantiana* **100**, 65-80
Blagg, T F C, 1985 Decorated architectural stonework, in Parnell 1985, 67-8
Blanchet, J C, 2000 *Habitats et Nécropoles a l'Âge du Bronze sur le Transmanche et le TGV Nord,* Société Préhistorique Française, Paris
Blancquaert, G and Bostyn, F, 1998 L'âge du fer à Coquelles et Fréthun (Pas-de-Calais) (Fouilles du Transmanche 1986-1988), *Revue du Nord* **80**, 109-37
Blinkhorn, P, 1999 Of cabbages and kings: production, trade, and consumption in Middle Saxon England, in M Anderton (ed.), *Anglo-Saxon Trading Centres: Beyond the Emporia*, Glasgow, 4-23
Bloch, M, 1995a People into places: Zafimaniry concepts of clarity, in E Hirsch and M O'Hanlon (eds), *The Anthropology of Landscape: perspectives on place and space*, Oxford University Press, Oxford, 63-77
Bloch, M, 1995b Questions not to ask of Malagasy carvings, in I Hodder, M Shanks, A Alexandri, V Buchli, J Carman, J Last and G Lucas (eds), *Interpreting Archaeology: finding meaning in the past*, London, 212-15
Bloch, M, 1995c The resurrection of the house amongst the Zafimaniry of Madagascar, in J Carsten and S Hugh-Jones (eds), *About the House: Levi-Strauss and beyond*, Cambrisge University Press, Cambridge, 69-83
Bloch, M, 2005 Why trees, too, are good to think with: toward an anthropology of the meaning of life, in M Bloch (ed.), *Essays on Cultural Transmission*, Berg, Oxford, 21-38
Bloch, M and Parry, J, 1982 Introduction: death and the regeneration of life, in M Bloch and J Parry (eds), *Death and the Regeneration of Life*, 1-44, Cambridge University Press, Cambridge
Blockley, K, Blockley, M, Blockley, P, Frere, S S and Stow, S, 1995 *Excavations in the Marlowe car park and surrounding areas*, The archaeology of Canterbury **V**, Canterbury Archaeological Trust (2 vols)
Boast, E, Gardner, O W and Moody, G A, in preparation *Excavations at St Stephen's College, North Foreland, Broadstairs, Kent*, Trust for Thanet Archaeology
Boden, D, 2004 Shelford Quarry, Broad Oak, *Canterbury's Archaeology 2002-2003*, 20-2
Boden, D, 2006 Holborough Quarry, Snodland, *Canterbury's Archaeology 2004-2005*, 41-2
Boden, D, 2007a Ellington School, Ramsgate, *Canterbury's Archaeology 2005-2006*, 27-9
Boden, D, 2007b Holborough Quarry, Snodland, *Canterbury's Archaeology 2005-2006*, 40-1
Bogaard, A and Jones, G, 2007 Neolithic farming in Britain and central Europe: contrast or continuity?, in Whittle and Cummings 2007, 357-75
Bond, D, 1988 *Excavation at the North Ring, Mucking, Essex,* East Anglian Archaeology Rep No **43**, Chelmsford
Bonney, D J, 1966 Pagan Saxon Burials and Boundaries in Wiltshire, *Wiltshire Archaeol Natur Hist Mag* **61**, 25-30
Bonney, D J, 1976 Early Boundaries and Estates in Southern England in P H Sawyer (ed.), *Medieval Settlement*, London, 72-82
Boon, G C, 1977 Gold-in-glass beads from the ancient world, *Britannia* **8**, 193-207
Booth, P, 1991 Inter site comparisons between pottery assemblages in Roman Warwickshire: ceramic indicators of social status, *J Roman Pottery Stud* **4**, 1-10
Booth, P, 1998 Defining small towns in Roman Britain, *J Roman Archaeol* **11**, 613-23
Booth, P, 2001 The Roman shrine at Westhawk Farm, Ashford: a preliminary account, *Archaeol Cantiana* **121**, 1-23
Booth, P, 2004 Quantifying status: some pottery data from the Upper Thames Valley, *J Roman Pottery Stud* **11**, 39-52
Booth, P (ed.), 2006a Ceramics from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Specialist Report Series*, in ADS 2006
Booth, P, 2006b Late Iron Age and Roman pottery, in Booth 2006a
Booth, P, 2007 Cotswold Water Park Roman ceramic assemblages in their regional context, in Miles *et al*. 2007, 319-35
Booth, P, 2009 Roman pottery from the Channel Tunnel Rail Link Section 1, Kent: a summary overview, *J Roman Pottery Stud* **14**, 1-26
Booth, P and Everson, P, 1994 Earthwork survey and excavation at Boys Hall Moat, Sevington, Ashford, *Archaeol Cantiana* **114**, 411-34
Booth, P and Howard-Davis, C, 2003 *Prehistoric and Romano-British settlement at Queen Elizabeth Square, Maidstone*, Oxford Archaeology Occ Paper No **11**, Oxford
Booth, P, Cool, H E, Keys, L, Northover, J P and Shaffrey, R, 2006 Small finds from the Thurnham Roman villa, Kent, *HS1 Specialist report series,* in ADS 2006
Booth, P, Keily, J and Richardson, B, 2006 Small Finds from Northumberland Bottom, *HS1 Specialist Report Series, in ADS 2006*
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: AD 1-1000*, Oxford Archaeology Thames Valley Landscapes Monogr **27**, Oxford
Booth, P, Bingham, A and Lawrence, S, 2008 *The Roman Roadside settlement at Westhawk Farm,*

Ashford, Kent: excavations 1998-9, Oxford Archaeology Monogr **2**, 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 Archaeology Monogr No **10**, Oxford
Borrill, H, 1981 Casket burials, in Partridge 1981, 304–21
Boston, C, Bowater, C, Boyle, A and Holmes, A, 2003 Excavation of a Bronze Age barrow at the proposed Centre for Gene Function, South Parks Road, Oxford, 2002, *Oxoniensia* **68**, 179-200
Bourdieu, P, 1977 *Outline of a Theory of Practice,* Cambridge
Bourdieu, P, 1990 The Kabyle house or the world reversed, in P Bourdieu (ed.), *The Logic of Practice*, Cambridge, 271-83
Bowden, M, Ford, S and Mees, G, 1993 The date of the ancient fields on the Berkshire Downs, *Berkshire Archaeol J* **74** (1991-3), 109-33
Boyle, A and Early, R, 1998 (n d) *Excavations at Springhead Roman Town, Southfleet, Kent,* Oxford Archaeological Unit Occ Paper No **1**, Oxford
Boylston, A, 2000 Evidence for weapon trauma in British archaeological examples, in M Cox and S Mays (eds), *Human Osteology*, London, 357-80
Bradford, J S P and Goodchild, R G, 1939 Excavations at Frilford, Berks, 1937-8, *Oxoniensia* **4**, 1-70
Bradley, R, 1970 The excavation of a Beaker settlement at Belle Tout, East Sussex, England, *Proc Prehist Soc* **36**, 312-79
Bradley, R, 1982 Belle Tout – revision and reassessment, in Drewett 1982a, 62-71
Bradley, R, 1984 *The Social Foundations of Prehistoric Britain,* London
Bradley, R, 1991 The pattern of change in British prehistory, in T Earle (ed.), *Chiefdoms: power, economy and ideology*, Cambridge University Press, Cambridge, 44-70
Bradley, R, 1998a *The Significance of Monuments*, London
Bradley, R, 1998b *The passage of arms: an archaeological analysis of prehistoric hoards and votive deposits,* 2nd edn, Oxford
Bradley, R, 2000 *An Archaeology of Natural Places*, London
Bradley, R, 2004 Domestication, sedentism, property and time: materiality and the beginnings of agriculture in northern Europe, in E DeMarrais, C Gosden and C Renfrew (eds), *Rethinking Materiality*, McDonald Institute Monogr, Cambridge, 107-15
Bradley, R, 2005 *Ritual and Domestic Life in Prehistoric Europe,* London
Bradley, R, 2007 *The Prehistory of Britain and Ireland,* Cambridge
Bradley, R, 2008 The end of the beginning: changing configurations in the British and Irish Neolithic, in H Fokkens, B J Cikes, A van Gijn, J P Kleijne, H H Ponjee and C G Slapp Endel (eds), *Between Foraging and Farming: an extended broad spectrum of papers presented to Lendert Louwe Kooijmans*, Analecta Praehistorica Leidensia **40**, Leiden, 43-50
Bradley, R and Fulford, M, 1980 Sherd size in the analysis of occupation debris, *Bull Inst Archaeol, Univ of London* **17**, 85-94
Bradley, R J and Yates, D T, 2007 After 'Celtic' fields: the social organisation of Iron Age agriculture, in Haselgrove and Pope 2007, 94-102
Bradshaw, J, 1967 Mersham, *Archaeol Cantiana* **82,** l-li
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
Braithwaite, M, 1984 Ritual and prestige in the prehistory of Wessex, *c* 2200-1400 BC: a new dimension to the archaeological evidence, in D Miller and C Tilley (eds), *Ideology, Power and Prehistory*, Cambridge, 93-110
Bridgland, D R, Allen, P and Haggart, B 1995 *The Quaternary of the lower reaches of the Thames: field guide,* London
Brigham, T, Goodburn, D and Tyers, I with Dillon, J, 1995 A Roman timber building on the Southwark waterfront, London, *Archaeol J* **152**, 1-72
Brindley, A L, 2007 *The Dating of Food Vessels and Urns in Ireland,* Bronze Age Studies **7**, Galway
Brinson, J G S, 1943 Two burial groups of Belgic age, Hothfield Common, Ashford, *Archaeol Cantiana* **56**, 41-7
Briscoe, G, 1960 Giant Beaker and rusticated ware from Lakenheath, Suffolk and reproduction of ornament, *Proc Cambridge Antiq Soc* **53**, 1-17
Britnell, W, 1982 The excavation of two round barrows at Trelystan, Powys, *Proc Prehist Soc* **48**, 133-201
Britnell, W and Savory, H, 1984 *Gwernvale and Penywyrlod: two Neolithic long cairns in the Black Mountains of Brecknock*, Cambrian Archaeological Association Monogr **2**, Cardiff
Brookes, S, 2003 The early Anglo-Saxon framework for middle Anglo-Saxon economics: the case of east Kent, in T Pestell and K Ulmschnieder (eds), *Markets in early medieval Europe: trading and 'productive' sites 650-850*, Macclesfield, 84-96
Brookes, S, 2007a *Economics and Social Change in Anglo-Saxon Kent AD 400-900*, Brit Archaeol Rep (Brit Ser) **431**, Oxford
Brookes, S, 2007b Boat-rivets in Graves in pre-Viking Kent: Reassessing Anglo-Saxon Boat-Burial Traditions, *Medieval Archaeol* **51**, 1-18
Brookes, S, forthcoming Population ecology and multiple-estate formation: the evidence from eastern Kent, in N Higham and M Ryan (eds), *Anglo-Saxon Landscapes, Vol. II: Landscape History and Archaeology*, Manchester
Brooks, N P, 1989 The creation and early structure of the kingdom of Kent, in S Bassett (ed.), *The Origins of Anglo-Saxon Kingdoms*, 55-74, London and New York

Brooks, N P and Kelly, S E, forthcoming *Charters of Christchurch, Canterbury*, Anglo-Saxon Charters XV-XVII, Oxford

Brophy, S, 2007 From big houses to cult houses: Early Neolithic timber halls in Scotland, *Proc Prehist Soc* **73**, 75-96

Brossler, A, Early, R and Allen, C, 2004 *Green Park (Reading Business Park): Phase 2 Excavations – Neolithic and Bronze Age sites,* Oxford Archaeology Thames Valley Landscapes Monogr **19,** Oxford

Brown, A G, 2000 Floodplain vegetation history: changes in potential ritual spaces, in A Fairbairn (ed.), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, Oxford, 49-62

Brown, G, 2002 Roman Greenwich, *Archaeol Cantiana* **122**, 293-317

Brown, K, 2002 Metal slag, in S Losco-Bradley and G Kinsley (eds), *Catholme: An Anglo-Saxon Settlement on the Trent Gravels in Staffordshire*, Nottingham, 113-5

Brown, N, 1988 A Late Bronze Age enclosure at Lofts Farm, Essex, *Proc Prehist Soc* **54**, 249-302

Brown, N, 1991 Middle Iron Age decorated pottery around the Thames estuary, *Essex Archaeol Hist* **22**, 165-166

Bruce-Mitford, R L S, 1978 The Purse-Lid, Sliding Catch and Purse, in A Care Evans (ed.), *The Sutton Hoo Ship Burial Volume* **2**, London, 487-522

Bruce-Mitford, R L S, 1983 The Coptic Bowl, in A Care Evans (ed.), *The Sutton Hoo Ship Burial Volume* **3**, London, 732-53

Brück, J, 1995 A place for the dead: the role of human remains in Late Bronze Age Britain, *Proc Prehist Soc* **61**, 245-77

Brück, J, 1999a Ritual and rationality: some problems of interpretation in European archaeology, *European J Archaeol* **23**, 313-44

Brück, J, 1999b What's in a settlement? Domestic practice and residential mobility in Early Bronze Age southern England, in J Brück and M Goodman (eds), *Making Places in the Prehistoric World: themes in settlement archaeology*, London, 52-75

Brück, J, 1999c Houses, lifecycles and deposition on Middle Bronze Age settlements in southern Britain, *Proc Prehist Soc* **65**, 145-66

Brück, J, 2000 Settlement, landscape and social identity: the Early-Middle Bronze Age transition in Wessex, Sussex and the Thames valley, *Oxford J Archaeol* **19**, 273-300

Brück, J, 2004 Material metaphors: the relational construction of identity in early Bronze Age burials in Ireland and Britain, *J Social Archaeol* **43**, 307-33

Brück, J, 2006 Fragmentation, personhood and the social construction of technology in middle and Late Bronze Age Britain, *Cambridge Archaeol J* **16(3)**, 297-315

Brück, J, 2007 The character of Late Bronze Age settlement in southern Britain, in Haselgrove and Pope 2007, 24-38

Brück, J, 2008 The architecture of routine life, in J Pollard (ed.), *Prehistoric Britain*, Oxford, 248-67

Brudenell, M, 2008 Reclaiming the Early Iron Age, in Davis *et al*. 2008, 185-98

Brudenell, M and Cooper, A, 2008 Post-middenism: depositional histories on later Bronze Age settlements at Broom, Bedfordshire, *Oxford J Archaeol* **27(1)**, 15-36

Buckley, D G and Hedges, J D, 1987 *The Bronze Age and Saxon settlements at Springfield Lyons, Essex: an interim report,* Chelmsford

Bull, R, 2006a The prehistoric landscape at Whitehill Road Barrow, Longfield and New Barn, Kent, *HS1 Integrated Site Report Series,* in ADS 2006

Bull, R, 2006b The prehistoric, Roman and medieval landscape at Tollgate, Cobham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Burchell, J P T and Piggott, S, 1939 Decorated prehistoric pottery from the bed of the Ebbsfleet, Norhfleet, Kent, *Antiq J* **19**, 405

Burgess, C, 1980 *The Age of Stonehenge,* London

Burleigh, R and Kerney, M P, 1982 Some chronological implications of a fossil molluscan assemblage from a Neolithic site at Brook, Kent, England, *J Archaeol Sci* **9**, 29-38

Burnham, B C and Wacher, J S, 1990 *The 'small towns' of Roman Britain*, London

Bushe-Fox, J P, 1925 *Excavation of the Late-Celtic Urnfield at Swarling, Kent,* Rep Res Comm Soc Antiqs London **5**, London

Bushe-Fox, J P, 1932 *Third Report on the Excavations of the Roman Fort at Richborough, Kent*, Rep Res Comm Soc Antiqs London **10**, London

Buss, B, 2003 Beechbrook Wood, Hothfield, Kent (ARC BBW 00): targeted watching brief assessment report

Butler, C, 1991 The excavation of a Beaker bowl barrow at Pyecombe, West Sussex, *Sussex Archaeol Collect* **129**, 1-28

Butler, J J, 1990 Bronze Age metal and amber in the Netherlands (I), *Palaeohistoria* **32**, 47-110

Caciola, N, 1996 Wraiths, Revenants and Ritual in Medieval Culture, *Past and Present* **152**, 3-45

Calkin, J B, 1953 'Kimmeridge coal money': the Romano-British shale armlet industry, *Proc Dorset Natur Hist Archaeol Soc* **75**, 45-71

Cambridge, E, 1999 The architecture of the Augustinian mission, in R Gameson (ed.), *St Augustine and the conversion of England*, Stroud, 202-36

Cameron, A, 1985 Human Bone from Clubb's Pit, Isle of Grain (Unpublished AML report)

Campbell, G, 1998 The charred plant remains, in Boyle and Early 1998, 36-9

Campbell, G, 2000 Plant utilisation: the evidence from charred plant remains, in Cunliffe 2000, 45-59

Campbell, J B, 1977 *The Upper Palaeolithic of Britain: a study of man and nature in the Late Ice Age,* Oxford

Carelli, P, 1997 Thunder and Lightning, Magical Miracles. Of the Popular Myth of Thunderbolts and the Presence of Stone Age Artefacts in

Medieval Deposits, in H Andersson, P Carelli and L Ersgård (eds), *Visions of the Past: Trends and Traditions in Swedish Medieval Archaeology*, 393-417

Carr, G and Knüsel, C, 1997 The ritual framework of excarnation by exposure as the mortuary practice of the early and Middle Iron Ages of central and southern Britain, in A Gwilt and C Haselgrove (eds), *Reconstructing Iron Age societies,* Oxford, 167-73

Chadwick, A, 2006 Bronze Age burials and settlement and an Anglo-Saxon settlement at Claypit Lane, Westhampnett, West Sussex, *Sussex Archaeol Collect* **144**, 7-50

Challinor, D, 2006 The wood charcoal from Pepper Hill, Northfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006

Challinor, D, 2008 The wood charcoal, in Booth *et al*. 2008, 343-9

Champion, T C, 1975 Britain in the European Iron Age, *Archaeol Atlantica* **1**, 127-45

Champion, T C, 1980 Settlement and environment in later Bronze Age Kent, in J Barrett and R Bradley (eds), *Settlement and society in the British later Bronze Age,* Oxford, 223-46

Champion, T C, 1982 The Bronze Age in Kent, in Leach 1982, 31-9

Champion, T C, 2004 Exotic materials in the Early Bronze Age of Southeastern England, in H Roche, E Grogan, J Bradley, J Coles and B Raftery (eds), *From megaliths to metals: essays in honour of George Eogan*, Oxford, 48-52

Champion, T C, 2007a The growth of archaeology in Kent, in Williams 2007, 7-22

Champion, T C, 2007b Kent from 1500 to 300 BC, in Haselgrove and Pope 2007, 293-305

Champion, T C, 2007c Prehistoric Kent, in Williams 2007, 67-132

Chaplin, R E, 1962 Excavations in Rochester, winter 1961-2, *Archaeol Cantiana* **77**, 1

Chapman, J, 2000 *Fragmentation in archaeology: people, places and broken objects in the prehistory of south-eastern Europe,* London

Chapman, J and Gaydarska, B, 2007 *Parts and wholes: fragmentation in prehistoric context,* Oxford

Chatterton, R, 2006 Ritual, in Conneller and Warren 2006, 100-20

Clark, J G D and Rankine, W F, 1939 Excavations at Farnham, Surrey (1937-38): the Horsham Culture and the question of Mesolithic dwellings, *Proc Prehist Soc* **5**, 61-118

Clark, P, 2003 Castle Road, Sittingbourne, *Canterbury's Archaeol* **27**, 32-4

Clark, P (ed.), 2004 *The Dover Bronze Age boat in Context: society and water transport in prehistoric Europe,* London

Clark, P and Rady, J, 2008 The prehistoric period, in Bennett *et al*. 2008, 9-100

Clark, P, Rady, J and Sparey-Green, C, 2009 *Wainscott Northern By-pass: Archaeological investigations 1992-1997*, Canterbury Archaeol Trust Occ Paper No **5**, Canterbury

Clarke, D L, 1970 *Beaker Pottery of Great Britain and Ireland,* Cambridge

Clarke, R, 2004 An Early Anglo-Saxon Cross-roads Burial from Broad Town, North Wiltshire, *Wiltshire Archaeol Natur Hist Mag* **97**, 89-94

Clarke, S, 1997 Abandonment, rubbish disposal and 'special' deposits at Newstead, in K Meadows, C Lemke and J Heron (eds), *TRAC 96: Proceedings of the sixth annual theoretical Roman archaeology conference, Sheffield 1996*, Oxford, 73-81

Cleal, R M J, Walker, K and Montague, R, 1995 *Stonehenge in its Landscape,* English Heritage Archaeol Rep **10**, London

Cleal, R M J and MacSween, A, 1999 *Grooved Ware in Britain and Ireland*, Neolithic Studies Group Seminar Papers **3**, Oxford

Cleere, H, 1989 The *Classis Britannica*, in Maxfield 1989, 18-22

Cleere, H and Crossley, D, 1985 *The iron industry of the Weald,* Leicester

Clément-Sauleau, S, Ghèsquiere, E, Le Goff, I, and Marcigny, C, 2000 Habitat et monument du Néolithique moyen: le dolmen de Cairon "la Pierre Tourneresse" (Calvados). Présentation liminaire, *Internéo* **3**, 85-103

Clinch, G, 1908 Early man, in Page 1908, 307-38

Coleman, L, Havard, T, Collard, M, Cox, S and McSloy, E, 2004 Denham, The Lea (TQ 0490 8600) interim report, *South Midlands Archaeol* **34**, 14-17

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 Archaeological Services Monogr **4**, Reading

Conneller, C and Warren, C (eds), 2006 *Mesolithic Britain and Ireland: new approaches,* Stroud

Cook, A M and Dacre, M W, 1985 *Excavations at Portway, Andover, 1973-1975*, Oxford University Committee for Archaeology Monogr **4**, Oxford

Cool, H E M, 2004 *The Roman cemetery at Brougham, Cumbria,* Britannia Monogr **21**, London

Cool, H E M, 2006a The small finds, in P Booth and H Cool (eds), Small finds from Pepper Hill Roman Cemetery, *HS1 Specialist Report Series*, in ADS 2006

Cool, H E M, 2006b The small finds of metal, glass, worked bone and frit, in Booth *et al*. 2006

Cool, H E M, 2008 The objects and vessels of non-ferrous metal, fired clay and glass, in Booth *et al*. 2008, 148-71

Cooney, G, 2000 *Landscapes of Neolithic Ireland,* London

Cooney, G, 2003 Rooted or routed? Landscapes of Neolithic settlement in Ireland, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement in Ireland and Western Britain*, Oxford, 47-55

Cooper, A and Edmonds, M, 2007 *Past and present: excavations at Broom, Bedfordshire, 1996-2005,* Cambridge

Cooper, L, 2006 Launde, a terminal Palaeolithic campsite in the English midlands and its north European context, *Proc Prehist Soc* **72**, 53-93

Cordle, C, 2011 *Out of the Hay and into the Hops, Hop cultivation in Wealden Kent and hop marketing in Southwark, 1744-2000*, University of Hertfordshire Press Studies in Regional and Local History, Volume **9**

Cotswold Archaeology, 2003 *Annual Review* **14**, Cirencester

Cotterill, J, 1993 Saxon raiding and the role of the late Roman coastal forts of Britain, *Britannia* **24**, 227-40

Cotton, J, 2004 Two decorated Peterborough bowls from the Thames at Mortlake and their London context, in Cotton and Field 2004, 128-47

Cotton, J and Field, D (eds), 2004 *Towards a New Stone Age: aspects of the Neolithic in south-east England*, CBA Res Rep **137**, London

Coudart, A, 1998 *Architecture et Société Néolithique: l'unité et la variance de la maison danubienne*, Documents D'Archéologie Française **67**, Paris

Coutts, H, 1963-64 Recent discoveries of short cists in Angus and east Perthshire, *Proc Soc Antiq Scotland* **97**, 157-65

Cowe, D L, 1983 Food Vessels of South-East Scotland, Unpublished MA dissertation, University of Edinburgh

Cowie, T G, 1978 *Bronze Age Food Vessel Urns in Northern Britain*, Brit Archaeol Rep (Brit Ser) **55**, Oxford

Cowie, R, Kemp, R, Morton, A and Wade, K, 2001 Appendix 1. Gazetteer of Known English *Wics*, in D Hill and R Cowie (eds), *Wics: The Early Mediaeval Trading Centres of Northern Europe*, Sheffield, 85-94

Cowley, N, 2005 Building materials, in B Yule, *A prestigious Roman building complex on the Southwark waterfront Excavations at Winchester Palace, London, 1983-90*, Museum of London Archaeological Services Monogr **23**, London, 90-100

Cracknell, S, 1989 Roman Alcester: recent archaeological excavations, *Trans Birmingham Warwickshire Archaeol Soc* **94** (for 1985-6), 1-62

Cramp, K, 2006 The worked flint from White Horse Stone, Pilgrim's Way, East of Boarley Farm and West of Boarley Farm; Aylesford, Boxley, Kent, *HS1 specialist report series*, in ADS 2006

Crawford, O G S, 1960 *Archaeology in the Field*, 2nd edn, London

Crombé, P, Perdaen, Y and Sergant, J, 2005 Le néolithisation de la Belgique: quelques réflexions, in G Marchant and A Tresset (eds), *Unité et diversité des processus de néolithisation sur la façade atlantique de l'Europe (6-7ème millenaires avant J-C),* Société Préhistorique de la France, Mémoire **36**, Paris, 47-66

Cross, S, 2003 Irish Neolithic settlement architecture – a reappraisal, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement in Ireland and Western Britain*, Oxford, 195-202

Crummy, N and Crossan, C, 1993 Excavation at Butt Road Roman cemetery, 1976-9, 1986 and 1989, in N Crummy, C Crummy and C Crossan (eds), *Excavations of Roman and later cemeteries, churches and monastic sites in Colchester, 1971-88*, Colchester Archaeol Rep **9**, Colchester, 4-163

Cruse, R J, 2007 Dating the cremation in a Biconical urn at the Early Bronze Age barrow, Hill Road, Wouldham, *Archaeol Cantiana* **127**, 163-73

Cruse, R J and Harrison, A C, 1983 Excavation at Hill Road, Wouldham, *Archaeol Cantiana* **99**, 81-108

Cummings, V and Whittle, A, 2003 Tombs with a view: landscape, monuments and trees, *Antiquity* **77**, 255-66

Cunliffe, B, 1980 Excavations at the Roman Fort at Lympne, Kent 1976-78, *Britannia* **11**, 227-88

Cunliffe, B W, 1982 Social and economic development in Kent in the pre-Roman Iron Age, in Leach 1982, 40-50

Cunliffe, B, 1984a *Danebury: an Iron Age hillfort in Hampshire. Volume 1. The excavations 1969-1978: the site,* CBA Res Rep **52,** London

Cunliffe, B, 1984b *Danebury: an Iron Age hillfort in Hampshire. Volume 2: the excavations 1969-1978: the finds,* CBA Res Rep **52,** London

Cunliffe, B, 1995 *Danebury: an Iron Age hillfort in Hampshire. Volume 6: a hillfort community in perspective,* London

Cunliffe, B, 2000 *The Danebury Environs Programme: the prehistory of a Wessex landscape, Vol. 1: Introduction,* English Heritage and Oxford University Committee for Archaeology Monogr **48**, Oxford

Cunliffe, B W, 2005 *Iron Age communities in Britain: an account of England, Scotland and Wales from the seventh century BC to the Roman conquest*, 4th edn, London

Cunliffe, B and Poole, C, 1991a *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, 1991b *Danebury: an Iron Age hillfort in Hampshire. Volume 5: the excavations 1979-1988: the finds,* CBA Res Rep **73**, London

Cunliffe, B and Poole, C, 2000 *The Danebury Environs programme, the prehistory of a Wessex landscape: Vol. 2, part 3, Suddern Farm, Middle Wallop, Hants, 1991 and 1996,* English Heritage and OUCA Monogr No. **49**, Institute of Archaeology, Oxford

Cunnington, M E, 1923 *The Early Iron Age inhabited site at All Cannings Cross Farm, Wiltshire,* Devizes

Darvill, T, 1996 Neolithic buildings in England, Wales and the Isle of Man, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Oxford, 77-112

Darvill, T, 1997a Ever increasing circles: the sacred

geographies of Stonehenge in its landscape, in B Cunliffe and C Renfrew (eds), *Science and Stonehenge*, Proc Brit Acad **92**, Oxford, 167-202
Darvill, T, 1997b Neolithic landscapes: identity and definition, in P Topping (ed.), *Neolithic Landscapes*, Oxbow Monogr **86**, Oxford, 1-13
Darvill, T, 2003 Analytical scale, populations and the Mesolithic-Neolithic transition in the far northwest of Europe, in L Bevan and J Moore (eds), *Peopling the Mesolithic in a Northern Environment*, Brit Archaeol Rep (Int Ser) **1157**, Oxford, 95-102
Darvill, T, 2004 *Long Barrows of the Cotswolds and Surrounding Areas,* Stroud
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, J A and Gregory, T, 1991 Coinage from a *civitas*: a survey of the Roman coins found in Norfolk and their contribution to the archaeology of the *civitas Icenorum*, *Britannia* **22**, 65-101
Davies, M, 2001 Death and social division at Roman Springhead, *Archaeol Cantiana* **121**, 157-69
Davies, M, 2004 Cabriabanus – a Romano-British tile craftsman in Kent, *Archaeol Cantiana* **124**, 163-82
Davies, S, 2006 The prehistoric and post-medieval landscapes at Cobham Golf Course, Cobham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Davies, S R, 2006 Timber Halls of the Early British Neolithic, Unpublished M Phil thesis, University of Birmingham
Davies, S R, 2009 The Early Neolithic longhouses at Lismore Fields, Buxton: a digital landscape modelling analysis, *Derbyshire Archaeol J* **129**, 1-16
Davis, A, 2006a The charred plant remains from Northumberland Bottom, Southfleet, Kent (ARC WNB 98), *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, A, with de Moulins, D, 2000 The plant remains, in Barber and Bowsher 2000, 368-78
Davis, O, Sharples, N and Waddington, K (eds), 2008 *Changing perspectives on the first millennium BC*, Oxford
Davis, S, 1989 Animal remains from the Iron Age cemetery, in Stead and Rigby 1989, 250-9
Davis, S, 2006 The Prehistoric Landscape at Cobham Golf Course, Cobham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Davison, C, 2000 Gender imbalances in Romano-British cemetery populations: a re-evaluation of the evidence, in Pearce *et al*. 2000, 231-7
Dean, M and Hammerson, M, 1980 Three inhumation burials from Southwark, *London Archaeol* **4**, 17-22
Derks, T and Roymans, N, 2002 Seal-boxes and the spread of Latin literacy in the Rhine delta, in A E Cooley (ed.), *Becoming Roman, writing Latin? Literacy and epigraphy in the Roman west*, J Roman Archaeol Supp Ser No **48**, Portsmouth RI, 87-134
Detsicas, A P, 1963 Excavations at Eccles, 1962: First Interim Report, *Archaeol Cantiana* **78**, 125-41
Detsicas, A P, 1964 Excavations at Eccles, 1963: Second Interim Report, *Archaeol Cantiana* **79**, 121-35
Detsicas, A P, 1965 Excavations at Eccles, 1964. Third Interim Report, *Archaeol Cantiana* **80**, 69-91
Detsicas, A P, 1966 Excavations at Eccles, 1965. Fourth Interim Report, *Archaeol Cantiana* **81**, 44-52
Detsicas, A P, 1967 Excavations at Eccles, 1966, *Archaeol Cantiana* **82**, 162-78
Detsicas, A P, 1968 Excavations at Eccles, 1967, *Archaeol Cantiana* **83**, 39-48
Detsicas, A P, 1969 Excavations at Eccles, 1968, *Archaeol Cantiana* **84**, 93-106
Detsicas, A P, 1970 Excavations at Eccles, 1969, *Archaeol Cantiana* **85**, 55-60
Detsicas, A P, 1971 Excavations at Eccles, 1970, *Archaeol Cantiana* **86**, 25-34
Detsicas, A P, 1972 Excavations at Eccles, 1971, *Archaeol Cantiana* **87**, 101-10
Detsicas, A P, 1973 Excavations at Eccles, 1972, *Archaeol Cantiana* **88**, 73-80
Detsicas, A P, 1974 Excavations at Eccles, 1973, *Archaeol Cantiana* **89**, 119-34
Detsicas, A P, 1975a A Romano-British building at Charing, *Archaeol Cantiana* **91**, 107-10
Detsicas, A P, 1975b Excavations at Eccles, 1974, *Archaeol Cantiana* **91**, 41-6
Detsicas, A P, 1976 Excavations at Eccles, 1975, *Archaeol Cantiana* **92**, 157-64
Detsicas, A P, 1977a Excavations at Eccles, 1976, *Archaeol Cantiana* **93**, 55-60
Detsicas, A, 1977b First-century pottery manufacture at Eccles, Kent, in J Dore and K Greene (eds), *Roman pottery studies in Britain and beyond*, Brit Archaeol Rep (Suppl Ser) **30**, Oxford, 19-36
Detsicas, A, 1983 *The Cantiaci*, Peoples of Roman Britain, Gloucester
Detsicas, A P, 1989 Excavations at Eccles: a progress report, *Archaeol Cantiana* **107**, 83-8
Devaney, R and Stansbie, D, 2011 Excavations on the site of Dartford Football Club, Princes Road, Dartford, in Simmonds *et al*. 2011, 243-76
Devoy, R J N, 1978 Flandrian sea level changes and vegetational history of the Lower Thames Estuary, *Phil Trans Roy Soc London* B, **285**, 355-407
Devoy, R J N, 1980 Post-glacial environmental change and man in the Thames Estuary: a synopsis, in F H Thompson (ed.), *Archaeology and coastal change,* Society of Antiquaries, London, 134-48
Devoy, R J N, 1982 Analysis of the geological evidence for Holocene sea level movements in Southeast England, *Proc Geol Ass* **93**, 65-90
Diack, M, 2006 *A Bronze Age settlement at Kemsley, near Sittingbourne, Kent,* Canterbury Archaeological Trust Occ Paper **3**, Canterbury
Diez, V, 2006a The Late Iron Age and Roman settlement at Leda Cottages, Ashford, Kent, *HS1*

Integrated Site Report Series, in ADS 2006
Diez, V, 2006b The Roman settlement at Bower Road, Smeeth, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Diez, V, 2006c The late prehistoric and Roman landscape at Snarkhurst Wood, Maidstone, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Diez, V, Northover, J P and Shaffrey, R, 2006 Small finds from Beechbrook Wood, *HS1 specialist report series*, in ADS 2006
Dinn, J L and Hemingway, J, 1996 Archaeology on the Blackstone to Astley Aqueduct, *Trans Worcstershire Archaeol Soc* (Ser 3) **14**, 105-19
Dinwiddy, K E and Barclay, A, 2009 Neolithic, in P Andrews, K E Dinwiddy, C Ellis, A Hutcheson, C Phillpott, A B Powell and J Schuster, *Kentish Sites and Sites of Kent: a miscellany of four archaeological excavations*, Wessex Archaeology Report **24**, Salisbury, 63-7
Dobney, K and Ervynck, A, 2007 To fish or not to fish? Evidence for the possible avoidance of fish consumption during the Iron Age around the North Sea, in Haselgrove and Moore (eds), 403-18
Douglas, D C, 1944 *The Domesday Monachorum of Christ Church Canterbury*, London
Down, A, 1971 The Roman cemetery at St Pancras, in A Down and M Rule (eds), *Chichester excavations I*, Chichester, 53-127
Drewett, P, 1975 A Neolithic pot from Selmeston, East Sussex, *Sussex, Archaeol Collect* **113**, 193-94
Drewett, P, 1976 The excavation of four round barrows of the second millennium BC at West Heath, Harting, 1973-75, *Sussex Archaeol Collect* **114**, 126-50
Drewett, P, 1982a *The Archaeology of Bullock Down, Eastbourne, East Sussex: the development of a landscape,* Sussex Archaeological Monogr **1**, Lewes
Drewett, P, 1982b Later Bronze Age downland economy and excavations at Black Patch, East Sussex, *Proc Prehist Soc* **48**, 321-400
Drewett, P, 1985 The excavation of barrows V-IX at West Heath, Harting, 1980, *Sussex Archaeol Collect* **123**, 35-60
Drewett, P, 2003 Taming the wild: the first farming societies in Sussex, in D Rudling (ed.), *The Archaeology of Sussex to AD 2000*, Great Dunham, 39-46
Drewett, P, Rudling, D and Gardiner, M, 1988 *The South-East to AD1000*, London
Drury, P J, 1982 Form, function, and the interpretation of the excavated plans of some large secular Romano-British buildings, in P J Drury (ed.), *Structural Reconstruction: Approaches to the interpretation of the excavated remains of buildings*, Brit Archaeol Rep (Brit Ser) **110**, Oxford, 289-308
Dubouloz, J, 1991 Le village fortifié de Berry-au-Bac (Aisne) et sa signification pour la fin du Néolithique dans la France du Nord, in J Lichardus (ed.), *Die Kupferzeit als historische Epoche*, Saarbrücker Beiträge zur Altertumskunde **55**, Bonn, 421-40
Dubouloz, J, 2000 *Archéologie en Picardie: enceinte néolithique et village du Bronze final à Osly-Courtil,* Amiens
Dunning, G C, 1966 Neolithic occupation sites in East Kent, *Antiq J* **46**, 1-25
Dyer, C, 2002 *Making a Living in the Middle Ages: The People of Britain 850-1520*, New Haven and London
Dyson, L, Shand, G and Stevens S, 2000 Causewayed enclosures, *Current Archaeol* **168**, 470-72
Easton, T, 1995 Spiritual Middens, in P Oliver (ed.), *Encyclopaedia of Vernacular Architecture of the World. Vol. 1,* Cambridge, 568
Eddison, J, 2000 *Romney Marsh: Survival on a Frontier*, Stroud and Charleston
Edmonds, M and Seaborne, T, 2001 *Prehistory in the Peak,* Stroud
Edwards, E and Fell, V, 2006 Small Finds from Eyhorne Street, *HS1 Specialist Report Series*, in ADS 2006
Ellaby, R, 1987 The Upper Palaeolithic and Mesolithic in Surrey, in J Bird and D G Bird (eds), *The Archaeology of Surrey to 1540*, Guildford, 53-70
Ellis, C, 2009 Archaeology of the West Malling and Leybourne Bypass, in P Andrews, K E Dinwiddy, C Ellis, A Hutcheson, C Philpotts, A B Powell and J Schuster (eds), *Kentish sites and sites of Kent: A miscellany of four archaeological excavations*, Wessex Archaeology Rep **24**, Salisbury, 1-55
Ellis-Davidson, H and Webster, L, 1967 The Anglo-Saxon Burial at Coombe (Woodnesborough), Kent, *Medieval Archaeol* **11**, 1-41
Ellison, A, 1987 The Bronze Age settlement on Thorny Down: pots, post-holes and patterning, *Proc Prehist Soc* **53**, 385-92
Ellison, A and Drewett, P, 1971 Pits and post-holes in the British Early Iron Age: some alternative explanations, *Proc Prehist Soc* **37**, 183-94
Engen, M and Spikins, P, 2007 'A needle in a haystack?' Perspectives on prospection for submerged Mesolithic sites, in C Waddington and K Pedersen (eds), *Mesolithic Studies in the North Sea Basin and Beyond*, Oxford, 25-32
Enright, D and Watts, M, 2002 *A Romano-British and medieval settlement sit at Stoke Road, Bishop's Cleeve, Gloucestershire*, Bristol and Gloucestershire Archaeological Report **1**, Cirencester
Entwistle, R and Grant, A, 1989 The evidence for cereal cultivation and animal husbandry in the southern British Neolithic and Early Bronze Age, in A Milles, D Williams and N Gardner (eds), *The Beginnings of Agriculture*, Brit Archaeol Rep (Int Ser) **496**, Oxford, 203-15
Eriksen, P and Madsen, T, 1984 Hanstedgård: a settlement site from the Funnel Beaker culture, *J Danish Archaeol* **3**, 63-83
Esmonde Cleary, S, 2000 Putting the dead in their place: burial location in Roman Britain, in Pearce, Millett and Struck, 2000, 127-42

Evans, A C, 2005 Chapter 7: Seventh-Century Assemblages, in M Carver (ed.), *A Seventh-century Princely Burial Ground and its Context*, Rep Res Comm Soc Antiqs London **69,** London, 201-82

Evans, A J, 1890 On a late-Celtic-urn-field at Aylesford, Kent, and on the Gaulish, Illyro-Italic, and Classical connexions of the forms of pottery and bronze-work there discovered, *Archaeologia* **52**, 315-88

Evans, C, 2003 *Power and island communities: excavations at the Wardy Hill ringwork, Coveney, Ely*, Cambridge

Evans, C, Mackay, D and Webley, L, 2008 *Borderlands: the archaeology of the Addenbrooke's Environs, South Cambridge,* Cambridge

Evans, C, Pollard, J and Knight, M, 1999 Life in woods: tree-throws, 'settlement' and forest cognition, *Oxford J Archaeol* **18**, 241-54

Evans, J, 2001 Material approaches to the identification of different Romano-British site types, in James and Millett 2001, 26-35

Everitt, A M, 1986 *Continuity and Colonisation: The Evolution of Kentish Settlement*, Leicester

Evison, V I, 1967 The Dover Ring-Sword and other Sword Rings and Beads, *Archaeologia* **101**, 63-118

Evison, V I, 1987 *Dover: The Buckland Anglo-Saxon Cemetery*, London

Evison, V I and Hill, P, 1996 *Two Anglo-Saxon Cemeteries at Beckford, Hereford and Worcester*, CBA Res Rep **103**, York

Fairbairn, A, 2000 On the spread of crops across Neolithic Britain, with special reference to southern England, in A Fairbairn (ed.), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, 107-21, Oxford

Fairbrother, J R, 1990 *Faccombe Netherton: Excavations of a Saxon and Medieval Manorial Complex*, British Museum Occas Pap **74**, London

Fasham, P J, Farwell, D E and Whinney, R J B, 1989 *The Archaeological Site at Easton Lane, Winchester,* Hampshire Field Club Monogr **6**, Winchester

Faussett, B, 1856 *Inventorium Sepulchrale: an account of some antiquities dug up at Gilton, Kingston, Sibertswold, Barfriston, Chartham and Crundale, in the county of Kent, from AD 1757 to AD 1773*

Fawn, A J, Evans, K A, McMaster, I and Davies, G M R, 1990 *The red hills of Essex: salt-making in antiquity,* Colchester

Fell, V, Keys, L and Shaffrey, R, 2006 Small finds from White Horse Stone, Aylesford, Kent, *HS1 Specialist Report Series*, in ADS 2006

Fernie, E, 1983 *The Architecture of the Anglo-Saxons*, London

Field, D, 1998 Round barrows and the harmonious landscape: placing Early Bronze Age burial monuments in south-east England, *Oxford J Archaeol* **17**, 309-26

Field, D, 2004 Sacred geographies in the Neolithic of south-east England, in Cotton and Field 2004, 153-63

Field, D, 2006 *Earthen Long Barrows: the earliest monuments in the British Isles,* Stroud

Field, D, 2008 The development of an agricultural countryside, in J Pollard (ed.), *Prehistoric Britain*, Oxford, 202-24

Field, D and Cotton, J, 1987 Neolithic Surrey: a survey of the evidence, in J Bird and D G Bird (eds), *The Archaeology of Surrey to 1540*, 71-96, Guildford

Field, N and Parker Pearson, M, 2003 *Fiskerton: an Iron Age timber causeway with Iron Age and Roman votive offerings: the 1981 excavations,* Oxford

Figueiral, I, 1992 The charcoals, in M G Fulford and J R L Allen (eds), Iron making at the Chesters Villa, Woolaston, Gloucestershire: Survey and Excavation 1987-91, *Britannia* **23**, 188-91

Finlayson, B and Warren, G M, 2010 *Changing Natures: hunter-gatherers, first farmers and the modern world*, London

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 Archaeology Report No. **12**, Salisbury

Fitzpatrick, A, 1998-2003 A La Tène dagger from the River Thames at Windsor, Berkshire, *Berkshire Archaeol J* **76**, 14-16

Fitzpatrick, A, Powell, A B and Allen, M J, 2008 *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992: Volume 1: Late Upper Palaeolithic-Anglo-Saxon,* Wessex Archaeology Report No. **21**, Salisbury

Fleming, A, 1971 Territorial patterns in Bronze Age Wessex, *Proc Prehist Soc* **37**, 352-81

Fleming, A, 2008 *The Dartmoor Reaves: investigating prehistoric land divisions*, 2nd edn, Oxford

Flight, C, 1997 *The earliest recorded bridge at Rochester*, Brit Archaeol Rep (Brit Ser) **252,** Oxford

Flight, C and Harrison, A C, 1978 Rochester Castle, 1976, *Archaeol Cantiana* **94**, 27-60

Ford, B M, Kinchin-Smith, R and Wilkinson, D R P, 2002 The Royal Arsenal, Woolwich, Greenwich, Greater London. Phase I: Infrastructure works, Post-excavation assessment and research design, Oxford Archaeology unpublished report for London Development Agency and Llewelyn Davies Ltd

Foreman, S, Hiller, J and Petts, D, 2002 *Gathering the People, Settling the Land: The Archaeology of a Middle Thames Landscape Anglo-Saxon to post-medieval*, Oxford Archaeology Thames Valley Landscapes Monogr **14**, Oxford

Fowler, P J, 2000 *Landscape Plotted and Pieced: Landscape History and Local Archaeology in Fyfield and Overton, Wiltshire*, Rep Res Comm Soc Antiqs London **64**, London

Framework Archaeology, 2006 *Landscape evolution in the Middle Thames Valley: Heathrow Terminal 5 Excavations Volume 1, Perry Oaks*, Framework

Archaeology Monogr No. **1**, Oxford and Salisbury
Freeman, P W M, 1993 'Romanisation' and Roman material culture, *J Roman Archaeol* **6**, 438-445
Freeman, P, 1997 'Romanisation – Imperialism' – what are we talking about?, in K Meadows, C Lemke and J Heron (eds) *TRAC 96: Proceedings of the sixth annual theoretical Roman archaeology conference, Sheffield 1996*, Oxford, 8-14
Freeman, P W M, 2007 *The best training-ground for archaeologists: Francis Haverfield and the uinvention of Romano-British archaeology*, Oxford
French, J, 2000 Historic Research Project on Old Cottage and Water Street Cottage, Lenham Heath, Kent, Unpublished report, UCL, May 2000
Frere, S S, 1984 Roman Britain in 1983: I. Sites explored, *Britannia* **15**, 266-332
Frere, S S, 1990 Roman Britain in 1989: I. Sites explored, *Britannia* **21**, 304-64
Fulford, M, 2004 Economic structures, in M Todd (ed.), *A companion to Roman Britain*, Oxford, 309-26
Gaffney, V, Fitch, S and Smith, D, 2009 *Europe's Lost World: the rediscovery of Doggerland,* CBA Res Rep **160**, York
Gamble, C, 1986 *The Palaeolithic Settlement of Europe,* Cambridge
Gamble, C, 1999 *The Palaeolithic Societies of Europe,* Cambridge
Gardiner, J, 1984 Lithic distributions and settlement patterns in central southern England, in R Bradley and J Gardiner (eds), *Neolithic Studies*, Brit Archaeol Rep (Brit Ser) **133**, Oxford, 15-40
Gardiner, M, 1990 The Archaeology of the Weald: a survey and review, *Sussex Archaeol Collect* **128**, 33-53
Gardiner, M, Cross, R, Macpherson-Grant, N and Riddler, I, 2001 Continental Trade and Non-Urban Ports in Mid-Anglo-Saxon England: Excavations at Sandtun, West Hythe, Kent, *Archaeol J* **158**, 161-290
Garner, D, 2007 *The Neolithic and Bronze Age Settlement at Oversley Farm, Styal, Cheshire: excavations in advance of Manchester airport's second runway, 1997-8,* Brit Archaeol Rep (Brit Ser) **435**, Oxford
Garrard, I P and Stowe, S, 1995 The quernstones, in Blockley *et al*. 1995, 1206-1210
Garrard, P H, 1987 The human bones, in S Frere, P Bennett, J Rady and S Stow, *The Archaeology of Canterbury Volume VIII: Canterbury excavations intra- and extra-mural sites 1949-55 and 1980-84*, Maidstone, 263-71
Garrow, D, 2007a 'It's 17km as the crow flies …': Neolithic journeys seen through the material at either end, in V Cummings and R Johnston (eds), *Prehistoric Journeys*, Oxford, 45-53
Garrow, D, 2007b Placing pits: landscape occuipation and depositional practice during the Neolithic in East Anglia, *Proc Prehist Soc* **73**, 1-24
Garrow, D, Beadsmore, E and Knight, M, 2005 Pit clusters and the temporality of occupation: an earlier Neoithic site at Kilverstone, Thetford, Norfolk, *Proc Prehist Soc* **71**, 139-57
Garrow, D and Sturt, F, 2010 Grey waters bright with Neolithic argonauts? Maritime connections and the Mesolithic-Neolithic transition within the 'western seaways' of Britain, *c.*5000-3500 BC, *Antiquity* **85**, 59-72
Garton, D, 1987 Buxton, *Current Archaeol* **103**, 250-3
Garton, D, 1991 Neolithic settlement in the Peak District: perspective and prospect, in R Hodges and K Smith (eds), *Recent Developments in the Archaeology of the Peak District*, Sheffield, 3-22
Garwood, P, 1984 The Cuckmere Valley fieldwalking programme, 1982-83, *Bull Inst Archaeol* **21**, 49-68
Garwood, P, 1991 Ritual tradition and the reconstitution of society, in P Garwood, D Jennings, R Skeates and J Toms (eds), *Sacred and Profane, Archaeology, ritual and religion*, Oxford Univ Comm Archaeol Monogr **32**, Oxford, 10-32
Garwood, P, 1999a The chronology of depositional contexts and monuments, with contributions by A, Barclay, in Barclay and Halpin 1999, 275-93
Garwood, P, 1999b Grooved Ware in southern Britain: chronology and interpretation, in Cleal and MacSween 1999, 145-76
Garwood, P, 1999c Radiocarbon dating and the chronology of the monument complex, in Barclay and Halpin 1999, 293-309
Garwood, P, 2003 Round barrows and funerary traditions in Late Neolithic and Bronze Age Sussex, in D Rudling (ed.), *The Archaeology of Sussex to AD 2000*, Great Dunham, 47-68
Garwood, P, 2007a Before the hills in order stood: chronology, time and history in the interpretation of early Bronze Age round barrows, in J Last (ed.), *Beyond the Grave: new perspectives on round barrows*, Oxford, 30-52
Garwood, P, 2007b Late Neolithic and Early Bronze Age funerary monuments and burial traditions in the West Midlands, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, Oxford, 134-65
Garwood, P, 2007c Regions, cultural identity and social change, 4500-1500 BC: the West Midlands in context, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, Oxford, 194-215
Garwood, P, 2007d Vital resources, ideal images and virtual lives: children in Early Bronze Age funerary ritual, in S E E Crawford and G B Shepherd (eds), *Children and Social Identity in the Ancient World*, Brit Archaeol Rep (Int Ser) **1696**, Oxford, 63-82
Garwood, P, 2011 Rites of passage, in T Insoll (ed.), *The Oxford Handbook of the Archaeology of Ritual and Religion,* 261–84, Oxford
Garwood, P, forthcoming The present dead: the making of past and future landscapes in the British Chalcolithic, in M J Allen, J Gardiner, A Sheridan and D McOmish (eds), *Is there a British Chalcolithic? People, place and polity in the later 3rd millennium,* Prehist Soc Monogr, Oxford

Garwood, P, in preparation a The Medway Valley prehistoric landscapes project 2007-9: preliminary results of fieldwork

Garwood, P, in preparation b The Neolithic and Early Bronze Age, in *South-East England: a regional research framework for archaeology*

Gatrill, J M, 1880 Notes on a discovery at Greenhithe, *Archaeol J* **37**, 193-5

Geake, H, 1997 *The Use of Grave Goods in Conversion-Period England,* c. *600*–c. *850*, Brit Arch Rep (Brit Ser) **261**, Oxford

Gelling, M, 1978 *Signposts to the Past*, Chichester

Gerloff, S, 1975 *The Early Bronze Age Daggers of Great Britain and a Reconsideration of the Wessex Culture,* Prähistorische Bronzefunde Abt **VI, B2**, Munich

Germany, M, 2007 *Neolithic and Bronze Age Monuments and Middle Iron Age Settlement at Lodge Farm, St Osyth, Essex: excavations 2000-3,* East Anglian Archaeology Rep **117**, Chelmsford

Gerritsen, F, 2003 *Local identities: landscape and community in the late prehistoric Meuse-Demer-Scheldt region,* Amsterdam

Gibson, A, 1978 *Bronze Age Pottery in the North-East of England,* Brit Archaeol Rep (Brit Ser) **56**, Oxford

Gibson, A, 1980 A reinterpretation of Chippenham Barrow 5, with a discussion of the Beaker-associated pottery, *Proc Cambridge Antiq Soc* **71**, 47-60

Gibson, A, 1982 *Beaker Domestic Sites: a study in the domestic pottery of the late third and early second millennia BC,* Brit Archaeol Rep (Brit Ser) **107**, Oxford

Gibson, A, 1996 The later Neolithic structures at Trelystan, Powys, Wales: ten years on, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Neolithic Studies Group Seminar Papers **1**; Oxbow Monogr **57**, Oxford, 133-41

Gibson, A, 1998 *Stonehenge and Timber Circles,* Stroud

Gibson, A, 1999 *The Walton Basin Project: excavation and survey in a prehistoric landscape 1993-7,* CBA Res Rep **118**, York

Gibson, A, 2002 The later Neolithic palisaded enclosures of the United Kingdom, in A Gibson (ed.), *Behind Wooden Walls: Neolithic palisaded enclosures in Europe*, Brit Archaeol Rep (Int Ser) **1013**, Oxford, 5-23

Gibson, A, 2003 What do we mean by Neolithic settlement? Some approaches, 10 years on, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement on Ireland and Western Britain*, Oxford, 135-45

Gibson, A, 2007 A Beaker veneer? Some evidence from the burial record, in L Larsson and M Parker Pearson (eds), *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*, Brit Archaeol Rep (Int Ser) **1692**, Oxford, 47-64

Gibson, A and Kinnes, I, 1997 On the urns of a dilemma: radiocarbon and the Peterborough problem, *Oxford J Archaeol* **16**, 65-72

Gidlow, A V, 1969 Faversham: Barnfield, Oare, *Archaeol Cantiana* **84**, 238

Gillings, M, Pollard, J, Wheatley, D and Peterson, R, 2008 *Landscape of the Megaliths: excavation and fieldwork on the Avebury monuments, 1997-2003,* Oxford

Gilmour, B, 2006 Metallurgical Analyses on Early Anglo-Saxon Grave Goods from Saltwood Tunnel, *HS1 Specialist Report Series*, in ADS 2006

Gimbutas, M, 1965 *Bronze Age Cultures in Central and Eastern Europe,* The Hague

Gingell, C, 1981 Excavation of an Iron Age enclosure at Groundwell Farm, Blundon St Andrew, 1976-7, *Wiltshire Archaeol Mag* **76**, 33-75

Gingell, C, 1992 *The Marlborough Downs: a later Bronze Age landscape and its origins,* Wiltshire Archaeol Natur Hist Soc Monogr **1**, Devizes

Giorgi, J, 2000 The plant remains – a summary, in A Mackinder (ed.), *A Romano-British cemetery on Watling Street*, Museum of London Archaeological Services Archaeol Stud Ser **4**, 65-6

Giorgi, J, 2006a The charred plant remains from Whitehill Road (Zones 1 and 2), Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006

Giorgi, J, 2006b The charred plant remains from Beechbrook Wood, Hothfield, Kent (ARC BBW00), *HS1 Specialist Report Series*, in ADS 2006

Giorgi, J A and Stafford, E, 2006 Palaeoenvironmental evidence from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Specialist Report Series*, in ADS 2006

Glass, H, 1999 Archaeology of the Channel Tunnel Rail Link, *Archaeol Cantiana* **119**, 189-220

Godwin, H, 1962 Vegetational history of the Kentish chalk downs as seen at Wingham and Frogholt, *Veröffentlichungen des geobotanischen Instituts Zürich* **37**, 83-99

Going, C J, 1993 The Iron Age, in A Clark (ed.), *Excavations at Mucking volume 1: the site atlas*, English Heritage Archaeol Rep **20**, London, 19-20

Going, C J, 1996 The Roman countryside, in O Bedwin (ed.), *The archaeology of Essex; Proceedings of the Writtle conference*, Chelmsford, 95-107

Gollop, A, 2005 Westwood Cross, Broadstairs, *Canterbury's Archaeology 2003-04*, 18-19

Gollop, A, 2006 The later prehistoric and medieval landscape to the north of Westenhanger Castle, Stanford, Kent, *HS1 Specialist Report Series*, in ADS 2006

Goodburn, D, 2003 Coffin construction, in S Watson (ed.), *An excavation in the western cemetery of Roman London; Atlantic House, City of London*, Museum of London Archaeological Services Archaeol Stud Ser **7**, London, 60-2

Graham, A H and Davies, S M, 1993 *Excavations in Trowbridge, Wiltshire, 1977 and 1986-88*, Wessex Archaeology Report **2**, Salisbury

Graham, J, 1936 A Romano-Celtic temple at Titsey, and the Roman road, *Surrey Archaeol Collect* **44**, 84-101

Grahame, M, 1998 Redefining Romanization: material culture and the question of social continuity in Roman Britain, in C Forcey, J Hawthorne and R Witcher (eds), *TRAC 97 Proceedings of the seventh annual Theoretical Roman Archaeology Conference, Nottingham*, Oxford, 1-10

Gray, H L, 1915 *English Field Systems*, Cambridge

Green, C and Rollo-Smith, S, 1984 The excavation of eighteen round barrows near Shrewton, Wiltshire, *Proc Prehist Soc* **50**, 255-318

Green, M, 1999 Religion and deities, in Turner 1999, 255-7

Green, M, 2000 *A Landscape Revealed: 10,000 years on a chalkland farm,* Stroud

Greene, K, 2002 Pots and plots in Roman Britain, in M Aldhouse-Green and P Webster (eds), *Artefacts and archaeology*, Cardiff, 235-56

Greene, K, 2005 The economy of Roman Britain: representation and historiography, in J Bruhn, B Croxford and D Grigoropoulos (eds), *TRAC 2004: Proceedings of the fourteenth annual theoretical Roman archaeology conference, Durham 2004*, Oxford, 1-15

Greenfield, E, 1960a A Neolithic pit and other finds from Wingham, east Kent, *Archaeol Cantiana* **74**, 58-72

Greenfield, E, 1960b The excavation of Barrow 4, Swarkeston, Derbyshire, *Derbyshire Archaeol J* **80**, 1-48

Greenwood, P, 1989 Uphall Camp, Ilford, Essex: an Iron Age fortification, *London Archaeologist* **6**, 94-101

Greig, J, 1991 The British Isles, in W van Zeist, K Wasylikowa and K Behre (eds), *Progress in Old World Palaeoethnobotany,* Blakema, Rotterdam, 299-334

Grimes, W F and Close-Brooks, J, 1993 The excavation of Caesar's Camp, Heathrow, Harmondsworth, Middlesex, 1944, *Proc Prehist Soc* **59**, 303-60

Grinsell, L V, 1987 Surrey barrows 1934-1986: a reappraisal, *Surrey Archaeol Collect* **78**, 1-41

Grinsell, L V, 1992 The Bronze Age round barrows of Kent, *Proc Prehist Soc* **58**, 355-84

Grogan, E, 1996 Neolithic houses in Ireland, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Neolithic Studies Group Seminar Papers **1,** Oxbow Monogr **57**, Oxford, 41-60

Grogan, E, 2002 Neolithic houses in Ireland: a broader perspective, *Antiquity* **76**, 517-25

Grøn, O, 2003 Mesolithic dwelling places in south Scandinavia: their definition and social interpretation, *Antiquity* **77**, 685-708

Guest, P, 2008 Coins, in Booth *et al*. 2008, 135-48

Guttman, E B and Last, J, 2000 A Late Bronze Age landscape at Hornchurch, Greater London, *Proc Prehist Soc* **66**, 319-59

Gwilt, A, 1997 Popular practices from material culture: a case study of the Iron Age settlement at Wakerly, Northamptonshire, in A Gwilt and C Haselgrove (eds), *Reconstructing Iron Age societies,* Oxford, 153-66

Gwynedd Archaeological Trust, 2005 *Archaeology at Parc Bryn Cegin, Llandygai* (Llandegaiweblog), http://www.heneb.co.uk/llandegaiweblog/

Halliday, R, 1996 Wayside Graves and Crossroad Burials, *Proc Cambridge Antiq Soc* **84** (1990), 113-19

Hambleton, E, 1999 *Animal Husbandry Regimes in Iron Age Britain. A comparative study of faunal assemblages from British Iron Age sites*, Brit Archaeol Rep (Brit Ser) **282**, Oxford

Hambleton, E, 2008 *Review of Middle Bronze Age – Late Iron Age faunal assemblages from Southern Britain,* English Heritage Res Dept Rep **71-2008**, London

Hamerow, H, 1993 *Mucking Volume 2: the Anglo-Saxon settlement*, London

Hamerow, H, 2006 'Special Deposits' in Anglo-Saxon Settlements, *Medieval Archaeol* **50**, 1-30

Hamilton, S, 1998 Using elderly data bases: Iron Age pit deposits at the Caburn, East Sussex, and related sites, *Sussex Archaeol Collect* **136**, 23-39

Hamilton, S, 2003 Sussex not Wessex: a regional perspective on southern Britain c. 1200-200 BC, in D Rudling (ed.), *The archaeology of Sussex to AD 2000,* King's Lynn, 69-88

Hamilton, S, 2007 Cultural choices in the 'British Eastern Channel Area', in Haselgrove and Moore (eds) 2007, 81-106

Hamilton, S and Manley, J, 2000 Hillforts, monumentality and place: a chronological and topographic review of first millennium BC hillforts in south-east England, *European J Archaeol* **4**, 7-42

Hammond, J, 2007 How Kent's recently discovered causewayed enclosures impact on our understanding and interpretation of the early Neolithic in the region, *Archaeol Cantiana* **127**, 357–82

Hampel, A, 1989 *Die Hausentwicklung im Mittelneolithikum Zentraleuropas,* Universitätsforschungen zur Prähistorischen Archaeologie **1**, Stuttgart

Hampel, A, 1994 *Der Kaiserdom zu Frankfurt am Main, Ausgrabungen 1991-93*, Nussloch

Hanson, W S, 1994 Dealing with barbarians: the Romanisation of Britain, in B Vyner (ed) *Building on the past, papers celebrating 150 years of the Royal Archaeological Institute*, 149-63

Harding, A, 1990 The Wessex connection: developments and perspectives, in *Orientalisch-Ägäische Einflüsse in der Europäischen Bronzezeit*, Habelt; Römisch-Germanisches Zentralmuseum Monographien **15**, Bonn, 139-54

Harding, J, 2003 *Henge Monuments of the British Isles,* Stroud

Harding, J, 2006 Pit digging, occupation and structured deposition on Rudston Wold, eastern Yorkshire, *Oxford J Archaeol* **25**(**2**), 109-26

Harding, J and Healy, F, 2007 *The Raunds Area*

Project: a Neolithic and Bronze Age landscape in Northamptonshire, Swindon
Harding, P, 1988 The Chalk Plaque Pit, Amesbury, *Proc Prehist Soc* **54**, 320-26
Harding, P, 2005 The flint from Sandway Road, Lenham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Harding, P, 2006 Prehistoric Worked Flint from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Specialist Report Series*, in ADS 2006
Harman, M, Molleson, T and Price, J L, 1981 Burials, bodies and beheadings in Romano-British and Anglo-Saxon cemeteries, *Bull Brit Mus Nat Hist (Geol)* **35**(**3**), 145-88
Harris, A, 2006 Copper-Alloy Bowls, in A Harris, P Blinkhorn, V Evison, B Gilmour and I Riddler (eds), Early Anglo-Saxon Vessels and Containers from Saltwood Tunnel, *HS1 Integrated Site Report Series*, in ADS 2006, 1-9
Harrison, L, 2008 Roman brick and tile, in Booth *et al*. 2008, 259-66
Hart, P and Moody, G, 2008 Two Beaker burials recently discovered on the Isle of Thanet, *Archaeol Cantiana* **128**, 165-77
Haselgrove, C, 1995 Social and symbolic order in the origins and layout of Roman villas in northern Gaul, in J Metzler, M Millett, N Roymans and J Slofstra (eds), *Integration in the early Roman west*, Dossiers d'Archéologie du Musée National d'Histoire et d'Art **IV**, Luxembourg, 65-75
Haselgrove, C, 1997 Iron Age brooch deposition and chronology, in A Gwilt and C Haselgrove (eds), *Reconstructing Iron Age societies*, Oxford, 51-72
Haselgrove, C, 2007 The age of enclosure: later Iron Age settlement and society in northern France, in Haselgrove and Moore 2007, 492-522
Haselgrove, C and Moore, T (eds), 2007 *The later Iron Age in Britain and beyond*, Oxford
Haselgrove, C C and Pope, R E (eds), 2007 *The earlier Iron Age in Britain and the near Continent*, Oxford
Haslam, J, 1980 A Middle Saxon Iron Smelting Site at Ramsbury, Wiltshire, *Medieval Archaeol* **24**, 1-68
Hasted, E, 1797–1801 *The History and Topographical Survey of the County of Kent I*, 2nd edn
Hawkes, C F C, 1942 The Deverel urn and the Picardy pin: a phase of Bronze Age settlement in Kent, *Proc Prehist Soc* **8**, 26-47
Hawkes, S C, 1970 Finds from two Middle Bronze Age pits at Winnall, Winchester, *Proc Hampshire Field Club Archaeol Soc* **26**, 5-18
Hawkes, S C, 1973 The dating and social significance of the burials in the Polhill cemetery, in Philp 1973, 186-214
Hawkes, S C, 1976 Orientation at Finglesham: Sunrise dating of death and burial in an Anglo-Saxon cemetery in east Kent, *Archaeol Cantiana* **92**, 33-51
Hawkes, S C, 1982a Anglo-Saxon Kent c 425-725, in Leach 1982, 64-78
Hawkes, S C, 1982b Finglesham. A Cemetery in East Kent, in J Campbell (ed.), *The Anglo-Saxons*, London, 24-5
Hawkes, S C, 1990 Bryan Faussett and the Faussett Collection: An Assessment, in E Southworth (ed.), *Anglo-Saxon Cemeteries: A Reappraisal*, Stroud, 1-24
Hawkes, S C and Grainger, G, 2006 *The Anglo-Saxon Cemetery at Finglesham*, *Kent,* Oxford
Hayden, C, 2000a Boys Hall Balancing Pond, Sevington, Kent (ARC BHB 98): strip, map and sample unpublished assessment report
Hayden, C, 2000b Chapel Mill, Lenham, Kent (ARC CML 99): strip, map and sample unpublished assessment report
Hayden, C, 2000c East of Station Road/Church Lane, Smeeth, Kent (ARC STR99/ARC CHL98): detailed archaeological works unpublished assessment report
Hayden, C, 2001 West of Blind Lane, Sevington, Kent (ARC BLN 98): detailed archaeological works unpublished assessment report
Hayden, C, 2006a The Prehistoric Landscape at White Horse Stone, Boxley, 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, 2008 Causewayed enclosures and the Early Neolithic: the chronology and character of monument building and settlement in Kent, Surrey and Sussex in the early to mid-4th millennium cal BC, *South East Research Framework: resource assessment seminar papers*: http://www.kent.gov.uk/leisure_and_culture/heritage/south_east_research_framework/serf_seminar_papers.aspx_
Healy, F, Cleal, R M J and Kinnes, I, 1993 Excavations on Redgate Hill, Huntstanton, 1970 and 1971, in R Bradley, P Chowne, R M J Cleal, F Healy and I Kinnes (eds), *Excavations on Redgate Hill, Huntstanton, Norfolk, and at Tattershall Thorpe, Lincolnshire*, East Anglian Archaeology Rep No. **57**, Norwich, 1-77
Healy, F and Harding, J, 2004 Reading a burial: the legacy of Overton Hill, in A Gibson and A Sheridan (eds), *From Sickles to Circles: Britain and Ireland at the time of Stonehenge*, Stroud, 176-93
Healy, F and Harding, J, 2007 A thousand and one things to do with a round barrow, in J Last (ed.), *Beyond the Grave: new perspectives on round barrows*, Oxford, 53-71
Hearne, C M and Heaton, M, 1994 Excavations at a Late Bronze Age settlement in the Upper Thames Valley at Shorncote Quarry near Cirencester, 1992, *Trans Bristol and Gloucstershire Archaeol Soc* **112**, 17-57
Hearne, C, Perkins, D and Andrews, P, 1995 The Sandwich Bay Wastewater Treatment Scheme archaeological project, 1992-1994, *Archaeol Cantiana* **115**, 239-354

Hellevang, K J, 1994 Grain Drying, AE-701 (Revised), http://www.ag.ndsu.edu/pubs/plantsci/smgrains/ae701-1.htm

Helm, R, 2003 Willow Farm, off Hooper's Lane, Broomfield, *Canterbury's Archaeology 2000-2001*, 22-3

Helm, R, 2006 Medieval ironworking evidence from Mersham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Helms, M, 1988 *Ulysses' Sail: an ethnographic odyssey of power, knowledge and geographical distance*, Princeton

Henig, M, 1974 *A corpus of Roman engraved gemstones from British sites*, Brit Archaeol Rep (Brit Ser) **8**, Oxford

Henning, J, 1994a Die ländliche Besiedlung in Umland von Sadovec und die römischen Agrarstrukturen im europäischen Vorland von Byzanz, in H Bender and H Wolff (eds), *Ländliche Beseidlung und Landwirtschaft in den Rhein-Donau-Provinzen des Römischen Reiches*, Passauer Universitäts Schriften zur Archäologie Vol **2**, Band 1 (Text), 463-503

Henning, J, 1994b Die ländliche Besiedlung in Umland von Sadovec und die römischen Agrarstrukturen im europäischen Vorland von Byzanz, in H Bender and H Wolff (eds), *Ländliche Beseidlung und Landwirtschaft in den Rhein-Donau-Provinzen des Römischen Reiches*, Passauer Universitäts Schriften zur Archäologie Vol **2**, Band 2 (Abbildungen), 153-79

Herne, A, 1988 A time and a place for the Grimston Bowl, in J Barrett and I Kinnes (eds), *The Archaeology of Context in the Neolithic and Bronze Age: recent trends*, Sheffield, 9-29

Hewson, M, 2006 *Excavations at Whitemoor Haye Quarry, Staffordshire, 2000-2004,* Brit Archaeol Rep (Brit Ser) **478**, Oxford

Hey, G, 1997 Neolithic settlement at Yarnton, Oxfordshire, in P Topping (ed.), *Neolithic Landscapes*, Oxbow Monogr **86**, Oxford, 99-112

Hey, G, 2001 Yarnton, *Current Archaeol* **173**, 216-25

Hey, G, 2004 *Yarnton: Saxon and medieval settlement and landscape*, Oxford Archaeology Thames Valley Landscapes Monogr **20**, Oxford

Hey, G, in preparation *Yarnton Neolithic and Bronze Age Settlement and Landscape,* Oxford Archaeology Thames Valley Landscapes Monogr

Hey, G and Barclay, A, 2007 The Thames Valley in the late fifth and the early fourth millennium cal BC: the appearance of domestication and the evidence for change, in Whittle and Cummings 2007, 399-422

Hey, G and Bell, C, 1997 Yarnton floodplain, *South Midlands Archaeol* **21**, 62-4

Hey, G and Lacey, M, 2000 *An evaluation of archaeological decision-making processes and sampling strategies*, European Regional Development Fund Interreg IIc, Planarch Project, Oxford Archaeological Unit, Oxford

Hey, G, with Robinson, M, 2011 Neolithic communities in the Thames Valley: the creation of new worlds, in A Morigi, D Schreve, M White, G Hey, P Garwood, M Robinson, A Barclay and P Bradley, *Thames Through Time: the archaeology of the gravel terraces of the Upper and Middle Thames. Early prehistory to 1500 BC*, Oxford Archaeology Thames Valley Landscapes Monogr **32**, Oxford, 221-60

Hey, G, Bayliss, A and Boyle, A, 1999 Iron Age inhumation burials at Yarnton, Oxfordshire, *Antiquity* **73**, 551-562

Hicks, A J, 1998 Excavations at Each End, Ash, 1992, *Archaeol Cantiana* **118**, 91-172

Hill, C, 1980 Discussion, in C Hill, M Millett and T Blagg (eds), *The Roman riverside wall and monumental arch in London*, London and Middlesex Archaeol Soc Special Paper No **3**, 56-76

Hill, D, 1981 *An Atlas of Anglo-Saxon England*, Oxford

Hill, J, 2006 The medieval manor at Parsonage Farm, Westwell, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Hill, J D, 1995 *Ritual and rubbish in the Iron Age of Wessex*, Brit Archaeol Rep (Brit Ser) **242**, Oxford

Hill, J D, 2001 Romanization, gender and class: recent approaches to identity in Britain and their possible consequences, in James and Millett 2001, 12-18

Hill, J D, 2002 Just about the potter's wheel? Using, making and depositing middle and later Iron Age pots in East Anglia, in A Woodward and J D Hill (eds), *Prehistoric Britain: The ceramic basis*, Prehistoric Ceramics Research group Occ Pub **3**, Oxford, 143-60

Hill, J D, 2007 The dynamics of social change in later Iron Age eastern and south-eastern England *c*. 300 BC-AD 43, in Haselgrove and Moore (eds) 2007, 16-40

Hiller, J and Wilkinson, D R P, 2005 *Archaeology of the Jubilee Line Extension: Prehistoric and Roman activity at Stratford Market Depot, West Ham, London 1991-1993*, Oxford Archaeology, Oxford

Hillman, G, 1982 Late Iron Age glume wheats from Wilmington Gravel-pit, Kent, Ancient Monuments Laboratory Report 3611

Hillman, G, 1991 A sample of carbonised plant remains, in Philp *et al*. 1991, 292

Hills, C, Penn, K and Rickett, R, 1984 *Spong Hill: Part III Catalogue of Inhumations*, East Anglian Archaeology Rep No. **21**, Gressenhall

Hingley, R, 1989 *Rural Settlement in Roman Britain*, London

Hingley, R, 1991 Iron Age 'currency bars': the archaeological and social context, *Archaeol J* **147**, 91-117

Hingley, R, 2005 *Globalizing Roman culture: unity, diversity and empire*, London

Hinton, D, 1993 Sutton Hoo Reviewed, *Archaol J* **150**, 508-11

Hirst, S M, 1985 *An Anglo-Saxon Inhumation Cemetery at Sewerby, East Yorkshire*, York Univ Archaeol Pub **4**, York

Hirst, S M, Nixon, T, Rowsome, P and Wright, S, 2004 *The Prittlewell Prince: The Discovery of a Rich Anglo-Saxon Burial in Essex*, London

Hodder, I, 1990 *The Domestication of Europe: structure and contingency in Neolithic societies,* Oxford

Hodder, I, 1994 Architecture and meaning: the example of Neolithic houses and tombs, in Parker Pearson and Richards 1994, 73-86

Hodgkinson, J S, 1999 Romano-British iron production in the Sussex and Kent Weald: a review of current data, *Historical Metallurgy*, **33(2)**, 68-72

Hogarth, A C, 1973 Structural features in Anglo-Saxon graves, *Archaeol J* **130**, 105-19

Holden, E, 1972 A Bronze Age cemetery-barrow on Itford Hill, Beddingham, Sussex, *Sussex Archaeol Collect* **110**, 70-117

Holgate, R, 1981 The Medway megaliths and Neolithic Kent, *Archaeol Cantiana* **97**, 221-34

Holgate, R, 2003 Late Glacial and Post-Glacial hunter-gatherers in Sussex, in D Rudling (ed.), *The Archaeology of Sussex to AD 2000*, Great Dunham, 29-38

Holgate, R, 2004 Managing change: the Mesolithic-Neolithic transition in south-east England, in Cotton and Field 2004, 24-8

Holman, D, 2000 Iron Age coinage in Kent: a review of current knowledge, *Archaeol Cantiana* **120**, 205-33

Holman, D, 2005 Iron Age coinage and settlement in East Kent, *Britannia* **36**, 1-54

Holman, D J and Parfitt, K, 2005 The Roman villa at Minster-in-Thanet. Part 2: the Iron-Age, Roman and later coinage, *Archaeol Cantiana* **125**, 203-28

Holmes, T and Bennett, P, 2003 Chilston Sandpit, Lenham, *Canterbury's Archaeology 2001-2002*, 43-4

Hooke, D, 1998 *The Landscape of Anglo-Saxon England*, London and Washington

Hope-Taylor, B, 1977 *Yeavering: An Anglo-British centre of early Northumbria*, London

Horrox, R (ed.), 1994 *The Black Death*, Manchester Medieval Sources, Manchester

Houliston, M, 1999 Excavations at The Mount villa, Maidstone 1994, *Archaeol Cantiana* **119**, 71-172

House, M, 2005 Hawkinge, *Kent Archaeol Soc Newsletter* **66**, 1-2

Huggett, J, 1988 Imported Grave Goods and the Early Anglo-Saxon Economy, *Medieval Archaeol* **32**, 63-96

Hugh-Jones, S, 1995 Inside-out and back-to-front: the androgynous house in Northwest Amazonia, in J Carsten and S Hugh-Jones (eds), *About the House: Levi-Strauss and beyond*, Cambridge, 226-52

Hugh-Jones, S, 1996 Houses in the Neolithic imagination: an Amazonian example, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Oxford, 185-93

Hull, M R and Hawkes, C F C, 1987 *Corpus of ancient brooches in Britain: pre-Roman bow brooches,* Brit Archaeol Rep (Brit Ser) **168**, Oxford

Hummler, M, 2005 Before Sutton Hoo: the prehistoric settlement (c.3000 BC to AD 550), in M Carver (ed.), *Sutton Hoo: a seventh-century princely burial ground and its context,* Rep Res Comm Soc Antiqs London **69**, London, 391-458

Humphrey, J, 2003 The utilisation and technology of flint in the British Iron Age, in J Humphrey (ed.), *Re-searching the Iron Age,* Leicester, 17-23

Humphrey, J, 2007 Simple tools for tough tasks or tough tools for simple tasks? Analysis and experiment in Iron Age flint utilisation, in Haselgrove and Pope 2007, 144-59

Hurd, H, 1909 On a Late Celtic village near Dumpton Gap, Broadstairs, *Archaeologia* **61**, 427-8

Hurd, H, 1914 Late Celtic discoveries at Broadstairs, *Archaeol Cantiana* **30**, 309-12

Hurtrelle, J, Monchy, E, Roger, F, Rossignol, 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, 2001 Early Roman burial in Dartford, *Archaeol Cantiana* **121**, 103-20

Hutchings, P, 2003 Ritual and riverside settlement: a multi-period site at Princes Road, Dartford, *Archaeol Cantiana* **123**, 41-79

Ilett, M and Plateaux, M, 1999 *Le Site Néolithique de Berry-au-Bac 'Le Chemin de la Pêcherie' (Aisne)*, Monographie du CRA **15**, CNRS editions, Paris

Jackson, R, 2007 Pits, pots, places and people: approaching the Neolithic at Wellington Quarry, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, Oxford, 109-22

Jacobi, R M, 1979 Early Flandrian hunters in the south-west, *Proc Devon Archaeol Soc* **37**, 48-93

Jacobi, R M, 1982 Later hunters in Kent: Tasmania and the earliest Neolithic, in Leach 1982, 12-23

James, H, 2003 *Roman Carmarthen Excavations 1978-1993*, Britannia Monogr Ser No. **20**, London

James, R, 2007 Chilston Icehouse, Chilston Park, Lenham, Kent, unpublished report of Archaeology South East (Project 2998, July 2007)

James, S, 2001 Soldiers and civilians: identity and interaction in Roman Britain, in James and Millett 2001, 77-89

James, S and Millett, M (eds), 2001 *Britons and Romans: advancing an archaeological agenda*, CBA Res Rep **125**, York

Jarman, C, 2002 Glebeland, Marley Road, Harrietsham, *Canterbury's Archaeology 1997-1998*, 16-17

Jarman, C, 2005 Underdown Lane, Eddington, *Canterbury's Archaeology 2003-04*, 14-16

Jarman, C, 2010 *Excavations at Downlands, Walmer, Kent*, Canterbury Archaeological Trust Occasional Paper **7**, Canterbury

Jarvis, K, 1983 *Excavations in Christchurch 1969-1980*, Proc Dorset Natur Hist Archaeol Soc Monogr **5**, Dorchester

Jay, M and Richards, M P, 2006 Diet in the Iron Age

cemetery population at Wetwang Slack, East Yorkshire, UK: carbon and nitrogen stable isotope evidence, *J Archaeol Sci* **35**, 653-62
Jessup, R F, 1930 *The archaeology of Kent,* London
Jessup, R F, 1937 Excavations at Julliberries Grave, Chilham, Kent, *Antiq J* **17**, 122-37
Jessup, R F, 1939 Excavations at Julliberries Grave, Chilham, Kent, *Antiq J* **19**, 260-81
Jessup, R F, 1959 Barrows and walled cemeteries in Roman Britain, *J Brit Archaeol Assoc* 3rd Ser **22**, 1-32
John, E, 1964 *Land Tenure in Early England*, 2nd edn, London
Johns, C and Potter, T, 1985 The Canterbury late Roman treasure, *Antiq J* **65**, 312-52
Johnson, C, 2002 The excavation of a Late Iron Age and early Roman site at Brisley Farm, Chilmington Green, Ashford, Kent, *Kent Archaeol Soc Newsletter* **52**, 1-2
Johnston, D E, 1977/1978 The excavation of a bell-barrow at Sutton Veny, Wilts., *Wiltshire Archaeol Mag* **72/73**, 29-50
Johnston, R, 2001 'Breaking new ground': land tenure and fieldstone clearance during the Bronze Age, in J Brück (ed.), *Bronze Age Landscapes: tradition and transformation*, Oxford, 98-109
Johnston, R, 2008 Later prehistoric landscapes and inhabitation, in J Pollard (ed.), *Prehistoric Britain*, Oxford, 268-87
Jolliffe, J E A, 1933 *Pre-Feudal England: The Jutes*, London
Jones, G, 2000 Evaluating the importance of cultivation and collecting in Neolithic Britain, in A Fairbairn (ed.), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, Oxford, 79-84
Jones, M, 1985 Archaeobotany beyond subsistence reconstruction, in G Barker and C Gamble (eds), *Beyond domestication in prehistoric Europe: investigations in subsistence archaeology and social complexity*, London, 107-28
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 Later Bronze Age settlement at Mucking, Essex, in J Barrett and R Bradley (eds), *Settlement and society in the British later Bronze Age*, Brit Archaeol Rep (Brit Ser) **83**, Oxford, 471-83
Jope, E M, 1961 Daggers of the Early Iron Age in Britain, *Proc Prehist Soc* **27**, 307-43
Jordan, P D, 2003 Peopling the Mesolithic: insights from ethnographers of landscape and material culture, in L Bevan and J Moore (eds), *Peopling the Mesolithic in a Northern Environment*, BritArchaeol Rep (Int Ser) **1157**, Oxford, 27-34
Jordan, P D, 2006 Analogy, in Conneller and Warren 2006, 83-100
Jordan, W C, 1996 *The Great Famine: Northern Europe in the Early Fourteenth Century*, Princeton
Kain, R J P, 1986 Kent, in R J P Kain, *An Atlas and Index of the Tithe Files of Mid-Nineteenth Century England and Wales*, Cambridge, 112-25
Keay, S and Terrenato, N, 2001 *Italy and the west: comparative issues in Romanization*, Oxford
Keefer, E, 1988 *Hochdorf II: eine jungsteinzeitliche Siedlung der Schussenrieder Kultur,* Stuttgart: Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemburg **27**
Keily, J, 2006a Small finds from Tollgate, Cobham, Kent (ARC 330 98 C), *HS1 Specialist Report Series,* in ADS 2006
Keily, J, 2006b Small finds from Whitehill Road, Longfield and New Barn, Kent (Archaeological Zones 1 and 2), *HS1 Specialist Report Series*, in ADS 2006
Keily, J and Richardson, B, 2006a Small finds from Northumberland Bottom, Southfleet, Kent, *HS1 specialist report series*, in ADS 2006
Keily, J and Richardson, B, 2006b Small finds from Parsonage Farm, *HS1 Specialist Report Series*, in ADS 2006
Keily, J, Morris E and Shaffrey, R, 2006 Small finds from Cobham Golf Course, *HS1 Specialist Report Series*, in ADS 2006
Keller, P T, 1989 Quern production at Folkestone, south-east Kent: an interim note, *Britannia* **20**, 193-200
Keller, P, 1990 *Charing near Ashford, Excavation of Iron Age and Romano-British farmstead sites at Bretts Sandpit, 1989,* Dover
Kelly, D B, 1963 Archaeological notes from Maidstone Museum: Upchurch, Slayhills Marsh, *Archaeol Cantiana* **78**, 201-3
Kelly, D B, 1971 Quarry Wood Camp, Loose: a Belgic *oppidum*, *Archaeol Cantiana* **86**, 55-84
Kelly, D B, 1978 Archaeological notes from Maidstone Museum, *Archaeol Cantiana* **94**, 264-8
Kelly, D, 1991 Archaeological notes from Maidstone Museum, *Archaeol Cantiana* **109**, 339-40
Kelly, D B, 1992 The Mount Roman Villa, Maidstone, *Archaeol Cantiana* **110**, 177-237
Kelly, S E, 1992 Trading privileges from eighth-century England, *Early Medieval Europe* **1:1**, 3-28
Kelly, S E, 1995 *Charters of St Augustine's Abbey, Canterbury and Minster-in-Thanet*, Anglo-Saxon Charters **IV**, Oxford
Kempfner-Jørgensen, L and Watt, M, 1985 Settlement sites with middle Neolithic houses at Grødby, Bornholm, *J Danish Archaeol* **4**, 87-100
Kerney, M P, 1963 Late-glacial deposits on the chalk of south-east England, *Phil Trans Royal Soc London* B, **246**, 203-54
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 Royal Soc London* B, **248**, 135-204
Kerney, M P, Preece, R C and Turner, C, 1980 Molluscan and plant biostratigraphy of some Late Devensian and Flandrian deposits of Kent, *Phil Trans Royal Soc London* B, **291**, 1-43

Kershaw, I, 1973, The Great Famine, *Past and Present*, **59**

Keys, L, 2005 Small finds from Tutt Hill, *HS1 Specialist Report Series*, in ADS 2006

Keys, L, 2006a The iron slag, in Keys and Shaffrey (eds), Small Finds from Leda Cottages, Westwell, Kent (ARC 430 01/83+200), *HS1 Specialist Report Series*, in ADS 2006

Keys, L, 2006b The iron slag, in Diez *et al*. 2006

Keys, L, 2006c The slag, in Booth *et al*. 2006

King, M P, 2003 *Unparalleled Behaviour: Britain and Ireland during the 'Mesolithic' and 'Neolithic',* Brit Archaeol Rep (Brit Ser) **355**, Oxford

Kinnes, I, 1982 Les Fouillages and megalithic origins, *Antiquity* **56**, 24-30

Kinnes, I, 1984 Microliths and megaliths: monumental origins on the Atlantic fringe, in G Burenhult (ed.), *The Archaeology of Carrowmore*, 367-70, Stockholm

Kinnes, I, 1988 The Cattleship Potemkin: reflections on the First Neolithic in Britain, in J Barrett and I Kinnes (eds), *The Archaeology of Context in the Neolithic and Bronze Age: recent trends*, Sheffield, 2-8,

Kinnes, I, 1994 The Neolithic, in B Vyner (ed.) *Building on the Past*, Royal Archaeological Institute, London, 90-102

Kinnes, I, 2004 Trans-manche: l'entente cordiale or vive la différence, in Cotton and Field 2004, 191-5

Kinnes, I, Cameron, F, Trow, S and Thomson, D, 1998 *Excavations at Cliffe, Kent*, British Museum Occasional Paper **69**, London

Kinnes, I and Longworth, I, 1985 *Catalogue of the Excavated Prehistoric and Romano-British Material in the Greenwell Collection,* British Museum Press, London

Kitch, J, 2006a Animal bones from HS1 Area 330, Zones 1 and 2, Kent (ARC 330 98A, ARC SSR 99) (Whitehill Road Barrow Principal Site), *HS1 Specialist Report Series*, in ADS 2006

Kitch, J, 2006b Animal bone from Northumberland Bottom, Southfleet, Kent (ARC 330 98B, ARC HRD 99, ARC WNB 98) *HS1 Specialist Report Series*, in ADS 2006

Kitch, J, 2006c Animal bone from Tollgate, Southfleet, Kent (ARC 330 98C), *HS1 Specialist Report Series*, in ADS 2006

Kitch, J, 2006d Animal bone from the Iron Age settlement and Roman Villa at Thurnham, Kent (ARC THM98, ARC 420 62+200-63+000 99), *HS1 Specialist Report Series*, in ADS 2006

Kitch, J, 2006e Animal bone from Bower Road, Smeeth, Kent (ARC 440/99), *HS1 Specialist Report Series*, in ADS 2006

Kitch, J, 2006f Animal bone from Little Stock Farm, Mersham, Kent (ARC LSF99), *HS1 Specialist Report Series*, in ADS 2006

Klein, W G, 1928 Roman temple at Worth, Kent, *Antiq J* **8**, 76-86

Knight, D, 2002 A regional ceramic sequence: pottery of the first millennium BC between the Humber and the Nene, in A Woodward and J D Hill (eds), *Prehistoric Britain: the ceramic basis*, Oxford, 119-42

Knight, D and Howard, A, 2004 From Neolithic to Early Bronze Age: the first agricultural landscapes, in D Knight and A Howard (eds), *Trent Valley Landscapes*, Great Dunham, 47-77

Kreuz, A, 2000 Functional and conceptual archaeobotanical data from Roman cremations, in Pearce *et al*. 2000, 45-51

Kristiansen, K and Larsson, T B, 2005 *The Rise of Bronze Age Society: travels, transmissions and transformation*s, Cambridge

Lakin, D, 1999 A Romano-British site at Summerton Way, Thamesmead, London Borough of Bexley, *Archaeol Cantiana* **119**, 311-41

Lally, M, 2008 Bodies of difference in Iron Age southern England, in Davis *et al*. 2008, 119-38

Lambot, B, 1988 Les coupes à bord festonné du bassin parisien et du nord de la France, *Bulletin de la Société Archéologique Champenoise* **81/2**, 31-83

Lambrick, G and Allen, T, 2004 *Gravelly Guy, Stanton Harcourt: the development of a prehistoric and Romano-British community,* Oxford Archaeology Thames Valley Landscapes Monogr **21**, Oxford

Lamdin-Whymark, H, 2008a *The Residue of Ritualized Action: Neolithic deposition practices in the middle Thames valley,* Brit Archaeol Rep (Brit Ser) **466**, Oxford

Lamdin-Whymark, H, 2008b Neolithic and Bronze Age flint, in Booth *et al*. 2008, 24-5

Lane Fox, Col. A, 1877 Opening of the Dyke Road, or Black Burgh Tumulus, near Brighton, in 1872, *J Royal Anthropol Instit* **6**, 280-7

Lane, T W and Morris, E L (eds), 2001 *A millennium of saltmaking: prehistoric and Romano-British salt production in the Fenland,* Sleaford

Lanting, J N and van Plicht, J, 2000/2001 De ^{14}C-chronologie van der Nederlandse pre- en protohistorie, IV: bronstijd e vroege ijzertijd, *Palaeohistoria* **43/44**, 117-262

Larrson, L, 2008 Ritual structures in south Scandinavian prehistory, *Proc Prehist Soc* **74**, 193-214

Last, J, 1996 Neolithic houses: a central European perspective, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Neolithic Studies Group Seminar Papers 1; Oxbow Monogr **57**, Oxford, 27-40

Last, J, 1998 Books of life: biography and memory in a Bronze Age barrow, *Oxford J Archaeol* **17**, 43-53

Lavender, N, 1999 Bronze Age and medieval sites at Springfield, Chelmsford: excavations near the A12 Boreham Interchange, 1993, *Essex Archaeol Hist* **30**, 1-43

Law, R, 2008 The Development and Perpetuation of a Ceramic Tradition: the significance of Collared urns in Early Bronze Age social life, Unpublished PhD thesis, University of Cambridge

Lawrence, S, 2006 The Iron Age settlement and Roman villa at Thurnham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Lawson, A J, 2000 *Potterne 1982-5: animal husbandry in later prehistoric Wiltshire,* Wessex Archaeology Rep No. **17**, Salisbury
Lawson, T, 2004a The Viking Incursions, in Lawson and Killingray 2004, 32
Lawson, T, 2004b Domesday Population, Towns and Landholdings, in Lawson and Killingray 2004, 36-7
Lawson, T, 2004c Markets in the Medieval Period, in Lawson and Killingray 2004, 50-1
Lawson, T, 2004d Population Trends: The Hearth Tax Data, in Lawson and Killingray 2004, 65
Lawson, T and Killingray, D, 2004 *An historical atlas of Kent*, Chichester
Leach, P (ed.), 1982 *Archaeology in Kent to A.D. 1500*, CBA Res Rep **48**, London
Leman-Delerive, G, 1984 Céramique laténienne domestique de la région lilloise (Nord), *Gallia* **42**, 79-95
Levi-Strauss, C, 1983 *The Way of the Masks* (1975: trans. S Modelski), London
Lewis, M J T, 1966 *Temples in Roman Britain*, Cambridge
Liversidge, J and Weatherhead, F, 1987 The Christian paintings, in Meates, 1987, 11-40
Lock, G, Gosden, C and Daly, P, 2005 *Segsbury Camp: excavations in 1996 and 1997 at an Iron Age hillfort on the Oxfordshire Ridgeway,* Oxford University School of Archaeology Monogr **61**, Oxford
Locker, A, 2007 *In piscibus diversis*: the bone evidence for fish consumption in Roman Britain, *Britannia* **38**, 141-80
Long, A J, 1992 Coastal responses to changes in sea level in the east Kent Fens and southeast England, UK, over the last 7500 years, *Proc Geolog Assoc* **103**, 187-99
Long, A J, Waller, M, Hughes, P and Spencer, C, 1998 The Holocene depositional history of Romney Marsh proper, in J Eddison, M Gardiner and A Long (eds), *Romney Marsh: environmental changes and human occupation in a coastal lowland*, Oxford Univ Comm Archaeol Monogr **46**, Oxford, 45-63
Long, A J, Scaife, R G and Edwards, R J, 2000 Stratigraphic architecture, relative sea-level, and models of estuary development on southern England: new evidence from Southampton Water, in K Pye and J R L Allen (eds), *Coastal and Estuarine Environments: sedimentology, geomorphology and geoarchaeology*, The Geological Society Special Publication **175**, London, 253-79
Long, A J, Hipkin, S and Clarke, H, 2002 *Romney Marsh: coastal and landscape changes through the ages,* Oxford University Committee for Archaeology Monogr **56**, Oxford
Longworth, I, 1984 *Collared Urns of the Bronze Age in Great Britain and Ireland,* Cambridge
Longworth, I and Cleal, R M J, 1999 Grooved Ware gazetteer, in R Cleal and A MacSween (eds), *Grooved Ware*, Neolithic Studies Group Seminar Papers **31**, Oxford, 77-206
Louwe Kooijmans, L P, 2001 *Hardinxveld-Giessendam Poldeweg: een mesolithisch jachtkamp in het rivierengebied (5500-5000 v Chr)*, Amersfoort, Rijksdienst voor het Oudheidkundig Bodemonderzoek
Loveday, R, 2006 *Inscribed Across the Landscape: the cursus enigma,* Stroud
Luke, M, 2008 *Life in the Loop: investigation of a prehistoric and Romano-British landscape at Biddenham Loop, Bedfordshire,* East Anglian Archaeology Rep No. **125**, Bedford
Lüning, J, 1981 *Eine Seidlung der mittelneolithischen Gruppe Bisheim in Schernau, Ldkr. Kitzingen*, Materialhefte zur Bayerischen Vorgeschichte, Reihe A, Band **44**, Kallmünz/Opf
Lüning, J and Stehli, P, 1994 *Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte,* Bonn
Lynch, F, and Musson, C, 2004 A prehistoric and early medieval complex at Llandegai, near Bangor, North Wales, *Archaeologia Cambrensis* **150**, 17-142
Lyne, M, 2006 The Late Iron Age and Roman pottery from Thurnham Roman Villa, Thurnham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Lyne, M, 2008 Roman and medieval pottery, in Booth *et al.* 2008, 207-59
Mackinder, T, 2005 Furfield Quarry finds, *Kent Archaeol Soc Newsletter* **66**, 14-15
Mackinder, T, 2006 Iron Age settlement and an Anglo-Saxon cemetery at Cuxton, Kent: Vol. 1, the site report, *HS1 Integrated Site Report Series*, in ADS 2006
Mackreth, D F, 1995 The pre-Roman and Roman brooches, in Blockley *et al.* 1995, 955-982
Macpherson-Grant, N, 1977 *The Excavation of a Neolithic/Bronze Age Site at Lord of the Manor, Haine Road, Ramsgate,* Isle of Thanet Archaeological Unit Publication **1**
Macpherson-Grant, N, 1980a Archaeological work along the A2, 1966-74, *Archaeol Cantiana* **96**, 133-83
Macpherson-Grant, N, 1980b Chaff-tempered ware: an unusual ?Belgic-Early Roman product from Canterbury, *Kent Archaeol Review* **61**, 2-4
Macpherson-Grant, N, 1989 The pottery from the 1987-89 Channel Tunnel Excavations, *Canterbury's Archaeology 1988/89,* 60-3
Macpherson-Grant, N, 1991 A re-appraisal of prehistoric pottery from Canterbury, *Canterbury's Archaeology 1990-91*, 38-48
Macpherson-Grant, N, 1992 A review of Late Bronze Age pottery from East Kent, *Canterbury's Archaeology 1991-92*, 55-63
Madgwick, R, 2008 Patterns in the modification of animal and human bones in Iron Age Wessex: revisiting the excarnation debate, in Davis *et al.* 2008, 99-118

Mahany, C, 1994 *Roman Alcester: southern extramural area, 1964-1966 excavations part 1: stratigraphy and structures*, CBA Res Rep **96**, London
Manby, T, 1957 Food Vessels of the Peak District, *J Derbyshire Archaeol Natur Hist Soc* **77**, 1-29
Manby, T, 2004 Food Vessels with handles, in A Gibson and A Sheridan (eds), *From Sickles to Circles: Britain and Ireland at the time of Stonehenge*, Stroud, 215-42
Mann, M E, 2002 Little Ice Age, Volume 1, The Earth system: physical and chemical dimensions of global environmental change, in M C MacCracken and J S Perry (eds), *Encyclopedia of Global Environmental Change*, Chichester, 504-9
Mann, M E, Zhang, Z, Rutherford, S, Bradley, R S, Malcolm, K, Shindell, D, Caspar, A and Faluvegi, G, 2009 Global Signatures and Dynamical Origins of the Little Ice Age and Medieval Climate Anomaly, *Science* **326** no. 5957, DOI: 10.1126/science.1177303, 1256-1260
Manning, A and Moore, C, 2003 A Late Bronze Age site at Springfield Park, Chelmsford, *Essex Archaeol Hist* **34**, 19-35
Margary, I D, 1948 *Roman ways in the Weald*, London
Margary, I D, 1955 *Roman roads in Britain*, 2 vols, London
Margary, I D, 1973 *Roman roads in Britain*, 3rd edn, London
Marolle, C, 1989 Le village Michelsberg des Hautes Chanvières à Mairy (Ardennes), *Gallia Préhistoire* **31**, 93-158
Marolle, C, 1998 Le site Michelsberg des 'Hautes-Chanvières' avec batiments et enceinte à Mairy, Ardennes, France, in Biel *et al*. 1998, 21-8
Marsden, P, 1994 *Ships of the port of London first to eleventh centuries AD*, English Heritage Archaeol Rep No **3**, London
Martin, D, 1999 Old Cottage and Water Street Cottage, Lenham, Kent, unpublished Archaeology South-East Building Survey (Ref. 1024), January 1999
Martin, J, Schuster, J, Barclay A J, Mepham, L, Stevens, C J, and Wyles S F, forthcoming An early Bronze Age field system and Anglo-Saxon sunken-featured building at Monkton Road, Minster, Thanet, *Archaeol Cantiana*
Martin, T S, 1997 Two Roman ceramic spouted vessels from Essex, *Essex Archaeol Hist* **28**, 281-2
Martin-Kilcher, S, 2000 *Mors immatura* in the Roman world – a mirror of society and tradition, in Pearce *et al*. 2000, 63-77
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
Masefield, R, Bayliss, A and McCormac, G, 2004 New scientific dating of the Later Bronze Age wells at Swalecliffe, Kent, *Antiq J* **84**, 334-9
Mattingly, D J, 1997 *Dialogues in Roman imperialism*, J Roman Archaeol Supplementary Ser No **23**, Portsmouth, RI
Mattingly, D J, 2002 Vulgar and weak 'Romanization', or time for a paradigm shift, *J Roman Archaeol* **15**, 536-40
Mattingly, D J, 2004 Being Roman: expressing identity in a provincial setting, *J Roman Archaeol* **17**, 5-25
Mattingly, D, 2006 *An Imperial possession Britain in the Roman empire, 54 BC-AD 409*, London
Maxfield, V A, 1989 *The Saxon Shore A handbook*, Exeter Stud in Hist No. **25**, Exeter
Mayr-Harting, H, 1991 *The Coming of Christianity to Anglo-Saxon England*, 3rd edn, London
Mays, S, 1993 Infanticide in Roman Britain, *Antiquity* **67**, 83-8
Mays, S A and Anderson, T, 1995 Archaeological research priorities for human remains from South-East England (Kent, East and West Sussex and Surrey) *Archaeol Cantiana* **115**, 355-88
McFadyen, L, Benson, D and Whittle, A, 2007 The pre-barrow contexts, in D Benson and A Whittle (eds), *Building Memories: the Neolithic Cotswold long barrow at Ascott-under-Wychwood, Oxfordshire*, Oxford, 27-31
McKinley, J I, 1992 Cremation and inhumation burials from St Stephen's cemetery, St. Albans, unpublished report for Verulamium Museum
McKinley, J I, 1993 A decapitation from the Romano-British cemetery at Baldock, Hertfordshire, *International J Osteoarchaeology* **3** (**1**), 41-4
McKinley, J, 1997 The cremated human bone from burial and cremation related contexts, in Fitzpatrick 1997, 55-73
McKinley, J, 2000 Phoenix rising: aspects of cremation in Roman Britain, in Pearce *et al*. 2000, 38-44
McKinley, J I, 2004 The human remains and aspects of pyre technology and cremation rituals, in Cool 2004, 283-309
McKinley, J I, 2006a Human Remains from Section 1 of the Channel Tunnel Rail Link, Kent, *HS1 Specialist Report Series*, in ADS 2006
McKinley, J I, 2006b Human remains from Saltwood Tunnel, Kent, *HS1 Specialist Report Series*, in ADS 2006
McKinley, J I, 2006c Human Bone, in Margate and Broadstairs Urban Wastewater Treatment Scheme Archaeological Assessment Report, Wessex Archaeology Client Report No. 59481.02
McOmish, D, Field, D and Brown, G, 2002 *The field archaeology of the Salisbury Plain Training Area*, Swindon
McWhirr, A, 1979 Roman tile-kilns in Britain, in A McWhirr (ed.), *Roman brick and tile*, Brit Archaeol Rep (Int Ser) **68**, Oxford, 97-189
Meaney, A, 1964 *A Gazetteer of Early Anglo-Saxon Burial Sites*, London
Meates, G W, 1973 Farningham Roman villa II, *Archaeol Cantiana* **88**, 1-21
Meates, G W, 1979 *The Roman villa at Lullingstone, Kent Volume I: The site*, Kent Archaeol Soc Monogr Ser No. **1**, Maidstone
Meates, G W, 1987 *The Roman villa at Lullingstone, Kent. Volume II: the wall paintings and finds*, Kent

Archaeol Soc Monogr Ser No. **3**, Maidstone
Megaw, J V S, 1976 Gwithian, Cornwall: some notes on the evidence for Neolithic and Bronze Age settlement, in C Burgess and R Miket (eds), *Settlement and Economy in the Third and Second Millennia BC*, Brit Archaeol Rep (Brit Ser) **33**, Oxford, 51-80
Mellars, P, 1976 Fire ecology, animal population and man: a study of some ecological relationships in prehistory, *Proc Prehist Soc* **42**, 15-45
Mellars, P and Rheinhardt, S C, 1978 Patterns of Mesolithic land-use in Southern England; a geological perspective, in P Mellars (ed.), *The Early Post Glacial Settlement of Northern Europe*, London, 371-96
Menghin, W, 1983 *Das Schwert in Frühen Mittelalter. Chronologisch-typologische Untersuchungen zu Langschwerten aus germanischen Gräben des 5. bis 7. Jahrhunderts n. Chr*., Germanischen Nationalmuseums, Stuttgart
Mepham, L, 2006a The post-Roman pottery from Mersham, Kent, *HS1 Specialist Report Series*, in ADS 2006
Mepham, L, 2006b The post-Roman pottery from North of Westenhanger Castle, Stanford, Kent (ARC WGC 98), *HS1 Specialist Report Series*, in ADS 2006
Mepham, L, 2006c The post-Roman pottery from Northumberland Bottom, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006
Merrifield, R, 1987 *The Archaeology of Ritual and Magic,* London
Midgley, M, 1992 *TRB Culture: the first farmers of the north European plain,* Edinburgh
Milcent, P-Y, 2005 Premier âge du fer médio-atlantique et genèse multipolaire des cultures matérielles laténiennes, in D Vitali (ed.), *Celtes et Gaulois, l'Archéologie face à l'Histoire, 2: la préhistoire des Celtes,* Glux-en-Glenne: Bibracte, 81-105
Miles, D (ed.), 1986 *Archaeology at Barton Court Farm, Abingdon, Oxon: an investigation of late Neolithic, Iron Age, Romano-British and Saxon settlements*, CBA Res Rep **50**, London
Miles, D, Palmer, S, Smith, A and Edgeley Long, G, 2007 *Iron Age and Roman settlement in the Upper Thames Valley: Excavations at Claydon Pike and other sites within the Cotswold Water Park*, Oxford Archaeology Thames Valley Landscapes Monogr **26**, Oxford
Millett, M, 1990 *The Romanization of Britain*, Cambridge
Millett, M, 1996 Characterizing Roman London, in J Bird, M Hassall and H Sheldon (eds), *Interpreting Roman London: papers in memory of Hugh Chapman*, Oxbow Monogr **58**, Oxford, 33-37
Millett, M, 2007 Roman Kent, in Williams 2007, 135-84
Millett, M and Wilmott, T, 2003 Rethinking Richborough, in P Wilson (ed.), *The archaeology of Roman towns: studies in honour of John S. Wacher*, Oxford, 184-94
Millward, P, 2000 The Building of the Balcombe Tunnel, 1838-41, *Sussex Indust Hist* **30**, 1-19
Milner, N, 2006 Subsistence, in Conneller and Warren 2006, 61-82
Milner, N and Mithen, S, 2009 Hunter-gatherers of the Mesolithic, in J Hunter and I Ralston (eds), *The Archaeology of Britain: an introduction from the earliest times to the twenty-first century,* 2nd edn, London, 53-77
Mizoguchi, K, 1993 Time in the reproduction of mortuary practices, *World Archaeol* **25**, 223-35
Moffett, L, Robinson, M A and Straker, V, 1989 Cereals, fruits and nuts: charred plant remains from Neolithic sites in England and Wales and the Neolithic economy, in A Milles, D Williams and N Gardner (eds), *The Beginnings of Agriculture*, Brit Archaeol Rep (Int Ser) **496**, Oxford, 43-61,
Momber, G, 2007 Submerged in Mesolithic archaeology, in C Waddington and K Pedersen (eds), *Mesolithic Studies in the North Sea Basin and Beyond*, Oxford, 33-9
Monaghan, J, 1987 *Upchurch and Thameside Roman pottery*, Brit Archaeol Rep (Brit Ser) **173**, Oxford
Money, J H, 1960 Excavations at High Rocks, Tunbridge Wells, 1954-1956, *Sussex Archaeol Collect* **98**, 173-221
Money, J H, 1968 Excavations on the Iron Age hillfort at High Rocks, near Tunbridge Wells, 1957-1961, *Sussex Archaeol Collect* **106**, 158-205
Money, J H, 1975 Excavations in the two Iron Age hillforts on Castle Hill, Capel, near Tonbridge, 1965 and 1969-71, *Archaeol Cantiana* **91**, 61-5
Money, J H, 1978 Excavations in the two Iron Age hillforts on Castle Hill, Capel, near Tonbridge, 1965 and 1969-71: supplementary note, *Archaeol Cantiana* **94**, 268-70
Moody, G, 2008 *The Isle of Thanet from prehistory to the Norman conquest,* Stroud
Moore, C, 2002 Late Bronze Age, Romano-British and Early/Middle Saxon features at Hoo St Werburgh, *Archaeol Cantiana* **122**, 259-74
Moore, D G, 2003 Neolithic houses in Ballyharry townland, Islandmagee, Co. Antrim, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic settlement in Ireland and Western Britain*, Oxford, 156-63
Moore, H, 1986 *Space, Text and Gender: an anthropological study of the Marakewt of Kenya,* Cambridge
Moore, J, 2003 Enculturation through fire: beyond hazelnuts and into the forest, in L Larsen, H Kindgren, K Knutsson, D Loeffler and A Åkelund (eds), *Mesolithic on the Move,* Oxford, 139-44
Moore, J and Jennings, D, 1992 *Reading Business Park: a Bronze Age landscape*, Oxford Archaeol Unit Thames Valley Landscapes: the Kennet Valley Volume **1**, Oxford
Moorhead, T S N, 2001 Roman coin finds from Wiltshire, in P Ellis (ed.), *Roman Wiltshire and after: papers in honour of Ken Annable*, 85-105, Wiltshire Archaeol and Nat Hist Soc, Devizes

Mordant, D and Simonin, D, 1997 Sites d'habitats Cerny, in C Constantin, D Mordant and D Simonin (eds), *La culture de Cerny: nouvelle économie, nouvelle société. Actes du Colloque International de Nemours, 1994*, Memoires du Musée de Préhistoire d'Île de France **6**, Paris, 319-39

Morgan, F de M, 1959 The excavation of a long barrow at Nutbane, Hants, *Proc Prehist Soc* **25**, 15-51

Morris, E L, 1994 The organisation of salt production and distribution in Iron Age Wessex, in A Fitzpatrick and E L Morris (eds), *The Iron Age in Wessex: recent work,* Association française d'étude de l'âge du fer and Trust for Wessex Archaeology, Salisbury, 14-16

Morris, E L, 2001 Briquetage and salt production and distribution systems: a comparative study, in Lane and Morris 2001, 389-404

Morris, E L, 2006 Later prehistoric pottery, in Booth 2006a

Morris, J, 2008 Associated bone groups: one archaeologist's rubbish is another's ritual deposition, in Davis *et al*. 2008, 83-98

Mortimer, J R, 1905 *Forty Years' Researches in British and Anglo-Saxon Burial Mounds of East Yorkshire,* London

Mudd, A, 1994 The excavation of a Late Bronze Age site at Coldharbour Road, Gravesend, *Archaeol Cantiana* **114**, 363-410

Murray, A, 2000 *Suicide in the Middle Ages. Volume 2: The Curse on Self-Murder*, Oxford

Musson, C, 1954 An illustrated catalogue of Sussex Beaker and Bronze Age pottery, *Sussex Archaeol Collect* **92**, 106-24

Myers, A M, 2006 The Mesolithic, in N Cooper (ed.), *Archaeology of the East Midlands: an archaeological resource assessment and research agenda*, Leicester Archaeol Monogr **12**, Leicester, 51-68,

Myers, A M, 2007 The Upper Palaeolithic and Mesolithic archaeology of the West Midlands region, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, 23-38, Oxford

Neal, D S, 1974 *The Excavation of the Roman Villa in Gadebridge Park Hemel Hempstead 1963-8,* Rep Res Comm Soc Antiqs London **31**, London

Neal, D S, 1977 Northchurch, Boxmoor, and Hemel Hempstead Station: The excavation of three Roman buildings in the Bulbourne Valley, *Hertfordshire Archaeol* **4** (for 1974-1976), 1-135

Neal, D S, 1984 A sanctuary at Wood Lane End, Hemel Hempstead, *Britannia* **15**, 193-215

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**, London

Needham, S, 1987 The Bronze Age, in J Bird and D G Bird (eds), *The Archaeology of Surrey to 1540*, 97-137, Guildford

Needham, S P, 1990 *The Petters Late Bronze Age metalwork: an analytical study of Thames Valley metalworking in its settlement context,* London

Needham, S P, 1991 *Excavation and salvage at Runnymede Bridge, 1978: the Late Bronze Age waterfront site,* London

Needham, S P, 1992 The structure of settlement and ritual in the Late Bronze Age of south-east Britain, in C Mordant and A Richard (eds), *L'Habitat et l'occupation du sol à l'Age du Bronze en Europe,* Editions du Comité des Travaux historiques et scientifiques, Paris, 49-69

Needham, S P, 1996 Chronology and periodisation in the British Bronze Age, in K Randsborg (ed.), *Absolute Chronology: Archaeological Europe 2500-500 BC*, Acta Archaeologica **67**, Copenhagen, 121-40

Needham, S P, 2000 Power pulses across a cultural divide: cosmologically driven acquisition between Armorica and Wessex, *Proc Prehist Soc* **66**, 151-207

Needham, S, 2005 Transforming Beaker culture in north-west Europe: processes of fusion and fission, *Proc Prehist Soc* **71**, 159-70

Needham, S, 2006a The amber artefacts, in Needham *et al*. 2006, 39-41

Needham, S, 2006b Networks of contact, exchange and meaning: the beginning of the Channel Bronze Age, in Needham *et al*. 2006, 75-9

Needham, S, 2006c Precious cups of the Early Bronze Age, in Needham *et al*. 2006, 53-67

Needham, S, 2007a Isotopic aliens: Beaker movement and cultural transmission, in L Larsson and M Parker Pearson (eds), *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*, Brit Archaeol Rep (Int Ser) **1692**, Oxford, 41-6

Needham, S P, 2007b 800 BC: the great divide, in Haselgrove and Pope 2007, 39-63

Needham, S, 2009 Encompassing the sea: 'maritories' and Bronze Age maritime interactions, in P Clark (ed.), *Bronze Age Connections: cultural contact in prehistoric Europe*, Oxford, 12-37

Needham, S and Spence, T, 1996 *Refuse and disposal at Area 16 East, Runnymede*, London

Needham, S and Spence, T, 1997 Refuse and the formation of middens, *Antiquity* **71**, 77-90

Needham, S and Trott, M, 1987 Structure and sequence in the Neolithic deposits at Runnymede, *Proc Prehist Soc* **53**, 479-98

Needham, S P, Bronk Ramsey, C, Coombs, D, Cartwright, C and Pettitt, P, 1998 An independent chronology for British Bronze Age metalwork: the results of the Oxford Radiocarbon Accelerator Programme, *Archaeol J* **154**, 55-107

Needham, S, Parfitt, K and Varndell, G (eds), 2006 *The Ringlemere Cup: precious cups and the beginning of the Channel Bronze Age*, British Museum Res Pub **163**, London

Newman, J, 1976 *West Kent and Weald*, The Buildings of England, Harmondsworth

Nielsen, F, 1999 Limensgård and Grødbygård. Settlements with house remains from the Early, Middle and Late Neolithic on Bornholm, in C Fabech and J Ringtved (eds), *Settlement and Landscape*, Aarhus: Jutland Archaeological Society, 149-65

Northover, J P and Shaffrey, R, 2006 Small finds from Sandway Road, Lenham, Kent, *HS1 specialist report series,* in ADS 2006

Nowakowski, J A, Quinnell, H, Sturgess, J, Thomas, C and Thorpe, C, 2007 Return to Gwithian: shifting the sands of time, *Cornish Archaeol* **46**, 13-76

O'Connell, M, 1986 *Petters Sports Field, Egham: excavation of a Late Bronze Age/Early Iron Age site,* Surrey Archaeol Soc Research Vol No **10**, Guildford

O'Connor, B, 1980 *Cross-channel relations in the later Bronze Age,* Oxford

O'Drisceoil, C, 2003 Archaeological excavation of a Neolithic settlement at Coolfore, Co. Louth, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement in Ireland and Western Britain,* Oxford, 176–81

Ó Nualláin, S, 1972 A Neolithic house at Ballyglass near Ballycastle, Co. Mayo *J Royal Soc Antiq Ireland* **102**, 49-57

Ó Ríordáin, B and Waddell, J, 1993 *The Funerary Bowls and Vases of the Irish Bronze Age,* Galway

Ocock, M A and Syddell, M J E, 1967 The Romano-British buildings in Church Field, Snodland, *Archaeol Cantiana* **82**, 192-217

Oswald, A, 1997 A doorway on the past: practical and mystic concerns in the orientation of roundhouse doorways, in A Gwilt and C Haselgrove (eds), *Reconstructing Iron Age societies*, Oxford, 87-95

Oswald, A, Dyer, C and Barber, M, 2001 *The Creation of Monuments: Neolithic causewayed enclosures in the British Isles,* Swindon

OWA, 2006 HS1 Section 2 post-excavation archaeological works; Springhead and Northfleet updated project design, unpublished report Ref no. OWA-SPNO-DSGN-PGSG-FIN-v2.0 for London and Continental Railways

Owoc, M A, 2001a Bronze Age cosmologies: the construction of time and space in south-western funerary/ritual monuments, in A T Smith and A Brookes (eds), *Holy Ground: theoretical issues relating to the landscape and material culture of ritual space*, Brit Archaeol Rep (Int Ser) **956**, Oxford, 27-38

Owoc, M A, 2001b The times, they are a changin': experiencing continuity and development in the early Bronze Age rituals of southwestern Britain, in J Brück (ed.), *Bronze Age Landscapes: tradition and transformation*, Oxford, 193-206

Pagano, M, 2000 *Herculaneum; a reasoned archaeological itinerary*, Portici, Naples

Page, W, 1908 *The Victoria History of the Counties of England, A History of Kent Volume 1,* London

Page, W, 1932 *The Victoria History of the Counties of England, A History of Kent Volume 3,* London

Palmer, S, 2006 Neolithic, Bronze Age, Iron Age, Roman and Anglo-Saxon Excavations on the Transco Churchover to Newbold Pacey Gas Pipeline in 1999, Warwickshire Museum Rep **0611**, unpublished

Palmer, S, 2007 Recent work on the Neolithic and Bronze Age in Warwickshire, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, 123-33, Oxford

Pantos, A, 2003 On the Edge of Things: the Boundary Location of Anglo-Saxon Assembly Sites, in D Griffiths, A Reynolds and S Semple (eds), *Boundaries in Early Medieval Britain*, Anglo-Saxon Studies in Archaeology and History **12**, Oxford, 38-49

Pare, C F E, 2000 Bronze and the Bronze Age, in C F E Pare (ed.), *Metals Make the World Go Round: the supply and circulation of metals in Bronze Age Europe*, Oxford, 1-38

Parfitt, K, 1994 A possible Bronze Age grave, Walmer, 1910, *Kent Archaeol Rev* **116**, 133-35

Parfitt, K, 1995 *Iron Age burials from Mill Hill, Deal*, London

Parfitt, K, 1998 Some radiocarbon dates for prehistoric East Kent, *Archaeol Cantiana* **118**, 376-9

Parfitt, K, 1999 Two La Tène I Brooches: Waldershare and Preston-by-Wingham, *Archaeol Cantiana* **119**, 376-8

Parfitt, K, 2004a The Iron Age c. 700 BC – AD 43, in Lawson and Killingray 2004, 16-18

Parfitt, K, 2004b The bath-house excavation, in Perkins 2004b, 33-45

Parfitt, K, 2004c A round barrow near Haynes Farm, Eythorne, *Archaeol Cantiana* **124**, 397-415

Parfitt, K, 2006a Excavations 2002-2005, in Needham *et al*. 2006, 47-52

Parfitt, K, 2006b Ringlemere and ritual and burial landscapes of Kent, in Needham *et al*. 2006, 7-30

Parfitt, K, 2006c The Roman villa at Minster-in-Thanet. Part 3: the corridor house, Building 4, *Archaeol Cantiana* **126**, 115-33

Parfitt, K and Brugmann, B, 1997 *The Anglo-Saxon Cemetery on Mill Hill, Deal, Kent*, Soc Medieval Archaeol Monogr **14**, London

Parfitt, K and Corke, B, 2003 The Dover-Deal bulk supply water main, *Canterbury's Archaeology 2001-2002*, 35-6

Parfitt, K and Green, M, 1987 A chalk figurine from Upper Deal, Kent, *Britannia* **18**, 295-8

Parfitt, K and Needham, S, 2007 Excavations at Ringlemere Farm, Woodnesborough, 2002-2006, *Archaeol Cantiana* **127**, 39-55

Parfitt, K, Allen, T and Rady, J, 1997 Witfield-Eastry by-pass, *Canterbury's Archaeology 1995-1996*, 28-33

Parker Pearson, M, 2007 The Stonehenge Riverside Project: excavations at the east entrance of Durrington Walls, in L Larsson and M Parker Pearson (eds), *From Stonehenge to the Baltic: living*

with cultural diversity in the third millennium BC, Brit Archaeol Rep (Int Ser) **1692**, Oxford, 125-44

Parker Pearson, M and Ramilisonina 1998 Stonehenge for the ancestors: the stones pass on the message, *Antiquity* **72**, 308-26

Parker Pearson, M and Richards, C, 1994 Ordering the world: perceptions of architecture, space and time, in M Parker Pearson and C Richards (eds), *Architecture and Order, Approaches to social space*, London, 1-37

Parker Pearson, M, Chamberlain, A, Craig, O, Marshall, P, Mulville, J, Smith, H, Chenery, C, Collins, M, 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

Parker Pearson, M, Cleal, R, Marshall, P, Needham, S, Pollard, J, Richards, C, Ruggles, C, Sheridan, A, Thomas, J, Tilley, C, Welham, K, Chamberlain, A, Chenery, C, Evans, J, Knüsel, C, Linford, N, Martin, L, Montgomery, J, Payne, A and Richards, M, 2007 The age of Stonehenge, *Antiquity* **81**, 617-39

Parker Pearson, M, Chamberlain, A, Jay, M, Marshall, P, Pollard, J, Richards, C, Thomas, J, Tilley, C and Welham, K, 2009 Who was buried at Stonehenge? *Antiquity* **83**, 23-39

Parnell, G, 1985 The Roman and medieval defences and later development of the inmost ward, Tower of London: excavations 1955-77, *Trans London Middlesex Archaeol Soc* **36**, 1-79

Partridge, C, 1981 *Skeleton Green: A Late Iron Age and Romano-British site*, Britannia Monogr Ser No **2**, London

Paynter, S, 2008 Metalworking remains, in Booth *et al.* 2008, 267-301

Peacock, D P S and Williams, D F, 1978 Petrological examination [of the Iron Age pottery] in P J Drury (ed.), *Excavations at Little Waltham, 1970-71*, CBA Res Rep **26**, London, 58-9

Pearce, J, 1998 From death to deposition: the sequence of ritual in cremation burials of the Roman period, in C Forcey, J Hawthorne and R Witcher (eds), *TRAC 97: Proceedings of the seventh annual theoretical Roman archaeology conference, Nottingham 1997*, Oxford, 99-111

Pearce, J, 1999 The dispersed dead: preliminary observations on burial and settlement space in rural Roman Britain, in P Baker, C Forcey, S Jundi and R Witcher (eds), *TRAC 98: Proceedings of the eighth annual theoretical Roman archaeology conference, Leicester 1998*, Oxford, 151-62

Pearce, J, Millett, M and Struck, M (eds), 2000 *Burial, society and context in the Roman world*, Oxford

Pearson, A, F, 2003 *The construction of the Saxon Shore forts*, Brit Archaeol Rep (Brit Ser) **349**, Oxford

Pearson, A, 2006 Piracy in late Roman Britain: a perspective from the Viking age, *Britannia* **37**, 337-53

Pearson, S, 1994 *The Medieval Houses of Kent: An Historical Analysis,* London

Pearson, S, Barnwell, P S and Adams, A T, 1994 *A Gazetteer of Medieval Houses in Kent*, London

Peers, C R, 1901 Saxon churches of the St Pancras type, *Archaeol J* **58**, 402-34

Pelling, R, 2003 Charred plant remains, in Booth and Howard-Davis 2003, 21-4

Pelling, R, 2004 The charred plant remains, in Priestley-Bell and Barber, 2004, 331-3

Pelling, R, 2008 Charred and waterlogged plant remains, in Booth *et al.* 2008, 349-57

Penn, W S, 1958 The Romano-British settlement at Springhead. Excavation of the Watling Street, shop and pedestal, Site B, *Archaeol Cantiana* **72**, 77-110

Penn, W S, 1960 Springhead: Temples III and IV, *Archaeol Cantiana* **74**, 113-40

Penn, W S, 1965 Springhead – map of discoveries, *Archaeol Cantiana* **80**, 107-17

Penn, W S, 1967 Springhead. Temple VI/gateway, *Archaeol Cantiana* **82**, 105-23

Perkins, D R J, 1995 Report on work by the Thanet Trust for Archaeology, *Archaeol Cantiana* **115**, 468-74

Perkins, D, 1999 A Gateway Island: an exploration of evidence for the existence of a cultural focus in the form of a 'gateway community' in the Isle of Thanet during the Bronze Age and Early and Middle Iron Ages, Unpublished PhD thesis, University College London

Perkins, D R J, 2001 The Roman archaeology of the Isle of Thanet, *Archaeol Cantiana* **121**, 43-60

Perkins, D, 2004a Oval barrows on Thanet, in Cotton and Field 2004, 76-81

Perkins, D R J, 2004b The Roman villa at Minster-in-Thanet. Part 1: introduction and report on the bath-house, *Archaeol Cantiana* **124**, 25-49

Perkins, D and Gibson, A, 1990 A Beaker burial form Manston, near Ramsgate, *Archaeol Cantiana* **108**, 11-27

Perkins, D R J and Macpherson-Grant, N, 1981 *The Isle of Thanet Archaeological Unit: interim excavation reports 1977-1980,* Ramsgate

Perkins, D R J, Macpherson-Grant, N and Healey, E, 1994 Monkton Court Farm evaluation, 1992, *Archaeol Cantiana* **114**, 237-316

Perring, D, 1989 Cellars and cults in Roman Britain, *Archaeol J* **146**, 279-301

Perring, D with Brigham, T, 2000 Londinium and its hinterland: the Roman period, in MoLAS (ed.), *The archaeology of Greater London*, London, 119-70

Perring, D and Roskams, S with Allen, P, 1991 *Early development of Roman London west of the Walbrook*, The archaeology of Roman London Vol **2**, CBA Res Rep **70**, London

Peterson, R, 2007 What were you thinking of? Round barrows and the dwelling perspective, in J Last (ed.), *Beyond the Grave: new perspectives on round barrows*, Oxford, 127-39

Philp, B J, 1963 Romano-British West Kent AD43-100, *Archaeol Cantiana* **78**, 74-82

Philp, B, 1968 *Excavations at Faversham, 1965*, Kent Archaeol Rescue Unit, Dover
Philp, B, 1973 *Excavations in West Kent, 1960-1970: the discovery and excavation of prehistoric, Roman, Saxon and medieval sites, mainly in the Bromley area and in the Darent Valley,* Second Research Report in the Kent Series, Kent Archaeol Rescue Unit, Dover
Philp, B, 1981 *The excavation of the Roman forts of the Classis Britannica at Dover, 1970-1977*, Kent Archaeol Rescue Unit, Dover
Philp, B, 1984 *Excavations in the Darent Valley, Kent*, Fourth Research Report in the Kent Monogr Ser, Kent Archaeol Rescue Unit, Dover
Philp, B, 1989 *The Roman house with Bacchic murals at Dover*, Kent Archaeol Rescue Unit, Dover
Philp, B, 1991 Excavations on the Orbital Park site – Ashford, *Kent Archaeol Rev* **104**, 74-7
Philp, B, 1994 *The Iron Age and Romano-British site at Lenham, Kent*, Kent Special Subjects Ser No **7**, Kent Archaeol Rescue Unit, Dover
Philp, B J, 2002 *Archaeology in the front line: 50 years of Kent rescue 1952-2002,* Kent Archaeol Rescue Unit, Dover
Philp, B, 2003 A new Roman site discovered at Rochester, *Archaeol Cantiana* **123**, 203-32
Philp, B, 2006 The medieval site of Well Wood, Aylesford, *Archaeol Cantiana* **126**, 27-48
Philp, B and Chenery, M, 1997 *A Roman site at Vagniacae (Springhead) near Gravesend*, Kent Special Subjects Ser No **9**, Kent Archaeol Rescue Unit, Dover
Philp, B and Chenery, M, 2001 *Excavations on a prehistoric and Roman site at Blackdale Farm, Darenth*, Kent Minor Sites Ser **15**, Kent Archaeol Rescue Unit, Dover
Philp, B and Chenery, M, 2002 A Roman site at Home Farm, Eynsford, *Archaeol Cantiana* **122**, 49-78
Philp, B and Dutto, M, 1981 The Medway megaliths, *Kent Archaeological Review* **64**
Philp, B, Parfitt, K, Willson, J, Dutto, M and Williams, W, 1991 *The Roman villa site at Keston, Kent. First report (excavations 1968-1978)*, Kent Monogr **6**, Kent Archaeol Rescue Unit, Dover
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 **8**, Kent Archaeol Rescue Unit, Dover
Philpott, R, 1991 *Burial practices in Roman Britain*, Brit Archaeol Rep (Brit Ser) **219**, Oxford
Piercy Fox, N, 1970 Excavation at the Iron Age camp at Squerryes, Westerham, *Archaeol Cantiana* **85**, 29-33
Pierpoint, S, 1980 *Social Patterns in Yorkshire Prehistory, 3500-700 BC,* Brit Archaeol Rep (Brit Ser) **74**, Oxford
Pirie, E, 1960 Thurnham Roman Villa, *Archaeol Cantiana* **74**, 162-70
Pirling, R, Wels-Weyrauch, U and Zurn, H, 1980 *Die Mittlere Bronzezeit auf der Schäbischen Alb: mittlere und westliche Alb*, Prähistorische Bronzefunde, Abt **20**, Band **3**, M nchen
Pitts, M, 2008 Kent Anglo-Saxon cemetery could be royal, *British Archaeol* **100**
Plouviez, J, 1995 A hole in the distribution map: the characteristics of small towns in Suffolk, in A E Brown (ed.), *Roman small towns in eastern England and beyond*, Oxbow Monogr **52**, Oxford, 69-80
Pollard, J, 1995 Inscribing space: formal deposition at the later Neolithic monument of Woodhenge, Wiltshire, *Proc Prehist Soc* **61**, 137-56
Pollard, J, 1999 'These places have their moments': thoughts on occupation practices in the British Neolithic, in J Brück and M Goodman (eds), *Making Places in the Prehistoric World: themes in settlement archaeology*, London, 76-93
Pollard, J, 2000 Neolithic occupation practices and social ecologies from Rinyo to Clacton, in A Ritchie (ed.), *Orkney in its European Context*, McDonald Institute Monogr, Cambridge, 363-9
Pollard, J, 2001 The aesthetics of depositional practice, *World Archaeology* **33(2)**, 315-33
Pollard, J, 2002 The nature of archaeological deposits and finds assemblages, in A Woodward and J D Hill (eds), *Prehistoric Britain: the ceramic basis*, Oxford, 22-37
Pollard, J, 2004 'A movement of becoming': realms of existence in the Early Neolithic of southern Britain, in A Chadwick (ed.), *Stories From the Landscape: archaeologies of inhabitation*, Brit Archaeol Rep (Int Ser) **1238**, Oxford, 55-69
Pollard, J, 2005 Memory, monuments or middens in the Avebury landscape, in G Brown, D Field and D McOmish (eds), *The Avebury Landscape: aspects of the field archaeology of the Marlborough Downs*, Oxford, 103-14
Pollard, J and Robinson, D, 2007 A return to Woodhenge: the results and implications of the 2006 excavations, in L Larsson and M Parker Pearson (eds), *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*, Brit Archaeol Rep (Int Ser) **1692**, Oxford, 159-74
Pollard, R J, 1988 *The Roman Pottery of Kent*, Kent Archaeol Soc Monogr **5**, Maidstone
Poole, C, 2011 Ceramic building material and fired clay, in E Biddulph, R Seager Smith and J Schuster, *Settling the Ebbsfleet Valley: High Speed 1 excavations at Springhead and Northfleet, Kent. The Late Iron Age, Roman, Saxon and medieval landscape, Volume 2: Late Iron Age to Roman finds reports*, Oxford Wessex Archaeology Monogr, 313-350
Poulton, R and Scott, E, 1993 The hoarding, deposition and use of pewter in Roman Britain, in E Scott (ed.), *Theoretical Roman Archaeology: First Conference Proceedings*, Aldershot, 115-32
Pounds, N J G, 2000 *A History of the English Parish: the Culture of Religion from Augustine to Victoria*, Cambridge
Powell, A B, Booth, P, Fitzpatrick, A P and Crockett, A D, 2008 *The archaeology of the M6 Toll, 2000–*

2003, Oxford-Wessex Archaeology Joint Venture Monogr No. **2**

Powell-Cotton, P H G and Crawford, O G S, 1924 The Birchington hoard, *Antiq J* **4**, 223-6

Pratt, S, 2004 A249 Sheppey, *Canterbury's Archaeology 2002-2003*, 38-9

Preece, R C, 1992 Episodes of erosion and stability since the late-glacial: the evidence from dry valleys in Kent, in M Bell and J Boardman (eds), *Past and Present Soil Erosion: archaeological and geographic perspectives*, Oxbow Monogr **22**, Oxford, 175-84

Preece R C, 1994 Radiocarbon dates from the 'Allerød soil' in Kent, *Proc Geolog Assoc* **105**, 111-23

Preece, R C and Bridgland, D R (eds), 1998 *Late Quaternary environmental change in north-western Europe: excavations at Holywell Coombe, south-east England,* London

Preece, R C and Bridgland, D R, 1999 Holywell Coombe, Folkestone, UK: a 13,000 year history of an English Chalkland valley, *Quaternary Science Reviews* **18**, 1075-125

Prehistoric Society, 1999 *Research Frameworks for the Palaeolithic and Mesolithic of Britain and Ireland,* Salisbury

Priestley-Bell, G and Barber, L, 2004 Roman finds at Holy Trinity churchyard, Dartford, *Archaeol Cantiana* **124**, 75-93

Prilaux, G, 2000 *La production du sel a l'Age du fer: contribution a l'établissement d'une typologie a partir des examples de l'autoroute A16*, Collection Protohistoire Européenne **5**, Éditions Monique Mergoil, Montagnac

Pringle, S, 2002 The building material, in J Drummond-Murray and P Thompson with C Cowan, *Settlement in Roman Southwark: archaeological excavations (1991-98) for the London Underground Limited Jubilee Line Extension Project*, Museum of London Archaeological Services Monogr Ser **12**, 151-61

Pryor, F, 1974 *Excavations at Fengate, Peterborough, England: the first report,* Royal Ontario Museum Archaeology Monogr **3**, Toronto

Pryor, F, 2001 *The Flag Fen Basin: archaeology and environment of a Fenland landscape*, London

Purcell, A, 2002 Excavation of three Neolithic houses at Corbally, County Kildare, *J Irish Archaeol* **11**, 31-76

Quiney, A, 1993 *Kent Houses*, Woodbridge

Rackham, O, 2003 *Ancient Woodland: its history, vegetation and uses in England* (new edn), Colvend

Rady, J, 1992 Waterbrook Farm, Ashford, *Canterbury's Archaeology 1991-1992*, 32-4

Rady, J, 1996 Waterbrook Farm, Ashford, *Canterbury's Archaeology 1994-1995*, 38-9

Rady, J, 2009 Thanet Earth, Monkton, *Canterbury's Archaeology 2007-08*, 11-25

Rady, J, 2010 Thanet Earth, Monkton, *Canterbury's Archaeology 2008-09*, 1-16

Rahtz, P A R, 1979 *The Saxon and Medieval Palaces at Cheddar*, Brit Archaeol Rep (Brit Ser) **65**, Oxford

Randsborg, K, 2006 Opening the oak-coffins. New dates – new perspectives, in K Randsborg and K Christensen (eds), *Bronze Age Oak Coffin Graves: archaeology and dendro-dating*, Acta Archaeologica **77** (Acta Archaeologica Supplementa VII) Copenhagen, 1-162

Ratcliffe-Densham, H, 1968 A woman of Wessex culture, *Sussex Archaeol Collect* **106**, 38-48

Rawlings, M, Chadwick, A, Reynier, M and Seager Smith, R, 2003 Prehistoric and Roman activity at Zionshill Farm, Chandlers Ford, *Proc Hampshire Field Club* **58**, 1-23

Ray, K, 2007 The Neolithic in the West Midlands: an overview, in P Garwood (ed.), *The Undiscovered Country: the earlier prehistory of the West Midlands*, 51-78, Oxford

Redfern, R, 2008 A bioarchaeological analysis of violence in Iron Age females: a perspective from Dorset, England (fourth century BC to first century AD), in Davis *et al*. 2008, 139-60

Reece, R, 1973 Roman coinage in the western empire, *Britannia* **4**, 227-51

Reece, R, 1987 Commentary, in Meates 1987, 48-51

Reece, R, 1989 Lympne, in Maxfield 1989, 152-7

Reece, R, 1991 *Roman Coins from 140 Sites in Britain*, Cotswold Studies **4**, Cirencester

Reece, R, 1995a Site finds in Roman Britain, *Britannia* **26**, 179-206

Reece, R, 1995b Models in collision: east and west in Roman Britain, *Oxford J Archaeol* **14**, 113-5

Reece, R, 1998 Discussion: the Roman coins, in J R Timby (ed.), *Excavations at Kingscote and Wycomb, Gloucestershire: a Roman estate centre and small town in the Gloucestershire Cotswolds with notes on related settlements*, Cirencester, 400-21

Rees, G, 2008 Enclosure boundaries and settlement individuality in the Iron Age, in Davis et *al*. 2008, 61-82

Remy, H and Soumoy, M, 1996 *Sur la Voie de L'histoire Archéologie et TGV,* Namur: Ministere de la Region Wallone, Namur

Renfrew, C, 1973 Monuments, mobilisation and social organisation in Neolithic Wessex, in C Renfrew (ed.), *The Explanation of Culture Change*, London, 539-58

Renfrew, C, 1976 Megaliths, territories and populations, in S J de Laet (ed.), *Acculturation and Continuity in Atlantic Europe*, Bruges, De Tempel, 198-200

Reynier, M J, 1998 Early Mesolithic settlement in England and Wales: some preliminary observations, in N Ashton, F Healy and P Pettitt (eds), *Stone Age Archaeology: essays in honour of John Wymer*, Oxbow Monogr **102**, Oxford, 174-84

Reynolds, A, 1999 *Later Anglo-Saxon England: Life and Landscape*, Stroud and Charleston SC

Reynolds, A, 2002 Burials, boundaries and charters in Anglo-Saxon England, in S Lucy and A Reynolds (eds), *Burial in Early Medieval England and Wales*,

Society for Medieval Archaeology Monogr **17**, London, 171-94
Reynolds, A, 2003 Boundaries and Settlements in later Sixth to Eleventh-Century England, in D Griffiths, A Reynolds and S Semple (eds), *Boundaries in Early Medieval Britain*, Anglo-Saxon Studies in Archaeology and History **12**, Oxford, 98-136
Reynolds, A, 2004 Review of S Foreman, J Hiller and D Petts (eds): Gathering the people, settling the land. The Archaeology of a middle Thames landscape: Ango-Saxon to medieval, 2002, *Antiquity* **78**, 474-6
Reynolds, A, 2005 From *pagus* to Parish: Territory and Settlement in the Avebury Region from the Late Roman Period to the Domesday Survey, in G Brown, D Field and D McOmish (eds), *The Avebury Landscape: Aspects of the Field Archaeology of the Marlborough Downs*, Oxford, 164-80
Reynolds, A, 2006a Wessex, *Reallexikon der Germanischen Altertumskunde* **33**, 507-11
Reynolds, A, 2006b The Early Medieval Period, in N Holbrook and J Ju ica (eds), *Twenty-Five Years of Archaeology in Gloucestershire: A Review of New Discoveries and New Thinking in Gloucestershire, South Gloucestershire and Bristol 1979-2004*, Cotswold Archaeology, Bristol and Gloucestershire Archaeological Report No. **3**, Kemble and Stroud, 133-60
Reynolds, A, 2009 *Anglo-Saxon Deviant Burial Customs*, Oxford
Rhodes, M, 1990 Faussett Rediscovered: Charles Roach Smith, Joseph Mayer, and the Publication of *Inventorium Sepulchrale*, in E Southworth (ed.), *Anglo-Saxon Cemeteries: A Reappraisal*, Stroud, 25-64
Richards, C, 1996a Life is not that simple: architecture and cosmology in the Balinese house, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Oxford, 171-84
Richards, C, 1996b Monuments as landscape: creating the centre of the world in late Neolithic Orkney, *World Archaeol* **28**, 190-208
Richards, C and Thomas, J, 1984 Ritual activity and structured deposition in Neolithic Wessex, in R Bradley and J Gardiner (eds), *Neolithic Studies: a review of some recent research*, Brit Archaeol Rep (Brit Ser) **133**, Oxford, 189-218
Richards, M P and Hedges, R, 1999 A Neolithic revolution? New evidence of diet in the British Neolithic, *Antiquity* **73**, 891-7
Richards, M P and Schulting, R J, 2003 Characterising subsistence in Mesolithic Britain using stable isotope analysis, in L Bevan and J Moore (eds), *Peopling the Mesolithic in a Northern Environment*, Brit Archaeol Rep (Int Ser) **1157**, Oxford, 119-28
Richardson, A, 2003 Thurnham potin hoard, *Kent Archaeol Soc Newsletter* **59**, 1-2
Richardson, A, 2005 *The Anglo-Saxon Cemeteries of Kent*, Brit Archaeol Rep (Brit Ser) **391**, Oxford
Richmond, A, 1999 *Preferred Economies: the nature of the subsistence base throughout mainland Britain during prehistory,* Brit Archaeol Rep (Brit Ser) **290**, Oxford
Rickett, R, 1995 *Spong Hill: Part VII: The Iron Age, Roman and Early Saxon Settlement*, East Anglian Archaeology Rep No. **73**, Dereham
Riddler, I, 2001 The small finds, in Gardiner *et al*. 2001, 228-52
Riddler, I, 2004 Late Anglo-Saxon Kent: Economic Development, in Lawson and Killingray (eds), *An Historical Atlas of Kent*, Chichester
Riddler, I, 2006a The early Anglo-Saxon cemeteries, in Riddler and Trevarthen 2006, 29-68
Riddler, I, 2006b Small finds from north of Westenhanger Castle, *HS1 Specialist Report Series*, in ADS 2006
Riddler, I and Ager, B, 2006 Saltwood Tunnel: Romano-British small finds, *HS1 Specialist Report Series*, in ADS 2006
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
Riehm, K, 1961 Prehistoric salt-boiling, *Antiquity* **35**, 181-91
Riley, D, 1980 *Early landscapes from the air: studies of crop marks in South Yorkshire and North Nottinghamshire*, Sheffield
Ritchie, K, 2006 The prehistoric settlement at Little Stock Farm, Mersham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006
Rivet, A L F and Smith, C, 1979 *The place–names of Roman Britain*, London
Robb, J and Miracle, P, 2007 Beyond 'migration' versus 'acculturation': new models for the spread of agriculture, in Whittle and Cummings 2007, 99-115
Roberts, B and Wrathmell, S, 2000 *An Atlas of Rural Settlement in England*, London
Roberts, C and Cox, M, 2003 *Health and disease in Britain from prehistory to the present day*, Stroud
Roberts, C and Manchester, K, 1995 *The archaeology of disease,* 2nd edn, Stroud
Roberts, C, Boylston, A, Buckley, L, Chamberlain, A C and Murphy, E M, 1998 Rib lesions and tuberculosis: the palaeopathological evidence, *Tubercle and Lung Disease* **79** (**1**), 55-60
Robinson, J M, 1983 *Georgian Model Farms: a study of decorative and model farm buildings in the age of improvement, 1700-1846*
Robinson, J M, 1998 Yonsea Farm, Hothfield, Kent Historical Report, Unpublished client report
Robinson, M, 1999 Charred plant remains, in Houliston 1999, 147-50
Robinson, M, 2000 Further considerations of Neolithic charred cereals, fruit and nuts, in A Fairbairn (ed), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, Oxford, 85-90
Rodwell, K A, 1988 *The prehistoric and Roman settle-*

ment at Kelvedon, Essex, CBA Res Rep **63**, London
Roe, F, 2008 The worked stone, in Booth *et al*. 2008, 188-95
Rowlands, M J, 1976 *The production and distribution of metalwork in the Middle Bronze Age in southern Britain,* Brit Archaeol Rep (Brit Ser) **31**, Oxford
Rowley-Conwy, P, 2001 Time, change and the archaeology of hunter-gatherers: how original is the 'original affluent society'?, in C Panter-Brick, R H Layton and P Rowley-Conwy (eds), *Hunter-gatherers: an interdisciplinary perspective*, Cambridge, 39-72
Rowley-Conwy, P, 2003 No fixed abode? Nomadism in the northwest European Neolithic, in G Burenhult (ed.), *Stones and Bones: formal disposal of the dead in Atlantic Europe during the Mesolithic-Neolithic interface 6000-3000 BC*, Brit Archaeol Rep (Int Ser), **1201**, Oxford, 115-43
Rowley-Conwy, P, 2004 How the west was lost: a reconsideration of agricultural origins in Britain, Ireland, and southern Scandinavia, *Current Anthrop* **45**, 83-113
Ruddy, A J, 2003 *British Anti-Invasion Defences 1940-1945,* Pillbox Study Group
Rudling, D (ed.), 2002 *Downland settlement and land-use: the archaeology of the Brighton By-pass,* University College London Field Archaeology Unit Monogr **1**, London
Ruggles, C, 1999 *Astronomy in Prehistoric Britain and Ireland,* Yale
Russel, A D, 1990 Two Beaker burials from Chilbolton, Hampshire, *Proc Prehist Soc* **56**, 153-72
Russell, M, 1993 Boys Hall Moat Sevington, Kent. Archaeological Investigation Interim Report, unpublished OAU report, June 1993 [OA online Library]
Saint-Blanquat, H de, 1992 *Archeo TGV: 450 km d'histoire,* Paris: Casterman
Savage, A, 1999 Ceramic, in Houliston 1999, 113-29
Savage, A, 2006 The 'Belgic' and Roman pottery, in D C Boden (ed.), A late Iron-Age/early Roman site at Bredgar, near Sittingbourne, *Archaeol Cantiana* **126**, 358-66
Savory, H N, 1962 The excavation of a Bronze Age cairn at Sant-y-Nyll, St. Brides-Super-Ely (Glam.), *Trans Cardiff Natur Soc* **89**, 9-25
Sawyer, P H, 1968 *Anglo-Saxon Charters: An Annotated List and Bibliography*, London
Scaife, R G, 1987 A review of later Quaternary plant 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. Volume II,* London, 125-203
Scarre, C, 2001 Modelling prehistoric populations: the case of Neolithic Brittany, *J Anthropol Archaeol* **20**, 285-313
Schierer, I, 1987 Ein Webstuhlbefund aus Gars-Thunau: Rekonstruktionversuch und Funktionsanalyse, *Archaeol Austriaca* **71**, 29-87
Schulting, R, 2000 New AMS dates from the Lambourn long barrow and the question of the earliest Neolithic in southern Britain: repacking the Neolithic package? *Oxford J Archaeol* **19**, 25-35
Schulting, R, 2008 Foodways and social ecologies from the Early Mesolithic to the Early Bronze Age, in J Pollard (ed.), *Prehistoric Britain*, Oxford, 90-120
Scott, B, 2004 Kentish evidence of the Palaeolithic and Mesolithic periods, in Lawson and Killingray 2004, 7-9
Scott, E, 1991 Animal and infant burials in Romano-British villas: a revitalization movement, in P Garwood, D Jennings, R Skeates and J Toms (eds), *Sacred and Profane, Proceedings of a conference on archaeology, ritual and religion Oxford, 1989*, Oxford University Committee for Archaeology Monogr No. **32**, 115-21
Scott, E, 1999 *The archaeology of infancy and infant death*, Brit Archaeol Rep (Int Ser) **819**, Oxford
Scott, I R, 1997 Archaeological investigations on the motorway service area, Junction 8, M20 at Eyhorne Street, Hollingbourne, *Archaeol Cantiana* **117**, 105-45
Scull, C J and Bayliss, A, 1999 Radiocarbon dating and Anglo-Saxon graves, in U von Freeden, U Kock and A Wieczorek (eds), *Wölker an Nord- und Ostsee und die Franken*, 39-50, Bonn
Seager Smith, R, 1995 Pottery, in V Birbeck, Excavations on a Romano-British villa at Churchfields, Snodland, 1992-94, *Archaeol Cantiana* **115**, 97-109
Seager Thomas, M, 2008 From potsherds, to people: Sussex prehistoric pottery, *Sussex Archaeol Collect* **146**, 19-51
Shaffrey, R, 2003 The rotary querns from the Society of Antiquaries' excavations at Silchester, 1890-1909, *Britannia* **34**, 143-74
Shaffrey, R, 2007 The puddingstone rotary querns from Springhead Roman town, Kent, *Lucerna* **33**, 6-10
Shand, G, 2002 Eddington Farm, Herne Bay, *Canterbury's Archaeology 1999-2000*, 18-23
Sharples, N M, 1991 *Maiden Castle: excavations and field survey 1985-6,* English Heritage Archaeol Rep **19**, London
Sheldon, H L and Yule, B, 1979 Excavations in Greenwich Park 1978-79, *London Archaeol* **3**, 313-7
Shennan, I and Horton, B, 2002 Holocene land- and sea-level changes in Great Britain, *J Quaternary Science* **17**, 511-26
Shennan, I, Bradley, S, Milne, G, Brooks, A, Bassett, S and Hamilton, S, 2006 Relative sea-level changes, glacial isostatic modeling and ice sheet reconstructions from the British Isles since the Last Glacial Maximum, *J Quaternary Science* **21**, 585-99
Shennan, S, 1982 Ideology, change and the European Early Bronze Age, in I Hodder (ed.), *Symbolic and Structural Archaeology*, Cambridge, 155-61
Shephard, J F, 1979 The Social Identity of the

Individual in Isolated Barrows and Barrow Cemeteries in Anglo-Saxon England, in B C Burnham and J Kingsbury (eds), *Space, Hierarchy and Society*, Brit Archaeol Rep (Int Ser) **59**, Oxford, 47-79

Sheridan, A, 1999 Drinking, driving, death and display: Scottish Bronze Age artefact studies since Coles, in A F Harding (ed.), *Experiment and Design: studies in honour of John Coles*, Oxford, 49-59

Sheridan, A, 2003 French connections I: spreading the marmites thinly, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement in Ireland and Western Britain*, Oxford, 3-17

Sheridan, A, 2004 Scottish Food Vessel chronology revisited, in A Gibson and A Sheridan (eds), *From Sickles to Circles: Britain and Ireland at the time of Stonehenge*, Stroud, 243-69

Sheridan, A, 2007 From Picardie to Pickering and Pencraig Hill? New information on the 'Carinated Bowl Neolithic' in northern Britain, in Whittle and Cummings 2007, 41-92

Sheridan, A, 2010 The Neolithicisation of Britain and Ireland: the big picture, in B Finlayson and G M Warren (eds), *Landscapes in Transition*, Council for British Research in the Levant (Levant Supplementary Series **8**), Oxford, 89-105

Sherratt, A, 1981 Plough and pastoralism: aspects of the secondary products revolution, in I Hodder, G Isaac and N Hammond (eds), *Pattern of the Past*, Cambridge, 261-305

Sherratt, A, 1990 The genesis of megaliths: monumentality, ethnicity and social complexity in Neolithic north-west Europe, *World Archaeology* **22**, 147-67

Sherratt, A, 1995 Instruments of conversion? The role of megaliths in the Mesolithic-Neolithic transition in north-west Europe, *Oxford J Archaeol* **14**, 245-60

Sherratt, A, 1997 *Economy and Society in Prehistoric Europe,* Princeton

Short, B, 1984 The South-East: Kent, Surrey, and Sussex, in J Thirsk (ed.), *The Agrarian History of England and Wales Vol VI 1640–1750,* Cambridge, 270–316

Sibun, L, 2001 Excavation at Syndale Park, Ospringe, *Archaeol Cantiana* **121**, 171-96

Sidell, J, Wilkinson, K N, Scaife, R G and Cameron, N, 2000 *The Holocene evolution of the London Thames: archaeological excavations (1991-1998) for the London Underground Limited Jubilee Line extension project,* London

Sieveking, G, 1960 Ebbsfleet: Neolithic sites, *Archaeol Cantiana* **74**, 192-93

Sim, D and Ridge, I, 2002 *Iron for the eagles The iron industry of Roman Britain*, Tempus

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 No. **11**, Oxford

Simmons, I G, 1996 *The Environmental Impact of Later Mesolithic Cultures*, Edinburgh

Simms, F, 1844 *Practical Tunnelling*, London

Simpson, W G, 1993 The excavation of a Late Neolithic settlement at Barholm, Lincolnshire, in W G Simpson, D A Gurney, J Neve and F M M Pryor (eds), *The Fenland Project Number 7: excavations in Peterborough and the Lower Welland Valley 1960-69,* East Anglian Archaeology Rep No. **61**, Peterborough, 7-28

Small, F, 2008 *Wickhambreux, Kent: ring ditch survey*, English Heritage Res Dep Rep **64-2008**

Smith, C, 1992 *Late Stone Age Hunters of the British Isles,* London

Smith, G H, 1987 A Beaker (?) burial monument and a Late Bronze Age assemblage from East Northdown, Margate, *Archaeol Cantiana* **104**, 237-89

Smith, J T, 1978 Villas as a key to social structure, in M Todd (ed.), *Studies in the Romano-British villa*, Leicester, 149-85

Smith, J T, 1997 *Roman villas. A study in social structure*, London

Smith, M J B, 1994 *Excavated Bronze Age Burial Mounds of North-East Yorkshire*. Architectural and Archaeological Society of Durham and Northumberland, Res Rep **3**, Durham

Smith, P and Kahila, G, 1992 Identification of infanticide in archaeological sites: a case study from the late Roman-early Byzantine periods at Ashkelon, Israel, *J Archaeol Science* **19**, 667-75

Smith, R, Healy, F, Allen, M, Morris, E, Barnes, I and Woodward, P J, 1997 *Excavations Along the Route of the Dorchester By-Pass, Dorset, 1986-88,* Wessex Archaeology Monogr No. **11**, Salisbury

Smith, R A, 1908 Anglo-Saxon Remains, in Page 1908, 339-87

Smith, R A L, 1943 *Canterbury Cathedral Priory. A Study in Monastic Administration*, Cambridge Studies in Economic History, Cambridge

Smith, T P, 2006a West of Northumberland Bottom: Building material, *HS1 Specialist Report Series*, in ADS 2006

Smith, T P, 2006b Bower Road: Building Material and Fired Clay, *HS1 Specialist Report Series*, in ADS 2006

Smith, V, 2003 *Front Line Kent. Defence against invasion from 1500 to the Cold War*, Maidstone

Smith, W and Davis, A, 2006 The charred plant remains from Thurnham Roman Villa, Kent (ARC THM 98), *HS1 Specialist Report Series*, in ADS 2006

Smyth, J, 2007 Role of the house in Early Neolithic Ireland: some new approaches, *European J Archaeol* **9**(**2**), 225-52

Sørensen, M L S, 1997 Reading dress: the construction of social categories and identities in Bronze Age Europe, *European J Archaeol*, **5**(**1**), 93-114

Spain, R J, 1984 Romano-British watermills, *Archaeol Cantiana* **100**, 101-28

Speake, G, 1989 *A Saxon bed burial on Swallowcliffe Down*, English Heritage Archaeol Rep **10**, London

Spikins, P, 2000 Ethno-facts or ethno-fiction? Searching for the structure of settlement patterns, in R Young (ed.), *Mesolithic Lifeways: current research from Britain and Ireland*, Leicester Archaeol Monogr **7**, 105-18, Leicester

Stafford, A, 2006a Sediments and soils, in Hayden, 2006a, 11-17

Stafford, A, 2006b Vegetation and the environment, in Hayden, 2006a, 17-20

Stanley, C, 1972 Bray Roman cemetery, Berkshire, *CBA Group 9 Newsletter* **2**, 12-13

Stanner, W E H, 1965 Aboriginal territorial organization: estate, range, domain and regime, *Oceania* **36**, 1-26

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,* 401-16, London

Stead, I M, 1991 *Iron age cemeteries in East Yorkshire,* London

Stead, I M, 2006 *British Iron Age swords and scabbards,* London

Stead, I M and Rigby, V, 1986 *Baldock: The excavation of a Roman and pre-Roman settlement 1968-72 (Herts.)*, Britannia Monogr Ser No **7**, London

Stead, I M and Rigby, V, 1989 *Verulamium: the King Harry Lane site*, English Heritage Archaeol Rep **12**, London

Stebbing, W P D, 1934 An Early Iron Age site at Deal, *Archaeol Cantiana* **46**, 207-9

Stenton, F M, 1971 *Anglo-Saxon England*, 3rd edn, Oxford

Steuer, H, 1987 Helm und Ringschwert. Prunkbewaffnung und Rangabzeichen germanischer Krieger: eine Übersicht, *Studien zur Sachsenforschung* **6**, 189-26

Stevens, C, 2006a The charred plant remains from Bower Road, Smeeth, Kent (ARC 440/99), *HS1 Specialist Report Series*, in ADS 2006

Stevens, C, 2006b The charred plant remains from Little Stock Farm, Mersham, Kent (ARC LSF98), *HS1 Specialist Report Series*, in ADS 2006

Stevens, C, 2006c The charred plant remains from North of Saltwood Tunnel, Saltwood, Kent, *HS1 Specialist Report Series*, in ADS 2006

Stevens, C, 2006d The charred plant remains from Westenhanger Castle, Stanford, Kent, *HS1 Specialist Report Series*, in ADS 2006

Stirland, A, 1989 The cremations from the Iron Age cemetery, in Stead and Rigby 1989, 240-4

Stone, J F S, 1932 Saxon Interments on Roche Court Down, Winterslow, *Wiltshire Archaeol Natur Hist Mag* **45**, 568-82

Stoodley, N, 2002 Multiple Burials, Multiple Meanings? Interpreting the Early Anglo-Saxon Multiple Interment, in S Lucy and A Reynolds (eds), *Burial in Early Medieval England and Wales*, 103-21

Struck, M (ed.), 1993a *Römerzeitliche Gräber als Quellen zu Religion, Bevölkerungsstruktur und Sozialgeschichte*, Archäologische Schriften des Instituts für Vor- und Frühgeschichte der Johannes Gutenberg-Universität Mainz **3**, Mainz

Struck, M, 1993b *Busta* in Britannien und ihre Verbindung zum Kontinent. Allgemeine Überlegungen zur Herleitung der Bestattungssitte, in Struck 1993a, 81-93

Stuart-Macadam, P, 1991 Anaemia in Roman Britain: Poundbury Camp, in H Bush and M Zvelebil (eds), *Health in past societies – biocultural interpretations of human skeletal remains in archaeological contexts*, Brit Archaeol Rep (Int Ser) **567**, Oxford, 101-14

Sweetingburgh, S, in preparation a *Early Medieval Kent, 800-1220*

Sweetinburgh, S, in preparation b *Later Medieval Kent, 1220-1540*

Swift, E, 2000 *Regionality in dress accessories in the late Roman west*, Monographies Instrumentum **11**, Éditions Monique Mergoil, Montagnac

Switsur, V R and Housely, R, 1998 Radiocarbon dating, in Preece and Bridgland 1998, 107-19

Sykes, N, 2004 The Dynamics of Status Symbols: Wildfowl Exploitation in England AD 410-1550, *Archaeol J* **161**, 82-105

Tatton-Brown, T, 1988 The churches of Canterbury diocese in the 11th century, in J Blair (ed.), *Minsters and Parish Churches: The Local Church in Transition 950-1200*, Oxford, 105-18

Tatton-Brown, T, 2001 The evolution of `Watling Street' in Kent, *Archaeol Cantiana* **121**, 121-33

Tatton Brown, V, 1998 Glass objects, in Hicks 1998, 157-61

Taylor, A, 2008 Aspects of deviant burial in Roman Britain, in E M Murphy (ed.), *Deviant burial in the archaeological record*, Oxford, 91-114

Taylor, C C, 1977 Polyfocal Settlement and the English Village, *Medieval Archaeol* **21**, 189-93

Taylor, G, 2003 An Early to Middle Saxon Settlement at Quarrington, Lincolnshire, *Antiq J* **83**, 231-80

Taylor, H M and Taylor, J, 1965 *Anglo-Saxon Architecture*, Cambridge

Taylor, J, 2001 Rural society in Roman Britain, in James and Millett, 2001, 46-59

Taylor, J, 2007 *An Atlas of Roman Rural Settlement in England*, CBA Res Rep **151**, York

Tebbutt, C F, 1982 A Middle-Saxon iron smelting site at Millbrook, Ashdown Forest, Sussex, *Sussex Archaeol Collect* **120**, 19-36

Tester, P J, 1961 The Roman villa in Cobham Park, near Rochester, *Archaeol Cantiana* **76**, 88-109

Tester, P J and Bing, H F, 1949 A First Century Urn Field at Cheriton, near Folkestone, *Archaeol Cantiana* **62**, 21-36

Thirsk, J, 1967 South-eastern England, in J Thirsk (ed.), *The Agrarian History of England and Wales Vol IV 1500–1640,* 55–64, Cambridge

Thoen, H, 1975 Iron Age and Roman salt-making sites on the coast of Belgium, in K W De Brisay and K A Evans (eds), *Salt: the study of an ancient industry*, Colchester, 55-60

Thomas, J, 1991a Reading the body: Beaker funerary practice in Britain, in P Garwood, D Jennings, R Skeates, R and J Toms (eds), *Sacred and Profane, Archaeology, ritual and religion*, Oxford Univ Comm Archaeol Monogr **32,** Oxford, 33-42

Thomas, J, 1991b *Rethinking the Neolithic,* Cambridge

Thomas, J, 1993 Discourse, totalization and the 'Neolithic', in C Tilley (ed.), *Interpretative Archaeology*, Oxford, 357-94

Thomas, J, 1996a The cultural context of the first use of domesticates in continental Central and Northwest Europe, in D R Harris (ed.), The *Origins and Spread of Agriculture and Pastoralism in Eurasia*, Washington, 310-22

Thomas, J, 1996b Neolithic houses in mainland Britain and Ireland – a sceptical view, in T Darvill and J Thomas (eds), *Neolithic Houses in Northwest Europe and Beyond*, Neolithic Studies Group Seminar Papers **1**; Oxbow Monogr **57**, Oxford, 1-12

Thomas, J, 1999 *Understanding the Neolithic,* London

Thomas, J, 2003 Thoughts on the 'repacked' Neolithic revolution, *Antiquity* **77**, 67-74

Thomas, J, 2006 On the origins and development of cursus monuments in Britain, *Proc Prehist Soc* **72**, 229-41

Thomas, J, 2007a Mesolithic-Neolithic transitions in Britain: from essence to inhabitation, in Whittle and Cummings 2007, 423-40

Thomas, J, 2007b The internal features at Durrington Walls: investigations in the Southern Circle and western enclosures 2005-6, in L Larsson and M Parker Pearson (eds), *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*, Brit Archaeol Rep (Int Ser) **1692**, Oxford, 145-57

Thomas, J, 2008 The Mesolithic-Neolithic transition, in J Pollard (ed.), *Prehistoric Britain*, Oxford, 58-89

Thomas, John, 2008 *Monument, Memory and Myth: use and re-use of three round barrows at Cossington, Leicestershire,* Leicester Archaeol Monogr **14**, Leicester

Thomas, K, 1982 Neolithic enclosures and woodland habitats on the South Downs in Sussex, England, in M Bell and S Limbrey (eds), *Archaeological Aspects of Woodland Ecology*, Brit Archaeol Rep (Int Ser) **146**, Oxford, 147-70

Thomas, N, 2005 *Snail Down Wiltshire: the Bronze Age barrow cemetery and related earthworks, in the parishes of Collingbourne Ducis and Collingbourne Kingston; excavations, 1953, 1955 and 1957*, Devizes, Wiltshire Archaeol Natur Hist Soc Monogr **3**

Thompson, F H, 1979 Three Surrey hillforts: Anstiebury, Holmbury and Hascombe 1972-7, *Antiq J* **59**, 245-318

Thompson, F H, 1983 Excavations at Bigberry, near Canterbury, 1978-80, *Antiq J* **63**, 237-78

Thompson, F H, 1986 The Iron Age hillfort of Oldbury, Kent: excavations 1983-4, *Antiq J* **66**, 267-86

Thompson, I, 1982 *Grog-tempered 'Belgic' pottery of South-eastern England*, Brit Archaeol Rep (Brit Ser) **108**, Oxford

Thorley, A, 1981 Pollen analytical evidence relating to the vegetation history of the Chalk, *J Biography* **8**, 93-106

Thornhill, P and Payne, P, 1980 Some sites in North Kent, *Archaeol Cantiana* **96**, 378-82

Tilley, C, 1994 *A Phenomenology of Landscape,* Oxford

Tilley, C, 1996 *An Ethnography of the Neolithic: early prehistoric societies in southern Scandinavia,* Cambridge

Tilley, C, 1998 *Material Culture and Metaphor,* Oxford

Tilley, C, 2004 *The Materiality of Stone: explorations of landscape phenomenology,* Oxford

Timby, J and Williams, D F, 2000 The briquetage, in M Fulford and J Timby (eds), *Late Iron Age and Roman Silchester: excavations on the site of the forum-basilica 1977, 1980-86*, Britannia Monogr Ser **15**, London, 287-91

Tipping, R and Tisdall, E, 2004 Continuity, crisis and climate change in the Neolithic and Early Bronze Age periods of north-west Europe, in I A G Shepherd and G J Barclay (eds), *Scotland in Ancient Europe*, Soc Antiq Scotland, Edinburgh, 71-81

Tolan-Smith, C, 2003a Colonisation – event or process, in L Larsen, H Kindgren, K Knutsson, D Loeffler and A Åkelund (eds), *Mesolithic on the Move*, Oxford, 52-6

Tolan-Smith, C, 2003b Social interaction and settlement patterns in hunter-gatherer societies – applications of the 'amity-enmity' model, in L Bevan and J Moore (eds), *Peopling the Mesolithic in a Northern Environment*, Brit Archaeol Rep (Int Ser) **1157**, Oxford, 113-18

Tomalin, D, 1988 Armorican *vases á anses* and their occurrence in southern Britain, *Proc Prehist Soc* **54**, 203-21

Toynbee, J M C, 1996 *Death and burial in the Roman world*, Baltimore (reprint)

Tresset, A, 2003 French connections II: of cows and men, in I Armit, E Murphy, E Nelis and D Simpson (eds), *Neolithic Settlement in Ireland and Western Britain*, Oxford, 18-30

Trevarthen, M, 2006 The Late Mesolithic and Early Neolithic Landscape at Sandway Road, Lenham, Kent, *HS1 Integrated Site Report Series*, in ADS 2006

Trow, S, James, S and Moore, T, 2009 *Becoming Roman, being Gallic, staying British: Research and excavations at Ditches 'hillfort' and villa 1984-2006*, Oxford

Tuckwell, A, 1975 Patterns of burial orientation in the round barrows of east Yorkshire, *Bull Insit Archaeol Univ of London* **12**, 95-123

Tullett, A, 2008 Black earth, bone and bits of old pot: the Pewsey middens. Recent work by the University of Sheffield, in Davis *et al*. 2008, 11-20

Turner, R, 1999 *Excavations of an Iron Age settlement and Roman religious complex at Ivy Chimneys, Witham, Essex, 1979-83*, East Anglian Archaeology Rep No. **88**, Chelmsford

Turner, R and Wymer, J J, 1987 An assemblage of Palaeolithic hand-axes from the Roman religious complex at Ivy Chimneys, Witham, Essex, *Antiq J* **67**, 43-60

Ullyott, J S, Nash, D J and Shaw, P A, 1998 Recent advances in silcrete research and their implications for the origin and palaeoenvironmental significance of sarsens, *Proc Geologists' Association* **109**, 255-70

URS, 2000a Boys Hall Balancing Pond, Sevington, Kent (ARC BHB98): Strip, map and sample excavation assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2000b South of Snarkhurst Wood, Hollingbourne, Kent (ARC SNK99): detailed Archaeological works post-excavation assessment report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2000c West of Sittingbourne Road, Boxley, Kent (ARC 420/61+900-62+000/99): Watching brief assessment report, unpubl. report prepared for Union Railways (South) Limited for OAU, in ADS 2006

URS, 2000d Chapel Mill, Lenham, Kent (ARC CML99): Strip, map and sample excavation assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2000e Lodge Wood, Ashford, Kent (ARC 430/87+300-87+800/99): Watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2000f East of Station Road/Church Lane, Smeeth, Kent (ARC STR99/ ARC CHL98): Detailed archaeological works assessment report. unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2000g West of Blind Lane, Sevington, Kent (ARC BLN98): Detailed archaeological works assessment report. unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2001 Hurst Wood, Charing Heath, Kent (ARC HWD 99): Targeted watching brief assessment report, unpubl. report prepared by OAU for Union Railways (South) Limited, in ADS 2006

URS, 2003 HS1 Section 1 updated project design for archaeological analysis and publication Volume 2, Contractor's method statements, unpubl. report prepared by RLE and OWA for URS, in ADS 2006

Vale, J, 1987 Archaeological notes from Kent County Museum Service, *Archaeol Cantiana* **104**, 368-74

Van de Noort, R, 2006 Argonauts of the North Sea: a social maritime archaeology for the 2nd millennium BC, *Proc Prehist Soc* **72**, 26-87

Van den Broeke, P, Fokkens, H and van Gijn, A, 2005 A prehistory of our time, in L P Louwe Kooimans, P W van den Broeke, H Fokkens and A L van Gijn (eds), *The Prehistory of the Netherlands*, Amsterdam, 17-31

Van der Veen, M, 1992 *Crop husbandry regimes: an archaeobotanical study of farming in northern England 1000 BC – AD 500,* Sheffield

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 (eds) 2007, 419-29

Van der Veen, M and O'Connor, T P, 1998 The expansion of agricultural production in Late Iron Age and Roman Britain, in J Bayley (ed.), *Science in Archaeology, an agenda for the future*, London, 127-44,

Van Doorselaer, A, 2001 Les tombes à incinération à l'époque gallo-romaine en Gaule septentrionale: introduction générale, in J-F Geoffroy and H Barbé (eds), *Les nécropoles à incinération en Gaule Belgique*, Revue du Nord Hors Série, Coll Art et Archéologie No. **8**, 9-14

Van Driel-Murray, C, 1999 And did those feet in ancient time...Feet and shoes as a material projection of the self, in P Baker, C Forcey, S Jundi and R Witcher (eds), *TRAC 1998: Proceedings of the eighth annual Theoretical Roman Archaeology conference Leicester 1998*, Oxford, 131-40

Van Ossel, P, 1993 L'occupation des campagnes dans le nord de la Gaule durant l'Antiquité tardive: l'apport des cimetières, in A Ferdière (ed.), *Monde des morts, monde des vivants en Gaule rurale Actes du Colloque Archea/AGER (Orléans, 7-9 fevrier 1992),* 6e Supplement à la Révue Archéologique du Centre de la France, Tours, 185-96

Van Ossel, P and Ouzoulias, P, 2000 Rural settlement economy in Northern Gaul in the Late Empire: an overview and assessment, *J Roman Archaeol* **13**, 133-60

Varndell, G, 2006 Grooved Ware, in Needham *et al*. 2006, 41-2

Vatcher, F de M and Vatcher, H L, 1976 The excavation of a round barrow near Poor's Heath, Risby, Suffolk, *Proc Prehist Soc* **42**, 263-92

Vera, F W M, 2000 *Grazing Ecology and Forest History,* CABI, Oxford

Vermeersch, P M, 1995 Le Michelsberg en Belgique et ses rapports avec les pays limitrophes, in *Le Néolithique du nord-est de la France et des regions limitrophes*, Actes du XIIIe Colloque Interrégional sur le Néolithique, Metz, 1986, Paris, 155-63

Vermeersch, P M and Burnez-Lanotte, L, 1998 La culture de Michelsberg en Belgique: état de la question, in Biel *et al*. 1998, 47-54

Vermeersch, P M and Walter, R, 1980 Thieusies, ferme de l'Hoste, site Michelsberg, *Archaeol Belgica* **230**, 1-46

Voss, K L, 1965 Stratigraphische notizen zu einem

Langhaus der Trichterbecherkulturen bei Wittenwater, Kr. Uelzen, *Germania* **43**, 343-51
Waddell, J, 1990 *The Bronze Age Burials of Ireland,* Galway
Waddington, C, 2007 Rethinking Mesolithic settlement and a case study from Howick, in C Waddington and K Pedersen (eds), *Mesolithic Studies in the North Sea Basin and Beyond*, 101-13, Oxford
Waddington, K, 2008 Topographies of accumulation at Late Bronze Age Potterne, in Davis *et al*. 2008, 161-84
Wait, G A, 1985 *Ritual and religion in Iron Age Britain*, Brit Archaeol Rep (Brit Ser) **149**, Oxford
Walker 1998, Yonsea Farm and Land. Brief preliminary report on documentary research.
Walker, S, 1990 *Catalogue of Roman sarcophagi in the British Museum*, Corpus Signorum Imperii Romani, Great Britain Vol II Fascicule 2, British Museum Pub
Wallace, C, 2006 Long-lived samian?, *Britannia* **37**, 259-72
Wallenberg, J, 1934 *The Place-Names of Kent*, Uppsala
Waller, M, 1994 Flandrian vegetational history of south-east England: pollen data from Pannel Bridge, East Sussex, *New Phytologist* **124**, 345-69
Wallower, B, 2002a Roman temple in Greenwich Park? Part 1, *London Archaeol* **10**(**2**), 46-54
Wallower, B, 2002b Roman temple in Greenwich Park? Part 2, *London Archaeol* **10**(**3**), 76-81
Wamers, E, 1995 Eine burgundische Pyxis 'vom Niederrhein'. Zu merowingerzeitlichen Amulettkapseln und Kosmetikbuchsen, *Fruhmittelalterlichen Studien* **29**, 144-66
Ward, A, 2004 Roman Rochester, in Lawson and Killingray 2004, 23
Ward, G, 1935 Westenhanger charter of 1035, *Archaeol Cantiana* **47**, 144-52
Ward Perkins, J B, 1944 Excavations on the Iron Age hillfort of Oldbury, near Ightham, Kent, *Archaeologia* **90**, 127-76
Warren, G, 2006 Technology, in Conneller and Warren 2006, 13-34
Warren, G, 2007 Mesolithic myths, in Whittle and Cummings 2007, 311-28
Waterson, R, 1990 *The Living House: an anthropology of architecture in South-East Asia,* Oxford
Watson, M B, 1963 Iron Age site on Bridge Hill, *Archaeol Cantiana* **78**, 185-8
Webley, L, Timby, J and Wilson, M, 2007 *Fairfield Park: later prehistoric settlement in the eastern Chilterns,* Bedfordshire Archaeology Monogr **7**, Oxford
Webster, G, 1975 Small towns without defences, in W Rodwell and T Rowley (eds), *Small towns of Roman Britain*, Brit Archaeol Rep (Brit Ser) **15**, Oxford, 53-66
Webster, J, 1997 Text expectations: the archaeology of 'Celtic' ritual wells and shafts, in A Gwilt and C Haselgrove (eds), *Reconstructing Iron Age Societies*, Oxbow Monogr **71**, 134-44
Webster, J and Cooper, N, 1996 (eds) *Roman Imperialism: Post-Colonial Perspectives*, Leicester Archaeol Monogr No **3**, Leicester
Webster, L, 1967 The Snodland buckle, in Ocock and Syddell 1967, 212-3
Webster, P V, 1981 The feeding cup, an unusual samian form, in A C Anderson and A S Anderson (eds), *Roman pottery research in Britain and north-west Europe*, Brit Archaeol Rep (Int Ser) **123**, Oxford, 249-55
Wegner, G (ed.), 1996 *Leben-Galuben-Sterben vor 3000 Jahren: Bronzezeit in Niedersachsen,* Oldenburg
Welch, M G, 1984 Kent, in *Reallexikon der Germanischen Altertumskunde*, 444-53
Welch, M, 2007 Anglo-Saxon Kent, in Williams 2007, 187-248
Welch, M, 2008 Report on excavations of the Anglo-Saxon cemetery at Updown, Eastry, Kent, *Anglo-Saxon Studies in Archaeology and History* **15**, 1-146
Wells, C, 1981 Human Remains, in Partridge 1981, 277-303
Wenban-Smith, F F, Allen, P, Bates, M R, Parfitt, S A, Preece, R C, Stewart, J R, Silva, B, Turner, C, and Whittaker, J E, 2006 The Clactonian elephant butchery site at Southfleet Road, Ebbsfleet, UK, *J. Quaternary Sci*., Vol. 21, 471-83
Wenban Smith, F F, Stafford, E and Bates, M R, in prep., Prehistoric Ebbsfleet: Excavations and research in advance of the High Speed 1 and South Thameside Development Route 4, 1989-2003, Oxford Wessex Archaeology Monograph Series
Werner, J, 1957 Zwei Gegossene Koptische Bronzeflaschen aus Salona, *Vjesnik za arheologiju I histoij u dalmatinsku* **59**, 115-28
Wessex Archaeology, 2001 Archaeological excavation at A20 Diversion Holm Hill, near Harrietsham, Kent (ARC HOL 99), detailed archaeological works assessment report
Wessex Archaeology 2009 Kingsmead Quarry, Horton, Berkshire: post-excavation assessment and updated project design for analysis and publication. Unpublished Wessex Archaeology report 54638.02
Wheaton, K, Hardy, A and Norton, A, in prep. Excavations of Bronze Age, Roman and medieval settlement on land at Wingfield Bank, Northfleet, Kent, 2008, Oxford Archaeology
Wheeler, H, 1979 Excavation at Willington, Derbyshire, 1970-72, *Derbyshire Archaeol J* **99**, 58-220
Wheeler, R E M (ed.), 1932 Romano-British remains, in W Page (ed.), *The Victoria History of the County of Kent, Volume Three*, University of London Institute of Historical Research, 1-176
Wheeler, R E M, 1943 *Maiden Castle Dorset,* London
Wheelhouse, P, 2005 The ritual monuments, in I Roberts (ed.), *Ferrybridge Henge: the ritual landscape. Archaeological investigations at the site of the Holmfield Interchange of the A1 Motorway*, West Yorkshire Archaeological Services, Yorkshire Archaeology **10**, Morley, 21-49

Whimster, R, 1981 *Burial practices in Iron Age Britain: a discussion and gazetteer of the evidence c. 700 BC – AD 43,* Brit Archaeol Rep (Brit Ser) **90**, Oxford

White, D A, 1982 *The Bronze Age Cremation Cemeteries at Simons Ground, Dorset,* Dorset Natur Hist Archaeol Soc Monogr Ser **3**, Dorchester

Whitehouse, N J and Smith, D N, 2004 Islands in Holocene forests: implications for forest openness, landscape clearance and cultural steppe species, *Environmental Archaeol* **9**, 199-208

Whitelaw, T, 1994 Order without architecture: functional, social and symbolic dimensions of hunter-gatherer settlement organization, in Parker Pearson and Richards, 1994, 217-43

Whiting, W, Hawley, W and May, T, 1931 *Report on the excavation of the Roman cemetery at Ospringe, Kent*, Rep Res Comm Soc Antiqs London **8**, Oxford

Whittle, A, 1977 *The Earlier Neolithic of Southern England and its Continental Background*, Brit Archaeol Rep (Int Ser) **403**, Oxford

Whittle, A, 1996 *Europe in the Neolithic: the creation of new worlds,* Cambridge

Whittle, A, 1997a Moving on and moving around: Neolithic settlement mobility, in P Topping (ed.), *Neolithic Landscapes*, Oxbow Monogr **86**, Oxford, 15-22

Whittle, A, 1997b *Sacred Mound, Holy Rings: Silbury Hill and the West Kennet palisade enclosures: a later Neolithic complex in Wiltshire*, Oxford

Whittle, A, 2000 Bringing plants into the taskscape, in A Fairbairn (ed.), *Plants in Neolithic Britain and Beyond*, Neolithic Studies Group Seminar Papers **4**, Oxford, 1-7

Whittle, A, 2003 *The Archaeology of People: dimensions of Neolithic life,* London

Whittle, A, 2007 The temporality of transformation: dating the early development of the southern British Neolithic, in Whittle and Cummings 2007, 377-98

Whittle, A and Cummings, V (eds), 2007 *Going Over: the Mesolithic-Neolithic transition in north-west Europe*, Proc Brit Acad **144**, Oxford

Whittle, A and Pollard, J, 1999 The harmony of symbols: wider meanings, in A Whittle, J Pollard and C Grigson (eds), *The Harmony of Symbols: the Windmill Hill causewayed enclosure*, Oxford, 381-90

Whittle, A, Barclay, A, Bayliss, A, McFayden, L, Schulting, R and Wysocki, M, 2007 Building for the dead: events, processes and changing worldviews from the thirty-eighth to the thirty-fourth centuries cal. BC in southern Britain, *Cambridge Archaeol J* **17**(**1**) (suppl.), 123-47

Whittle, A, Healy, F and Bayliss, A, 2011 *Gathering time: dating the early Neolithic enclosures of southern Britain and Ireland*, Oxford

Wilhelmi, K, 1977 Zur Funktion und Verbreitung dreieckige Tongewichte der Eisenzeit, *Germania* **55**, 180-84

Wilhelmi, K, 1987 Zur Besiedlungsgenese Englands und des nordwestlichen Kontinent von 1500 vor bis Christi Geburt, *Acta Praehistorica Archaeologica* **19**, 71-84

Wilkin, N C A, 2009 Regional Narratives of the Early Bronze Age: a contextual and evidence-led approach to the funerary practices of east-central Scotland, Unpublished M Phil thesis, University of Birmingham

Wilkinson, D R P, 1994 Excavations on the White Cliffs Experience site, Dover, 1988-91, *Archaeol Cantiana* **114**, 51-148

Wilkinson, K N, 2003 Colluvial deposits in dry valleys in southern England as proxy indicators of palaeoenvironmental and land-use change, *Geoarchaeology* **18**(**7**), 725-55

Wilkinson, T J, 1988 *Archaeology and environment in south Essex: rescue archaeology along the Grays By-pass, 1979/80*, East Anglian Archaeology Rep No. **42**, Chelmsford

Wilkinson, T J and Murphy, P, 1995 *The archaeology of the Essex coast, Volume 1: the Hullbridge Survey,* East Anglian Archaeology Rep No. **71**, Chelmsford

Williams, A and Martin, G H, 2002 *Domesday Book*, London

Williams, D, 2004 Franks' Sandpit, Betchworth, Surrey: a site of special significance?, in Cotton and Field 2004, 164-7

Williams, H, 2004 Potted histories – cremation, ceramics and social memory in early Roman Britain, *Oxford J Archaeol* **23** (**4**), 417-27

Williams, H, 2006 *Death and Memory in Early Medieval Britain*, Cambridge

Williams, J H, 2003 New light on Roman Kent, *J Roman Archaeol* **16**, 219-36

Williams, J (ed.), 2007 *The archaeology of Kent to AD 800,* Woodbridge

Williams, T, 1993 *Public buildings in the south-west quarter of Roman London*, The Archaeology of Roman London Vol **3**, CBA Res Rep **88**, London

Willis, S, 2002 A date with the past: Late Bronze Age and Iron Age pottery chronology, in A Woodward and J D Hill (eds), *Prehistoric Britain: the ceramic basis,* Oxford, 4-21

Willson, J, 2002 The Street, Iwade, *Canterbury's Archaeology 1997-1998*, 23

Wilson, C, 1981 Burials within settlements in southern Britain during the pre-Roman Iron Age, *Bull Inst of Archaeol, Univ London* **18**, 127-69

Wilson, D R, 1973 Roman Britain in 1972, I. Sites Explored, *Britannia* **4**, 271-323

Winbolt, S E and Margary, I, 1933 Dry Hill Camp, Lingfield, *Surrey Archaeol Collect* **41**, 79-82

Witkin, A, 2006 Human remains from Bower Road, Kent, *HS1 Specialist Report Series*, in ADS 2006

Witkin, A and Boston, C, 2006 Iron Age and Roman human remains from Pepper Hill, Southfleet, Kent, *HS1 Specialist Report Series*, in ADS 2006

Witney, K P, 1976 *The Jutish Forest: a study of the*

Weald of Kent from 450 to 1380 AD, London
Woodburn, J, 1980 Hunter-gatherers today and reconstruction of the past, in A Gellner (ed.), *Soviet and Western Anthropology*, London, 95-117
Woodburn, J, 1982 Egalitarian societies, *Man* **17**, 431-51
Woodcock, A G, Kelly, D B and Cummins, W A, 1988 The petrological identification of stone implements from South East England, in T H McK Clough and W A Cummins (eds), *Stone Axe Studies: Vol 2. The petrology of prehistoric stone implements from the British Isles*, CBA Res Rep **67**, London, 21-34
Woodward, A, 1995 Vessel size and social identity in the Bronze Age of southern Britain, in I Kinnes and G Varndell (eds), *'Unbaked urns of rudely shape': essays on British and Irish pottery for Ian Longworth,* Oxford, 195-202
Woodward, A, 2000 *British Barrows: a matter of life and death,* Stroud
Woodward, A, 2002a Beads and beakers: heirlooms and relics in the British early Bronze Age, *Antiquity* **76**, 1040-47
Woodward, A, 2002b Inclusions, impressions and interpretations, in A Woodward and J D Hill (eds), *Prehistoric Britain: the ceramic basis*, Oxford, 106-18
Woodward, A, 2002c Sherds in space: pottery and the analysis of site organisation, in A Woodward and J D Hill (eds), *Prehistoric Britain: the ceramic basis*, Oxford, 62-74
Woodward, A, 2006 Neolithic and Bronze Age pottery, in Hewson 2006
Woodward, A and Woodward, P, 1996 The topography of some barrow cemeteries in Bronze Age Wessex, *Proc Prehist Soc* **62**, 275-91
Woodward, A, Hunter, J, Ixer, R, Maltby, M, Potts, P J, Webb, P C, Watson, J S and Jones, M C, 2005 Ritual in some Early Bronze Age gravegoods, *Archaeol J* **162**, 31-64
Woolf, G, 1998 *Becoming Roman. The origins of provincial civilization in Gaul*, Cambridge
Worley, F and Nicholson, R, 2006 Animal bone from Saltwood Tunnel, Kent (ARC SLT98, ARC SLT98C, ARC SLT99, ARC SFB99, ARC SFB01), *HS1 Specialist Report Series*, in ADS 2006
Worsfold, F H, 1943 A report on the Late Bronze Age site excavated at Minnis Bay, Birchington, Kent, 1938-40, *Proc Prehist Soc* **9**, 28-47
Worssam, B C, 1963 *Geology of the country around Maidstone*, London
Wymer, J J and Brown, N R, 1995 *Excavations at North Shoebury: settlement and economy in south-east Essex 1500BC-AD1500,* East Anglian Archaeology Rep No. **75**, Chelmsford
Wysocki, M, Griffiths, S, Hedges R E M, Higham, T, Fernandez-Jalvo, Y and Whittle, A, in prep. Coldrum: dating, dietary analysis and taphonomy of the human remains from a Medway megalithic monument
Yates, D T, 2007 *Land, Power and Prestige: Bronze Age field systems in Southern England,* Oxford
Yorke, B A E, 1983 Joint kingship in Kent, c. 560-785, *Archaeol Cantiana* **99**, 1-20
Yorke, B A E, 1990 *Kings and Kingdoms of Early Anglo-Saxon England*, London
Yorke, B A E, 1995 *Wessex in the Early Middle Ages*, London and New York
Young, C J, 1977 *The Roman pottery industry of the Oxford region*, Brit Archaeol Rep (Brit Ser) **43**, Oxford
Young, R J C and Humphrey, J, 1999 Flint use in England after the Bronze Age: time for a re-evaluation?, *Proc Prehist Soc* **64**, 231-42
Zell, M, 1994 *Industry in the countryside Wealden society in the sixteenth century*, Cambridge
Zimmerman, W H, 1979 Ein Hausgrundriß der Trichterbecherkultur von Flögeln, im Örten, Kreis Cuxhaven, in H Schirnig (ed.), *Großsteingräber in Niedersachsen*, Veröffentlichungen der urgeschichtlichen Sammlungen des Landesmuseums zu Hannover **24**, Hildesheim, 247-53

Index

Note all place names listed in index are located in Kent unless specified otherwise

High Speed 1 (HS1) is the first new railway to be built in Britain for over a century and is the UK's first high speed railway. The publication of this volume celebrates the immense scale and award-winning quality of the archaeological and historic building investigations that resulted from the construction of Section 1 of the rail link in Kent.

The project encompasses some truly exceptional individual discoveries, such as the Early Neolithic longhouse at White Horse Stone, one of only a handful known in Britain and the most thoroughly dated example. Extensive excavations at Thurnham Roman Villa and Pepper Hill Roman cemetery have contributed greatly to our understanding of Roman Kent, while the Anglo-Saxon cemeteries at Cuxton and Saltwood Tunnel are immensely important additions to the corpus of Kentish cemeteries. Perhaps the most important contribution of HS1 Section 1 lies in the extent to which a range of 'ordinary' rural sites have been exposed and investigated across a broad range of landscape zones. The sheer number and scale of sites studied within a consistent research framework has offered a unique opportunity to examine change and continuity in this long-inhabited corridor from the Thames Estuary to the Channel coast.

This book provides a synthetic overview and critical analysis of the HS1 Section 1 archaeological results by a group of leading regional and period experts, placing the investigations within the context of current frameworks of archaeological understanding at a regional, national and international scale.

Underlying this volume is a large body of digital site and specialist reports and data, which is available from the Archaeology Data Service website. ADS 2006 Collection: 335 doi:10.5284/1000230 http://ads.ahds.ac.uk/catalogue/projArch/ctrl.

Cover illustration of White Horse Stone Early Neolithic longhouse by Peter Lorimer

ISBN 987-0-9545970-8-5

9 780954 597085