EAST ANGLIAN ARCHAEOLOGY

To all who have worked on the West of Bedford projects.

Close to the Loop

Landscape and settlement evolution beside the Biddenham Loop, west of Bedford

by Mike Luke

with major contributions by
Sarah Bates, Dana Challinor, Holly Duncan,
John Giorgi, Mark Maltby, Sarah Percival,
Natasha Powers, James Rackham and Jackie Wells

other contributions by
Ben Barker, Jo Barker, Hilary Cool, John Crowther,
Gill Cruise, Corinne Duhig, Jane Evans, Jill Eyers,
Seren Griffiths, Peter Guest, Derek Hamilton,
Sarah Jones, Angela Lamb, Peter Northover,
Robert Scaife and Felicity Wild

and illustrations by
Joan Lightning, Cecily Marshall and Mike Trevarthen
with Maggie Foottit, David Ingham

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

Cover photograph
Aerial photograph taken in April 2008 showing the study area from the north with the Biddenham Loop in foreground (Albion Archaeology *copyright reserved*).

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Contents of the CD

The volume is accompanied by a CD including the following content.

Section 1
A detailed summary of previous archaeological investigations in the vicinity and a summary of the fieldwork methodology for the recent investigations. Copies of most of the grey literature reports produced by Albion/BCAS associated with these investigations and others referenced in the bibliography. In addition, a copy of Luke, M., 2008 *Life in the Loop* EAA 125 (pdf format).

Section 2
Full artefact, ecofact and environmental reports with tables and figures. Where relevant they include an addendum for the Sports Complex excavations (undertaken after the completion of specialist reports). They comprise:

- Animal bone, by Mark Maltby
- Ceramic building material and fired clay, by Jackie Wells
- Charcoal, by Dana Challinor
- Charred plant remains, by John Giorgi
- Copper knife-dagger from Beaker burial SG25032, by Peter Northover
- Coins, by Peter Guest
- Flint, by Sarah Bates
- Human bone from main investigations, by Natasha Powers
- Human bone from Sports Complex excavation, by Corinne Duhig
- Isotope composition of skeletal remains from beaker burial SG25032, by Angela Lamb and Jane Evans
- Loss on ignition and phosphate of selected deposits from Bedford Western Bypass, by John Crowther

- Loss on ignition and phosphate of selected deposits from Land West of Bedford, by John Crowther
- Other artefacts, by Holly Duncan
- Palaeo-environmental study of the deposits in two river palaeochannels on the flood plain of the River Great Ouse on the Biddenham Loop, by James Rackham *et al.*
- Palynological report of selected deposits from Bedford Western Bypass, by Gill Cruise
- Palynological report of selected deposits from Land West of Bedford, by Sarah Jones
- Pottery (Neolithic–early Bronze Age), by Sarah Percival
- Pottery (middle Bronze Age–modern), by Jackie Wells
- Radiocarbon dating and Bayesian modelling, by Derek Hamilton
- Samian, by Felicity Wild

Section 3
Detailed contextual hierarchy descriptions and plans of all Site Periods (whole study area, Biddenham Loop and Land west of Kempston)

Section 4
Radiocarbon data-sheets (for samples from the excavation and the palaeo-environmental study area)

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Overall
The funding for the vast majority of the archaeological investigation, including this publication, was provided by David Wilson Home (South Midlands) Ltd and Bedfordshire Highways. Anglian Water Services Ltd funded the work on the Bedford Water Main.

Albion Archaeology is grateful to David Wilson Home (South Midlands) Ltd for their support and assistance during the Land west of Bedford investigations. Our gratitude is extended to a large number of individuals within this organisation but in particular we would like to acknowledge the co-operation and support of Chris Hatfield, Guy Caswell, Gareth Davies, Ian Bennett and Steve Howett. The principal site contractor was PJ Construction; Dave Flanigan and Ashley Williams are owed thanks for their co-operation throughout the

Plate 0.1 Part of the Bedford Western Bypass team who worked on the excavations at Kempston Church End. (March 2006)

investigations and for the provision of earthmoving and welfare facilities. The input and support of David Wilson Homes' archaeological consultant, Simon Mortimer of CgMs Consulting, has proved invaluable throughout this project.

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Where archaeological investigations were undertaken concurrently with construction the co-operation of Mick Richardson (Clerk of Works) and Mark Hibbert (Carillion) is duly acknowledged. Malcolm Whitmore (Whitmore Plant) and his staff are owed thanks for the efficient and responsive provision of earthmoving equipment. The assistance and forbearance of the tenants of Bell Farm (Mr and Mrs Ridge) and Bury Farm (Mr and Mrs Moffat) is much appreciated.

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Plate 0.2 Part of the Bedford Western Bypass team who worked on the excavations at Biddenham Loop (January 2007)

Plate 0.3 Part of the Land West of Bedford (residential development) team who worked on the excavations at Biddenham Loop (February 2008)

Plate 0.4 Part of the Land West of Bedford (residential development) team who worked on the excavations at Biddenham Loop (February 2008)

University London), who attempted OSL dating, Gordon Cook (Scottish Universities Environmental Research Centre), who oversaw all radiocarbon determinations, Richard Macphail, who gave advice on deposits within the Bypass investigations, and Mark Noel of GeoQuest Associates (archaeomagnetic dating).

Site archaeologists

Most importantly, Albion Archaeology would like to acknowledge the large number of site archaeologists who undertook field artefact collection, excavation, recording and initial interpretation of features/deposits. Without them there would be no report. They are acknowledged here within the elements of each project to which they contributed.

The Bedford Western Bypass evaluation

- **Field artefact collection:** supervised by Christiane Meckseper and Gary Edmondson, fieldwork by Petra Adams, Ian Beswick, Rob Edwards, Craig Halsey, Joan Lightning, Jerry Stone and Tony Walsh.
- **Geophysical survey:** Geophysical Surveys of Bradford (GSB).
- **Trial excavation:** supervised by Rob Edwards, Matt Edgeworth, Christiane Meckseper and Mark Phillips,

Plate 0.5 Part of the Land West of Bedford (residential development) team who worked on the excavations at Biddenham Loop (September 2008)

excavation and recording by Ian Beswick, Craig Halsey, Joan Lightning and Tony Walsh.

The evaluation of the adjacent residential development

- **Field artefact collection:** supervised by Ian Beswick, fieldwork by David Ingham, Adam Lee, Chris Mallows and Chris Thatcher.
- **Earthwork survey:** Joan Lightning and Martin Edwards
- **Geophysical survey:** West Yorkshire Archaeology Service (WYAS)
- **Trial excavation:** supervised by Tracy Preece, excavation and recording by Laurence Coulter, Teresa Hawtin, Adam Lee, Chris Mallows, Helen Parslow, Mark Phillips, Julian Watters and Adrian Woolmer.

The Bedford Western Bypass detailed field artefact collection

- **Fieldwork team:** supervised by Ben Barker, fieldwork by Victoria Osborn, Linda O'Sullivan (Albion) Jerry Bond, Clare Davies, Dave Murdie (Wessex Archaeology staff) and Mercedes Planas (Souterrain Archaeological Services).

The adjacent residential development detailed field artefact collection

- **Fieldwork team:** supervised by Ben Barker, fieldwork by Kerry Ashworth, Liz Mordue, Adam Howard, Jerry Stone and Mercedes Planas (Souterrain Archaeological Services).

The Bedford Western Bypass open area excavations and 'strip and map' areas

- **Fieldwork team:** overseen by Ben Barker and different areas supervised by Lennard Anderson, Jo Barker, Ian Beswick and Matt Smith. Excavation and recording by Kerry Ashworth, Melanie Bell, Zoe Clarke, Anthony Clifton-Jones, Liz Mordue, George Demetri, Sian Ellis, Mick Garside, Lizzie Gill, Stuart Heath, Phil Henderson, Laura Hill, Adam Howard, Marcin Koziminski, Gary Manning, Jonathan Millward, Jeremy Mordue, James Newboult, Victoria Osborn, Lynda O'Sullivan, Kathy Pilkinton, Tim Sanderford, Gareth Shane, Jerry Stone, Chris Swain, Mark Winter, Duncan Walsh, Slawomir Utrata, Adam Williams and Adrian Woolmer.

The Bedford Western Bypass watching brief areas

- **Fieldwork team:** overseen by Ben Barker, with different areas supervised by Lennard Anderson, Richard Gregson and Mark Phillips. Excavation and recording by Kerry Ashworth, Anthony Clifton-Jones, Adam Howard, Annette Hughes, Marcin Koziminski, Adam Loeden, James Newboult, Anna Rebisz-Niziolek, Jerry Stone and Adam Williams.

The adjacent residential development open area excavations and 'strip and map' areas

- **Biddenham Loop:** overseen by Ben Barker, with the majority of the excavation areas supervised by Jo Barker, although Alison Bell, Richard Gregson and Adam Lodoen supervised smaller areas of short duration. Excavation and recording by Lennard Anderson, Kerry Ashworth, Alison Bell, Melanie Bell, Anthony Clifton-Jones, George Demetri, Richard Gregson, Marcin Koziminski, Adam Howard, Annette Hughes, Iain Leslie, Adam Lodoen, Gary Manning, Jeremy Mordue, Gyorgy Nemes, Kathy Pilkinton, Anna Rebisz-Niziolek, Gareth Shane, Catrina Summerfield-Hill, Wiebke Starke, Jerry Stone, Kirsty Tuthill, Slawomir Utrata, Jennifer White, Adam Williams and Adrian Woolmer.
- **Land west of Kempston:** overseen by Ben Barker, with the majority of the excavation areas around The Bury supervised by Victoria Osborn, although Jo Barker was responsible for the small areas to the south of the development. Excavation and recording by Kerry Ashworth, Melanie Bell, Annette Hughes, David Ingham, Jan Janulewicz, Anthony Clifton-Jones, Adam Lodoen, Gary Manning, Mark Phillips, Jeremy Mordue, Kirsty Tuthill, Slawomir Utrata and Adrian Woolmer.

The Bedford Water Main open areas and watching briefs

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In addition to site staff, metal detecting was also undertaken by James Pixley and surveying was undertaken by Mercedes Planas. All ecofact sample processing was undertaken or overseen by Sharon Gerber-Parfitt, assisted by Slawomir Utrata, under the management of Gary Edmondson.

Key Albion personnel

Ben and Jo Barker require special acknowledgment due to their unwavering hard work, dedication and support in all aspects of these projects. Two other members of staff at Albion require special acknowledgement for their work during fieldwork whereby finds were processed and information fed back into the excavation strategy: Jackie Wells who supervised all finds processing and initial identification; and Holly Duncan who undertook initial identification of non-ceramic artefacts. Both were involved in the assessment and have produced publication reports.

Post-fieldwork Assessment and Updated Project Design

The Assessment and Updated Project Design for Bedford Western Bypass was produced by Mike Luke (Project Manager) and Ben Barker (Project Officer), with contextual assessment undertaken by Ben Barker, Jo Barker, Matt Smith and Tracy Preece. The Assessment and Updated Project Design for Land west of Bedford was also produced by Mike Luke and Ben Barker with the majority of the contextual assessment undertaken by Jo Barker (Biddenham Loop) and Victoria Osborne (Land west of Kempston). The specialists who assessed the data also produced reports for this publication and their names are, therefore, not repeated here.

Analysis and publication

Wherever possible, the same specialists were used on the different projects within the study area and were used for both the assessment and analysis/publication. They are duly acknowledged as contributors within this publication

and their full specialist reports are presented on CD. The only significant change in personnel was occasioned by the retirement of Carol Allen, who was replaced by Sarah Percival.

A number of Albion Archaeology staff who were substantially involved in the analysis do not, owing to the nature of their work, have easily identifiable contributions to this publication. They include Joan Lightning (who undertook all the digital capture of excavation drawings and cropmarks) and Drew Shotliff (who provided endless support and advice). The latter also had the unenviable task of reading, commenting on and editing the entire publication.

Photographs

All the photographs published here are Albion Archaeology copyright reserved, except for Plates 4.1, 4.15, 4.16, 4.18, 4.21, 5.4, 5.13, 5.25, 5.45, 5.46, 5.50, 5.51, 5.52, 5.53, 6.8 and 6.10 (Aerial Close-Up Ltd) and Plate 5.21 (ArchaeoPhysica Ltd). Photographs taken from a helicopter were taken by Commission Air Ltd but are Albion Archaeology copyright.

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Artefact photographs were all taken by Adam Williams except those of Samian, which were taken by Priscilla Wild.

About this publication

Structure

The publication is divided into two elements:

1. **Monograph:** this volume presents the results within chronological chapters that review the evidence from the entire study area (rather than by Site Periods for each individual intervention). For example, Chapter 4 covers the creation of extensive field systems in the middle Bronze Age and follows them through to the middle Iron Age, when the fields were still in use. Each chapter starts with an introduction and discussion of the dating and environmental evidence. Individual Site Period plans are included on the CD.
2. **CD:** this contains detailed information on background and the fieldwork/post-fieldwork methodology (Section 1); specialist reports with illustrations and type series as appropriate (Section 2); detailed contextual hierarchy descriptions (Section 3); and radiocarbon data-sheets (Section 4).

The monograph contains a number of boxed 'highlights' within each chapter (see below).

Terminology and abbreviations

The study area comprises the land within the Bypass corridor, adjacent housing development (including the country park) and the Bedford Water Main. Its constituent land parcels are referred to as 'the Biddenham Loop', or just 'the Loop', to the north of the river Great Ouse, and 'Land west of Kempston' to the south of the river.

An understanding of the structural hierarchy is fundamental to an understanding of the terminology used in this publication. The main elements comprise Site Period (SP prefix), Site Landscape (SL prefix), Phases (written in full), Land use area number (L prefix) and Group number (G prefix). These are described in more detail below (see Chapter 1, Section IX).

Where pottery fabric types are relevant to the discussion they are usually described briefly with the relevant fabric code for ease of reference to the type series (CD Section 2; Wells 2014). All non-ceramic artefacts, including struck flint, are registered with a unique number within each of the three main projects. Therefore, for the purpose of the publication they are prefixed with F (for Flint) and OA (for Other Artefact), if they are discussed or illustrated within the flint report (CD Section 2; Bates 2014) or the other artefacts report (CD Section 2; Duncan 2014). Where the term RA (for registered artefact) is used it will refer to the number sequence within an individual project.

Finally, all measurements are metric.

Date of writing

It should be borne in mind that most of the specialist reports were completed in 2011 and that the first draft of the publication was issued in June 2012. However, a new excavation area, known as the Sports Complex, was investigated over the summer of 2012 (Albion 2012). Some of the discoveries within it were considered so significant that they warranted inclusion in this publication. Therefore, new specialist reports were produced (in the form of

addenda to the original reports) and selected parts of the main text and associated figures were updated.

Chronological periods and dates used in this publication

Chapter 2
Palaeolithic and Mesolithic – *c.*50000–4000 BC

Chapter 3
Early Neolithic (SP3) – *c.*4000–3000 BC
Later Neolithic (SP4) – *c.*3000–2600 BC
Early Bronze Age (SP5) – *c.*2600–1600 BC

Chapter 4
Middle Bronze Age (SP6) – *c.*1600–1000 BC
Late Bronze Age/early Iron Age (SP7) – *c.*1000–400 BC
Middle Iron Age (SP8) – *c.*400–100 BC

Chapter 5
Late Iron Age/early Romano-British (SP9) – *c.*100 BC–AD 100
Romano-British (SP10) – *c.*AD 100–400
Early Saxon (SP11) – *c.*AD 400–650

Chapter 6
Late Saxon/Saxo-Norman (SP12) – *c.*AD 850–1150
Medieval (SP13) – *c.*AD 1150–1500
Post-medieval (SP14) – *c.*AD 1500–1750
Modern (SP20) – *c.*AD 1750–1945

Boxed highlights
There are a number of boxed highlights within this publication. They focus on topics of particular interest or significance for which good images are available. The latter include a number of specially produced reconstruction drawings/watercolours. Although based on the archaeological evidence, these inevitably require a degree of artistic licence to make them meaningful. Some depict the landscape of the Biddenham Loop in different chronological periods and have been deliberately drawn from the same aerial viewpoint to allow easy comparison. As far as possible, the text in the boxed highlights has been written in plain English, free from archaeological terminology, in the hope that they will provide a quick 'way in' for readers who are less familiar with archaeological publications.

Radiocarbon determinations
The calibrated radiocarbon determinations cited in the text are usually expressed to a 95% level of confidence cal AD/BC and have been calculated according to Stuiver and Reimer 1986. The age estimates and results of Bayesian modelling are based on Hamilton (CD Section 2). Therefore, all dates given in this publication have been calculated using the internationally agreed calibration curve of Reimer *et al.* 2009 and the computer program OxCal v4.1 (Bronk Ramsey 1995; 1998; 2001; 2009). However, the majority of the data-sheets (CD Section 4) were created earlier on the basis of Reimer *et al.* 2004 and OxCal v3.10.

Other artefact catalogue
A catalogue is included within the Other Artefacts report (CD Section 2; Duncan). It is presented following the discussion of the artefacts and each entry is laid out in a standard format. The catalogue includes both illustrated and non-illustrated artefacts, with the figure numbers provided as appropriate.

* (illustrated) or + (photographed) OA 1 (Other Artefact catalogue no.); object type, material, and description; project phasing information SP (Site chronological period); SL (Site Landscape no.); P (Phase, only used for Romano-British SL155); L (Landuse area no.); G (Group no.) SG (Sub-group no. used only in the case of burials); Feature; Context; RA (Registered Artefact no.). OA Fig. (figure no.) or OA Pl. (plate no.)

Tables
Tables within each chapter are numbered in a unique sequence, *e.g.* tables in Chapter 6 (Phase 6) are numbered 6.1, 6.2, 6.3, *etc.* They have been used to provide detailed information in an easy-to-view manner. Where possible, tables showing similar information in different chapters have been standardised to allow quick and easy comparison.

Figures
Illustrations within each evidence chapter are numbered in a unique sequence, *e.g.* Chapter 3 illustrations are numbered Fig. 3.1, 3.2, 3.3, *etc.* Wherever possible, a hierarchy of figures linked to the interpretive hierarchy is used, so that each chapter has a 'standard' evolution of the landscape plan showing the location of settlements, burials, fields and so on. There are individual figures for each settlement, monument and burial. The Appendix contains individual Site Period plans for the entire study area, the Biddenham Loop and Land west of Kempston. The position of the river Great Ouse shown is that of its present course; the area of flood plain is as designated by the Environment Agency.

Artefact illustrations are presented with the relevant specialist reports (CD Section 2), with only a small selection within the boxed highlights in this volume. The illustration numbers for the different artefact types are prefixed as follows: pottery (P), fired clay (FC), flint (F) and other artefacts (OA).

See below for details of drawing conventions.

Drawing conventions

Plans
The plans in this volume are labelled only with those elements of the structural hierarchy (*e.g.* the SL or L or G numbers) that are actually referred to in the text. The large scale of the investigations means that the majority of the published plans are necessarily at a small scale. Most plans distinguish between excavated and unexcavated areas by the use of shade. Hachures and sections are shown on the larger-scale plans only where they can aid understanding (*e.g.* for ring-ditches, cess pits, sunken-featured buildings). Where relevant, earlier features are shown in a different colour.

Where possible, section drawings are included on the plans for ease of reference. They are greyed to help distinguish them from features shown on the plan. In general, section drawings on plans are not labelled in order to keep the figures uncluttered.

Sections
The majority of the section drawings are shown at a scale of 1:40 or 1:50. Different line types are used for 'cuts' and their fills. The upper limit of a drawn section is always the level to which the site was machined, even if the section was

located in the side of the excavation area. All sections are positioned in the horizontal plane, but no OD heights are given. They are usually either south- or west-facing only; if necessary, the original drawing has been mirrored. Section drawings are labelled only where it will aid understanding of the text. Accordingly, the majority of fills are not labelled because they are not specifically mentioned in the text.

Pottery
Standard drawing conventions have been used, with vessels usually shown at one-quarter size, although some large vessels are drawn at 1:8. An external view is shown on the right, with a section and internal view on the left. Wheel-thrown vessels are shown with solid sections, hand-made vessels and applied parts with hatched sections. Visible coils are indicated in the section. The pie diagram at the base of each illustration indicates the proportion of the vessel recovered. Omission of the pie diagram indicates illustration of all available sherds. Illustrated vessels are sequentially numbered with a prefix P (pottery) and are catalogued below each figure.

Fired clay
All fired clay illustrations are in numerical order, prefixed with FC (fired clay) and catalogued below each figure. They are drawn at one-quarter size.

Flint
All flint illustrations are presented in chronological order based on the Site Periods (SP), taking no account of residuality. They are in numerical order, prefixed with F (flint) and catalogued below each figure. They are drawn at actual size.

Other artefacts
All other artefact illustrations are in numerical order and prefixed with OA (other artefact). The catalogue is an integral part of the Other Artefact report, so is not repeated below each figure. They are drawn at a variety of scales.

Preface

This publication presents the results of large-scale archaeological investigations undertaken, in the main between 2005 and 2012, to the west of Bedford. These comprised two projects covering substantial areas (the Bedford Western Bypass and an adjacent residential development) and one extensive but narrow and linear project (Bedford Water Main). At their inception it was never foreseen that these projects would be subject to joint analysis and publication. However, this has allowed the development of a much wider chronological and spatial framework than would have been possible for any of the projects individually. The combined study area measured *c.*200ha, of which *c.*90ha was excavated. The remainder was subject to field artefact collection, geophysical survey, trenching and palaeo-environmental study of the flood plain. Several other significant archaeological investigations undertaken in the vicinity of the study area are referenced, where relevant, in this volume.

The majority of the work was undertaken within the Biddenham Loop, which is the local name for an area of land delineated by a large meander of the river Great Ouse to the south of the village of Biddenham (although since 2007 the Biddenham Loop has been part of the newly created Great Denham parish). Significant evidence was also found to the south of the river Great Ouse, to the west of Kempston (mainly within Kempston Rural parish). Prior to these investigations it was already known that the Biddenham Loop had, for millennia, been a focus of sustained human activity (Luke 2008). However, before the Bedford Western Bypass investigations the majority of Land west of Kempston, with the exception of the area around Kempston Church End, was thought to be largely devoid of such evidence, partly because of its clay geology.

The investigations have produced evidence for 6,000 years of landscape and settlement evolution. Perhaps the most striking result is the evidence for continuity, rather than discontinuity, in the development of the landscape. The act of defining chronological periods, while essential in describing past human society, does tend to accentuate discontinuity. This applies both to individual monuments — some on the Biddenham Loop played a major part in people's lives for many generations — and to the wider landscape itself. The Neolithic and Bronze Age monuments were incorporated into the middle Bronze Age field systems and some were still used for the burial of the dead. Continued use of these fields into the middle Iron Age and even the Romano-British period is clearly evidenced by the way in which later farmsteads were set up on their periphery. The positioning of the main early Iron Age pit alignment across the Biddenham Loop has elements of both discontinuity and continuity. It does 'cut' a number of ditched boundaries but does so at the corners of fields, so that over the majority of its course it crosses unenclosed land between two separate middle Bronze Age field systems. For the Roman–Saxon transition it is significant that the majority of the evidence for early Saxon settlement occurs in the vicinity of Romano-British settlements.

No settlements were present within the Biddenham Loop after the early Saxon period, although continuity from this period through to the present day was found near The Bury (Land west of Kempston) and from the late Saxon to the medieval period in the Ford End area of Bedford.

Summary

The vast majority of the evidence for the evolution of the landscape comes from the Biddenham Loop and, unless otherwise stated, this is the area described below. The early 4th millennium BC sees the first firm evidence (other than flint concentrations within the ploughsoil) for human activity — a sub-circular monument with two inhumations and, *c.*0.5km away, two small pits. This monument, and two similar ones, became the focus of later Neolithic and early Bronze Age ceremonial and burial activity. Alongside the construction of ring-ditches, twenty-five large pits or shafts were dug. The positioning of these features on the periphery of the monument/burial areas and the presence of the bones of unusual animal species, including wolf and aurochs, suggest that they were dug, used for offerings and deliberately backfilled as part of ceremonial events undertaken around the monuments. Perhaps the most stunning of the burials was that within the smallest ring-ditch. It was accompanied by a Beaker, flint arrowheads, a boar's tusk and a knife-dagger. The Neolithic/early Bronze Age settlements were always located on the periphery of the monument/burial areas, suggesting they were mutually exclusive. Most of the settlement evidence came from 117 small pits, both isolated and in clusters. It was difficult to determine whether they represent the locations of permanent settlements or areas which were returned to on a regular basis by fairly mobile populations. By contrast, there was little evidence for Neolithic/early Bronze Age activity — one possible ring-ditch and five small pits — on Land west of Kempston.

The middle Bronze Age saw major changes on the Biddenham Loop, with the open, monument-dominated landscape subdivided by fields and trackways. The two resultant field systems broadly coincided with two of the Neolithic/early Bronze Age monument clusters — perhaps they were created by people whose ancestors had built, and were buried in, the monuments. Although the change could be described as dramatic, some fields were probably created incrementally and individual monuments appear to have been incorporated within separate fields. Others were located on the margins of the fields, where they were built into the boundary. In contrast to the limited evidence for contemporary settlement, thirty-five middle Bronze Age human burials (inhumation and cremation) were identified. Some people were buried in field ditches while others, including nineteen in a cremation cemetery, were buried within or adjacent to the earlier monuments.

Five pit alignments were identified within the study area: three on the Biddenham Loop and two on Land west of Kempston. One of the pit alignments was constructed across the Biddenham Loop in the early Iron Age. Although it cut across some of the field ditches, it did so at the corners of fields, suggesting that they were still farmed. By the late Bronze Age, two settlements had been established to the north-west of the two field systems (but both lay beyond the study area). By the middle Iron Age, all the settlements were located between the field systems and the Great Ouse flood plain. These typically comprised a roundhouse, a cluster of storage pits and, occasionally, a small ditched enclosure. In contrast to the evidence on the Biddenham Loop, a few areas of possible late Bronze Age to middle Iron Age settlement were identified on Land west of Kempston, but no fields were found.

By the late Iron Age settlements on the Biddenham Loop and Land west of Kempston typically comprised ditched enclosures. Although they had all shifted from the sites occupied in the middle Iron Age they were in similar topographical locations and presumably still utilised the fields established in the middle Bronze Age. To the south of the Great Ouse one developed into an extensive Roman roadside settlement. It comprised a regular arrangement of rectangular enclosures with the domestic foci, as is typical, located closest to the road. The settlement was established next to a river crossing that had probably been in existence since at least the Iron Age.

The evidence for this settlement and its occupants provides an interesting contrast to the contemporary farmsteads in the vicinity. There is a suggestion that at least some of the inhabitants had served in the government or military. This may in part explain why they were living in buildings with stone foundations, were using cess pits and had access to a wider range of Roman goods than their counterparts in the more rural farmsteads. The roadside settlement contained at least two cemeteries and probably a number of temples, although these were all located outside the study area. A ritual complex was established in the late Iron Age on the Biddenham Loop away from any contemporary settlement. It comprised three small square buildings, interpreted as shrines; two were situated within the same ditched enclosure.

As elsewhere in lowland Roman Britain, cremation was the favoured burial rite in the early Roman period, but was later replaced by inhumation. There were a handful of burials on most of the farmsteads. Exceptionally, the farmstead at the southern end of the Biddenham Loop featured a cemetery of thirty-three graves. The 4th century also saw a *bustum* burial, a rite which is very rarely seen in Roman Britain, within the southern Biddenham Loop: the deceased was laid on a couch with the body of his dog.

Away from the settlements, while trackways and land boundaries were created, new fields were established only where none had previously existed — for example, to the south of Land west of Kempston. Intriguingly, the only extensive boundary ditch on the Biddenham Loop was parallel to the early Iron Age pit alignment, suggesting continuity of some kind. Four blocks of bedding trenches were established on Land west of Kempston to cultivate grapevines or fruit trees.

Early Saxon settlement within the Biddenham Loop was concentrated in the vicinity of one of the Roman farmsteads. Twenty sunken-featured buildings (SFB) were identified, mostly within one of the existing ditched enclosures. The spaces between the SFBs were probably occupied by post-built 'halls', although none was positively identified. The SFBs produced evidence for bone and antler working. More dispersed SFBs were found to the west of the Loop and may represent short-term or temporary settlement. Traces of activity within the roadside settlement to the south of the river suggest that this was not completely abandoned at the end of the Roman period.

Another area of early Saxon settlement was found to the south-west of the roadside settlement near the modern buildings known as The Bury. Although the settlement focus shifted over time, the land around The Bury was occupied throughout the Saxo-Norman, medieval and post-medieval periods, right up to the present day. During the medieval period it was probably part of a settlement that extended along a trackway to Kempston Green End. Despite long-standing speculation, there is nothing from the recent investigations to suggest that The Bury was ever a manorial site other than a possible fish pond and the construction in 1628 of a brick mansion (beyond the study area). From the middle Saxon period to the late 20th century the Biddenham Loop comprised arable fields associated with nearby settlements. However, another area of long-term settlement was located to the north-east in what became Ford End, Bedford. This was examined only within a narrow trench but there is evidence for late Saxon, medieval and post-medival settlement which may have extended as far as the Great Ouse.

Résumé

La plupart des vestiges de l'évolution du paysage vient de la Biddenham Loop qui, sauf indication contraire, est décrit dans les paragraphes suivants. C'est au début du 4 millénaire avant Jésus-Christ qu'apparaissent les premiers vestiges tangibles d'une activité humaine, en dehors des concentrations de silex dans les terres de labour. Il s'agit en l'occurrence d'un monument sous-circulaire comprenant deux inhumations et deux petites fosses situées à environ 500 mètres. Ce monument ainsi que deux autres semblables devint le centre d'activités funéraires et cérémonielles à la fin du néolithique et au début de l'âge du bronze. En plus de la construction de fossés circulaires, vingt cinq fosses ou puits de grande taille furent creusés. La disposition de ces éléments à la périphérie de la zone des monuments et des inhumations ainsi que la présence d'os d'espèces animales rares, y compris des loups et des aurochs, permettent d'émettre l'hypothèse suivante : ils auraient été creusés et utilisés pour des offrandes avant d'être sciemment comblés dans le cadre des cérémonies entreprises autour de ces monuments. La plus surprenante de ces inhumations se trouve sans doute dans le plus petit des fossés circulaires. Celui-ci contenait également un gobelet Beaker, des têtes de flèche en silex, une défense de sanglier et un couteau dague. Les implantations du néolithique et du début de l'âge du bronze se trouvaient toujours à la périphérie des zones des monuments et des inhumations, ce qui signifie qu'elles s'excluaient mutuellement. La plupart des vestiges des implantations proviennent de 117 petites fosses qui étaient isolées ou groupées. Il est difficile de déterminer s'il s'agissait d'implantations permanentes ou de lieux qui étaient régulièrement fréquentés par des populations assez mobiles. Par contraste, il existe peu de vestiges d'une activité au néolithique et au début de l'âge du bronze dans un endroit situé à l'ouest de Kempston, à l'exception, peut-être, d'un fossé circulaire et de cinq petites fosses.

À l'âge du bronze moyen, la Biddenham Loop a connu des changements importants qui ont pris la forme d'un paysage ouvert, dominé par des monuments et divisés en champs et en chaussées. Il en est résulté deux systèmes de champs qui coïncidaient en gros avec deux des groupes de monuments du néolithique et du début de l'âge du bronze. Ces systèmes furent peut-être créés par des individus dont les ancêtres avaient construit les monuments dans lesquels ils furent enterrés. Même si l'on peut qualifier ces changements de spectaculaires, certains des champs ont probablement été créés progressivement et les différents monuments ont été intégrés dans des champs distincts. D'autres monuments ont été repérés à la limite des champs où ils ont été construits. Alors qu'il existe peu de vestiges d'implantations de la même époque, on a pu identifier trente-cinq sépultures humaines de l'âge du bronze moyen (inhumation et crémation). Certains individus furent enterrés dans des fossés situés dans des champs tandis que d'autres furent inhumés à l'intérieur ou à côté des monuments antérieurs. Parmi ces derniers, dix-neuf se trouvaient dans un cimetière de crémation.

Cinq alignements de fosses furent identifiés dans la zone d'étude : trois se trouvaient à la Biddenham Loop et deux dans un endroit à l'ouest de Kempston. L'un des alignements de fosses fut construit à la Biddenham Loop au début de l'âge du fer. Celui-ci coupait bien certains des fossés des champs, mais, comme cela s'est produit aux coins des champs, on peut supposer que ces derniers étaient encore cultivés. À la fin de l'âge du bronze, deux implantations s'étaient formées au nord-ouest des deux systèmes de champs, mais elles sortaient toutefois de la zone d'étude. Pendant l'âge du fer moyen, toutes les implantations se trouvaient entre les systèmes de champs et la plaine d'inondation de la Great Ouse. Elles comprenaient en général une rotonde, un groupe de fosses de stockage et, parfois, une petite enceinte à fossés. Par contraste avec les vestiges de la Biddenham Loop, on a identifié dans un endroit à l'ouest de Kempston plusieurs zones d'une implantation possible datant de la fin de l'âge du bronze jusqu'au milieu de l'âge du fer, mais aucun champ n'a été trouvé.

À la fin de l'âge du fer, les implantations situées à la Biddenham Loop et à l'ouest de Kempston comprenaient en général des enceintes à fossés. Même si elles provenaient toutes de sites occupés au milieu de l'âge du fer, ces implantations se trouvaient dans des lieux semblables sur le plan topographique et il est probable qu'on continuait d'y cultiver les champs datant du milieu de l'âge du bronze. Au sud de la Great Ouse, l'une d'entre elles est devenue une grande implantation romaine en bord de route. Elle comprenait un ensemble régulier d'enceintes rectangulaires dotées de foyers domestiques qui se trouvaient en général au plus près de la route. L'implantation était située près d'un lieu de franchissement du fleuve qui existait probablement depuis au moins l'âge du fer. Les vestiges de cette implantation et de ses occupants présentent un intéressant contraste avec les fermes de la même époque situées à proximité. On pourrait émettre l'hypothèse qu'au moins

certains de ses habitants avaient exercé des responsabilités politiques ou militaires. Cela expliquerait en partie pourquoi ils vivaient dans des bâtiments dotés de fondations en pierre, utilisaient des fosses d'aisances et avaient accès à une plus grande variété de biens romains que leurs semblables habitant dans des zones plus rurales. L'implantation en bord de route contenait au moins deux cimetières et probablement plusieurs temples, même s'ils étaient tous situés hors de la zone d'étude. Une zone de rituels s'est établie à la fin de l'âge du fer sur la Biddenham Loop loin de toute implantation de la même époque. Elle comprenait trois petits bâtiments carrés que l'on peut considérer comme des temples, deux d'entre eux étant situés dans la même enceinte à fossés.

Comme dans d'autres lieux de la Grande-Bretagne romaine des basses terres, la crémation, qui était le rite funéraire de prédilection au début de la période romaine, fut remplacée ultérieurement par l'inhumation. On a trouvé quelques tombes dans la plupart des fermes. Quant à la ferme située au sud de la Biddenham Loop, elle contenait un cimetière de trente-trois tombes, ce qui est exceptionnel. On a également découvert dans la partie sud de la Biddenham Loop une tombe à incinération (bustum) datant du quatrième siècle, ce qui est extrêmement rare dans la Grande-Bretagne romaine. Le défunt était allongé sur une couche avec les restes de son chien.

À l'écart des implantations et alors que l'on créait des chaussées et des limites de terres, de nouveaux champs furent délimités uniquement dans des lieux où ils n'existaient pas auparavant, par exemple, dans un endroit au sud-ouest de Kempston. Curieusement, le seul grand fossé qui marquait une limite à la Biddenham Loop était parallèle à l'alignement des fosses du début de l'âge du fer, ce qui suggère l'existence d'une forme de continuité.

Quatre ensembles de tranchées de repiquage ont été creusées à un endroit à l'ouest de Kempston pour cultiver de la vigne et des arbres fruitiers.

Des implantations de la première période saxonne étaient concentrées dans la Biddenham Loop à proximité de l'une des fermes romaines. Vingt bâtiments à structure enfouie (sunken-featured buildings) ont été identifiés, principalement dans l'une des enceintes à fossés. Les espaces entre ces bâtiments ont été probablement occupés par des « halls » construits sur des poteaux, même si aucun d'entre eux n'a été identifié avec certitude. Des vestiges d'os et du travail de ramures ont été découverts dans les bâtiments à structure enfouie. On a également trouvé des bâtiments de ce type à l'ouest de la Biddenham Loop ; ils étaient plus dispersés et correspondaient peut-être à des implantations à court terme ou provisoires. Des traces d'activités dans l'implantation en bord de route au sud du fleuve suggèrent qu'elle n'était pas complètement abandonnée à la fin de la période romaine.

Une autre zone d'implantation de la première période saxonne a été découverte au sud-ouest de l'implantation en bord de route près des bâtiments modernes connus sous le nom de Bury. Même si le centre de l'implantation s'est déplacé au fil du temps, les terres autour du Bury étaient occupées pendant toutes les périodes saxon-normande, médiévale et post-médiévale jusqu'à aujourd'hui. Pendant la période médiévale, ces terres faisaient probablement partie d'une implantation qui s'est étendue le long d'une chaussée vers Kempston Green End. En dépit de spéculations de longue date, les investigations récentes ont seulement permis de conclure à la construction en 1628 d'un manoir en brique (au-delà de la zone d'étude) et à l'existence possible d'un étang à poissons, mais en dehors de ces deux éléments, rien n'indique qu'un domaine seigneurial se trouvait au Bury. Depuis la période saxonne moyenne jusqu'à la fin du vingtième siècle, la Biddenham Loop comprenait des terres arables qui étaient associées aux implantations voisines. Toutefois, une autre zone d'implantations à long terme se trouvait au nord-est dans un lieu qui est devenu Ford End (à Bedford). Ces éléments n'ont été observés que dans une étroite tranchée mais il existe des preuves d'implantations des périodes saxonne tardive, médiévale et post-médiévale qui se sont peut-être étendues jusqu'à la Great Ouse.

(Traduction: Didier Don)

Zusammenfassung

Der Großteil der Belege für die Evolution der im Folgenden beschriebenen Landschaft stammt, sofern nicht anders angegeben, aus dem Biddenham Loop. Mit Ausnahme der Silexkonzentrationen im Ackerboden datieren die ersten konkreten Hinweise auf eine menschliche Präsenz – eine kreisförmige Anlage mit zwei Körpergräbern und zwei kleine Gruben etwa 500 Meter entfernt – aus dem frühen 4. Jahrtausend v. Chr. Diese und zwei ähnliche Denkmalanlagen standen im Mittelpunkt ritueller Aktivitäten und Beisetzungen am Ende der Jungsteinzeit und zu Beginn der Bronzezeit. Außer einigen Kreisgräben wurden fünfundzwanzig große Gruben oder Schächte angelegt. Ihre Lage am Rand der Denkmal-/Grabanlagen und die Anwesenheit von Knochen ungewöhnlicher Tierarten wie Wolf und Auerochse lassen darauf schließen, dass sie für Rituale, die rund um die Denkmalstätten abgehalten wurden, ausgehoben, mit Beigaben versehen und absichtlich verfüllt wurden. Das vielleicht ungewöhnlichste Grab fand sich im kleinsten Kreisgraben. Es enthielt einen Becher, Silexpfeilspitzen, einen Wildschweinhauer und ein Dolchmesser. Die jungsteinzeitlichen/frühbronzezeitlichen Siedlungen lagen zu allen Zeiten am Rand der Denkmal-/Grabanlagen, was darauf hindeutet, dass beide klar voneinander abgegrenzt waren. Die meisten Siedlungsbefunde stammten aus 117 kleinen Gruben, die sowohl einzeln als auch in Gruppen angelegt waren. Es lässt sich nur schwer bestimmen, ob es sich um dauerhafte Siedlungen handelte oder um Bereiche, die regelmäßig von umherwandernden Gruppen aufgesucht wurden. Im Gegensatz dazu gab es auf einem Landstück westlich von Kempston außer einem potenziellen Kreisgraben und fünf kleinen Gruben kaum Belege für jungsteinzeitliche/frühbronzezeitliche Aktivitäten.

In der mittleren Bronzezeit kam es im Biddenham Loop zu größeren Veränderungen, bei denen die offene, von

Denkmalen dominierte Landschaft durch Felder und Wege unterteilt wurde. Dadurch entstanden zwei Flursysteme, die sich ungefähr mit zwei der Denkmalanlagen aus der Jungsteinzeit/Frühbronzezeit deckten; vielleicht wurden sie von Menschen angelegt, deren Vorfahren die Stätten errichtet hatten und dort begraben waren. Obwohl die Veränderungen als dramatisch angesehen werden können, wurden einige der Felder wahrscheinlich stufenweise angelegt, wobei einzelne Denkmale, wie es scheint, in unterschiedliche Felder einbezogen wurden. Andere lagen am Rand der Felder, wo sie einen Teil der Abgrenzung bildeten. Obwohl es nur begrenzte Siedlungsbefunde für die mittlere Bronzezeit gab, wurden fünfunddreißig Gräber (Erd- und Brandbestattungen) aus dieser Zeit entdeckt. Einige Leichen wurden in Feldgräben bestattet, andere – darunter neunzehn in einem Brandgräberfeld – innerhalb oder direkt neben den früheren Denkmalstätten.

In dem untersuchten Gebiet wurden fünf Grubenreihen ausgemacht: drei im Biddenham Loop und zwei auf einem Landstück westlich von Kempston. Eine der Grubenreihen wurde zu Beginn der Eisenzeit quer über den Biddenham Loop angelegt. Sie verlief über einige Feldgräben hinweg, allerdings immer nur am Rand der Felder, was vermuten lässt, dass diese weiterhin landwirtschaftlich genutzt wurden. Noch vor dem Ende der Bronzezeit wurden zwei Siedlungen nordwestlich der beiden Flursysteme errichtet (beide lagen außerhalb des untersuchten Gebiets). In der mittleren Eisenzeit befanden sich sämtliche Siedlungen zwischen den Flursystemen und der Flussaue der Great Ouse. Sie bestanden typischerweise aus einem Rundhaus, einer Gruppe von Vorratsgruben und in einigen Fällen einer kleinen Grabenanlage. Anders als im Gebiet des Biddenham Loop wurden auf dem Landstück westlich von Kempston potenzielle Siedlungsbereiche aus der späten Bronzezeit bis mittleren Eisenzeit entdeckt, allerdings gab es hier keine Hinweise auf Felder.

In der späten Eisenzeit waren die Siedlungen im Gebiet des Biddenham Loop und westlich von Kempston zumeist durch Grabenanlagen gesichert. Obwohl sich alle Siedlungen von den mitteleisenzeitlichen Siedlungsorten weg verlagert hatten, war ihre topografische Lage ähnlich; die in der mittleren Bronzezeit angelegten Felder wurden zudem vermutlich weiter genutzt. Eine der Siedlungen südlich des Flusses Great Ouse entwickelte sich zu einer ausgedehnten römischen Straßensiedlung. Sie bestand aus regelmäßig angeordneten rechteckigen Einfriedungen, wobei der Wohnbereich wie üblich direkt an der Straße lag. Die Siedlung wurde neben einem Flussübergang erbaut, der wahrscheinlich mindestens auf die Eisenzeit zurückging.

Die Befunde zu dieser Siedlung und zu ihren Bewohnern bilden einen interessanten Kontrast zu den im Umland gelegenen Gehöften aus derselben Zeit. Es bestehen Hinweise darauf, dass wenigstens ein Teil der Bewohner für die Regierung oder das Militär tätig war. Dies könnte teilweise erklären, warum sie in Gebäuden mit Steinfundamenten wohnten, Kloaken verwendeten und Zugang zu einem breiteren Spektrum an römischen Waren hatten als die Bewohner der ländlichen Gehöfte. Zu der Straßensiedlung gehörten mindestens zwei Gräberfelder und vermutlich mehrere Tempel, die jedoch alle außerhalb des untersuchten Gebiets lagen. In der späten Eisenzeit wurde im Biddenham Loop in einiger Entfernung zu den bewohnten Siedlungen ein Ritualkomplex errichtet, der drei kleine quadratische Bauwerke – zwei davon innerhalb derselben Grabenanlage – aufwies, die als Schreine interpretiert wurden.

Ebenso wie andernorts im Tiefland des römischen Britanniens wurden zu Beginn der Römerzeit Brandbestattungen bevorzugt, die später durch Erdbestattungen abgelöst wurden. Auf den meisten Gehöften fand sich eine Handvoll Gräber. Eine Ausnahme bildete das Gehöft am Südende des Biddenham Loop, das ein Gräberfeld mit dreiunddreißig Grabstätten umfasste. Im 4. Jahrhundert fand zudem innerhalb des Biddenham Loop eine Bustumbestattung statt – ein Ritus, der im römischen Britannien nur sehr selten zu finden ist –, bei der der Verstorbene zusammen mit seinem Hund aufgebahrt wurde.

Obwohl außerhalb der Siedlungen Wege und Flurgrenzen entstanden, wurden nur in zuvor landwirtschaftlich ungenutzten Bereichen neue Felder angelegt, etwa im Süden des Landstücks westlich von Kempston. Erstaunlicherweise verlief der einzige ausgedehnte Grenzgraben im Biddenham Loop parallel zu der Grubenreihe aus der frühen Eisenzeit, was auf eine gewisse Kontinuität hindeutet. Auf dem Landstück westlich von Kempston wurden Pflanzgruben in vier Blöcken für Weinstöcke oder Obstbäume ausgehoben.

Der Kern der frühangelsächsischen Besiedlung im Biddenham Loop lag unweit eines der römischen Gehöfte. Es wurden zwanzig Grubenhäuser identifiziert, die meisten innerhalb einer der bestehenden Grabenanlagen. Zwischen den Grubenhäusern standen wahrscheinlich auf Pfosten erbaute »Hallen«, obwohl dies nicht mit Sicherheit zu bestimmen war. In den Grubenhäusern fanden sich Befunde für Knochen- und Geweiharbeiten. Westlich des Loop standen etwas weiter verstreute Grubenhäuser, die möglicherweise nur kurzzeitig oder vorübergehend bewohnt waren. Die Straßensiedlung südlich des Flusses enthielt Spuren von Aktivitäten, so dass angenommen wird, dass die Siedlung am Ende der römischen Periode nicht ganz aufgegeben wurde.

Eine weitere frühangelsächsische Siedlung wurde südwestlich der Straßensiedlung in der Nähe der neuzeitlichen Häuser entdeckt, die als The Bury bezeichnet werden. Obwohl sich der Siedlungsschwerpunkt im Laufe der Zeit verlagerte, war das Gebiet rund um The Bury während der gesamten angelsächsisch-normannischen, mittelalterlichen und nachmittelalterlichen Zeit bis heute besiedelt. Im Mittelalter war der Bereich wahrscheinlich Teil einer Siedlung, die sich an einem Weg bis nach Kempston Green End entlangzog. Die jüngsten Untersuchungen förderten außer einem Fischteich und einem großen Backsteingebäude aus dem Jahr 1628 (außerhalb des untersuchten Gebiets) keinerlei Hinweise darauf zutage, dass The Bury zu irgendeiner Zeit ein herrschaftliches Anwesen darstellte, auch wenn es seit langem Spekulationen darüber gab. Von der Mitte der angelsächsischen Zeit bis zum späten 20. Jahrhundert bestand der Biddenham Loop aus Ackerland, das zu den umliegenden Ortschaften gehörte. Ein weiteres lange besiedeltes Gebiet, das lediglich mittels eines schmalen Sondageschnitts untersucht wurde, lag nordöstlich davon im Bereich des heutigen Ford End in Bedford. Dabei fanden sich Belege für eine spätangelsächsische, mittelalterliche und nachmittelalterliche Besiedlung, die sich womöglich bis zur Great Ouse erstreckte.

(Übersetzung: Gerlinde Krug)

Streszczenie

W niniejszej publikacji przedstawiono zmiany w krajobrazie archeologicznym w zakolu rzeki Great Ouse w okolicach *Biddenham* (*the Biddenham Loop*). Zdecydowana większość ustaleń dokonanych na podstawie materiału archeologicznego dotyczy wspomnianego obszaru. Najstarsze dowody na działalność człowieka na tym terenie (poza koncentracjami krzemieni znalezionych w glebie ornej) pochodzą z początku IV tysiąclecia p.n.e. – z okrągłego obiektu archeologicznego zawierającego dwa pochówki szkieletowe oraz z dwóch niewielkich jam, oddalonych o około 500m od pochówków. Owe pochówki, w połączeniu z dwoma podobnymi monumentami, stanowiły miejsca, wokół których koncentrowała się działalność ceremonialna i grzebalna w okresie późnego neolitu oraz wczesnej epoki brązu. Z tego okresu pochodzą obiekty w formie kolistej fosy (*ring ditch*), stanowiące pozostałości kurhanów pierścieniowych oraz dwadzieścia pięć głębokich jam / szybów. Jamy zlokalizowane były w pewnej odległości od miejsc pochówków ludzkich, ponadto ich wypełniska zawierały depozyty kości nietypowych gatunków zwierząt, jak wilk czy tur. Owe szyby mogły pełnić ważną rolę w trakcie obrzędów rytualnych, które odbywały się wokół monumentów funeralnych. Najbardziej okazały pochówek został odkryty w obrębie pozostałości najmniejszego z kurhanów. Szkieletowi towarzyszyły bogate dary grobowe w postaci pucharu dzwonowatego, krzemiennych grotów strzał, kła dzika oraz sztyletu. Osadnictwo w późnym neolicie i wczesnej epoce brązu rozwijało się na obrzeżach centrów rytualnych, co sugeruje, iż te dwa rodzaje działalności człowieka były od siebie wyraźnie odseparowane. Materiał archeologiczny z osady z tego okresu pochodził ze 117 niewielkich jam, które występowały w grupach, bądź pojedynczo. Nie jest przy tym jasne, czy owe jamy stanowią dowód na stałe osadnictwo, czy też był to obszar zasiedlany okresowo. Po drugiej stronie rzeki, na zachód od *Kempston*, wykopaliska dostarczyły bardzo niewiele materiału z tego okresu. Jedyne obiekty archeologiczne datowane na okres neolitu i wczesnej epoki brązu to pozostałości domniemanego kurhanu oraz pięć niewielkich jam.

W środkowej epoce brązu krajobraz 'zakola *Biddenham*' uległ znacznej zmianie, pojawiły się trakty oraz pola uprawne poprzedzielane rowami. Pojawiły się dwa osobne układy pól, które jednakowoż respektowały istnienie dwóch grup obiektów ceremonialnych z poprzedniego horyzontu chronologicznego. Może to wskazywać, że istniała tu pewnego rodzaju ciągłość osadnicza oraz, być może, pokoleniowa. Krajobraz uległ wprawdzie bardzo głębokiemu przekształceniu, jednak zmiany prawdopodobnie odbywały się stopniowo i poszczególne monumenty były włączane w obręb nowo powstających pól, bądź pozostawały na ich obrzeżach. Aktywność osadnicza w środkowej epoce brązu pozostawiła niewielką ilość materiału archeologicznego, w przeciwieństwie do aktywności funeralnej – trzydzieści pięć pochówków (szkieletowych i ciałopalnych) zostało przyporządkowanych do tego okresu. Zmarli byli składani w rowach oraz w pobliżu bądź w obrębie już istniejących kurhanów — włącznie z dziewiętnastoma pochówkami ciałopalnymi stanowiącymi osobne cmentarzysko.

Na badanym obszarze odsłonięto dużą liczbę jam, które utworzyły pięć długich rzędów: trzy w obrębie zakola *Biddenham* oraz dwa na zachód od *Kempston*. Jeden z tych rzędów ciągnął się w poprzek całego zakola rzeki a wykopanie jam datowane jest na wczesną epokę żelaza. Wspomniany rząd jam jest stratygraficznie późniejszy niż niektóre z rowów okalających pola z epoki brązu. Przecinanie się tych obiektów kulturowych miało jednak miejsce tylko w narożnikach pól, co może wskazywać, że większość tego obszaru była wciąż uprawiana w początkowej fazie epoki żelaza. W późnej epoce brązu wykształciły się dwie osady – obie położone na północny zachód od pól, poza obszarem zainteresowania niniejszej publikacji. We wczesnej i środkowej epoce żelaza osadnictwo przesunęło się w kierunku południowym i rozkwitło na obszarze pomiędzy istniejącym układem pól a terasą zalewową rzeki Great Ouse. W skład typowej osady wchodził dom na planie koła (*roundhouse*), któremu towarzyszyło kilka jam zasobowych oraz, czasami, niewielka zagroda. Na zachód od Kempston odkryto kilka obszarów osadnictwa z okresu późnej epoki brązu do środkowej epoki żelaza, natomiast nie towarzyszyły im pola uprawne.

W późnej epoce żelaza wykształcił się typ osady w postaci zagrody otoczonej rowem. Osadnictwo w tym okresie przesunęło się w inne miejsca w obrębie badanego obszaru. Temu przesunięciu towarzyszyła jednak ta sama idea lokowania osad w podobnych warunkach topograficznych, natomiast układ pól uprawnych prawdopodobnie pozostał w dużej mierze niezmieniony od środkowej epoki brązu. Jedna z osad, położona na południe od *Great Ouse*, rozwinęła się w okresie rzymskim w dużą osadę przydrożną – 'ulicówkę'. Na osadę składał się szereg prostokątnych zagród z domostwem położonym przy drodze. Osada powstała przy brodzie przez rzekę, który istniał tu prawdopodobnie co najmniej od epoki żelaza.

Materiał źródłowy pozyskany z tej osady znacznie odróżnia się od materiału z pobliskich osad i gospodarstw datowanych na ten sam okres. Na osadzie znaleziono pozostałości budynków o kamiennej podmurówce, doły kloaczne oraz wyraźnie bogatszy inwentarz zabytków rzymskich, co sugeruje, iż osadę zamieszkiwali ludzie o wyższym statusie społecznym. Na tej podstawie przypuszcza się, że przynajmniej część mieszkańców osady mogła służyć w rzymskiej armii bądź administracji. Osadzie rzymskiej towarzyszyły przynajmniej dwa cmentarzyska oraz kilka kaplic, które położone były poza obszarem będącym przedmiotem zainteresowania niniejszej publikacji. W późnej epoce żelaza powstał kompleks obrzędowo-rytualny w zakolu *Biddenham*, jednak był on położony w pewnej odległości od ówczesnych osad. Na kompleks składały się trzy małe budynki na planie kwadratu – dwa z nich były ponadto otoczone rowem. Pozostałości tych budynków są interpretowane jako kaplice.

Dominującym rodzajem pochówku zmarłych na nizinnych terenach Brytanii we wczesnym okresie rzymskim było ciałopalenie, które dopiero w późniejszym

okresie ustąpiło miejsca pochówkom szkieletowym. Kremacje znaleziono w obrębie większości gospodarstw czy też osad z tego okresu. W obrębie osady położonej na południowym krańcu cypla *Biddenham* zidentyfikowano cmentarzysko składające się z aż trzydziestu trzech grobów. W zakolu rzeki *Great Ouse* znaleziono ponadto pochówek typu *bustum*, datowany na IV w. n.e. Zawierał on szczątki ludzkie ułożone na swego rodzaju 'ławie' bądź 'łożu', a wśród darów grobowych znajdował się szkielet psa. Pochówki typu *bustum* stanowią bardzo rzadkie znalezisko na terenie Brytanii okresu rzymskiego.

W okresie rzymskim wykształcił się nowy układ pól ornych, traktów oraz rowów granicznych. Co ciekawe, nowe pola powstały w miejscach stanowiących uprzednio pustkę osadniczą, np. na południe od *Kempston*. Nowo powstałe rowy graniczne najwyraźniej respektowały istniejącą już siatkę pól oraz, do pewnego stopnia, długi rząd jam datowanych na wczesną epokę żelaza. Pojawił się ponadto nowy rodzaj obiektu kulturowego, tzw. rowy wegetacyjne lub 'ściółkowe' (*bedding trenches*). Na zachód od Kempston powstały cztery pola tego typu i służyły prawdopodobnie do uprawy winnej latorośli lub drzew owocowych.

W pobliżu jednej z farm z okresu rzymskiego na cyplu *Biddenham* powstała wczesno-anglosaska osada. W trakcie prac odkryto dwadzieścia półziemianek, spośród których większość znajdowała się w obrębie uprzednio istniejącej zagrody. Budynki te reprezentowały typ półziemianki z podwieszoną podłogą (*sunken-featured building – 'SFB'*). Na terenie osady nie uchwycono natomiast pozostałości podłużnych budynków naziemnych o konstrukcji słupowej. Z półziemianek uzyskano materiał źródłowy świadczący o działalności produkcyjnej związanej z przeróbką poroża oraz kości zwierząt. Na zachód od zakola *Biddenham* odkryto kilka luźno rozproszonych półziemianek, prawdopodobnie stanowiących fragment tymczasowej osady. Anglosaskie zabytki znaleziono także w rzymskiej osadzie przydrożnej na południe od rzeki, co świadczy, że nie została ona całkowicie porzucona wraz z końcem okresu rzymskiego.

Wczesno-anglosaska osada powstała również na południowy zachód od przydrożnej osady rzymskiej, w pobliżu nowożytnych zabudowań znanych jako *The Bury*. Z krótszymi lub dłuższymi przerwami teren wokół *The Bury* pozostał zasiedlony aż do czasów nowożytnych. W średniowieczu prawdopodobnie stanowił część osady leżącej wzdłuż traktu, prowadzącego do *Kempston Green End*. W toku prowadzonych prac wykopaliskowych nie uzyskano żadnego materiału źródłowego, pozwalającego stwierdzić, by *The Bury* stanowił część anglosaskiego bądź średniowiecznego dworu.

Od okresu środkowo-anglosaskiego aż po koniec XX wieku działalność człowieka na cyplu Biddenham ograniczała się do uprawy pól ornych. Na północny wschód od cypla, w okolicy obecnej ulicy *Ford End* w *Bedford* zidentyfikowano kolejny obszar zasiedlenia. Uzyskany materiał archeologiczny pozwala datować tę osadę na czas od późnego okresu anglosaskiego po nowożytność. Na obecnym etapie badań nie można stwierdzić, jaki był zasięg tej osady ani czy rozpościerała się aż do rzeki *Great Ouse*.

(Tłumaczenie: Marcin Koziminski)

1. Introduction

I. Location and spatial referencing

(Fig. 1.1, Plate 1.1)

The study area comprises *c.*200ha of land immediately west of the outskirts of Bedford. The river Great Ouse and its flood plain divides it into two main land parcels, which are extensively used as key locational reference points in both the text and the figures.

The Biddenham Loop is the local name given to an area of land delineated by a large meander of the river Great Ouse to the south of the village of Biddenham, centred on TL 021484. It is bounded to the west, south and east by the river and to the north by housing and a golf course (part of the earlier Bovis development). The north-east corner abuts housing within the Ford End (or Queens Park) area of Bedford. The modern housing development within the Loop is now known as Great Denham.

Land west of Kempston lies to the south of the river and to the west of Kempston, centred on TL 018467. To the south it is bounded by the A421, which has been upgraded to a dual carriageway since the investigations reported on here. In the main the physical boundary on the west side of the study area is the Bedford Western Bypass. The major reference points used within this publication are the roads known as Cemetery Road, Ridge Road and the A421, together with the group of buildings known as The Bury (to the north) and the Marsh Leys Business Park (to the south). Finally, the modern villages of Kempston Box End, Church End and Green End are all referenced, especially in Chapter 6 (late Saxon to modern).

II. Topography and geology

(Figs 1.1 and 1.2, front cover)

The majority of the Biddenham Loop, in the northern part of the study area, is flat, but there is a slope nearer the river down towards the flood plain. It mostly lies at *c.*30–33m OD; the 30m contour line is shown on some figures. Its highest point, at 41m OD, lies to the north-east and is known locally as Honey Hill. The flood plain lies at approximately 28m OD; the slope down to it is steep to the west and east, but much gentler to the south.

On the opposite side of the flood plain, in the part of the study area known as Land west of Kempston, the land rises to 40m OD by The Bury. From there, it twice drops southwards into shallow valleys containing tributaries of the river Great Ouse, situated south and north of Ridge Road. It rises again to 40m OD near Bell Farm before dropping to 30m OD on the edge of the Marston Vale and the flood plain associated with the Elstow Brook.

The soil cover over the river terrace gravel is primarily moderately stony, fine argillic brown earths, with gravelly subsoils of the Efford 1 soil association (King 1969; Hodgson 1983). In addition, calcareous clayey soils

Plate 1.1 View of the majority of the study area north of Ridge Road, from the south-west (April 2008). At this time the Bedford Western Bypass was under construction and archaeological investigations were underway on the Biddenham Loop

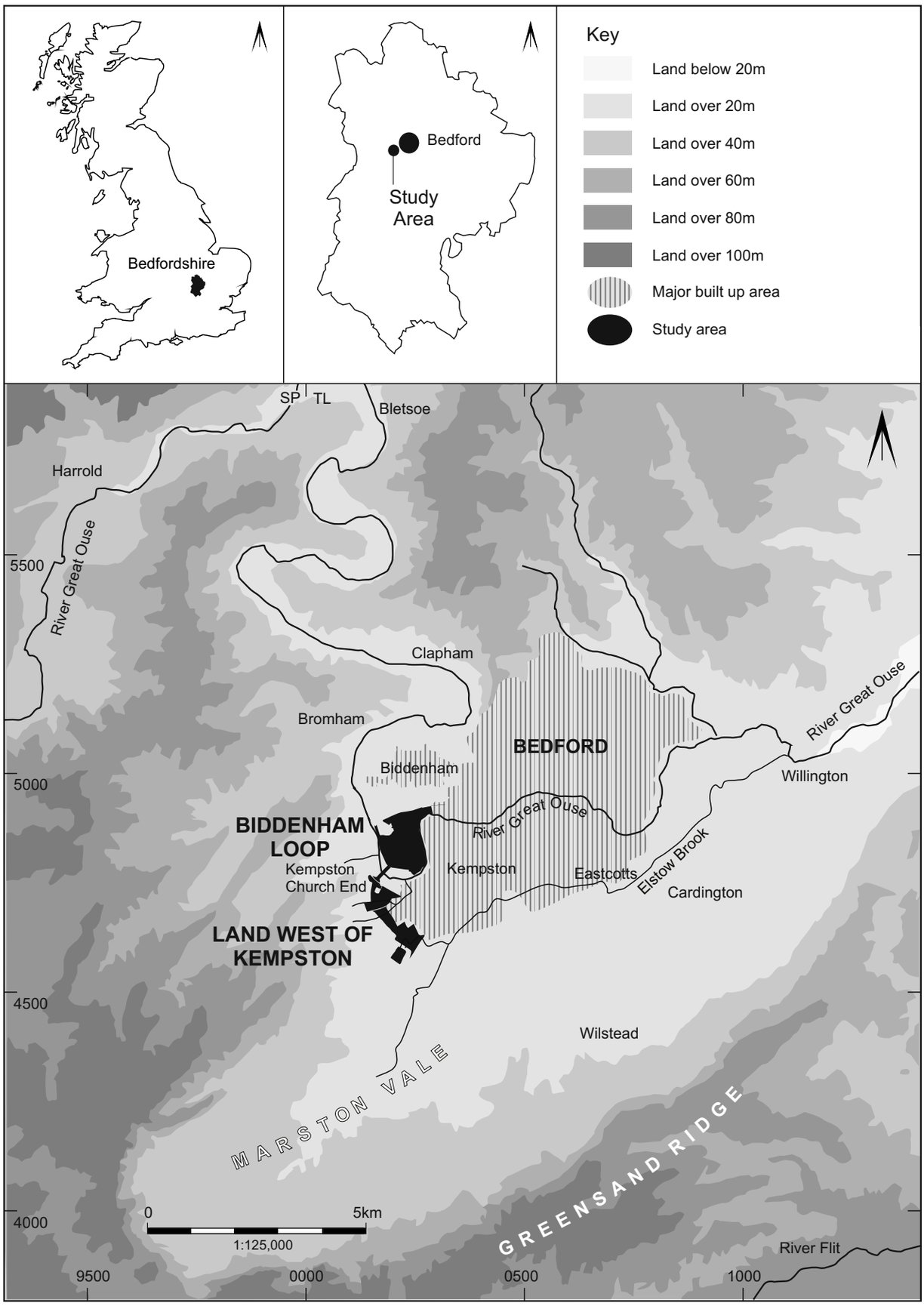


Fig. 1.1 Location of the study area and topography of the area. Scale 1:125,000

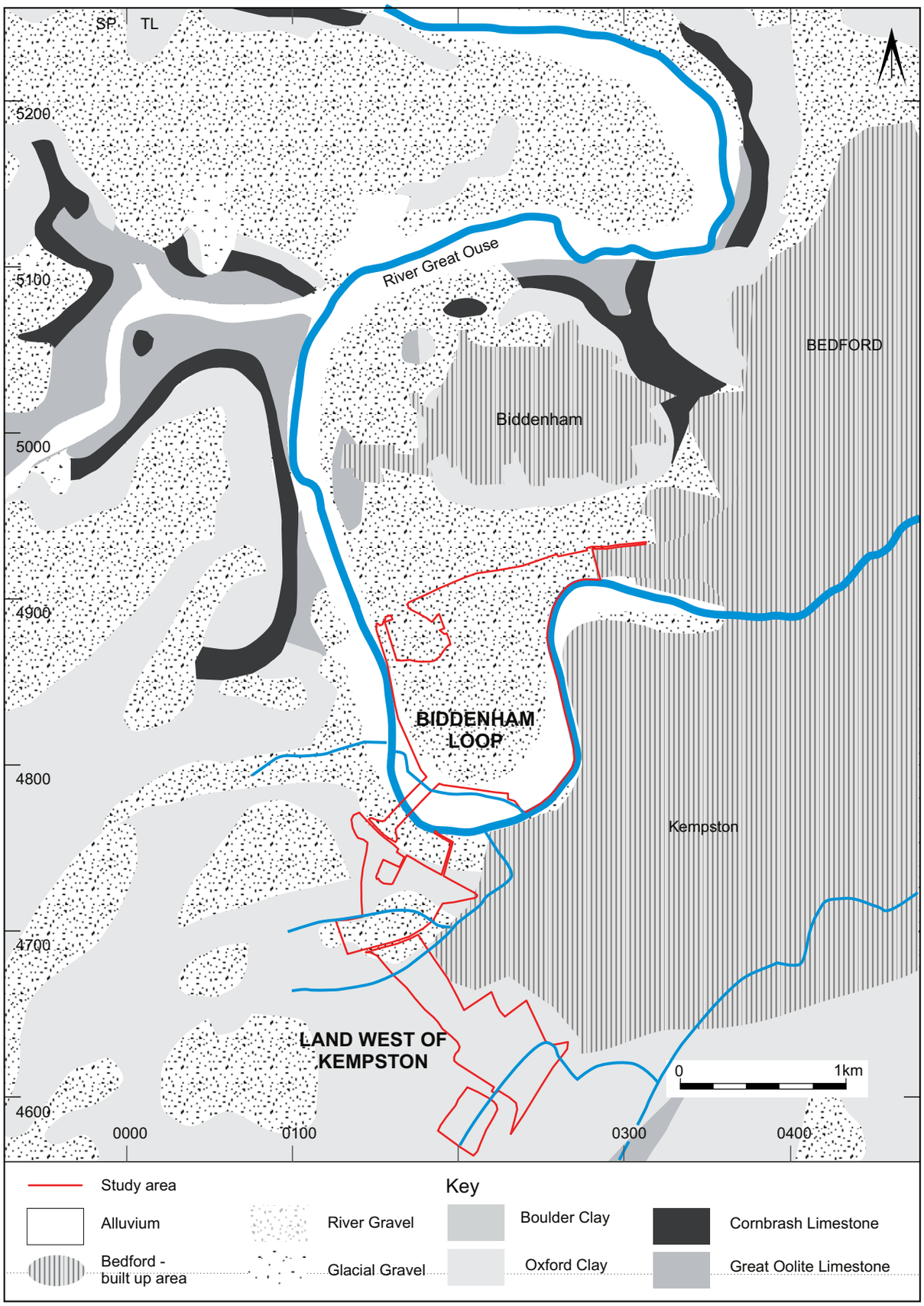


Fig. 1.2 Location of the study area and geology of the area. Not to standard scale

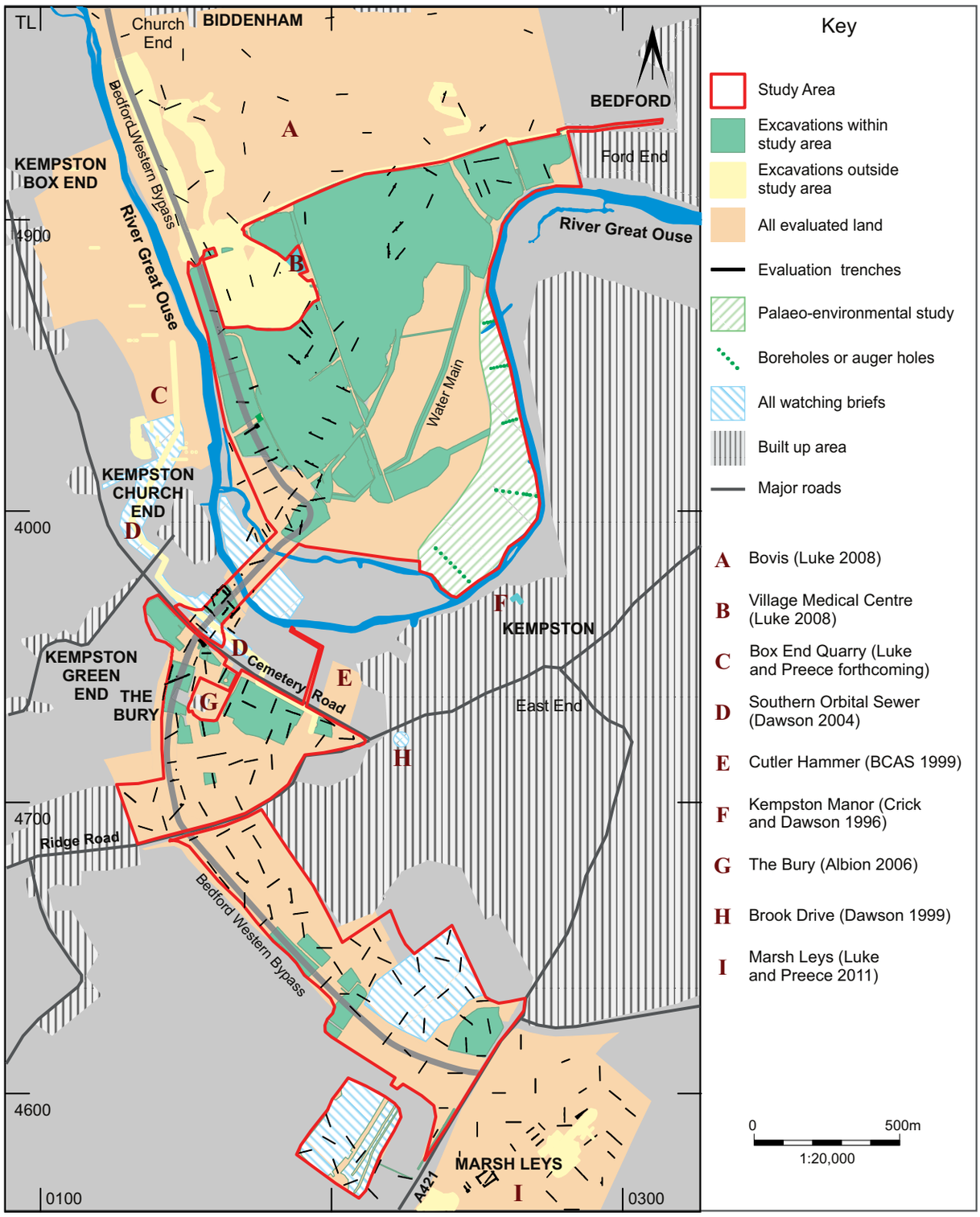


Fig. 1.3 Different types of archaeological investigation within and adjacent to the study area. Scale 1:5000

of the Mead Association occur over areas of alluvium (Hodgson 1983). In contrast, Land west of Kempston is typified by Evesham soils, which are clayey.

The drift geology (Fig. 1.2) within the Biddenham Loop predominantly comprises river gravels and sands, into which the majority of the archaeological features were dug. Alluvial clays occur within the flood plain and some colluvial deposits were identified on the adjacent sloping ground.

The solid geology of the area is limestone (Biddenham Loop) and Oxford Clay (Land west of Kempston), which is overlain by river gravels and alluvium in the

valleys. Occasional outcrops of white Oolitic Limestone and brown, occasionally sandy, Cornbrash Limestone, sometimes separated by Blisworth Clay, occur on the Biddenham Loop (King 1969, 4). Limestone was observed at *c.*0.4m to the west and south of the Loop and at *c.*1.5m in the centre of the Loop.

III. Background to the investigations

Planning permission

Prior to planning applications for a Bypass and adjacent housing development to the west of Bedford, archaeological evaluations were undertaken on the advice of the County Archaeological Officer (CAO) of the (now defunct) Bedfordshire County Council. The evaluations comprised non-intrusive and intrusive works and are detailed in Tables 1.1 and 1.2, along with others undertaken in the vicinity of the study area. Further details are available within the individual evaluation reports. Planning permission was granted with conditions or section 106 agreements requiring the implementation of a programme of archaeological investigation as a consequence of development, in line with local plan policy and the guidelines in the Department of the Environment's Planning Policy Guidance Note 16: Archaeology and Planning (PPG 16).

Key organisations

The key organisations involved in the projects are briefly mentioned below. While Albion's involvement in these projects has been constant, there have inevitably, given the length of time involved, been a number of changes to other organisations. These are outlined below to help explain the different clients and consultants that will have been mentioned over the years in unpublished reports, published summaries and public talks. All, of course, are listed in the acknowledgements.

- **Bypass:** initially the road was designed by engineers from Bedfordshire County Council, who commissioned several stages of archaeological evaluation. In 2000 the engineering role, which was still overseen by the County Council, was transferred to Babtie, whose in-house archeological consultant designed a mitigation strategy, liaised with the CAO and undertook a tender to determine which archaeological organisation would undertake the archaeological mitigation. At the end of 2005 Amey took over the engineering role for the County Council from Babtie. They engaged archaeological consultants from Scott Wilson, who oversaw the completion of the mitigation fieldwork and the subsequent post-excavation analysis/publication. In 2009 Bedfordshire County Council ceased to exist and was replaced by Bedford Borough Council. They continued to use Amey and therefore an archaeological consultant from Scott Wilson has overseen this project to completion.
- **Adjacent residential development:** the initial development designs and the archaeological evaluations were commissioned by a consortium of landowners via their planning consultants Woods Hardwick. The majority of the evaluated land was subsequently sold to David Wilson Homes (South Midlands) Ltd. The latter engaged an archaeological consultant from CgMs Consulting Ltd who designed a mitigation strategy, liaised with the CAO and undertook a tender to determine which archaeological organisation would undertake the archaeological mitigation.
- **Bedford Water Main:** as a statutory undertaker Anglian Water Services did not require planning permission for this work but, in line with their internal policies, they commissioned archaeological investigations compatible with those undertaken on the adjacent developments.

IV. Summary of archaeological investigations within the study area and vicinity

(Fig. 1.3)

This publication presents the results of the large-scale investigations associated with the Bedford Western Bypass, the adjacent residential development and the Bedford Water Main — collectively referred to as the study area. These works were undertaken in the main between 2005 and 2012.

It has long been recognised that the Biddenham Loop and land around Kempston contain significant prehistoric and Roman remains (Woodward 1978 and Simco 1984, 107–8 respectively). Accordingly, over the last twenty years, there have been numerous archaeological investigations occasioned by a variety of development proposals. Most of these have been undertaken by Albion Archaeology, formerly Bedfordshire County Archaeology Service (BCAS).

Many archaeological sites in the vicinity of the study area have produced significant results and, where relevant, these are referenced in this volume. The most important are: the Bovis Homes development on the Biddenham Loop (Luke 2008); the Southern Orbital Sewer near Kempston Church End (Dawson 2004); and the Marsh Leys development to the south (Luke and Preece 2011).

Tables 1.1–1.4 summarise the different archaeological investigations mentioned in this volume undertaken within the study area and in its vicinity over the last twenty years. A summary is also included on the publication CD (Section 1).

V. Different types of archaeological fieldwork undertaken in the study area

(Fig. 1.3)

The overall results of all fieldwork, both evaluation and mitigation, are presented in this volume. It is worth briefly describing the archaeological methods to provide an insight into the way in which the archaeological evidence was recovered.

Detailed field artefact collection

(Fig 1.4)

Eight flint concentrations containing late Mesolithic/early Neolithic material and fourteen concentrations containing late Neolithic/early Bronze Age material were identified during the Bovis evaluation (Bates 2008a, 75 and 80). These were investigated by trial excavation and open area excavation within the Bovis development but no corresponding sub-surface features were identified

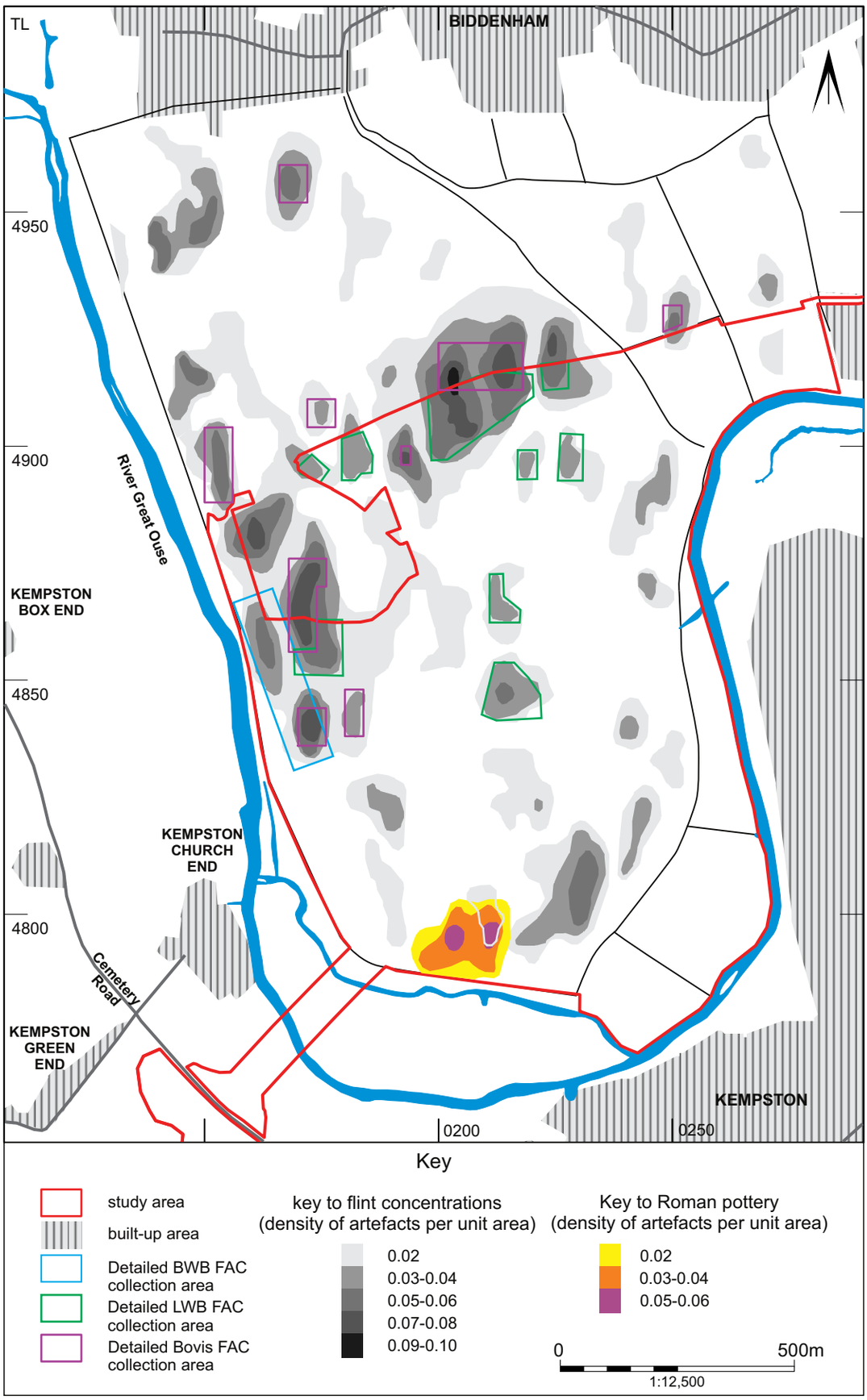


Fig. 1.4 Flint and Roman pottery concentrations on the Biddenham Loop. Scale 1:12,500

BOX 1: Scale and nature of the archaeological investigations

Part of the Bypass excavations on the Biddenham Loop. The river Great Ouse and Kempston are to the right (west) and the Bovis, and subsequent David Wilson Homes excavations to the left (west)

Part of the David Wilson Homes excavations within the Biddenham Loop. The river Great Ouse is to the right of the photograph, with the golf course that was constructed within the Bovis development to the north. A number of Neolithic and early Bronze Age monuments are visible (within the fenced-off areas). The scale of the investigations is indicated by the yellow mechanical excavators; the small yellow dots next to them are archaeologists.

This publication presents the results of the large-scale archaeological investigations associated with the Bedford Western Bypass and the adjacent David Wilson Homes residential development — collectively referred to as the West of Bedford study area. This includes both the parcel of land known as the Biddenham Loop and a swathe of land on the other side of the river Great Ouse known as Land west of Kempston. It comprises 200ha, of which 90ha has been excavated.

While these investigations were not planned as a single project, it became clear during the work on the David Wilson Homes development that joint analysis and publication with the Bypass would provide an excellent opportunity to present the results of the archaeological investigation of a significant swathe of the Bedfordshire countryside. This would allow the results of both projects to be examined in a wider chronological framework and spatial setting than could be achieved by either of them individually.

The study area and its vicinity contain a wealth of significant archaeological remains, some of which have been examined in advance of development. Where relevant, these are referenced in this volume. The most important are the Bovis Homes development on the Biddenham Loop (Luke 2008); the Southern Orbital Sewer near Kempston Church End (Dawson 2004); and the Marsh Leys development to the south (Luke and Preece 2011).

(Luke 2008, 31). Given that the ploughsoil concentrations might have represented the only evidence for this period, more detailed flint artefact collection was undertaken over the 'cores' of the flint concentrations as part of the Bypass (Albion 2009) and adjacent residential development (Albion 2008b) mitigation strategy, as it had been for the Bovis investigations (Luke 2008, 8–9).

Open area excavation
(Figs 1.5, 1.6 and 1.7)
On the Biddenham Loop, open area excavation within the Bypass was restricted to areas where evaluation had demonstrated the existence of significant archaeological features. In the main, these areas extended over the full width of the road corridor (which was sufficiently wide to allow for later dualling). As a result, *c.*75% of the road corridor was investigated (Plate 1.2) but, even then, significant features were found on the edge of the excavation area. Partly as a consequence of this and the growing realisation that the Biddenham Loop contained significant dispersed archaeological features, including burials, that could not be located by anything other than large-scale open area excavation, it was decided that this would be undertaken over the entire area of adjacent residential development and associated infrastructure (Fig. 1.5, Plate 1.3). The main exceptions were land designated for public open space and a country park — effectively the flood plain. There were also areas of unexcavated land adjacent to hedges which were to be retained within the development, under the main public footpath and in small patches situated between the edge of the residential development and a major service routeway which runs along the edge of the flood plain. A 3km length of the Bedford Water Main starting in the Ford End area of Bedford (Plate 1.4) passed through the Biddenham Loop and, except where excavation had already taken place as

Survey type	*Area*	*Development*	*Extent*	*Results*	*Reference*
Field artefact collection	BL	Bovis housing	216ha	Palaeolithic handaxes 43 artefact concentrations (mostly struck flint of late Mesolithic/early Neolithic and late Neolithic/early Bronze Age date)	BCAS 1991, Luke 2008
Geophysical survey	BL	Bovis housing	44ha	Large number of pit- and ditch-type anomalies of Bronze Age, Iron Age, Roman and medieval date	GSB 1994, Luke 2008
Field artefact collection	LWK	Bypass	15.6ha	Although struck flint, Roman and medieval pottery were recovered, the only concentrations were of pottery to the west of The Bury	BCAS 1997 and 1998
Field artefact collection	LWK	DWH housing	15ha		Albion 2003
Geophysical survey	LWK	Bypass	5.5ha	A small number of pit-type and ditch-type anomalies were located, but the only significant concentrations were between Cemetery Road and the River Great Ouse, and to the west of The Bury	GSB 1997 and 1998
Geophysical survey	LWK	DWH housing	4.6ha		WYAS 2003
Geophysical survey	LWK	Cutler Hammer	1.8ha	Possible ring-ditches, trackways and enclosures	WYAS 1999
Geophysical survey	LWK	The Bury	0.7ha	Anomalies associated with the post-medieval settlement	Stratascan 2006

LWK = Land west of Kempston; BL = Biddenham Loop; DWH = David Wilson Homes

Table 1.1 Non-intrusive evaluation survey undertaken within and adjacent to the study area

Area	*Development*	*Nb*	*Results*	*Reference*
BL	Bovis housing	56	Confirmed the existence of sub-surface features that correlated with geophysical anomalies and cropmarks, along with areas apparently devoid of features	Wessex Archaeology 1995
BL	Bypass	18	Sub-surface features concentrated near known Roman site on the periphery of the road corridor	BCAS 1997
BL	DWH housing	22	By this time it had generally been accepted that the Biddenham Loop was peppered with small Neolithic and early Bronze Age pits, which were too dispersed to be located by trenching. The accuracy of the geophysical survey in locating sub-surface archaeological features had also been confirmed, so that the trenches were primarily designed to test cropmark anomalies of uncertain status	Albion 2004
LWK	Bypass	39	Two hot spots located: dense Roman features between Cemetery Road and River Great Ouse, possible Roman and medieval near The Bury	BCAS 1997 and 1999b
LWK	Cutler Hammer	10	Bronze Age ring-ditches, late Iron Age/Romano-British enclosures and possible Saxon settlement	BCAS 1999a
LWK	DWH Housing	62	Although a number of these trenches tested artefact clusters and geophysical anomalies, the majority were designed to provide even coverage of the area. Only a small number of concentrations of sub-surface features were identified	Albion 2004

BL = Biddenham Loop; LWK = Land west of Kempston; DWH = David Wilson Homes

Table 1.2 Intrusive evaluation surveys undertaken within and adjacent to the study area

part of the residential development, it was subject to open area excavation.

On Land west of Kempston open area excavation on both the Bypass and the adjacent residential development took place where evaluation had demonstrated the presence of significant archaeological features. These areas were located in the vicinity of The Bury (Fig. 1.6, Plate 1.5) and adjacent to the A421 (Fig. 1.7). The extent of the Bypass open areas was fixed in advance and could not be changed when it was found that archaeological remains continued outside the excavation area but still within the road corridor (Fig. 1.7). The route of the Bedford Water Main passed through the Kempston Church End Roman settlement. However, the pipe was directionally drilled beneath it from the Biddenham Loop to a point *c.*30m east of Cemetery Road where the construction of the Southern Orbital Sewer in the early 1990s was likely to have removed any archaeological features. To the west of Cemetery Road a 35m length was subject to open area excavation. No archaeological work was carried out on the remainder, as it lay close to an excavation area which had proved to be blank (Fig. 1.6).

Strip and map

On the Bypass and the adjacent residential development 'strip and map' investigations were undertaken in areas which had moderate archaeological potential, but where evaluation had either been inconclusive or had not been undertaken. Areas were stripped of overburden under archaeological control well in advance of construction work. They were then rapidly mapped and any archaeological remains characterised by sample excavation. Once a budget had been agreed, these areas were investigated as if they were open area excavations. As the same investigation strategy was used, these two types of mitigation are not differentiated on the figures in this volume.

Development	*Type*	*Description*	*Reference*
Bovis housing	FAC	Undertaken in early 1996 over nine flint concentrations totalling *c.*6.1ha	Luke 2008, 8–9
Bovis housing	EXC	Undertaken in 1996–7 totalling *c.*18ha	Luke 2008
Bovis housing	PHOTO	Undertaken as part of the Bovis post-excavation analysis; all available aerial photographs were re-examined	Luke 2008, 13
Bovis housing	GEOPHYS	*c.*2ha undertaken in March 1999 as part of the Bovis post-excavation analysis in two areas to clarify the extent and nature of settlements which were to be preserved *in situ* within the Golf Course.	Luke 2008, 13; GSB 1999
Bypass	FAC	Undertaken in 2005 over two flint concentrations totalling *c.*2ha	Albion 2009, 23
Medical Centre	EXC	Undertaken in 2004 over *c.*0.35ha	Luke 2008, 288–92
Bypass	EXC	Undertaken in 2006 and 2007 over *c.*9ha	Albion 2009
DWH housing	FAC	Undertaken in 2007 over a further nine flint concentrations totalling *c.*7ha	Albion 2008a
DWH housing	EXC	Undertaken between October 2007 and October 2008 over *c.*60ha	Albion 2007a, b and c; Albion 2008 a, c and e; Albion 2010a
DWH housing	PALEO	A palaeo-environmental study was undertaken in the flood plain owned by DWH as part of the post-excavation analysis	Rackham 2009
AWS	EXC	A *c.*550m length was investigated in September 2008	Albion 2008d
DWH country park	GEOPHYS	*c.*5.4ha undertaken in March 2011 as part of the Bypass post-excavation analysis to clarify the extent and nature of a Romano-British farmstead partially investigated within the road corridor	ArchaeoPhysica 2011
AWS	EXC	An additional 2km length was investigated during 2010	Albion 2011a
DWH housing	EXC	Additional areas were investigated in 2011 and 2012. The most significant of which was *c.*1.8ha for a Sports Complex	Albion 2012

DWH = David Wilson Homes; AWS = Anglian Water Services; FAC = Field artefact collection; EXC = Excavation; Geophy = Geophysical survey

Table 1.3 Mitigation investigations undertaken within and adjacent to the Biddenham Loop

Development	*Type*	*Description*	*Reference*
AWS	WB & EXCA	*c.*0.7ha were subject to open area excavation in 1991 and 1992 within a larger, but intermittent, watching brief undertaken to the east of Cemetery Road in the vicinity of Kempston Church End	Dawson 2004, 38–66
Indep	WB	Undertaken in 1991 on the foundation trenches for an extension to 6 Brook Drive, Kempston	Dawson 1999
Indep.	EXCA	Undertaken in 1994 on the footprint of new buildings	Crick and Dawson 1996
Indep.	SALVAGE	*c.*0.5ha were subject to salvage investigation in 2004 after the discovery of human remains during quarry operations at Box End Quarry which had no archaeological condition attached to the planning permission	Luke and Preece forthcoming a
Bypass	EXCA	*c.*7.5ha were subject to investigation in 2005 (Areas 9, 10 and 11) and in 2006 (Areas 5, 6, 7 and 8)	Albion 2009a
Indep.	EXCA	*c.*8ha were investigated in 2000 and 2001 at Marsh Leys adjacent to the southern limit of the study area	Luke and Preece 2011
DWH housing	EXCA	*c.*6ha were investigated between October 2007 and October 2008. These were mainly located in the vicinity of The Bury, but smaller areas were undertaken to the south of the study area	Albion 2007a and c; Albion 2008a, c and e; Albion 2010a
DWH housing	EXCA	A 4.5m-wide pipe trench between Cemetery Road and the River Great Ouse near Cutler Hammer Sportsground was investigated in 2009, in advance of pipe laying	Albion 2010a, 27
Bypass	GEOPHYS	*c.*6.2ha undertaken in May 2011 as part of the Bypass post-excavation analysis in three areas to clarify the extent and nature of settlements which were to be preserved *in situ*. One was to the south of the Biddenham Loop and the others were south of Kempston Church End	ArchaeoPhysica 2011
AWS	WB and EXCA	Investigations were undertaken in late 2010 and June 2011 adjacent to Cemetery Road. The pipe was directionally drilled to the east of Cemetery Road under most of the River Great Ouse flood plain, including the known Roman settlement in this area, and to the west of Cemetery Road over a shorter length under the Bypass. A watching brief was undertaken on the machine pits and associated narrow drainage trenches. Immediately to the west of Cemetery Road a *c.*35m length was subject to excavation immediately in advance of pipe laying.	Albion 2011a

AWS = Anglian Water Service; DWH = David Wilson Homes; Indep. = Independent developer; WB = watching brief; EXCA = Excavation; GEOPHYS = Geophysical survey

Table 1.4 Mitigation investigations undertaken within and adjacent to land west of Kempston

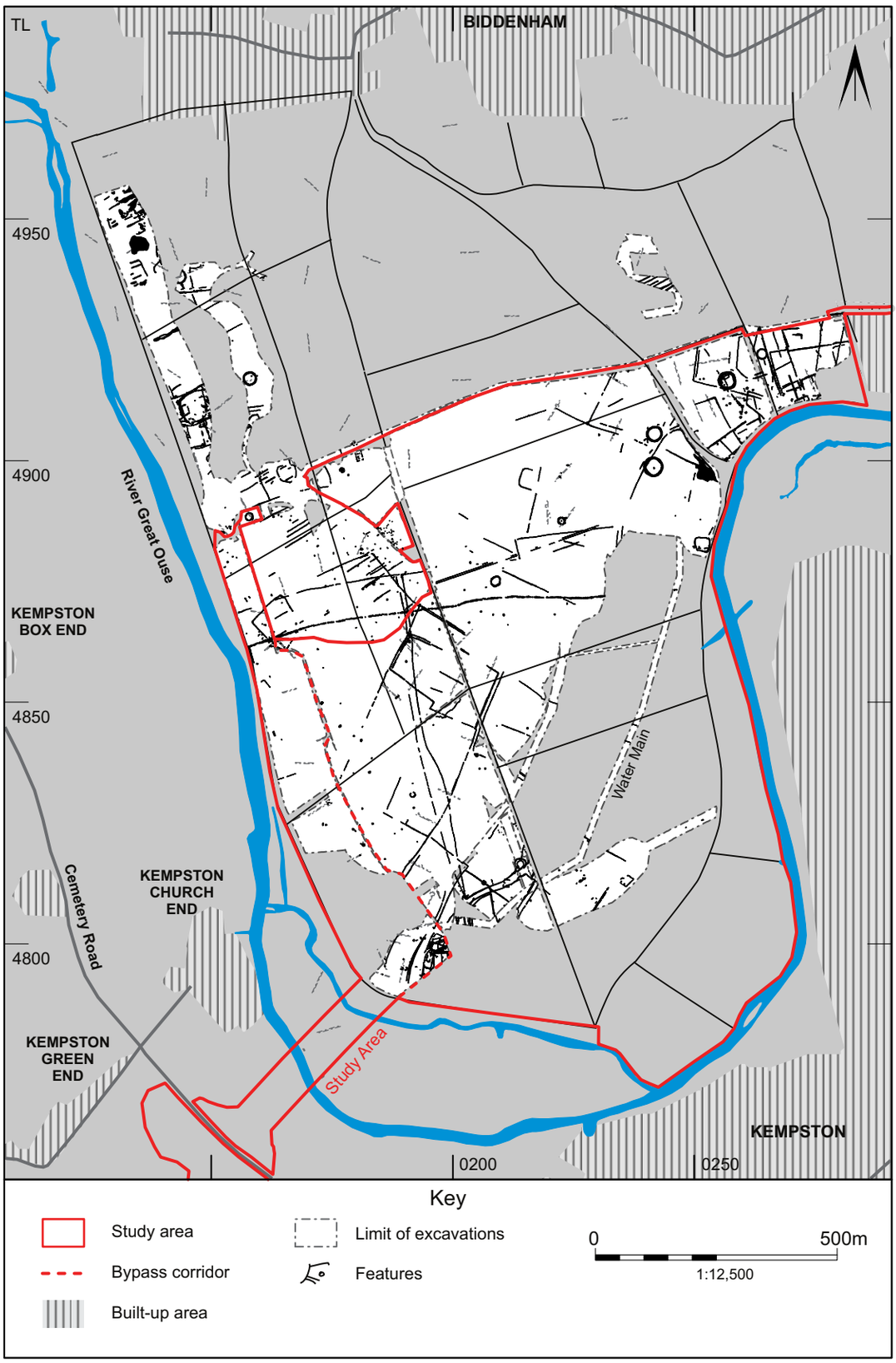


Fig. 1.5 All features plan (excluding medieval furrows) for excavation areas on the Biddenham Loop. Scale 1:12,500

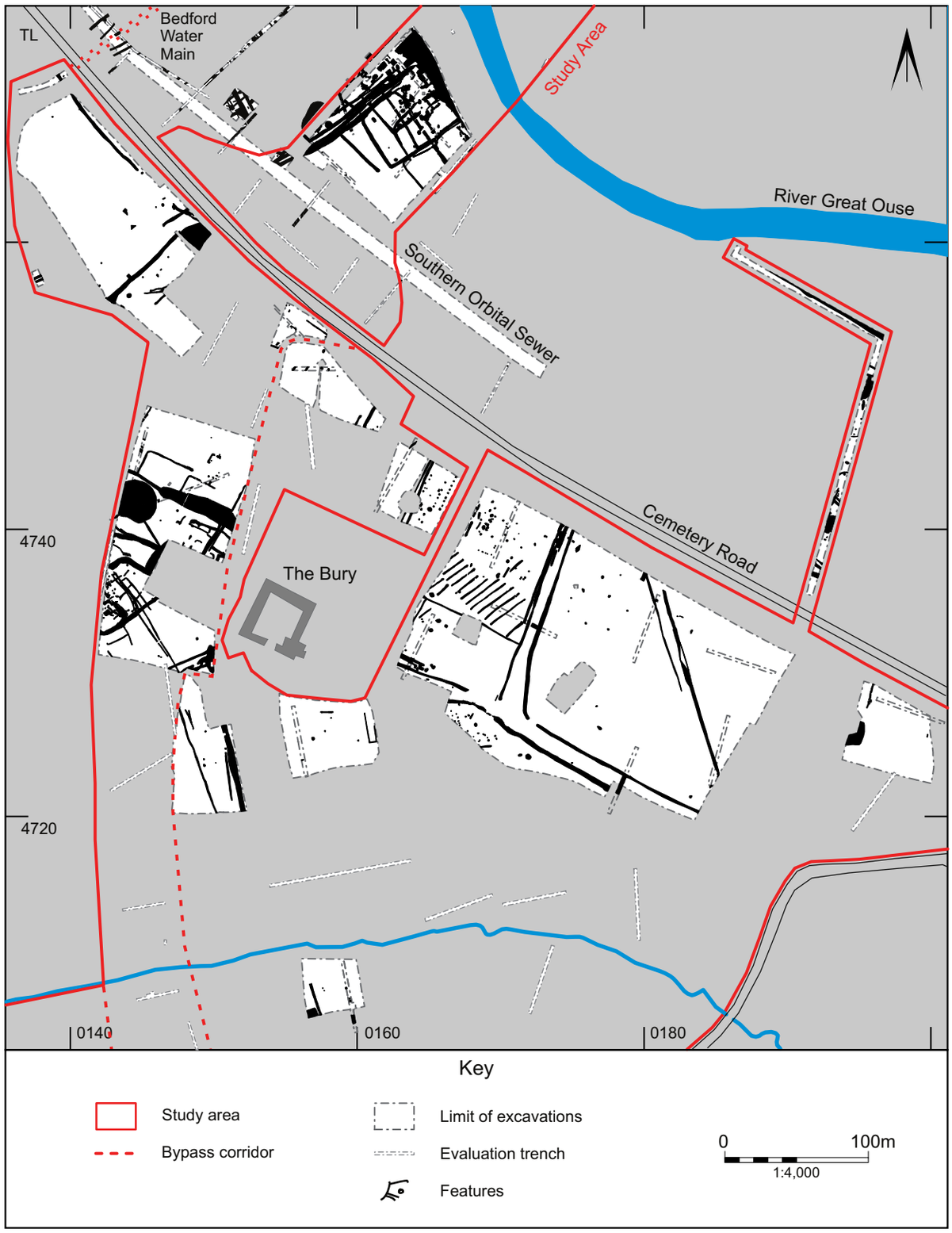


Fig. 1.6 All features plan (excluding medieval furrows) for excavation areas around The Bury. Scale 1:4000

Watching brief
(Fig. 1.3)
Watching briefs were undertaken either in areas considered to have low archaeological potential or in areas of ground raising where only topsoil was to be stripped. The key difference between this and the other mitigation strategies was that watching briefs were undertaken during groundworks and using the contractors' machines and operators. Where archaeological features were identified — which occurred only within the Bypass balancing pond to the south of the study area — they were subject to investigation in line with the strategy applied to

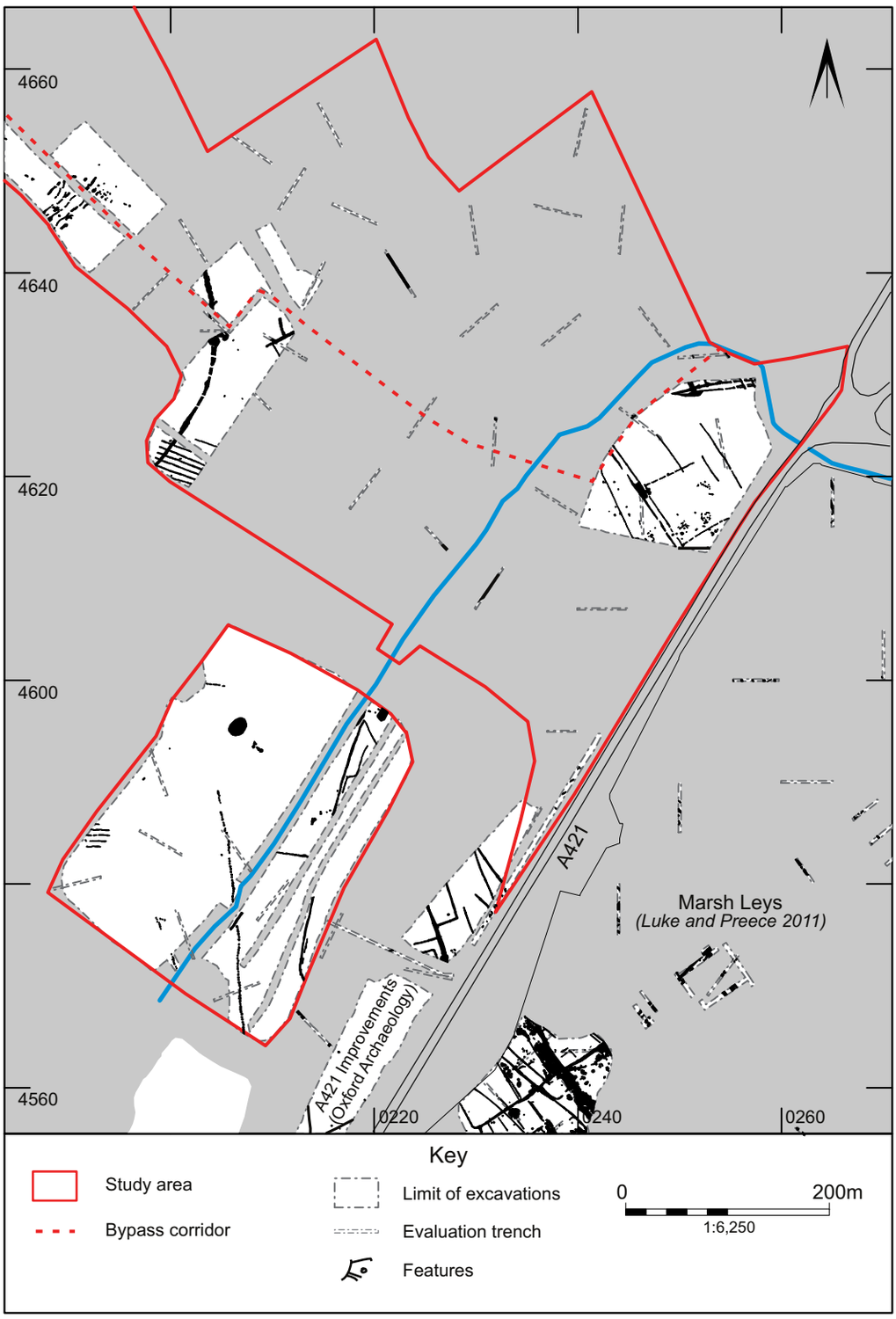


Fig. 1.7 All features plan (excluding medieval furrows) for the excavation areas around the A421. Not to standard scale

open area excavation. Watching briefs are specifically mentioned within this report only where working conditions appear to have affected the visibility or survival of archaeological remains.

Palaeo-environmental study in the flood plain
(Fig. 1.3)
Approximately 50ha of the study area within the Biddenham Loop, broadly coinciding with the present-day flood plain, was designated as a country park. Evaluation of this area, close to the river, identified significant depths of alluvium, making geophysical survey and trenching unproductive. The potential archaeological

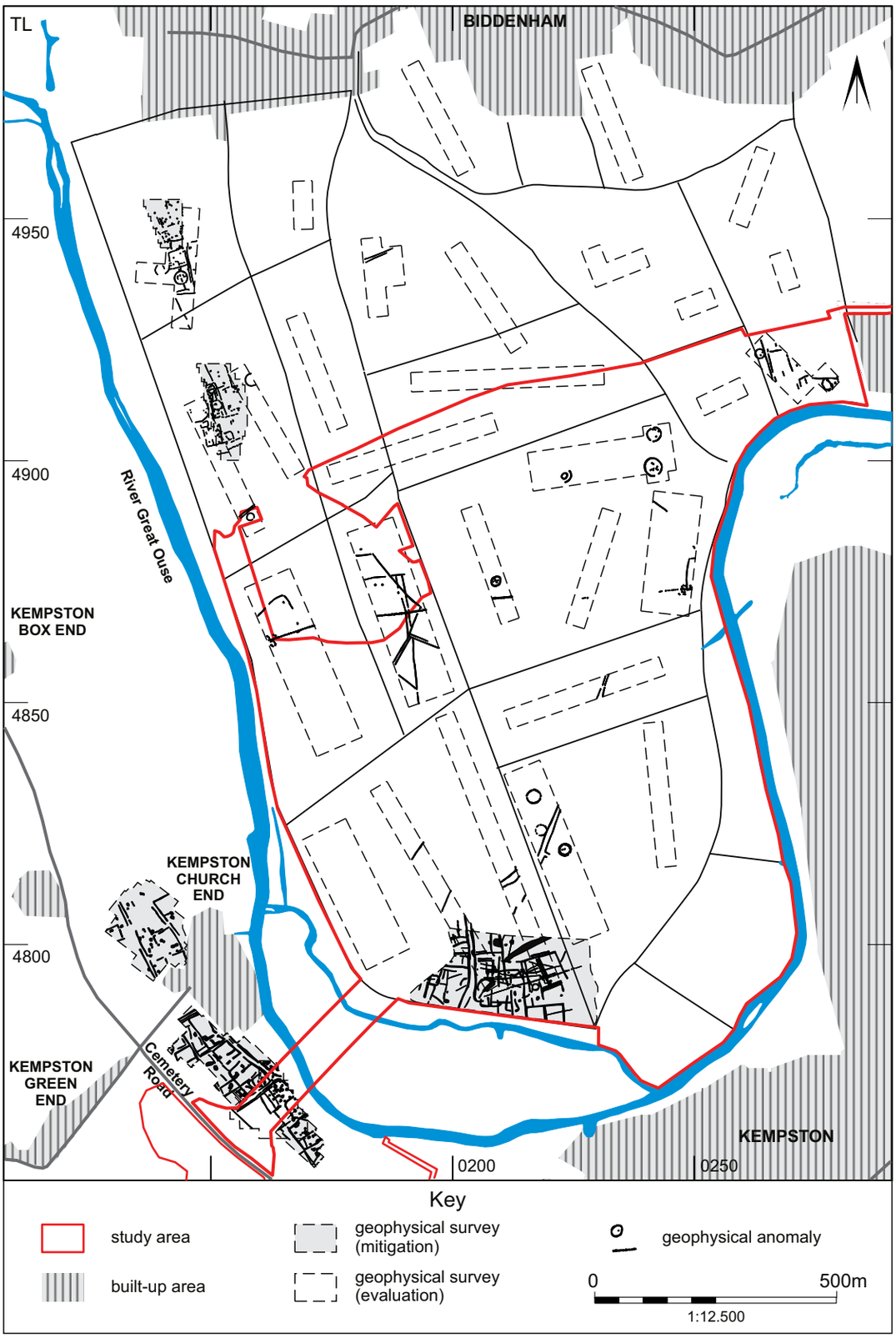


Fig. 1.8 Areas of detailed geophysical survey (evaluation or mitigation) within the Biddenham Loop. Scale 1:12,500

impact of tree planting and the creation of shallow ponds within the country park was considered slight. However, it was possible that this area contained palaeochannels preserving waterlogged deposits that could make a significant contribution to an understanding of the prehistoric and historic environment of the area.

An initial desk-based assessment, walkover and auger survey identified a small number of possible

Plate 1.2 The Biddenham Loop, from the south-west (May 2007), with archaeological investigations underway within the road corridor of the Bedford Western Bypass. The majority of the land within the Biddenham Loop (under crop in this photo) was later to become part of the David Wilson Homes development. To the left (west) are the lakes between Kempston Church End (just visible) and Kempston Box End

Plate 1.3 The Biddenham Loop, from the south-west (July 2008), with the Bedford Western Bypass under construction (to the west) and archaeological investigation areas within the David Wilson Homes development visible over the rest of the Loop

palaeochannels, some of which contained waterlogged deposits with potential for palaeoenvironmental reconstruction (Rackham 2008). A programme of coring was implemented in June 2008 to recover samples of the waterlogged deposits (Plate 1.6). These were assessed (Rackham 2009) to determine whether they could be

Plate 1.4 The Bedford Water Main investigations in the Ford End area of Bedford (November 2010)

Plate 1.5 One of the excavation areas on land west of Kempston, from the north-west (January 2008). The Bury is visible in the foreground and Cemetery Road to the left

used to reconstruct parts of the palaeo-landscape and the required analysis was set out in the Assessment and Updated Project Design stage (see VII, this chapter).

Post-excavation geophysical survey
(Fig. 1.8)
Additional geophysical surveys were undertaken adjacent to open area excavations as part of the post-excavation stage of the project (for further details see IX, this chapter).

VI. Fieldwork methodologies

The project-specific Written Schemes of Investigation should be consulted for a full description of the fieldwork

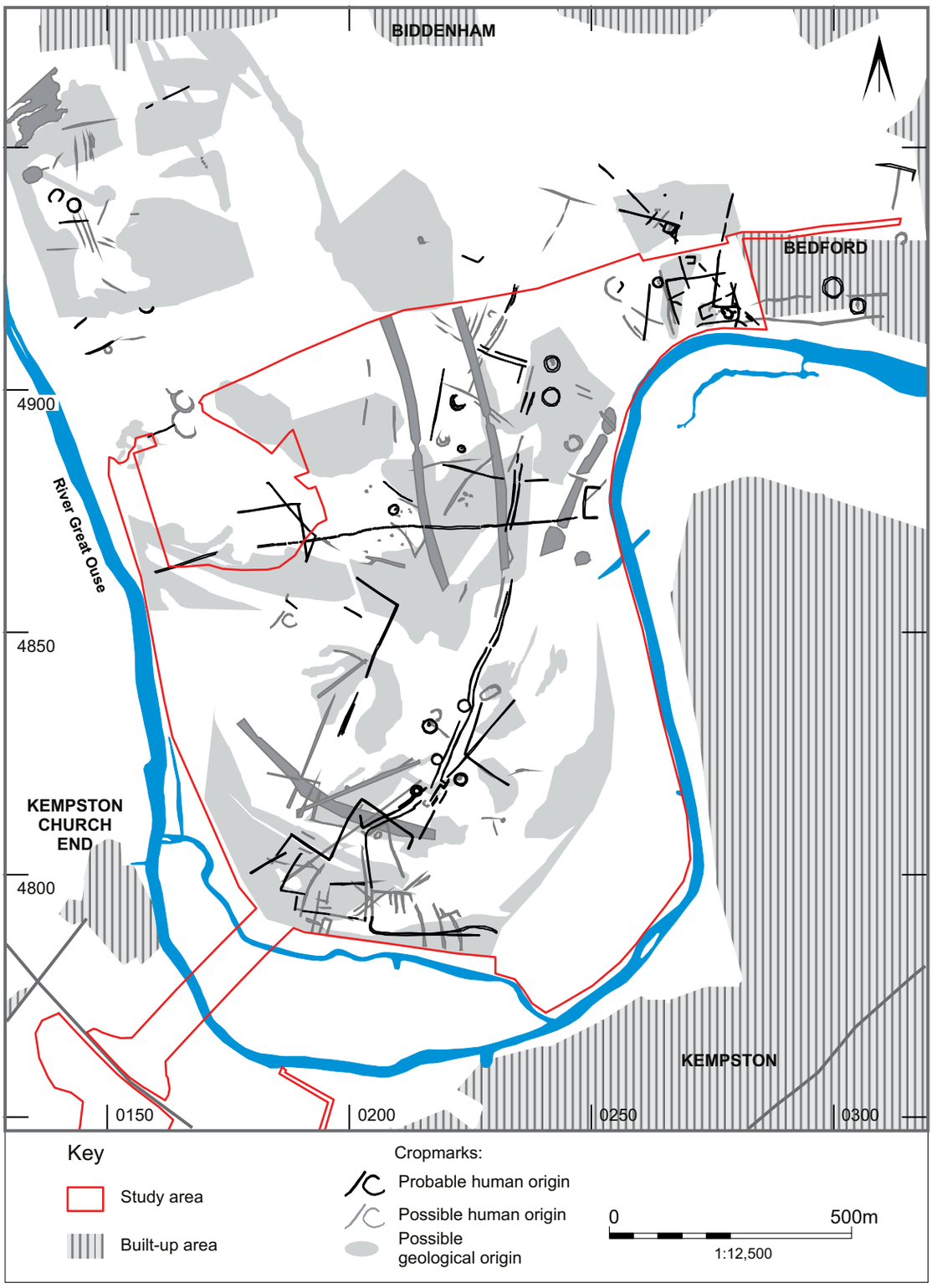


Fig. 1.9 All significant cropmarks (excluding furrows) on the Biddenham Loop. Scale 1:12,500

methodologies (Albion 2005, 2007a, 2008f and 2010d). However, they are summarised in Tables 1.1–1.4 and briefly described in CD Section 1.

VII. Assessment and Updated Project Design

Separate Assessments and Updated Project Designs (UPD) were produced for the Bypass (Albion 2009) and the adjacent residential development projects (Albion

2010a). These summarised and assessed the results in the light of local, regional and national research agendas, and also identified those data sets that had the potential to address research priorities and set out the methodological basis for further analysis. When the Bypass Assessment/UPD was produced it was intended to be a stand-alone project. However, by the time the other Assessment/UPD was produced the combining of the two projects had been agreed.

VIII. Combined post-excavation project

In the course of the fieldwork associated with the David Wilson Homes residential development it became clear that joint analysis and publication with the Bypass would provide an excellent opportunity to present the results of the archaeological investigation of a significant swathe of the Bedfordshire countryside. Joint analysis would allow the results of both projects to be examined in a wider chronological framework and spatial landscape than could be achieved by either of them individually. This would lead to a more meaningful interpretation of the results. Finally, from the respective clients' points of view, this approach would represent the most cost-effective option. In early 2009 both clients confirmed that they would like to proceed with a joint analysis and publication project. Inevitably, by this time the two projects were at different stages in the post-excavation cycle. The Bypass Assessment/UPD (Albion 2009) had been submitted and post-excavation analysis was underway, whereas the Assessment/UPD for the adjacent residential development had not yet been completed.

The time and thought required to synchronise the two projects should not be underestimated, although it is not described in detail here. The fundamental prerequisite was the establishment of a single phasing hierarchy for both projects, building on the work already done on the Bypass data. The inevitable anomalies between the two projects needed to be resolved. It was also necessary to have the same specialists working on the data from both projects, which required some flexibility within their existing work programmes.

A single phasing hierarchy was established by June 2010 and a combined phasing and publication liaison report was issued to the project team (Albion 2010b). This set out for the specialists the phasing hierarchy that was to form the basis for their reports and provided guidance on the format of publication. However, it should be remembered that the Bypass contextual analysis was largely completed before work on data from the adjacent housing development had begun. This explains why, in a small number of cases, numbering of elements of the hierarchy may appear a bit clumsy. To facilitate the establishment of an overall interpretive chronological and spatial framework for both projects, two new hierarchical levels were created — Site Landscape (SL) and Site Period (SP) (see IX, this chapter, for more details). Where possible the results of the Bedford Water Main were integrated into this analytical framework, although fieldwork did not finish until June 2011 (after the combined phasing and publication liaison report had been issued).

One intended consequence of combining the three different projects in this publication is that individual projects are referred to only where this is considered to be useful to the reader, *e.g.* for spatial location or to explain anomalies between data-sets.

Plate 1.6 Recording of cores as part of the palaeo-environmental study

IX. Post-fieldwork analysis methodologies

The UPD for each project (Albion 2009 and 2010a) should be consulted for a full description of the methodologies applied to each data-set. The combined phasing and publication liaison report (Albion 2010b) also illuminates more general issues. However, the methodological approach to analysis is summarised below. The analysis was underpinned by two fundamental precepts:

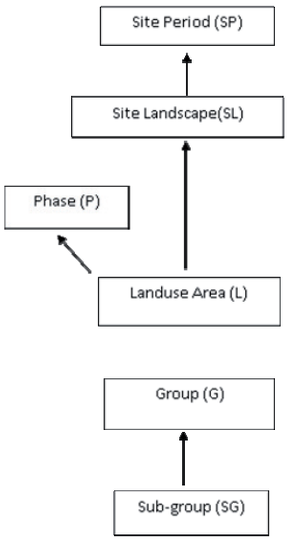
The results of the investigations could be enhanced by integrating archaeological evidence from the *unexcavated* parts of the study area, some of which had been subject to non-intrusive evaluation. This would enable evidence from albeit large excavation areas to be placed within a wider chronological and spatial context. Clearly, it should always be remembered that evidence from non-intrusive evaluation is less reliable and less detailed than evidence from open-area excavation.

The data was digitised so that it could be viewed and manipulated within a fully integrated, computer-based system of analysis. All structural, artefactual and ecofactual information was entered onto an Access database. Post-excavation feature and deposit plans were digitised, all section drawings were scanned and photographs were available as digital images. The databases and digital drawings were interfaced initially via Gsys and subsequently via MapWindow, allowing any combination of chronological, spatial or material groupings to be viewed and manipulated. This system allowed rapid and flexible analysis of the data. It also facilitated the creation of the text and plans which form the basis of this publication.

Structural

Aerial photographs
(Fig. 1.9)
All aerial photographs held by the HER, Cambridge University Collection of Aerial Photographs and the National Library of Air Photographs were examined. Aerial photographs that contained cropmarks were converted to a digital format and, if necessary, rectified. Visible cropmarks, whatever their perceived origin, were

then mapped and assigned to one of four categories: archaeological, possible archaeological, geological and modern.



Geophysical survey
(Fig. 1.8)
The geophysical survey undertaken as part of the evaluations at the Biddenham Loop and around Kempston Church End (GSB 1994; 1997) had served its purpose in terms of indicating areas of archaeological significance. However, the open area excavations clearly demonstrated that, towards the south of the Biddenham Loop and adjacent to the Bypass on the other side of the river, archaeological remains continued beyond the excavation limits and into areas which had not been subject to any archaeological investigation. It was felt that further geophysical survey in these areas had the potential to significantly enhance understanding of these remains. Therefore, in the Bypass UPD it was proposed that four new areas should be subject to geophysical survey (Albion 2009, 113–6). Similar geophysical surveys, subsequent to the main archaeological fieldwork, had been undertaken for the same reasons as part of the Bovis investigations on the Biddenham Loop (Gaffney 2008, 13) and the sewer investigations around Kempston Church End (Shiels *et al.* 2004, 153).

The surveys were undertaken in 2011 but, owing to ongoing problems with ground conditions and undergrowth, it was possible to undertaken geophysical survey in only three of the four envisaged areas (ArchaeoPhysica 2011). The total area surveyed was 6.2ha. The results were incorporated into the structural analysis and are presented, where relevant, in the appropriate chapters.

Contextual
Albion Archaeology employs a standard approach to detailed contextual analysis which requires the assignment of contexts to a hierarchy. Each hierarchical level/element gradually becomes more interpretative and less detailed in nature. The actual names given to these entities (*e.g.* Site Period, Landuse area, Group) are less important than their hierarchical position. An understanding of these terms is essential to the understanding of this publication.

During contextual analysis, work was undertaken from the bottom (context) upwards, first assigning significant contexts to sub-groups, then assigning significant sub-groups to groups, then significant groups to Landuse Areas, then significant Landuse Areas to Phases.

It should be remembered that the Bypass contextual analysis had been largely completed before contextual analysis on the adjacent residential development began. To facilitate establishment of an overall interpretive chronological and spatial framework for both projects, two new hierarchical levels were created — Site Landscape (SL) and Site Period (SP). Project-specific Landuse Areas were assigned to Site Landscapes and project-specific Phases were assigned to Site Periods.

One of the more unusual aspects of the contextual analysis was the integration of cropmarks and geophysical anomalies. To optimise the effectiveness of this approach, all cropmarks and geophysical anomalies likely to be of archaeological origin were assigned context numbers (in blocks to distinguish the evidence type) and described. They were digitised and incorporated into the structural analysis in a genuinely integrated way.

In some of the specialist reports Group or Landuse area numbers have a decimal point. These indicate the presence of primary fills (.1), secondary fills (.2), tertiary fills (.3), or sole fills (.05); they are not used within this volume.

During analysis, the contextual evidence was organised into a structural hierarchy comprising:

- **SP (Site Period):** a meaningful chronological time period that contains a collection of phases from different projects within the study area.
- **SL (Site Landscape):** a meaningful spatial element within a Site Period. Examples include farmsteads, monument complexes, field systems and peripheral areas. Site Landscapes may transcend different projects and excavation areas. For ease of spatial referencing those located on the Biddenham Loop were numbered SL01–SL99 and those on Land west of Kempston were numbered SL100–SL199.
- **Phase:** a collection of contemporary Landuse Areas within a particular project. They were issued numbers which corresponded to spatially discrete excavation areas, although these areas are no longer relevant in this publication (with the exception of Romano-British settlements SL54 and SL155, late Saxon/Saxo-Norman settlement SL168 and medieval settlement SL172).
- **L (Landuse area):** a meaningful spatial element typically comprising spatially and/or functionally associated Groups, *e.g.* a monument (both the defining ditch and internal features), an enclosure or field (both the boundary and internal activity), an area of unbounded activity, a major boundary or a roundhouse.
- **G (Group):** a functionally or spatially distinct element within a Landuse Area. Groups are an aggregation of related Sub-groups, *e.g.* a cluster of similar pits, a number of graves sharing similar attributes or a water pit.
- **SG (Sub-group):** typically an aggregation of contexts which are closely related both stratigrapically and processually, *e.g.* the primary fills of the same ditch or a burial. With the exception of the latter they are

used only in exceptional circumstances within this publication.

Scientific dating

Scientific dating was attempted on key deposits to assist in finalising the site phasing. Four features were subjected to archaeomagnetic dating (dates achieved on two) and two monuments were subjected to optically stimulated luminescence (OSL) dating but the determinations were unsuccessful. A total of 94 radiocarbon determinations were undertaken by the Scottish Universities Environmental Research Centre (SUERC) by Accelerator Mass Spectrometry (AMS) from deposits within the Bypass and adjacent residential development. The samples were submitted in a number of stages determined largely by the importance of achieving a date, the suitability of material and the completion of specialist analysis. Preference was given to material that was likely to be in a primary context, *e.g.* human burials (inhumations and cremated) or animal bone groups. Where other material was used preference was given to material from secure, undisturbed deposits; charred seeds were prioritised over charcoal owing to the potential longevity of wood.

While many of the determinations are from single features, some are from archaeologically coherent landscape elements, *e.g.* monuments and cemeteries. For these, a Bayesian approach has been adopted for the interpretation of their chronology. The resultant dates have been incorporated into this publication and are given in Hamilton (CD Section 2). The date certificates are available on the publication CD.

Finds

The methodologies for the artefactual and ecofactual data are described at the beginning of each specialist report (CD Section 2).

2. The first settlers (50,000 BC–4000 BC)

I. Introduction

Athough for this period the results of the recent investigations are relatively insignificant, this short chapter is included because the Biddenham and Kempston areas are relatively well known for Palaeolithic discoveries both locally (Luke 2007, 21) and nationally (Wymer 1999, 123). As a result of discoveries made during 19th-century quarrying, the Biddenham area, in particular, gained national repute as a prolific source of palaeoliths (Wymer 1999, 123). The absence of evidence from the recent investigations is probably due to the fact that the majority of the associated construction work did not penetrate the underlying gravel, *i.e.* the palaeolith-bearing deposits.

This chapter therefore provides a brief summary of the period of time when southern England was inhab-

BOX 2: The Palaeolithic

By Holly Duncan and Mike Luke. Photograph by Adam Williams

The oldest finds from the Biddenham Loop are two flint handaxes which are probably around 50,000 years old (dating to the Middle Palaeolithic). They were found during fieldwork funded by Bovis Homes Ltd but within the corridor that was later to become the Bedford Western Bypass.

The handaxe was the archetypal tool of the Lower Palaeolithic but is also occasionally found in Middle Palaeolithic assemblages. Although termed handaxes, these artefacts were all-purpose butchery tools that could also be used for a range of other tasks. The two from the Biddenham Loop were probably used in a knife-like manner, rather than for chopping. One is a probable bout coupe handaxe (flat-butted, heart-shaped) (top left); the other is of ovate form (top right). They were made from flint nodules. Initial shaping was carried out by working round the circumference of the nodule, alternately removing flakes from each face. Once the basic (rough-out) shape was achieved, further flakes were removed to thin the handaxe and achieve the desired finished shape.

Gravel quarrying over the last few centuries in Biddenham and Kempston has produced hundreds of handaxes. Unfortunately most of these have since been lost and, therefore, the two from the study area are valuable finds. Records kept during the quarrying suggest that some handaxes were found in association with elephant tusks, reminding us that this was a time when the landscape and fauna were very different to those of the present day.

Largely as a result of quarrying, Biddenham, and the area near to the Bromham Road in particular, gained a national reputation as a prolific source of palaeoliths. The two handaxes from the study area were found within the ploughsoil adjacent to former quarries, suggesting that they were brought to the surface in the 19th century. As such, they represent chance finds because much of the construction work within the Biddenham Loop that prompted the archaeological investigations did not penetrate the underlying gravel and, therefore, did not reach the deeply buried palaeolith-bearing deposits.

For details of the flint assemblage and more figures see CD Section 2; Bates.

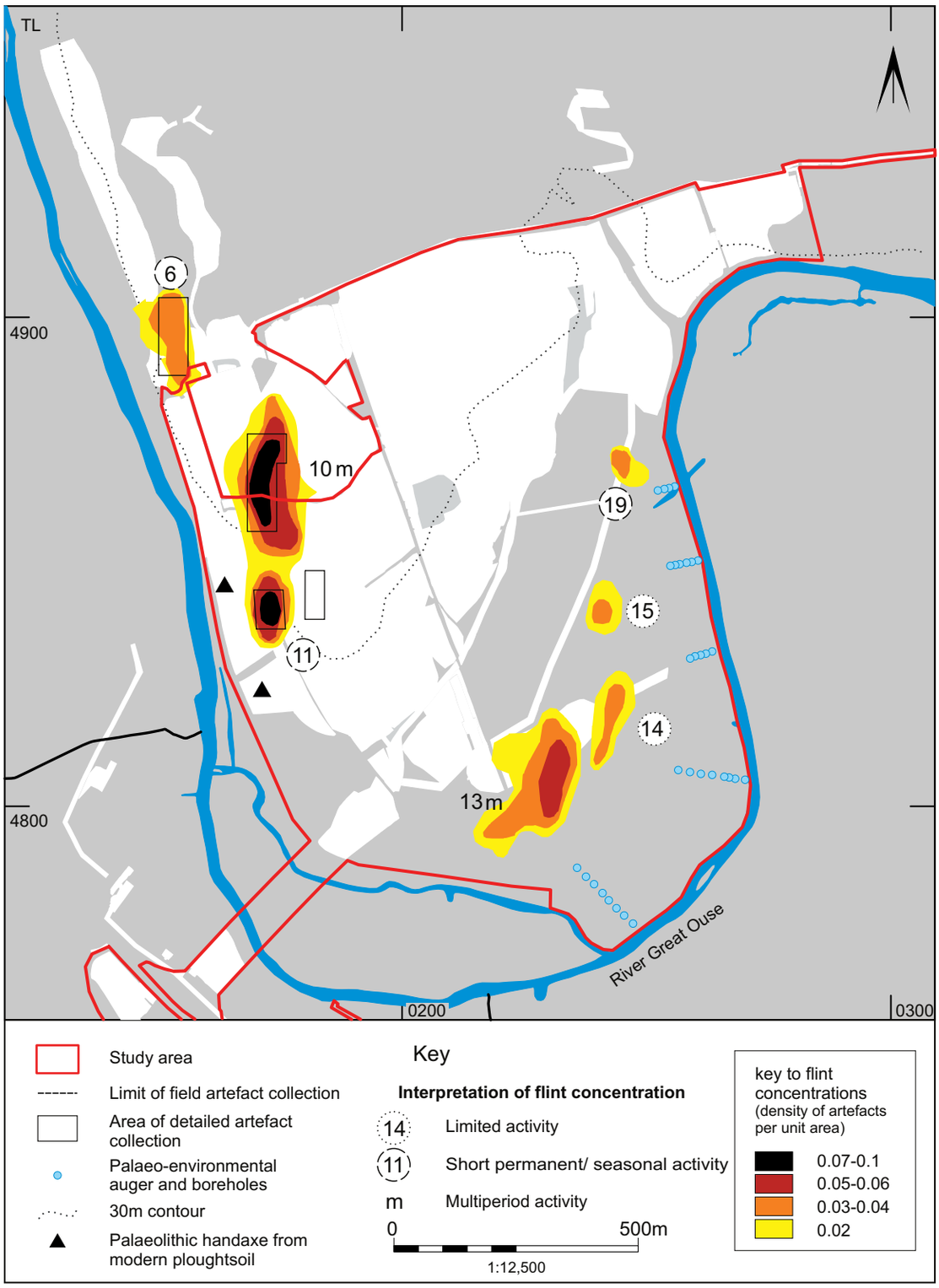


Fig. 2.1 Mesolithic/early Neolithic flint concentrations within the Biddenham Loop. Scale 1:12,500

ited by mobile communities of hunter-gatherers who have left little trace. As the term suggests, these people would have hunted wild animals and birds, fished, and gathered food from wild plants. The main evidence we have for these people and their activities is derived from their flint artefacts. Although the assemblages from field artefact collection were quite large, the majority of the material comprises largely undiagnostic debitage which can be assigned only to broad chronological divisions, *e.g.* late Mesolithic/early Neolithic. The most common diagnostic flint artefacts are microliths and blades, with a range of other objects including leaf-shaped arrowheads, end scrapers, a pick and a knife (Bates 2008a, 75).

BOX 3: Mesolithic Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Mesolithic landscape of the Biddenham Loop would have looked like and how communities lived at this time.

The first extensive evidence for a human presence within the Loop dates to the late Mesolithic/early Neolithic. It mainly comprises flint artefact concentrations within the modern ploughsoil. No sub-surface features were found within the excavation areas.

It is clear from the location and nature of the flint concentrations that the first land to be 'settled' within the Loop was around the edge of the river terrace; it is presumed that much of the interior of the Loop was still wooded. The edge of the river terrace on the woodland margins overlooking the river Great Ouse would have been an ideal 'settlement' location for the exploitation of a broad spectrum of natural resources. Woodland would have provided timber, fruit and a variety of game, with the river itself providing plants, fish, shell fish, waterfowl and aquatic mammals.

The evidence suggests that small groups of mobile 'hunter-gatherers' operated in this area and created encampments on the edge of the woodland overlooking the river (as shown in this illustration). However, with no evidence other than the ploughsoil flint concentrations, it is difficult to assess longevity of occupation or to identify specific types of activity.

For details of the flint assemblage and more figures see CD Section 2; Bates.

II. Earliest people (Palaeolithic)

(Fig. 2.1)

Two handaxes from the Bovis investigations are our only testimony to the Palaeolithic period. They comprise a probable *bout coupe* and an ovate form (Luke 2008, 73). They were found within the ploughsoil on the Biddenham Loop adjacent to 19th-century quarries, suggesting that they were derived from deep within the gravel (Luke 2008, 19). The Biddenham and Kempston areas are known to have produced hundreds of handaxes over the last few centuries (Luke 2007, 21). In 1986 palaeolith-bearing deposits at a depth of *c.*5m were re-examined within a former quarry known as Deep Spinney adjacent to the Bromham Road to the north of Biddenham village (Harding *et al.* 1991). Very little of the construction work associated with the recent investigations reached such a depth. Where it did (*e.g.*, the Bypass balancing ponds on the Biddenham Loop), only monitoring of the rapid, ongoing earthmoving operations was possible.

III. Tree clearance and first settlers (late Mesolithic/early Neolithic)

(Fig. 2.1)

The first extensive evidence for a human presence revealed by flint artefacts within the modern plough-

BOX 4: Late Mesolithic–Early Neolithic flint

By Holly Duncan and Mike Luke. Photograph by Adam Williams

The British Mesolithic began some 8,500 years ago. Within the Biddenham Loop, as elsewhere in Britain, this period is characterised by the presence of mobile 'hunter-gatherer' communities (see Box 1). Commencing c.4000 BC, the early Neolithic is characterised by the domestication of both animals and plants and by woodland clearance, leading to the emergence of possibly permanent settlements. On areas of land such as the Biddenham Loop, which were favoured for settlement over thousands of years, sub-surface evidence for Mesolithic and early Neolithic occupation rarely survives. However, the stone tools used by these people and the waste material generated by their manufacture do survive, either in later features or in the modern ploughsoil.

Larger tools, such as the Mesolithic pick (top row left) and adze (top row right), are referred to as 'core tools'. The primary purpose of removing flakes was to shape the nodule (or core) into a tool; the flakes were merely a by-product. Other tools, such as the burin (top centre), used in the manufacture of bone and antler tools, were formed by removing pieces from a core and then fashioning the removed piece into the desired shape. Mesolithic and early Neolithic flint knappers used a technique called 'indirect percussion'; they placed a punch, probably made of bone, antler or wood, on a flint core and then struck the punch with a hammerstone. Cores (top row third and fifth from left) were carefully worked until no further pieces could be removed. Blades, defined as having a length at least twice their width and featuring parallel ridges (e.g. the burin), and bladelets (bottom row centre) are characteristic of the Mesolithic and early Neolithic. Bladelets were further worked to form microliths (bottom row right), a characteristically Mesolithic technique. Several microliths would be hafted together in composite implements, such as sickles, arrows and other hunting tools.

Tiny flakes could be removed from the edges of blades to form a serrated knife edge (third row left). Scrapers (top row second from left) had a continuous series of overlapping small flakes removed from their sides, an end or both, to create a blunted edge; these tools were used to work soft materials such as hide. In the early Neolithic blades, bladelets and flakes continued in use, but microliths were no longer produced. The composite microlith arrowhead was replaced by a leaf-shaped version (second row left and two at right). Fabricators (third row middle) are thought to have been used for retouching other flint tools, grinding and possibly as part of a fire-lighting kit.

For details of the flint assemblage and more figures see CD Section 2; Bates.

soil of the Biddenham Loop can be only broadly dated to the late Mesolithic/early Neolithic. Most of the flint can be assigned only an approximate date because of the continued use of systematic core reduction and the preference for blade type pieces. The majority of the flint was found in concentrations identified during field artefact collection undertaken as part of the Bovis investigations (Luke 2008, 5; Boismier 2008, 16; Boismier 2003); some of these were also rewalked in more detail during the recent investigation (Albion 2008b and 2009). No comparable evidence was located during field artefact collection on Land west of Kempston.

There is little environmental evidence for this period. A study of sediments within the Biddenham Loop indicated that 'the vegetation record appears to start shortly after the Neolithic Elm Decline with the accretion of sediment at 3600 BC' (CD Section 2; Rackham *et al.*). Unfortunately there are comparatively few data-sets for the Ouse Valley within Bedfordshire (Scaife 2000, 17). In general it is believed that during the late Mesolithic the land around the Ouse and its tributaries would have been substantially wooded with different species in different locations reflecting changes in soil type (Godwin 1975). At Broom, on the river Ivel *c.*17km south-east of Biddenham, 'Oak, Elm and Hazel were most likely widespread, even on the clays, though varied in density' (Cooper and Edmonds 2007, 40). The plant life on the marshy and seasonally affected flood plain of the Great Ouse may have been different, with a greater quantity of alder carr and willow.

The late Mesolithic/early Neolithic flint concentrations within the study area were located on the terrace of the Great Ouse in a position similar to the other known sites on the river, *e.g.* downstream at Roxton, Beds. (Luke 2007, 26) and Eynesbury, Cambs. (Ellis 2004, 100). A similar pattern was seen further afield at Thatcham, Berks., on the river Kennet (Healy *et al.* 1992). It is clear from the location and nature of the flint concentrations that the first land to be 'settled' within the Loop was around the edge of the river terrace; much of the interior of the Loop was probably still wooded (Luke 2008, 19; Boismier 2003). It has been suggested by Ellis that 'in the later Mesolithic the environment became warmer, there were well-developed soils, and the slow migration of tree species resulted in the development of deciduous woodland cover over most of the country' (Ellis 2004, 99). The edge of the river terrace, on the woodland margins overlooking the river Great Ouse, would have been an ideal location for the exploitation of a broad spectrum of natural resources. Woodland would have provided timber, fruit and a variety of game, with the river itself providing plants, fish, waterfowl and aquatic mammals (Luke 2008, 19).

The flint concentrations were classified as representing limited, short permanent or seasonal occupation (Boismier 2008, 16; Luke 2008, 20). This fits the model of small groups of mobile hunter-gatherers creating encampments. However, with no evidence other than the ploughsoil flint concentrations, it is difficult to assess the longevity of occupation or to identify specific types of activity.

However, some late Mesolithic/early Neolithic flint was discovered within the interior of the Loop during more recent field artefact collection (Albion 2008b) and as 'residual' finds within later sub-surface features (CD Section 2; Bates). This may suggest that earlier interpretations of occupation as occurring only along the river edge (Luke 2008, 19) may have been too simplistic. The presence of four early Neolithic monuments away from these flint concentrations and in two instances within the interior of the Loop (see below) suggests that woodland clearance may have been well underway by 4000 BC. At Eynesbury, Cambs. an early Neolithic buried soil suggested that the landscape had been deforested and was cultivated at this time (French 1984, 5), although there is no comparative evidence from the Loop.

Where open area excavation was undertaken below late Mesolithic/early Neolithic flint concentrations no contemporary sub-surface features were identified. However, one cluster of early Neolithic pits (L2427) was found in a topographical location similar to those of the flint concentrations. The same location was reused in the later Neolithic and this may have masked the evidence for earlier activity (see below).

3. Monuments and settlements (4000 BC–1600 BC)

I. Introduction

The fundamental change in England from a Mesolithic hunter-gatherer lifestyle to more settled farming communities occurred during this period. The process of change is likely to have been gradual, complex and not consistent even across southern England. Domesticated plants and animals, along with pottery, are generally believed to have been introduced into Britain around 4000 BC. Unfortunately, the evidence from the study area for crop regimes and animal husbandry during this period is limited. There is, however, evidence for the transformation of the landscape in terms of the gradual increase in the number of monuments and settlements during the 4th and 3rd millennia BC along with a reduction in woodland. Such changes are probably closely associated with the origins of agricultural communities. The vast majority of the evidence is derived from the Biddenham Loop and not Land west of Kempston.

In the Neolithic and early Bronze Age the Biddenham Loop became one of a number of foci for ceremonial and burial events in the Great Ouse valley. The earliest known monuments, and probably those with the longest histories, are three small sub-circular ditched enclosures with entrances. Although the ditch of one contained two burials, it is likely that the monuments provided a focus for wider ceremonial and ritual activities rather than being purely for burial. The three oval enclosures were probably constructed in the later Neolithic prior to a burst of ring-ditch construction in the early Bronze Age. One of the earliest ring-ditches, based on radiocarbon dating and grave goods, contained a classic Beaker burial, presumably that of a local leader. Although the numbers of burials from the Biddenham Loop is not statistically meaningful, it can be noted that only inhumations occur in the early Neolithic; that no later Neolithic burials were found at all; and that both inhumations and cremation burials occur in the early Bronze Age.

Evidence for the location of settlements during this period comprised flint concentrations within the modern ploughsoil and small pits, both isolated and in clusters (Fig. 3.1). The flint concentrations and pit clusters assigned to the later Neolithic/early Bronze Age are far more extensive than those of the earlier period, but it is still difficult to determine whether they represent the locations of permanent settlements or areas which were returned to on a regular basis by fairly mobile populations. Added to this is the complication that very few sub-surface features were found below ploughsoil flint concentrations. Although the population was probably relatively small throughout this period, their efforts as evidenced within the archaeological record appear to have been directed towards the construction of monuments rather than settlement.

II. Dating evidence

The dating evidence for this period derives from changing styles of flint tools and pottery and from radiocarbon dating. Only a very few stratigraphical relationships with later features were present.

Although a few features produced quite large flint assemblages — for example, around fifty-one artefacts came from large pit G23181 — the majority contained ten artefacts or fewer. In addition, much of the assemblage is largely undiagnostic debitage which can be only broadly dated (CD Section 2; Bates):

- **Late Mesolithic/early Neolithic:** most of the flakes are quite small and are often squat and irregular. The blade-like flakes and blades are similar. Tool types, some found residually, include blades, a pick, piercers and leaf-shaped arrowheads.
- **Later Neolithic/early Bronze Age:** flakes are almost all small, with some being squat and clearly struck by hard hammer. Part of a late Neolithic petit tranchet type arrowhead was found and a small squat possible knife is probably of the same date. Other types include arrowheads (barbed and tanged, chisel, oblique), a fabricator, knives and scrapers.

The pottery assemblage comprised 832 sherds weighing 5.2kg (CD Section 2; Percival) and can be broadly divided into:

- **Early Neolithic:** undecorated, round-based bowls with globular or rounded shoulders; several examples have long curved necks. 'The absence of developed or decorated forms might suggest that the pottery was deposited sometime between 4000 and 3500 BC' (CD Section 2; Percival), a conclusion which is supported by the radiocarbon dates from pit cluster L2427.
- **Later Neolithic:** Peterborough (Fengate and Mortlake, no Ebbsfleet from the recent investigations) and Grooved Wares. 'The most recent dating of Peterborough Ware sees its currency as overlapping with Grooved Ware and Beaker (Gibson and Kinnes 1997; Thomas 1999, fig. 5.10) … Grooved Ware dates span the period *c.*2900–2100 BC (Garwood 1999, 152), giving a partial overlap with both Peterborough Ware and Beaker' (CD Section 2; Percival).
- **Early Bronze Age:** Beaker and Collared Urn types. 'Allen suggests that the Beaker pottery from the Biddenham Loop can be broadly dated to 2100 BC or after (2008, 113) and a similar date is likely for the present assemblage' (CD Section 2; Percival).

Radiocarbon dating of a range of features — principally the monuments, shafts and burials — was undertaken. This produced eight early Neolithic dates, two later Neolithic dates and twenty-one early Bronze Age dates (see CD Section 2; Hamilton for more information on radiocarbon dating and Bayesian modelling). The absence of determinations dating to the 3rd millennium BC is striking but may reflect the absence of formal burials of this period.

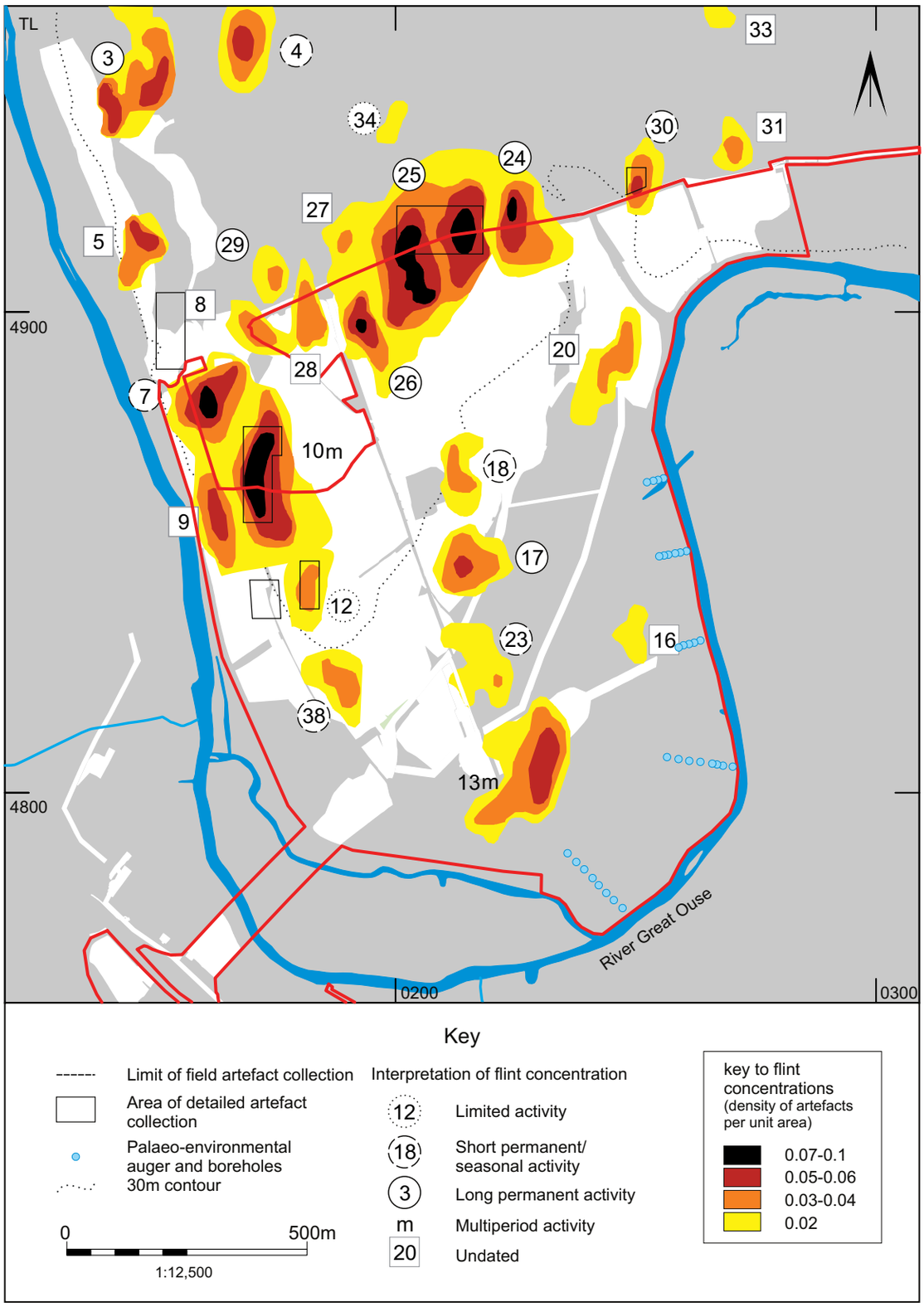


Fig. 3.1 Later Neolithic/early Bronze Age flint concentrations within the Biddenham Loop. Scale 1:12,500

III. Environment, plants and animals

The major elements of the natural landscape at this time would have been woodland and the river, with its flood plain. The flint distributions suggest that the Biddenham Loop was still largely wooded in the late Mesolithic/early Neolithic (all flint concentrations were situated around the edge not within the interior of the Loop). There would have been a small number of clearances within the interior of the Loop (indicated by occasional isolated flint

BOX 5: Early Bronze Age Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Biddenham Loop might have looked like in the early Bronze Age. It is one of a series in this publication showing different chronological periods from the same viewpoint.

By the early Bronze Age the Biddenham Loop had become a focus for ceremonial and funerary events. The earliest monuments — sub-circular ditched enclosures constructed in the early Neolithic — had complex histories. Ditches were redug and entrances blocked. Their continued significance for almost two millennia is vividly demonstrated by the clustering around them of later Neolithic monuments (both oval and square) and early Bronze Age ring-ditches. In some cases the later monuments were aligned on them, forming processional routes (as shown in the reconstruction). One of these routes led to the centre of the Loop, where a number of shafts and large pits were dug next to one of the early Neolithic monuments. They represented a significant element of this ritual landscape, apparently being dug to receive offerings before being deliberately backfilled as part of ceremonial events undertaken around the monuments. They contained bones from an unusually wide range of species — human, wolf, deer, aurochs, wild boar, dog, cattle and even pine marten.

People were buried both within and close to the monuments. Some were cremated first; others were simply interred. Among the latter was a rare Beaker burial, only the second to be found in Bedfordshire (Box 11)

It is important to stress that people were also living within the Loop at this time. This is clearly demonstrated by the clusters of small pits and by the flint concentrations in the modern ploughsoil. Less certain is whether these settlements were seasonal or permanent, as depicted in the reconstruction. Either way, they were kept deliberately away from the sacred spaces reserved for the monuments, burials, shafts and large pits.

NOTE. There is no firm evidence for the position of woodland within the Loop at this time. It is shown in areas where there were no sub-surface features and no flint concentrations in the modern ploughsoil. The presence of fields near the settlements is pure speculation. Finally, although the palaeo-environmental study yielded some information about the flood plain, the precise configuration of the river channels remains uncertain.

findspots and a small number of monuments). However, by the later Neolithic extensive woodland clearance had taken place, evidenced by more widespread distributions of flint concentrations, monuments and settlements.

The Biddenham Loop meander in the river Great Ouse was probably of great significance to the hunter-gatherer and subsequent communities using this area. This may explain the presence of both monuments and settlements within it. For example, the earliest monument, a sub-circular enclosure dated to the early 4th millennium BC, is located centrally within the Loop and influenced the siting of subsequent monuments and burials. A possibly contemporary sub-circular monument to the south occupied a similar central location; it too influenced the siting of subsequent monuments and burials. This may suggest that, while the early monuments may have been established within woodland clearances, it was the loop in the river, rather than the woodland, that was the significant feature within the natural landscape and one that had a major influence on the local communities. In contrast to

BOX 6: Late Neolithic–early Bronze Age flint

By Sarah Bates and Holly Duncan. Photograph by Adam Williams

Owing to their durable nature, considerable quantities of flint tools and manufacturing waste were recovered from both prehistoric and later features and from the modern ploughsoil. During the late Neolithic (commencing c.3000BC) and the early Bronze Age (commencing c.2600BC) flint knappers used the direct percussion method: that is, the hammerstone came into direct contact with the flint nodule.

Flint cores were not as carefully curated in this period as in the Mesolithic or early Neolithic and flakes, frequently short and squat, are commonly found (bottom row left). Despite an apparent decline in the overall quality of flintworking, some very finely worked tools continued to be produced, including scale flaked knives (bottom row second and third from the left) and arrowheads.

A variety of arrowheads were in use during this period, including, in the late Neolithic, the chisel (top row centre and third row middle), the petit tranchet (second row middle) and the oblique (top row fourth from left and second row right). Barbed and tanged arrowheads appeared from the early Bronze Age (three examples in the top row).

Scrapers continued to be made and used (two examples at each end of the third row), as did fabricators (two examples on the right of the bottom row).

For details of the flint assemblage and more figures see CD Section 2; Bates.

the river Thames, exceptionally few objects of this period are known to have been deposited within the waters of the river Great Ouse.

The palaeochannels within the modern flood plain provide us with valuable information on the palaeo-environment (CD Section 2; Rackham *et al.*).

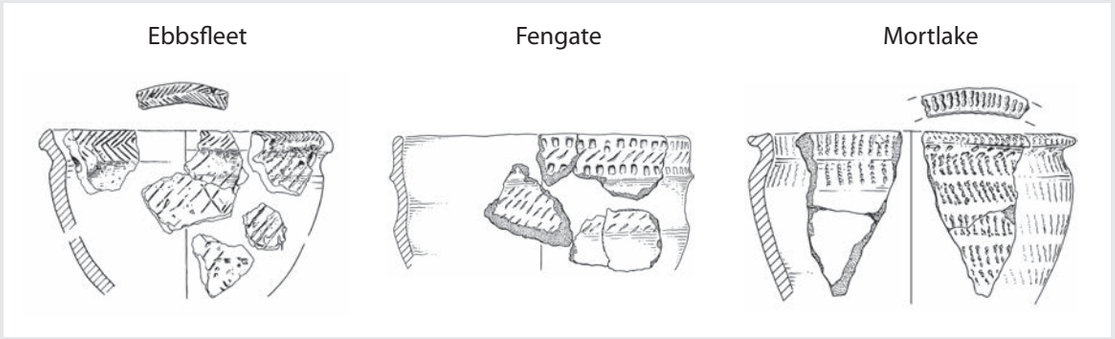
> The vegetation record appears to start shortly after the Neolithic Elm Decline with the accretion of sediment at 3600 BC. It is known that earlier Holocene sediments are present in palaeo-meander cut-offs. The last remnants of elm may be present in the lowest level. This is contemporary with … [the early Neolithic] and the pollen evidence already indicates an opening up of the landscape, the presence of pasture and also cereal cultivation. The flood plain adjacent to the river carried alder carr and willow, with reed and sedge swamp communities, although the molluscan evidence suggests that this area was already largely open damp grassland and marsh with only a little evidence for woodland by the end of … [the] early Neolithic. There had already been a significant impact on the local lime, oak and hazel woodland by the Neolithic and the landscape of monuments, burials, pit clusters and flint scatters may already have been in a fairly open landscape, with perhaps woodland stands on the steeper slopes of the valley.
>
> Woodland clearance continues into the late Neolithic, with a generally increasing herbaceous element in the pollen data. The plantain, *Plantago lanceolata*, an indicator of grassland/pasture, remains fairly stable throughout this period, but a rise in cereal pollen, a type of pollen that does not get transported far, suggests an increase in local arable land — a picture consistent with the excavated archaeological evidence for SP4 (late Neolithic). The pollen evidence suggests that the river flood plain continues to support alder carr and willow stands, although alder shows a decrease and its catkins and seeds are absent from the macrofossil remains. Some scrub and grassland is indicated from the plant macrofossils, but the terrestrial snails reflect an open flood plain grassland with probable seasonal flooding. This picture remains fairly stable through the late Neolithic and early Bronze Age until around 1600 BC (CD Section 2; Rackham *et al.*).

On the basis of the charcoal from excavated monuments and both funerary and settlement features (all at least 350m from the palaeochannels in the flood plain) Challinor (CD Section 2) concludes that, in the Neolithic, '*Quercus* woodland dominated, with some less densely wooded areas, allowing shrubbier forms of vegetation to flourish. Riverine flora were available, but seem to have been infrequently exploited'.

BOX 7: Peterborough and Grooved Ware Pottery

By Sarah Percival and Jackie Wells

Peterborough Ware



Peterborough Ware forms a significant proportion of the early prehistoric pottery assemblage recovered from all investigations on the Biddenham Loop. Sherds were identified in all three styles: Ebbsfleet, Fengate and Mortlake. The typological terminology in this publication follows Gibson's modified use (1995) of Smith's original definitions (1956), so Ebbsfleet refers to simple or sparsely decorated bowls; Fengate to vessels with simple rims, collars and flat bases; and Mortlake to highly decorated vessels with elaborate rims. The Ebbsfleet bowl shown here is one of the more complete examples from the Bovis investigations.

Grooved Ware

Tub-shaped Grooved Ware vessels are either straight-sided or slightly inturned at the rim, with flat bases and pointed rims. A mix of grog, sand and shelly limestone fabrics were identified, including a coarse fabric with voids caused by the leaching of shell from the surfaces of the pots. Decorative traits characteristic of the Durrington Walls and Woodlands substyles are present, while some vessels exhibit a mixture of both. For the Welland Valley, Kinnes considered the latter to represent a regional variant (1998, 213), which may also be the case with the Biddenham Loop material.

For details of the pottery assemblage and more figures see CD Section 2; Percival

The charcoal record, in contrast to other evidence, suggests that the wooded landscape did not change dramatically in the early Bronze Age, 'although there were some more open areas of scrub, or hedgerows, which would have supported shrubs such as Maloideae and *Prunus spinosa*' (CD Section 2; Rackham *et al.*).

Direct evidence for woodland clearance comes in the form of tree-throw holes. They are common features on Neolithic sites, although they are not necessarily the result of human action and are often undated. Approximately 240 were identified within the Bovis investigations; variability in the direction of fall was considered to be a possible indicator of human agency rather than natural events (when a common direction of fall is more likely) (Luke and Edmondson 2008, 69). Dating evidence was limited and ranged from the Mesolithic through to the late Bronze Age/early Iron Age (Luke and Edmondson 2008, 71). Tree-throw L2401 was the only one within the recent investigations to produce datable artefacts — a relatively large quantity of Beaker pottery and a leaf-shaped arrowhead of earlier Neolithic date.

Giorgi (CD Section 2) states:

> The Neolithic period samples, mainly from pit and post-hole fills in the southern part of the Biddenham Loop, produced only traces of charred cereal remains of *Triticum* sp. (wheat) (including hulled wheat in the late Neolithic phase) and *Hordeum* sp. (barley) … Both early and late Neolithic samples show the collection and consumption of wild food in the form of hazelnuts, possibly from local woodland.

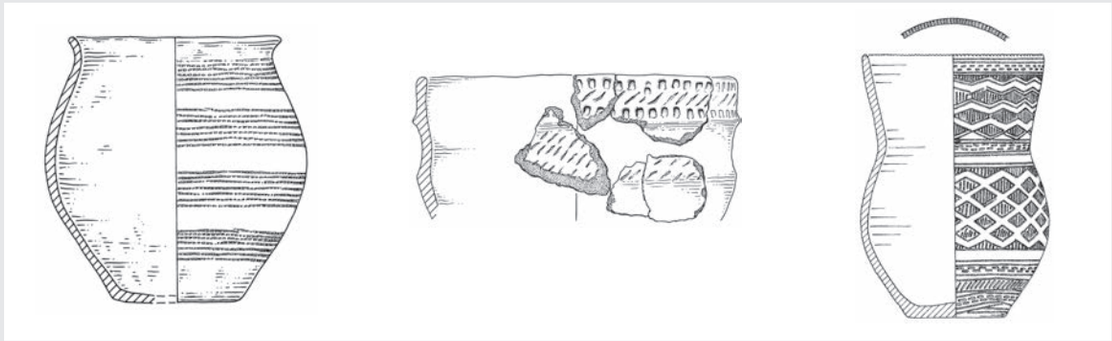
However, he also says:

> There was a significant increase in the amount of charred cereal remains in the early Bronze Age with evidence for mainly emmer wheat and barley including *Hordeum vulgare* (six-row hulled barley); these are usually the main cereals found during the earlier Bronze Age in southern England (Greig 1991, 302). There was

BOX 8: Beaker and Collared Urn Pottery

By Sarah Percival and Jackie Wells

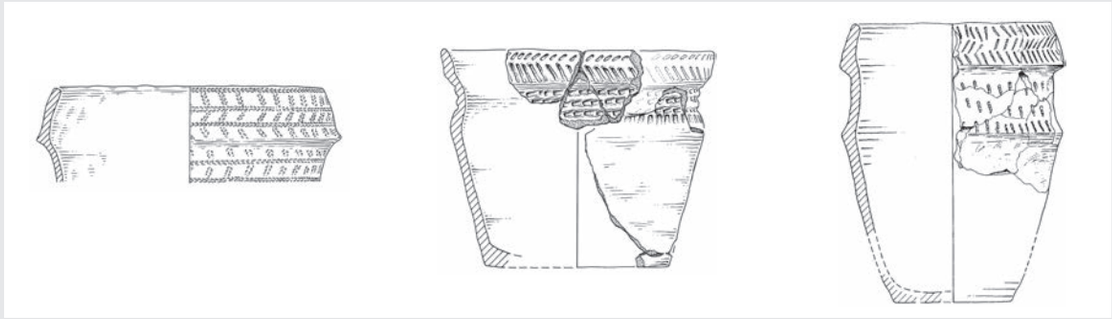
Beaker



The Beakers are predominantly grog-tempered with a small number in flint-tempered fabric. Coarser vessels feature fingertip-impressed rustication forming pinched pairs of vertical or horizontal cordons (above centre). The 'fine' vessels have comb-impressed or incised zoned bands and lozenge-shaped panels, often filled with lattice or alternating plain or combed bands and triangles.

One complete Beaker accompanied the central burial within a ring-ditch. It is decorated all over with zoned, comb-impressed horizontal bands, each of seven rows, interspersed with plain bands. It has a globular, sinuous profile with low belly, short concave neck and out-turned rounded rim (above left). Mention should be made of the finely made Beakers from the Bovis investigations (above right). They had bulbous bodies and long necks decorated with comb-impressed filled lozenges. Allen (2008, 113) has suggested that they may represent a regional variant, distinct to the Bedford area. However, no vessels of this type were identified within the study area.

Collared Urn



Collared Urns are mainly grog-tempered; there is a single example in a grog and calcareous fabric. Formal traits exhibited comprise neat, straight collars and cord-impressed decoration. The collar of the urn from cremation burial SG25034 is decorated with plaited cord impressions, forming three horizontal bands infilled with alternate rows of short horizontal lines. Below the collar the decoration appears to be similar, comprising horizontal bands of plaited cord impressions infilled with short vertical lines (above left).

One urn has rectangular tooled marks on the collar with deep cord-impressed rows below, and a row of rectangular tooled marks on the shoulder (above centre). The decoration forms filled triangular panels on the collar and a herringbone motif on the rim top. Another urn has diagonal fingernail impressed rows on the collar. The Urn with twisted cord decoration (above right) is a more complete example from a cremation burial within the Bovis investigations.

For details of the pottery assemblage and more figures see CD Section 2; Percival

also tentative evidence for *Triticum spelta* (spelt), and occasional *Triticum aestivum* type (free-threshing wheat) grains; traces of free-threshing wheat together with barley were found in early to middle Bronze Age features within the Bovis investigations within the Biddenham Loop (Pelling 2008, 119) … There is evidence for the continued collection of hazelnuts … Wild fruits, *Crateagus monogyna* (hawthorn) and *Prunus spinosa* (sloe/blackthorn) represented by charred remains, may have been gathered for human consumption and a few *Quercus* (oak) cotyledons possibly as animal feed for pigs, although these remains may have arrived incidentally as part of wood fuel, suggesting shrubby, hedgerow, woodland vegetation close by.

IV. The Biddenham Loop monument and ceremonial complex (early Neolithic/early Bronze Age)

(Figs 3.2 and 3.3)

Introduction

Mesolithic people undoubtedly had significant places in their landscape — both natural, such as rivers and woodland, and of their own creation, such as camps, clearings in woodland and routeways. However, it is only with the beginning of the Neolithic period that the construction of the various forms of earthwork enclosures (with banks, mounds and timber structures) that we refer to as monuments and the treatment of some of the dead in a way that is archaeologically visible are seen. The interpretation of the Biddenham Loop monuments, like that of so many on the gravels of southern England, is hampered by the removal through ploughing of all their above-ground elements. Sub-surface remains suggest that monument L3210 may have been screened by a timber structure, but such evidence is rare.

The nature of the monuments built in the 4th and 3rd millennia BC and the treatment of the dead changed over time. Bayesian modelling of the radiocarbon dates suggests that the earliest monument within the study area, L2312, was 'probably constructed in 3950–3690 cal. BC (68% probability)' (CD Section 2; Hamilton). It is striking that this monument, which survived as a sub-circular ditched enclosure, was located fairly centrally within the Loop. There is some evidence to suggest that it may have originally been constructed within a woodland clearing and, therefore, views from it, at least in the 4th millennium BC, may have been very restricted. It is possible that its central position in relation to the Mesolithic hunter-gatherer camps located on the edge of the woodland above the flood plain was the significant factor in its location. This monument appears to have influenced the location of subsequent monuments, settlement and other landscape features for several millennia.

It is clear that the Neolithic monuments, such as L2356 and L2191, had very complex histories; all of them were remodelled at least once, although in the cases of the sub-circular monuments this was sometimes restricted to the entrances. Monument building, specifically of the ring-ditches, along with the digging of shafts and large pits, appears to have reached a peak in the early Bronze Age. The last firmly dated central burial within a ring-ditch took place in the early part of the 2nd millennium BC. These monuments continued to have significance to the local population throughout the late Bronze Age and well into the Iron Age.

Given the small number of burials, it is clear that only a minority of the population was commemorated in this way. The individuals concerned may have been significant individuals or may simply have died at an opportune time for formal burial. Whatever the reason, the community made a collective decision to invest time and effort in their burial. There is no evidence at the Biddenham Loop for any of the associated feasting that is seen on some other sites. However, this may simply indicate that the surrounding ditch, which typically produces most of the evidence for feasting, was dug some time after the actual burial.

In its most developed form the Biddenham Loop monument complex comprised three separate clusters: SL3 (Fig. 3.4), SL5 (Fig. 3.5) and SL7 (Fig. 3.6). Although the clusters could be described as 'barrow cemeteries', that term has been avoided because not all the monuments produced evidence for burials, the linear arrangement of monuments in SL5 is suggestive of a ceremonial route and the presence of shafts/large pits also indicates activity other than just burial. Each cluster featured an early Neolithic sub-circular monument, a later Neolithic oval monument, early Bronze Age ring-ditches and a small number of flat graves, shafts and large pits. The clusters were focused around the early Neolithic monuments (*cf.* Barrow Hills, Radley, Oxon.; Barclay 1999b, 323), and in some cases early Bronze Age ring-ditches were aligned on the early Neolithic monuments — most clearly in the case of the north-east cluster SL5. Similar juxtapositions are known elsewhere in Britain, as at Winterbourne Stoke, Wilts., where at least seven of over twenty round barrows in a cemetery were aligned on the long axis of a Neolithic long barrow (Woodward 2000, fig. 41).

Garwood has suggested that there are some consistent patterns in the way that the linear arrangements 'would have been experienced in the course of processional movements along them' (2011, 344). He suggested that at both the Drayton cursus and the Barrow Hills monuments in Oxfordshire 'ceremonial routes start by traversing a relatively elevated area of land, followed by a shallow valley, and then the top of another elevated area before coming to an end at a location providing relatively wide vistas' (Garwood 2011, 344 and fig. 14.13). Such a route would be comparable to the linear arrangement of monuments within SL5 — if a procession commenced to the north-east and moved south-west, it would start at the highest point within the Loop, pass through a shallow valley and finish to the south-west of the earliest monument in the centre of the Loop, where a large number of shafts/large pits were dug (Fig. 3.7). By, at the latest, the early Bronze Age this route would have had wide vistas. As Garwood suggested, these processional routes 'may perhaps be interpreted as symbolic pathways that reified acts of pilgrimage and rites of passage' (2011, 344). Although spatial patterning within the other two monument clusters at Biddenham Loop is less clear, the Neolithic monuments in both cases appear to be situated at the ends, suggesting that they too could have been the focus of processional routes.

A small rectangular enclosure L2471 is present within the southern monument and burial cluster at the Biddenham Loop. It has some similiarities to square enclosures found within the Cardington/Willington monument complex (Luke 2007, 35–6) and may have served a mortuary function. Using cropmark evidence, various authors have postulated the presence of long rectangular enclosures and a cursus within the Loop (Luke 2008, 20; Malim 2000, 80 and fig. 8.16 respectively). However, the recent investigations have proved conclusively that no such monuments exist — the proposed candidates are actually parts of Romano-British enclosure systems and trackways. The Biddenham Loop is therefore different from other monument complexes where these types of monuments were built, such as Cardington/Willington, Beds. (Malim 2000, 82) and Eynesbury, Cambs. (Ellis 2004, 6). The reasons for this are unclear, but it does not

appear to reflect a hiatus in activity. Cursus monuments are believed to have been built within the period 3640–3380 cal. BC to 3260–2920 cal. BC (Barclay and Bayliss 1999, 25), which is broadly the date of the burials within two of the sub-circular monuments within the Loop. It is likely that not all processional routes needed to be defined by substantial earthworks and evidence for this on the Biddenham Loop is indicated by the alignment of monuments (Fig. 3.7) and the segmented ditch (Fig. 3.33).

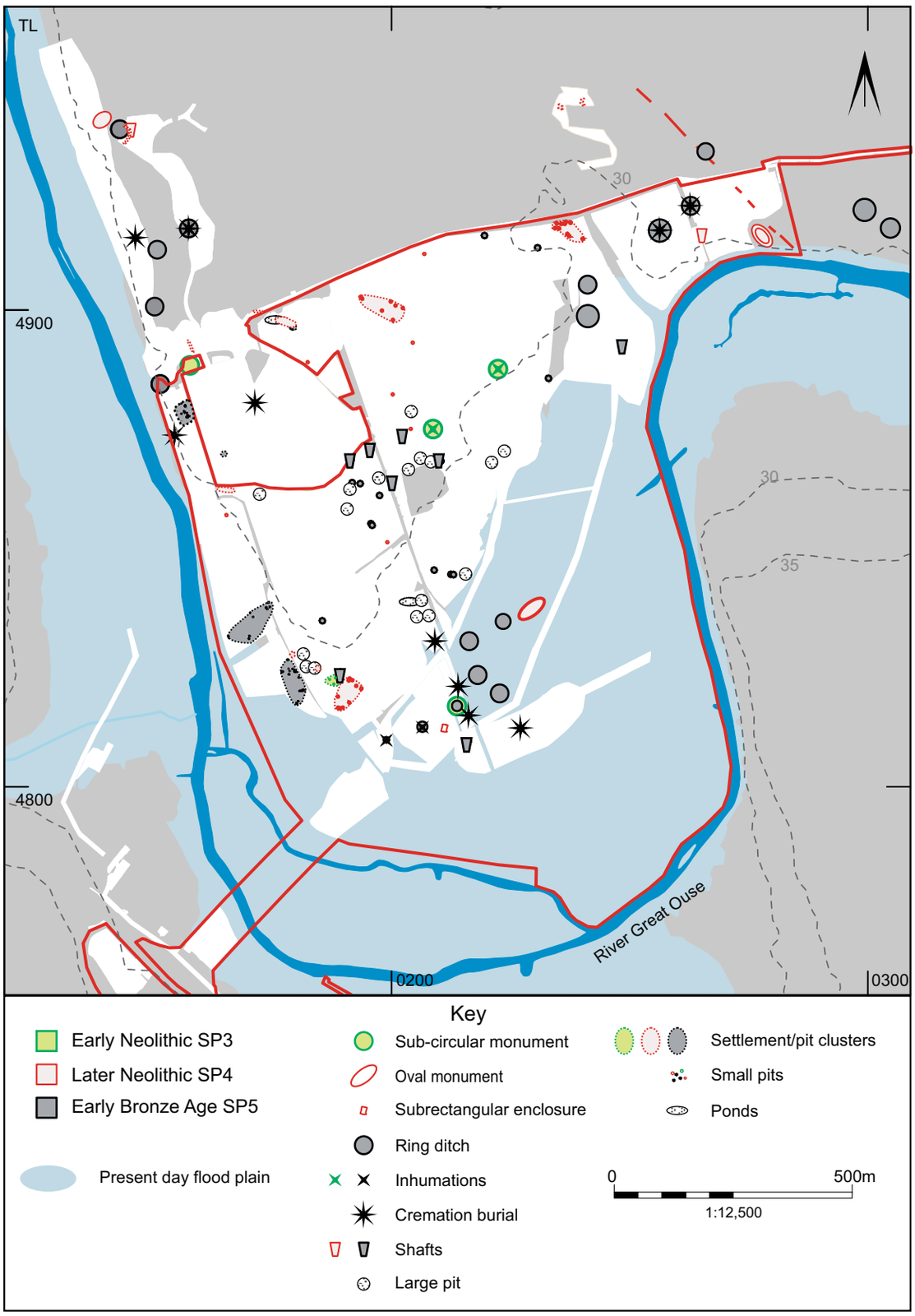


Fig. 3.2 The Neolithic and early Bronze Age landscape of the Biddenham Loop. Scale 1:12,500

Another type of early Neolithic monument absent from the study area and its vicinity is the causewayed enclosure. These are generally considered to have been constructed in the middle of the 4th millennium BC and are typically interpreted as places where people gathered for feasting, ritual activities and exchange (Oswald *et al.* 2001, 123–4). The nearest known example is *c.*7km to the east at Cardington, Beds. (Oswald *et al.* 2001, fig. 8.9). Although it is located near the Cardington/Willington monument complex (Luke 2007, 31), it is the only known example in this part of the Ouse Valley so was probably used by people from quite a large area.

The number and range of monuments within the Biddenham Loop has led to its being described as a

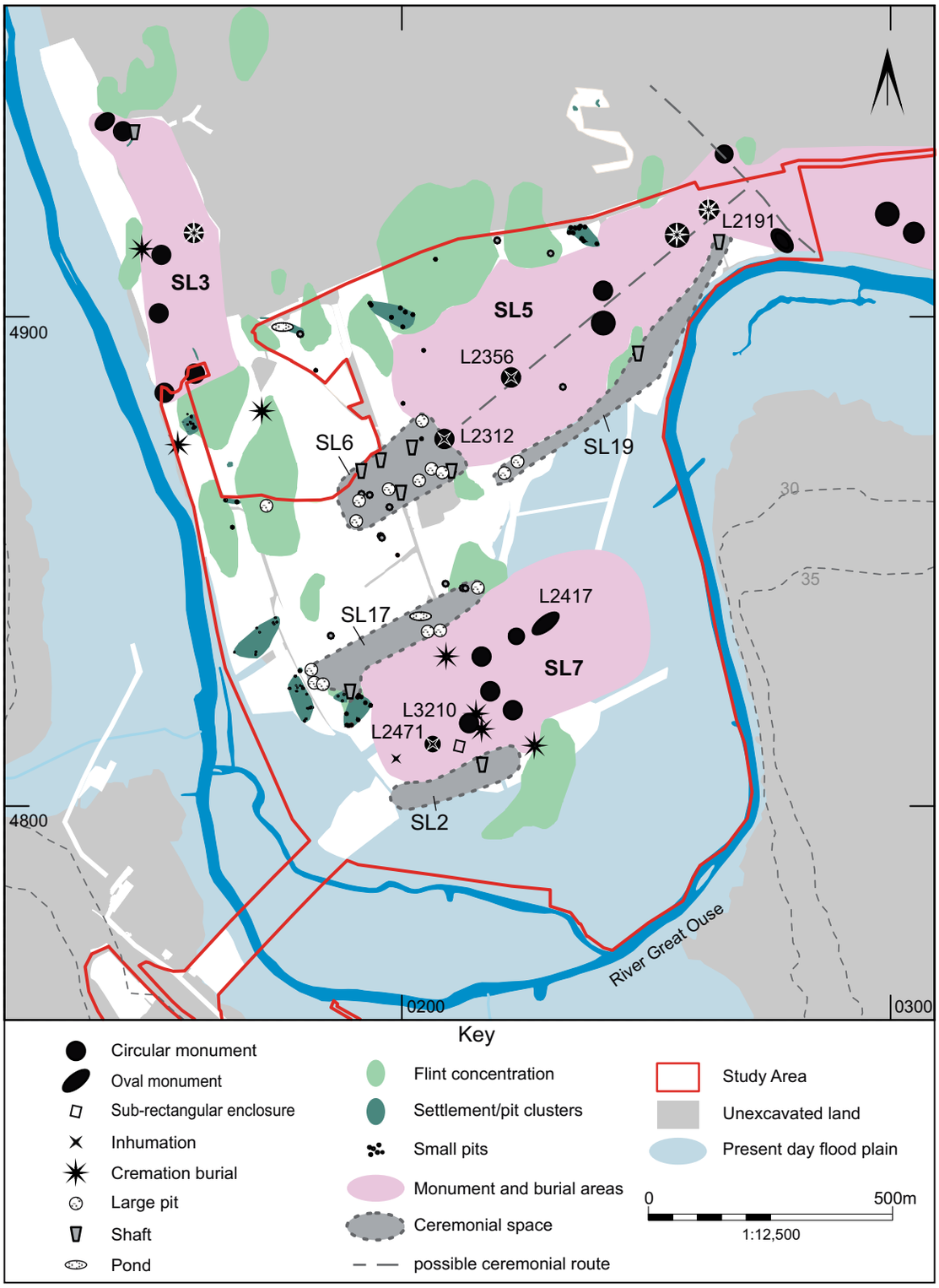


Fig. 3.3 Simplified plan of the Neolithic and early Bronze Age landscape of the Biddenham Loop (with key monuments labelled). Scale 1:12,500

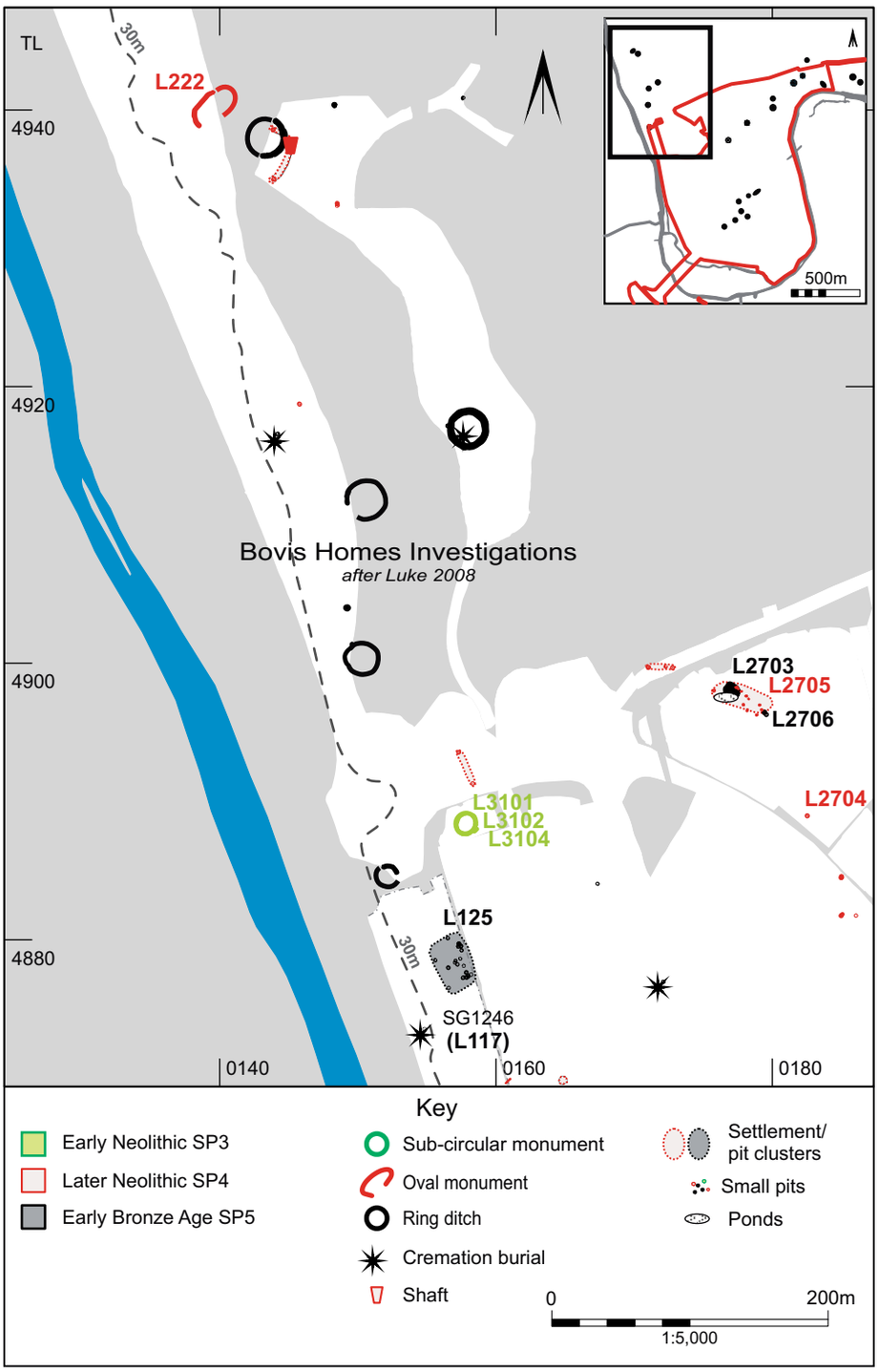


Fig. 3.4 Overall plan of monument and burial cluster SL3. Scale 1:5000

monument complex (Luke 2008, 29–31). As such, it can be compared to similar complexes in Bedfordshire (Luke 2007, 41), the wider Ouse valley (Malim 2000) and the Upper Thames valley (Barclay 1999b, 320). Monument complexes within the Ouse valley are spaced at fairly uniform 5–6km intervals, which suggested to Malim that 'they might have acted as focuses for distinct groups occupying clearly differentiated sectors of the Ouse' (2000, 57). Similar spacing has been observed within parts of the Upper Thames valley (Barclay 1999b, 320). The nearest known complexes to the Biddenham Loop are located upstream at Harrold/Odell and downstream at Cardington/Willington (Luke 2007, 41) (Fig. 3.8). The existence of monument complexes indicates a large-scale structuring of ceremonial activities by the local population, although the three clusters of monuments *within* the Biddenham Loop may suggest that three distinct groups of people used it. Various authors, such as Green (1974) and Malim (2000) for the Ouse valley, and Field (1998) for south-east England in general, have linked ring-ditch/

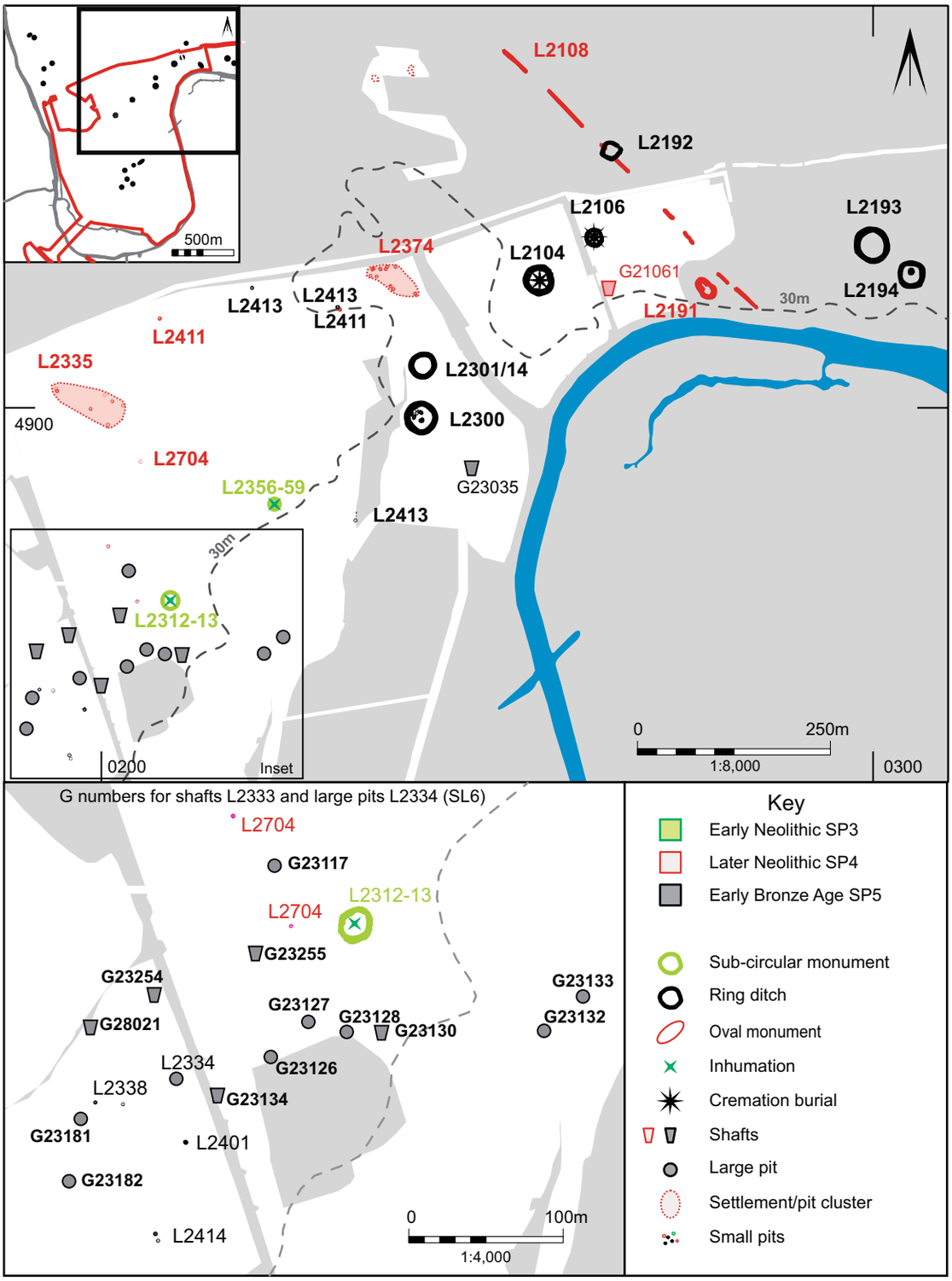


Fig. 3.5 Overall plan of monument and burial cluster SL5, with close-up of shaft and large pit cluster SL6. Scale 1:4000

barrow distributions to 'tribal' territories. The presence of predominantly burial monuments in the early Bronze Age and the absence of cursus and larger henge monuments may suggest that by this time the Biddenham Loop had become a focal point for burial rather than ceremonial activities, although of course the two are intertwined. A similar change is suggested for Abingdon, Oxon, where 'from the middle Neolithic onwards, its focus was on the dead, and, by the Beaker period it may have become revered as an ancient site' (Hey and Barclay 2011, 307).

As observed in the Thames valley, the area around the Biddenham Loop monument complexes also contained a small number of monuments. Isolated ring-ditches are visible as cropmarks to the north of Biddenham; immedi-

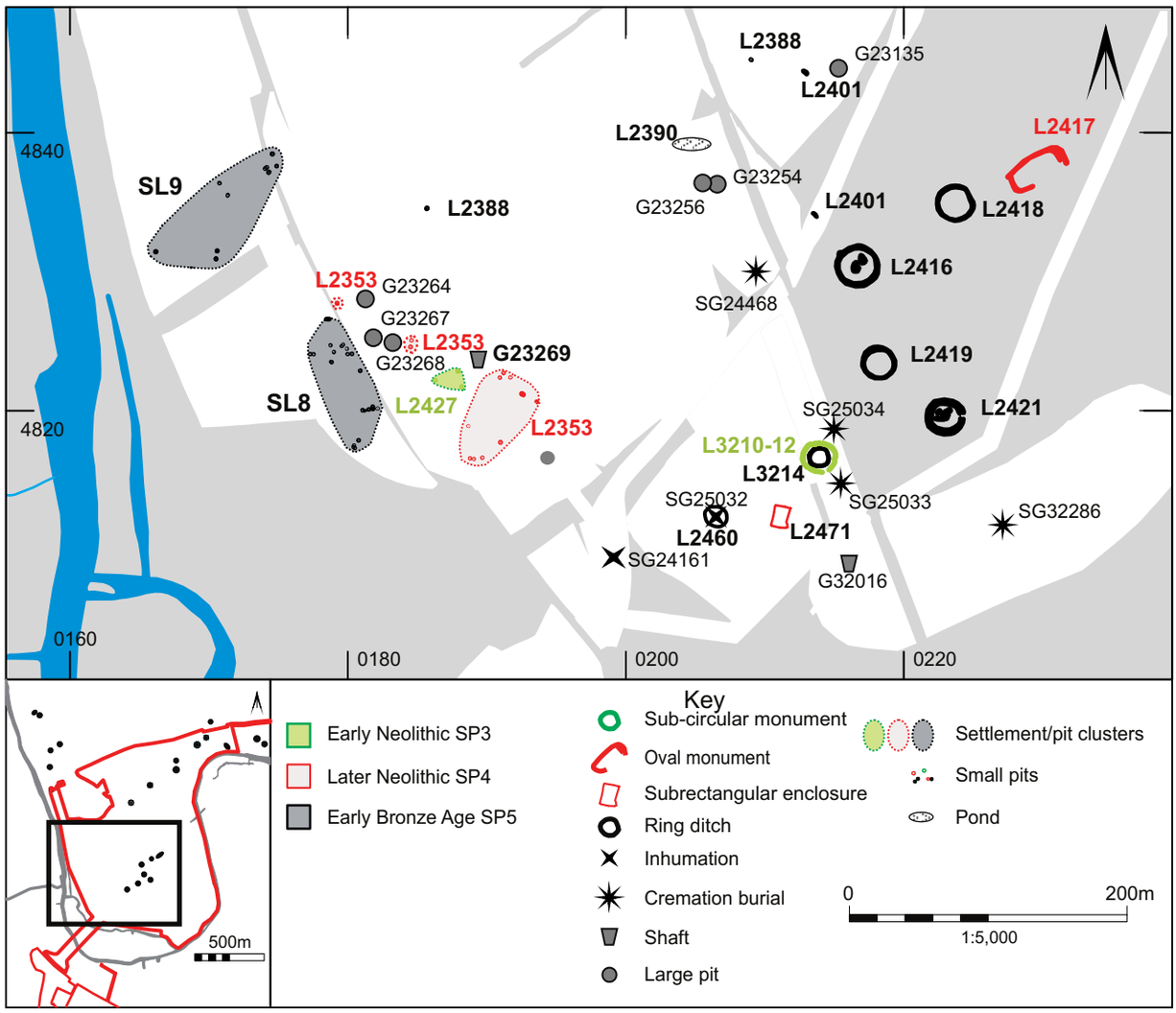


Fig. 3.6 Overall plan of monument and burial cluster SL7. Scale 1:5000

ately south of the Loop a cluster of three ring-ditches was found during evaluation at Cutler Hammer Sportsground (BCAS 1999a). There may also have been a ring-ditch (L709) within Land west of Kempston.

One significant component of the Biddenham Loop monument complex not seen elsewhere is the shafts (eight) and large pits (sixteen) found in the vicinity of the monument clusters (Fig. 3.3). One shaft has been radiocarbon dated to the later Neolithic and five others to the early Bronze Age, suggesting that, like the ditched monuments, they were part of a long-lived tradition. One particular concentration, SL6, was located to the south-west of the central early Neolithic sub-circular monument L2312 at the end of the putative processional route.

The monuments will be discussed together in this section. However, it is important that they are considered in conjunction with the other aspects of the contemporary landscape. Although the Biddenham Loop became a focus of monuments and associated ceremonial and burial activity, the settlement evidence indicates that parts of it were also very much a living landscape.

The sub-circular monuments (early Neolithic)
(Fig. 3.8, Table 3.1, Plates 3.1–3.9)

Introduction, location and dating

Four sub-circular monuments with some degree of ditch redigging or alteration to their entrances were identified and assigned to SL1. Monuments L2312 (Plate 3.2) and L2356 (Plate 3.3) were central and were associated with inhumations which have been radiocarbon dated to the early Neolithic (although their early date was not known during fieldwork). Two similar monuments were found to the west (L3101) and south (L3210) (Plate 3.1) of the Loop. These did not contain material suitable for radiocarbon dating and optically stimulated luminescence (OSL) dating was not successful.

The radiocarbon dates, especially for the inhumations associated with monument L2312, are particularly early (Table 3.1). Bayesian modelling of these indicate that the monument could have been constructed:

> in either 4460–4365 cal. BC (6% probability) or 4360–4330 cal. BC (1% probability) or 4210–3665 cal. BC (88% probability). The monument was probably constructed in 3950–3690 cal. BC (68% probability) …. If the burials in the ditch are viewed as integral to the main use of the monument, then the model estimates that this [burial] activity ceased in either 3770–3240 cal.

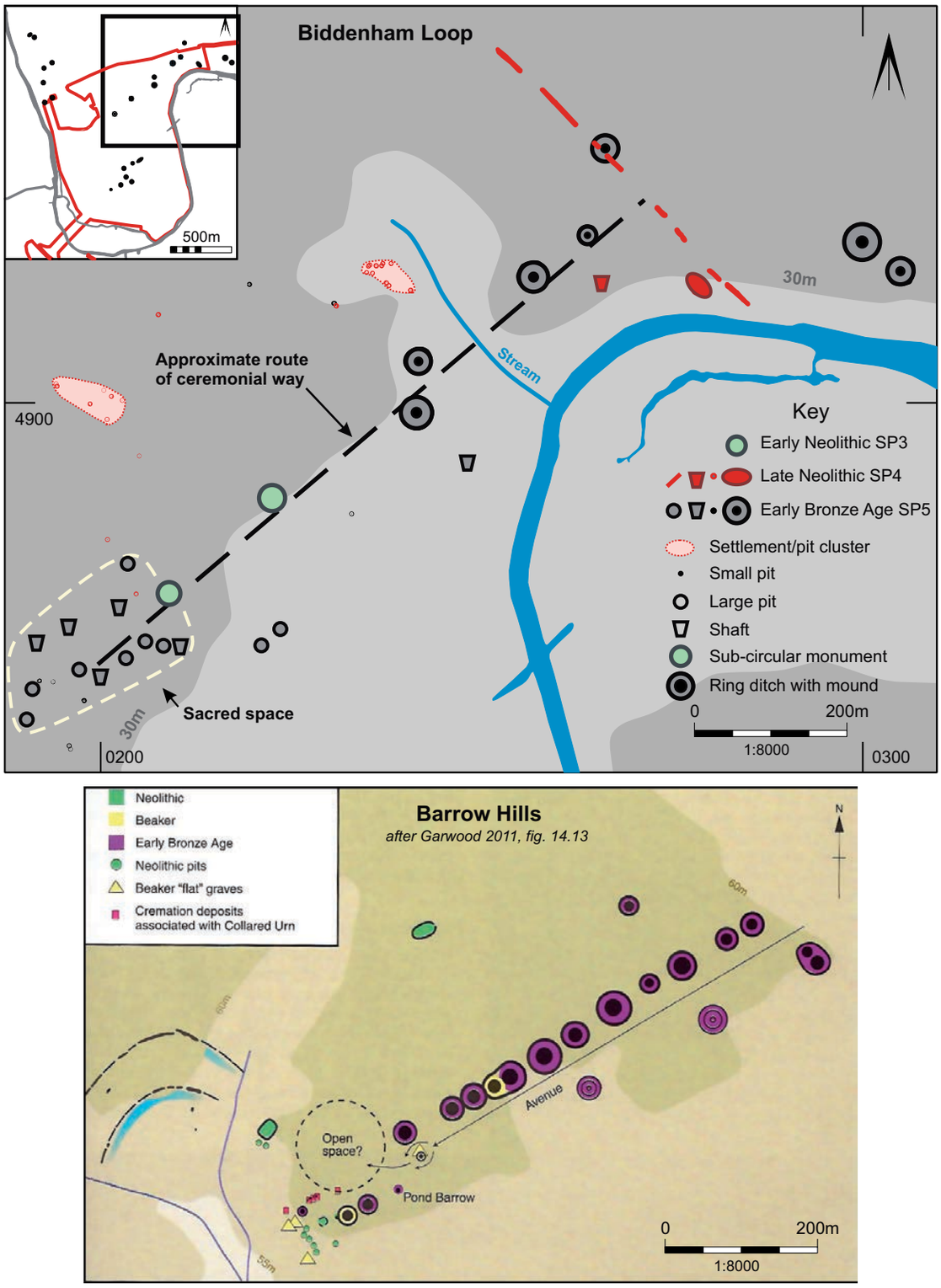


Fig. 3.7 Possible ceremonial routes within monument clusters at Biddenham Loop and Barrow Hills. Scale 1:8000

BC (88% probability) or 3150–3015 cal. BC (7% probability), and probably in 3755–3515 cal. BC (68% probability) (CD Section 2; Hamilton).

The monument itself clearly continued in use after this date because a recut of its ditch partially truncated burial SG24590. It must have been visible for at least another millennium because some of the early Bronze Age ring-ditches were aligned on it. In the case of monument L2356 'the model estimates that the central burial occurred in 3520–3355 cal. BC (95% probability) (CD Section 2; Hamilton).

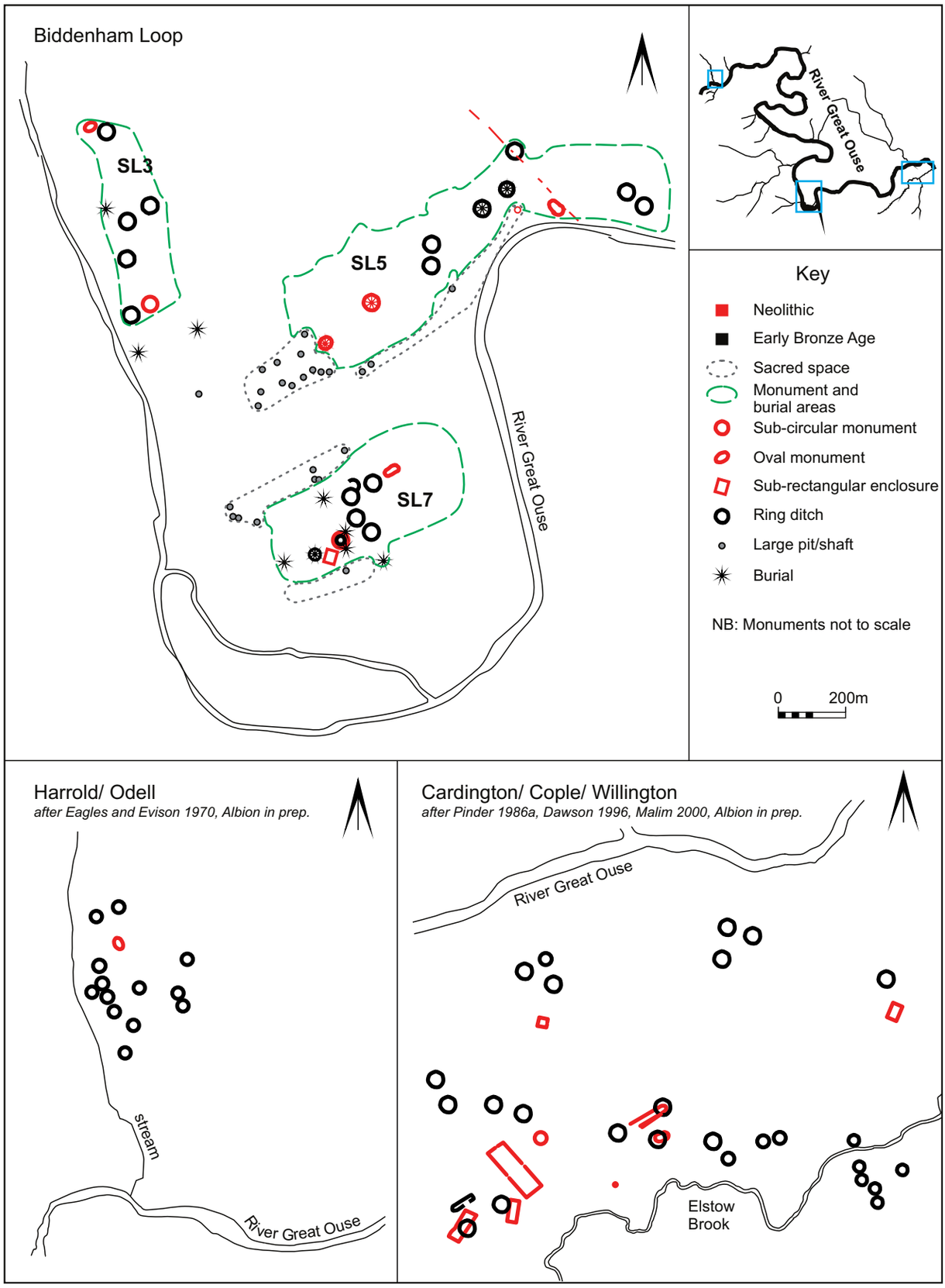


Fig. 3.8 Monument complexes at Biddenham Loop, Harrold/Odell and Cardington/Willington. Not to standard scale

BOX 9: Early Neolithic ceremonial monuments

This reconstruction by Cecily Marshall aims to give an impression of what the early Neolithic sub-circular monuments may have looked like within their contemporary landscape. Four such monuments have now been excavated within the Biddenham Loop; before the recent investigations their presence in this area had not even been suspected. They are presumed to have been the focus of ceremonial and ritual activities. The reconstruction is based on monument L3210, looking north towards monument L2312.

The monuments were all defined by a sub-circular ditch with entrances, which in some cases had been blocked. In this they contrast with the early Bronze Age ring-ditches, which were typically near circular and unbroken. In plan, parts of the ditches appeared to be slightly angular and, in the case of L3210, narrow and steep-sided — hence the timber screen shown in the reconstruction. The monuments may have been kept 'ritually' clean, as virtually no artefacts or other material were recovered from the ditch fills.

Monument L2312 was radiocarbon dated to the early Neolithic. Two of the three dates came from two human burials placed in its ditch. Burials of this period are still relatively rare in Britain and accentuate the significance of these monuments. These monuments also became the focus of monument building, burial and other ritual activities for perhaps two millennia.

NOTE. There is no evidence for the post arrangement shown within the interior and the position of the trees is pure speculation.

Form

(Figs 3.9–3.14)

All four monuments were defined by a ditch which demarcated a sub-circular area (Fig. 3.9, Plates 3.1–3.3), in contrast to the circular ring-ditches of the early Bronze Age. Two were associated with burials, but the only central grave was within L2356. Three had definite entrances (see below) and, with the exception of the two graves within L2356 (see below), no internal features were present. Their internal diameters were *c.*11m × 10m (L2356), 14m × 12m (L3101), 18m × 15m (L2312) and *c.*22m × 19m (L3210). Of these, L2312 is very similar to the enclosure at Shepperton, which was 23m × 21.5m (Jones 2008, 6) (Fig. 3.11).

All four of the Biddenham Loop sub-circular enclosures were subject to some degree of ditch redigging or alteration to their entrances (see below). It is clear that they had a complex constructional history and it is possible that their purpose may have changed over time. The shape in plan of the ditch defining L2312 is intriguing because it was almost polygonal; the angles are most obvious in recut L2313, where they are located in the same position as the original ditch (Fig. 3.10). Occasional straight lengths or acute angles are also noticeable in at least two of the other sub-circular enclosures, such as L2356 (Fig. 3.12) and L3210 (Fig. 3.14). This could indicate that the ditch was dug in segments, as was suggested for Shepperton (Jones 2008) and Eynesbury (Ellis 2004). However, it is also possible that the ditches actually held wooden beams which supported some kind of timber screen. This may explain why the ditch defining L3210 has a narrow, steep-sided profile (contrast Plate 3.5 with Plate 3.4).

Asymmetrical fill patterns within ditch segments were occasionally observed. They hint at the existence of an internal bank in L3210; however, similar patterns

Plate 3.1 Aerial view of sub-circular monument L3210, from the south, with hand excavation nearing completion

Plate 3.2 Aerial view of sub-circular monument L2312, from the north, at the commencement of hand excavation

Plate 3.3 Aerial view of sub-circular monument L2356, from the north-east

Plate 3.4 The ditch defining L2312 under excavation

Plate 3.5 The ditch defining L3210, showing its narrow profile (1m scale)

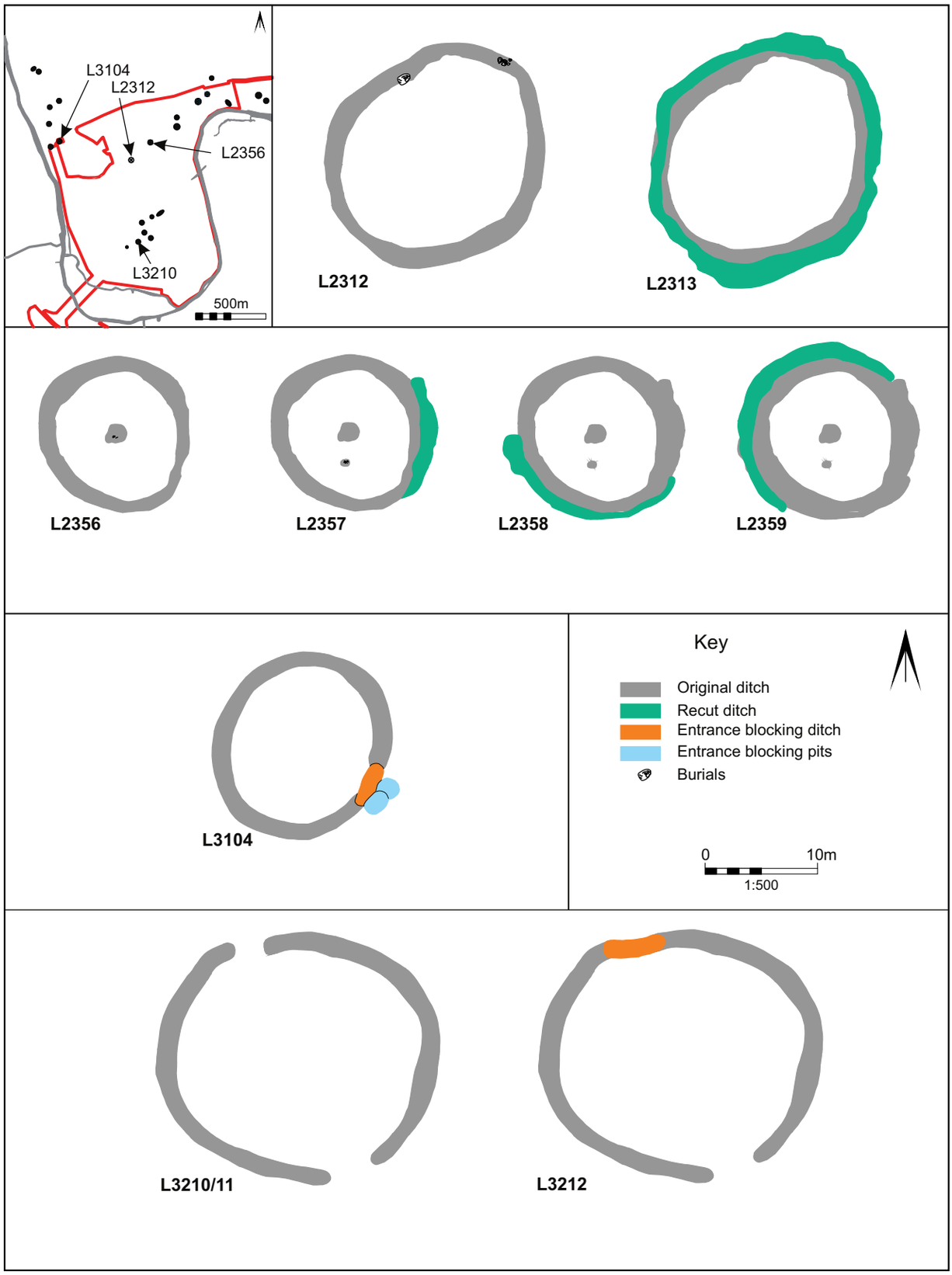


Fig. 3.9 Comparative plans of early Neolithic sub-circular monuments on the Biddenham Loop. Scale 1:500

were not observed consistently in the other segments. However, the presence of an internal bank is perhaps indicated by the way a middle Bronze Age ditch stops and a Romano-British ditch narrows within *c.*1m of the outer edge of the early Neolithic ditch (Fig. 3.26).

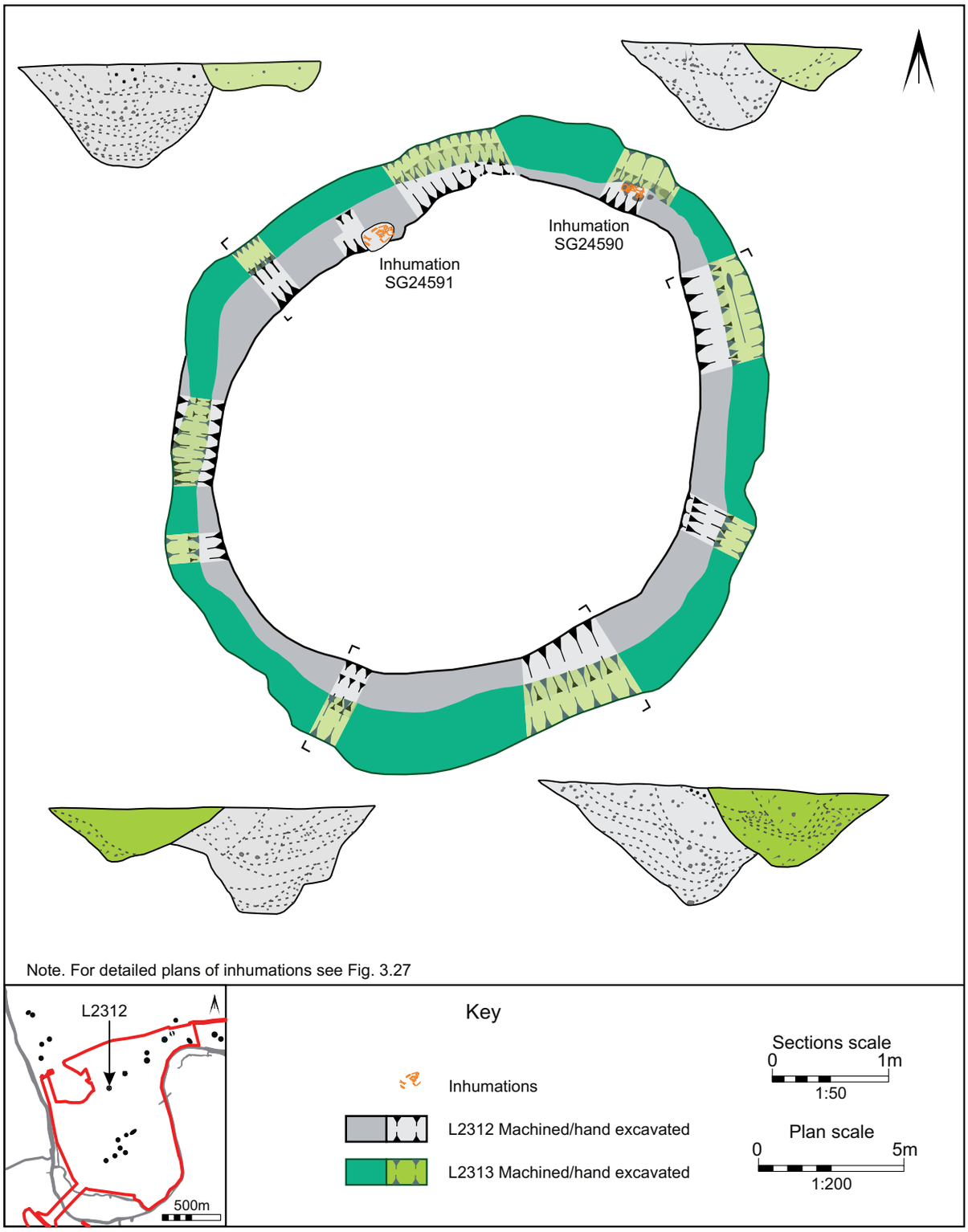


Fig. 3.10 Detailed plan of sub-circular monument L2312 with recut 2313. Scale 1:200

L2356 perhaps served a purpose different from that of the other sub-circular enclosures — although it had a complex sequence of ditch recuts, it contained a central burial (Fig. 3.12, Plate 3.3). Its ditch was originally dug as a complete circuit, although a possible entranceway is indicated to the south-east, where the ditch narrows. Subsequently it was redug on three occasions (L2357/2358/2359), but never again as a complete circuit. Ring-ditch 1 at Barton, Beds., had a similar sequence but none of its phases were firmly dated (Clark 1991, fig. 3). In its earliest form it was a sub-square enclosure with a north-facing entrance and human bone in its ditch fill (Clark 1991, 22). Ultimately, it took the form of a C-ditch monument with a wide south-east-facing opening.

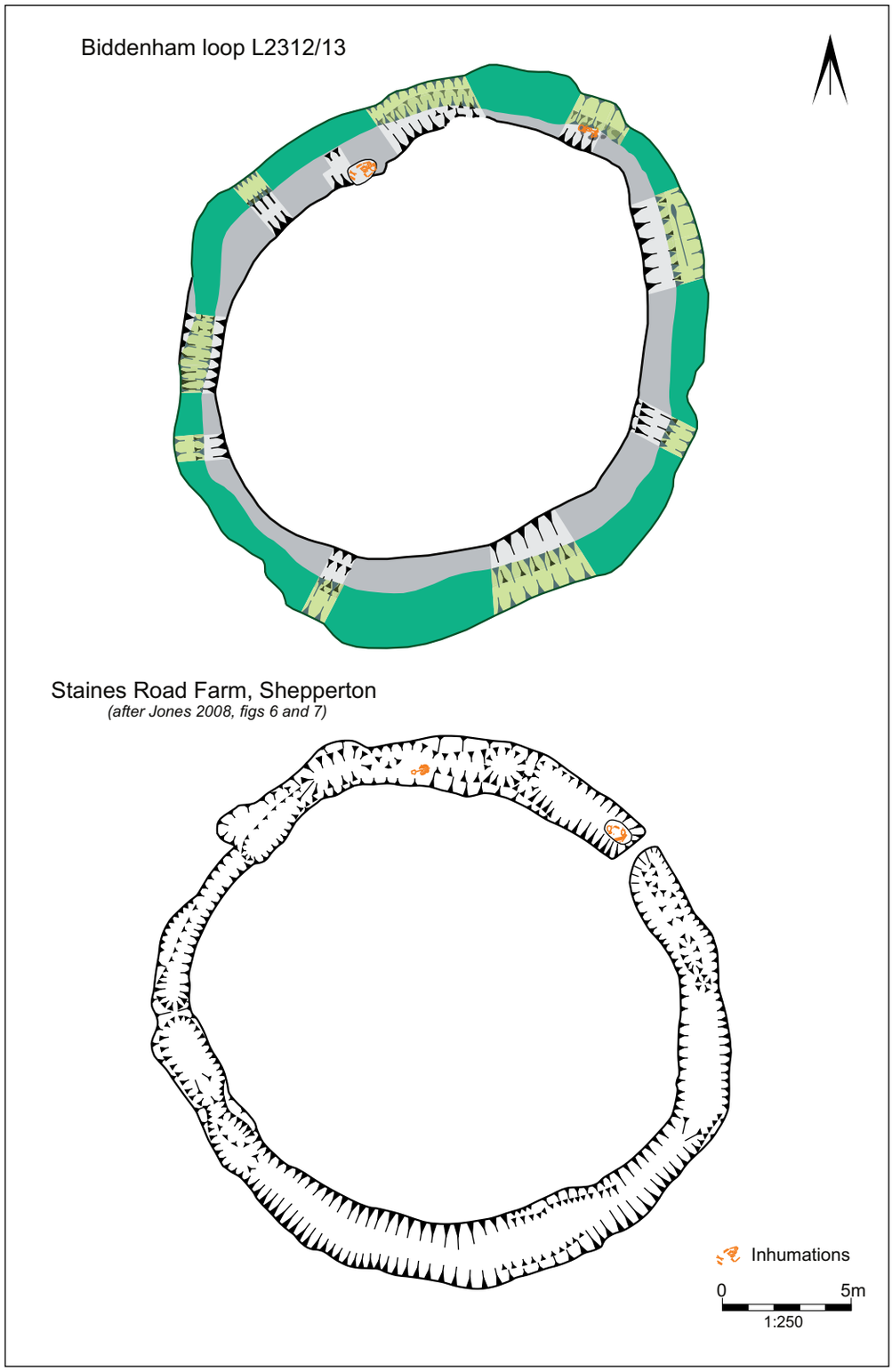


Fig. 3.11 Comparative plans of monument L2312/13 and Shepperton. Scale 1:250

This has some similarities with the C-ditch monument at Broom, Beds. that was believed by its excavators to have originated in the earlier Neolithic (Cooper and Edmonds 2007, 53–61).

Entranceways
(Fig. 3.13 and 3.14)
Two monuments had definite entrances: L3101 to the south-east and L3210 to the north and south. The narrowing of the ditch to the south-east of L2356 may indicate the location of an entrance but the extent of recut-

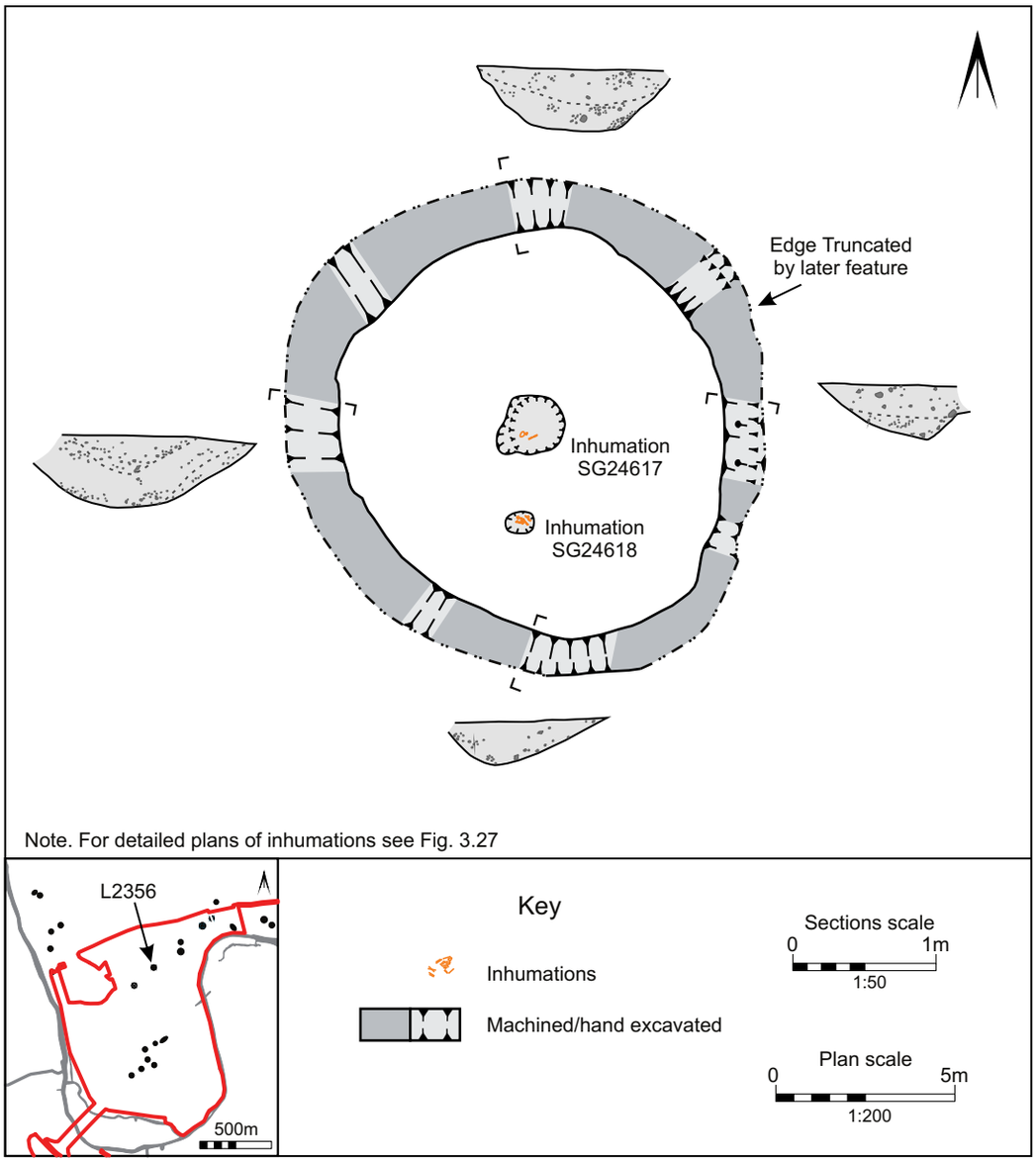


Fig. 3.12 Detailed plan of sub-circular monument L2356 (original phase). Scale 1:200

ting in L2312 precludes its positive identification. In both monuments the original entrances were subsequently blocked, with the exception of the southern entrance of L3210, which remained open (Plate 3.1). The entrance of L3101 was initially narrowed by a linear pit (L3104) and subsequently completely blocked by another linear pit (L3102) (Plate 3.6). The north entrance of L3210 was completely blocked by a linear pit (L3212). This process is paralleled in the monument at Eynesbury, Cambs., the south-east entrance of which was initially narrowed by a pit before being finally closed by a gulley; its north entrance was closed by a large pit (Ellis 2004, 102). A charcoal-rich deposit at the base of the latter produced a radiocarbon date of 3970–3690 cal. BC (4995 ± 65 BP). The entrances of monuments are often considered to have been aligned on astronomical phenomena, ceremonial routeways or earlier monuments (Harding and Lee 1987, 35). It is therefore interesting to note that the south-east entrance of L3101 and the north entrance of L3210 would provide a line of sight, which, in combination with the central monument L2312, may also have developed into a ceremonial routeway. (Ceremonial routeways are discussed more fully above: p.31.)

Finds

In contrast with the monuments at Eynesbury, Cambs. (Ellis 2004), and Shepperton, Surrey (Jones 2008), the ditches associated with the Biddenham Loop monuments produced very few artefacts (Table 6.1) despite hand excavation and sieving of a significant volume of the ditch fills. Each monument produced only a handful of artefacts, mostly flakes: L2312/13 (twelve flints), L2356/57/58/59 (six flints), L3101 (four flints) and L3210 (seven flints). 'Apart from the stone axe, and probably the burin (although this might be a residual Mesolithic piece) the flint from SL1 does not include any closely datable retouched pieces. The presence of the blades and blade-like pieces is, however, consistent with flint-working of the period and the blade-type cores suggest that knapping occurred in the vicinity' (CD Section 2;

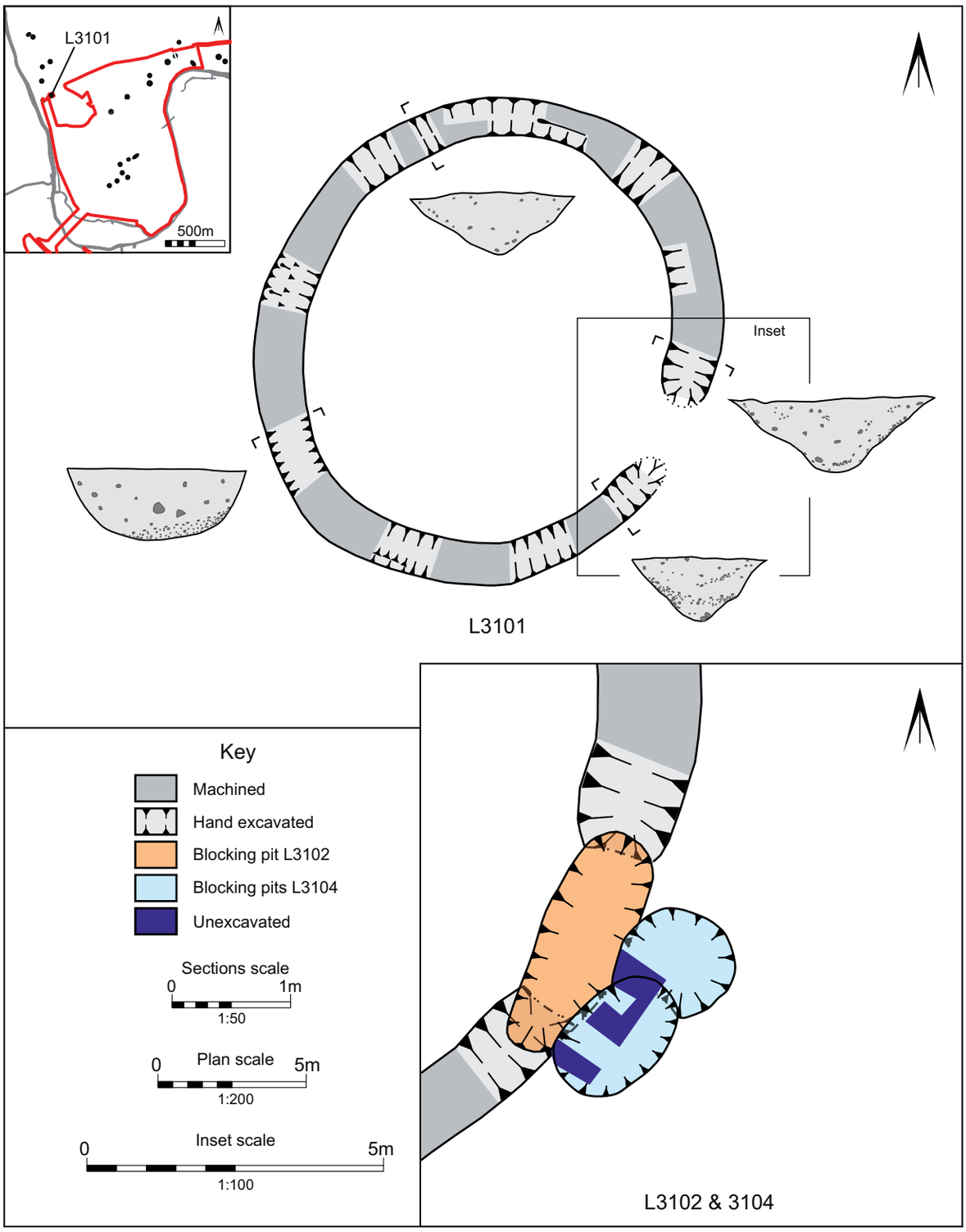


Fig. 3.13 Detailed plan of sub-circular monument L3101, with inset plan for blocking features L3102 and L3104. Scale 1:200

Bates). No pottery or animal bone and very little charred material was recovered.

The most significant find from L2312, both in its own right and because of the small overall assemblage, was an incomplete polished axe from Great Langdale, Cumbria (Group VI) (CD Section 2; Bates, Fig. 1, F1). 'Its blade edge and part of its body survives; the butt end is missing' (CD Section 2; Bates). Two fragments of Group VI axes were found in the C-ditch monument at Broom, Beds. (Cooper and Edmonds 2007, 57), while an incomplete polished axe was found within the ditch at Eynesbury, Cambs. (Ellis 2004, fig. 9).

The small assemblages of finds from the ditches is intriguing and may suggest that they were kept 'ritually'

L	Internal diameter (m)	Average dimensions of ditch width:depth (m)	Fill	Finds	Burials	*RCD*
2312	18 × 15	1.6:0.8	Secondary	Flint flake 1 (RAl 6005)	Inhumation SG24590	3940–3660 cal BC (SUERC-25529; 4985±35BP)
			Tertiary/sole	Polished stone Langdale axe (RAl 6011) Flint blade-like flake 1 (RAl 6008) Multi-platform flint flake core 1 (RAl 6009) Flint blade 1 (RAl 6014) Flint flakes 2 (RAl 6000, 6001) Flint spall 1 (RAl 6010)	Inhumation SG24591	3770–3640 cal BC (SUERC-25530; 4910±35BP)
2313	20 × 18	1.1:0.4	Primary	Flint flake 1 (RAl 6002)	—	3960–3710 cal BC (SUERC-26331; 5035±35BP)
			Secondary	Flint axe 1 (RAl 6004) Flint blade 1 (RAl 6003)	—	
			Tertiary/sole	Flint blade-like flake 1 (RAl 6019) Utilised flint flake 1 (RAl 6017) Flint flake 1 (RAl 6018)	—	
2356	11 × 10	1.4:0.5	—	—	Central inhumation SG24617 Off-centre inhumation SG24618	3520–3350 cal BC (SUERC-25527; 4645±35BP) 3350–3020 cal BC (SUERC-25528; 4470±35BP)
2357	—	1.6:0.4	Secondary	—	—	—
			Tertiary/sole	Flint blade-like flake 1 (RAl 5006)	—	
2358	—	0.9:0.1	Secondary	Flint blade-like flake 1 (RAl 5001)	—	—
			Tertiary/sole	Flint flake 1 (RAl 5003) Flint blade-like flake 1 (RAl 5002)	—	
2359	—	1.4:0.4	Secondary	Retouched flint fragment 1 (RAl 5005)	—	—
			Sole	Flint flake 1 (RAl 5004)	—	
3101	14 × 12	1.5:0.6	Secondary	Flint flake 1 Single platform flint flake core 1 Flint combination burin/retouched 1 Flint core/tool 1 (RAl 11000)	—	—
3210	22 × 19	1.7:0.7	Tertiary	Flint bipolar core 1 Multi-platform flint flake core 1 (RAl 12007) Flint core fragment 1 (RAl 12004) Flint blade 1 (RAl 12002) Flint blade-like flake 1 Flint flake 1 Flint spall 1	—	—
3211	22	1.7:0.7	Tertiary	—	—	—

RAl = LWB1289 registered artefact number. All weights rounded up to the nearest 0.01g

Table 3.1 Summary of the early Neolithic sub-circular monuments

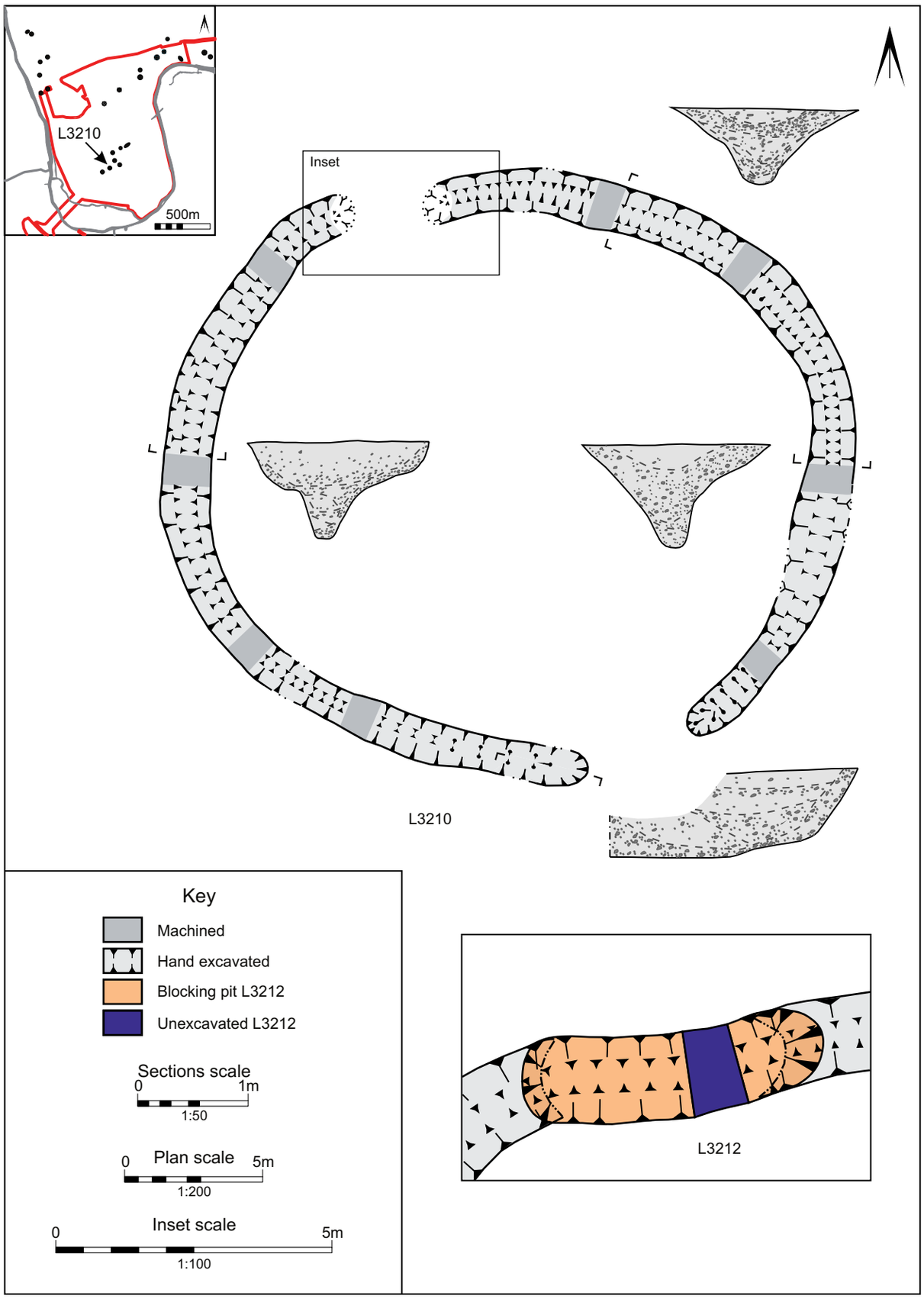


Fig. 3.14 Detailed plan of sub-circular monument L3210, with inset plan for blocking ditch L3212. Scale 1:200

Plate 3.6 The amended entrance to L3101 with linear pit partially excavated (1m scale)

Plate 3.7 Inhumation SG24590 within the ditch of monument L2312 after the removal of stones

Plate 3.8 Inhumation SG24591 at the base of the ditch of monument L2312 (1m scale)

Plate 3.9 Inhumation SG24617 within the central grave of monument L2356 (1m scale)

clean. With the possible exception of the axe fragments, no 'structured' or pyre-related deposits were identified within any of these monuments. Similar small quantities of finds from a Neolithic monument have been commented upon at Maxey West Field (Pryor *et al.* 1985, 66).

Burials
(Fig. 3.27)
Four inhumations associated with monuments L2312 and L2356 were radiocarbon dated to the 4th millennium BC (see above, p. 39), although they are unlikely to be contemporary. None was associated with grave goods. Nor was there any evidence for associated feasting, even in the case of the burials placed in the ditch of L2312, which would have provided a natural catchment for food waste, charcoal and other debris.

Two burials, *c.*8m apart, were found in the northern part of the ditch defining monument L2312 (Fig. 3.10). The western burial (SG24591/92) (Plate 3.8) was associated with the basal fill of the ditch and has been dated to 3940–3660 cal. BC (SUERC-25529: 4985 ± 35BP). The skeleton was 'of a male aged ≥46 years at death' (CD Section 2; Powers). He had been placed in a crouched position facing the exterior of the monument. The eastern burial (SG24590) (Plate 3.7) was associated with the secondary fill of the same ditch and has been dated to 3770–3640 cal. BC (SUERC-25530: 4910 ± 35BP). The skeleton 'was a 26–35-year-old probable female' (CD Section 2; Powers). She had also been placed in a crouched position facing the exterior of the monument. Lesions on the left side of the cranium indicate that she suffered from a chronic middle ear infection (*otitis media*). 'The condition would have been painful, causing headaches and localised swelling, and she would undoubtedly have suffered loss of hearing in her left ear' (CD Section 2; Powers). Large pieces of limestone were placed over the body, the largest over the head (Fig. 3.27). This was clearly deliberate and presumably associated with the individual's ear infection. The presence of limestone is significant because the ditch was not dug into the underlying limestone bedrock and, other than a single shaft, this represents the only occurrence of limestone within a feature of this period on the Biddenham Loop.

One of the few contemporary parallels for inhumations within ditches defining sub-circular monuments is at Shepperton, Surrey, where there are a number of striking parallels with the burials in L2312 (Fig. 3.11). As at Biddenham Loop there were two burials, both placed in the northern part of the ditch and both *c.*8m apart. The western burial was incomplete; the individual was of indeterminate sex and aged 25–35 years. The eastern burial was a female aged 30–40 years. The body had been placed in a crouched position facing the *interior* of the monument. It was dated to 3600–3340 cal. BC (OxA-4061: 4645±85 BP) (Jones 2008, 11–12).

Two graves, one central and the other off-centre, were dug within the interior of monument L2356 (Fig. 3.12). Both were poorly preserved (Fig. 3.27). The central burial (SG24617) (Plate 3.9) was an adult of indeterminate sex dated to 3520–3350 cal. BC (SUERC-25527: 4645 ±- 35BP). The off-centre burial (SG24618) has been dated to 3350–3020 cal. BC (SUERC-25528: 4470 ± 35BP). Burials within the interior of sub-circular enclosures dated to this period are rare. The contrasting depth of the two graves may support the radiocarbon dating, which suggests that they were dug at different times. The shallower depth of the off-centre grave could suggest that it had been dug through mound material, whereas the deeper central grave might have been dug before a mound was constructed. As is so often the case, it is impossible to determine which grave is associated with which ditch recut.

Interpretations of early Neolithic mortuary practices in Britain have been dominated by collective burial deposits within chambered tombs and earthen long barrows. In 1999 Alastair Whittle stated that 'the first single or limited-number burials under small barrows or in small ring-ditches date to the end of the Middle Neolithic' (1999, 60), although new evidence and the increased use of radiocarbon dating has changed his opinion (pers. comm.). In a recent review of early Neolithic mortuary practices in the Middle and Upper Thames valley Garwood noted the 'sheer number and variety of single articulated inhumation burials' (2011, 390). This is echoed at Biddenham Loop, where contrasting burial practices were observed in the two monuments: in L2312 the bodies were placed within the defining ditch, while in L2356 individual graves were dug within the interior of the monument. There are now a number of well-dated 4th millennium BC single inhumations graves in the Thames valley region (Garwood 2011, table 15.1). These are often associated with mortuary structures, as at Whiteleaf Hill, Bucks. (Hey *et al.* 2007). However, there is increasing evidence for 'formal' burials within individual graves, as at Barrow Hills, Oxon (Barclay and Bradley 1999, 31–4 and fig. 3.9). Within the Middle and Upper Thames valley the earlier single inhumations associated with monuments, such as Whiteleaf Hill and Shepperton, dating to the period *c.*3750–3500 cal. BC tend not to have grave goods, as was the case with the Biddenham Loop burials.

Discussion
Small monuments of 4th millennium BC date occur in a variety of forms but have often proved difficult to date securely. Comparable monuments to those on the Biddenham Loop — that is, ones that are sub-circular in shape and with at least one entrance — are known at Eynesbury, Cambs. (Ellis 2004), and Shepperton, Surrey (Jones 2008). Less comparable, but of similar date and size, are the segmented ring-ditch at Barrow Hills, Oxon (Barclay 1999a, 44–6) and the horseshoe enclosure HE1 at Perry Oaks, Heathrow (Lewis *et al.* 2006, 72–80). As Garwood observed, the interpretation and categorisation of these monuments 'varies greatly from one site report to another' (2011, 360). They are sometimes described as hengi-form monuments, although this terminology is potentially misleading and not universally accepted. The date of the two Biddenham Loop monuments, like those of Eynesbury (Ellis 2004, 7–11) and Shepperton (Bayliss and Jones 2008, 73), 'places them *c.*700–1000 years earlier than the traditionally accepted period for the beginning of henge construction, at the end of the late 4th millennium (Harding and Lee 1987)' (Ellis 2004, 102). Irrespective of the terminology used to describe the Biddenham Loop monuments it is highly probable, based on the Bayesian modelling, that L2312 at least was constructed before 3700 cal. BC and therefore at a time in Britain when monument construction and burials are

rarely identified. It is in this context that the central location of L2312 within the Loop should be seen.

The exact function of monuments of this type is uncertain. The majority are not associated with burials, although one of the Biddenham Loop monuments and the Shepperton monument had inhumations within their ditches (Fig. 3.11). It seems likely that they served as a focus for ceremonial and ritual activities, as suggested for the horseshoe enclosure at Perry Oaks, Heathrow (Lewis *et al.* 2006, 77–80). Their size suggests that they could have been built by relatively small numbers of people. The narrow entranceways of the Biddenham Loop monuments and the possible evidence for timber screens within L3210 suggest that access to the activities undertaken within the monuments was carefully controlled, perhaps to the exclusion of part of the population.

Other oval monuments (?later Neolithic)
(Fig. 3.15 and 3.16)
Three oval monuments are known from non-intrusive survey within the Biddenham Loop, but only one (Bovis L222) has been partially excavated (Luke 2008, 81 and fig. 5.4). Although they are little understood, their presence within monument clusters is important to our understanding of how this landscape developed. Two of the oval monuments (L2191 and Bovis L222) were *c.*30m long, but were placed on different alignments. Monument L2417 was on a similar south-west–north-east alignment to Bovis L222 but, at *c.*45m, was much longer. These monuments were at least 230m from the early Neolithic sub-circular monuments and were not aligned on them.

Non-intrusive survey evidence indicates that scheduled monument L2191 had a complex, and presumably lengthy, development history. In Fig. 3.14 it is suggested

BOX 10: Neolithic axes

By Sarah Bates and Holly Duncan. Photograph by Adam Williams

During the Neolithic period (c.4000–2600BC) ground and polished axes, of both flint and other stone types, were produced in large numbers in Britain. Petrological research has been able to pinpoint the sources of the stone and some Neolithic flint mines have been investigated. Many of the axes, like those from the Biddenham Loop, have been found far from their place of origin, indicating trade and/or exchange networks.

Some of the axes were no doubt mounted in wooden hafts and used, for example, in the woodland clearance that was a feature of the period. However, their manner of deposition and the distances they travelled also reflect their symbolic significance, which was perhaps associated with gender or group identity. One was found in the ditch of one of the early Neolithic sub-circular monuments and on other sites they have been associated with funerary monuments.

During manufacture the axe was flaked into the desired shape and then ground and polished. This final stage was a laborious process, requiring the continual grinding of the surface against a hand-held sandstone rubber stone or a piece of sandstone bedrock. It has been estimated that perhaps five hours' work was required for small axes and up to forty hours for larger examples.

The photograph shows two of the axes and two flakes from other polished flint axes found during the investigations. The stone axe second from left is made of Epidote tuff from Great Langdale, Cumbria; it was found in early Neolithic sub-circular monument L2312 (F1). To its right is a flint axe found during field artefact collection along the route of the Bedford Western Bypass. The flakes were recovered from early Neolithic pit G23274 (L2427).

For details of the flint assemblage and more figures see CD Section 2; Bates.

that it started as an oval barrow, after which a U-shaped ditch was dug within the interior at the north-west end; finally, the south-east end was redug. This sequence has some similarities with those of excavated monuments at Barrow Hills, Oxon (Bradley 1992, fig. 4) and Manor Farm, Horton, Berks. (Ford and Pine 2003, fig. 2.6) (see Fig. 3.15). The development sequence for the monument at Barrow Hills, Oxon, is not secure but it may have 'began as a rectangular enclosure, which was remodelled twice as a U-shaped enclosure, and only became an oval barrow in its final phase of use' (Hey and Barclay 2011, 273). That at Horton was originally a U-shaped enclosure with posts in the base of the ditch and with a possibly later outer ditch (Ford and Pine 2003, 23, 64–6 and fig. 2.6). The open end of the monument at Barrow Hills appears to have been the focus of major deposits of artefacts and ecofacts (Bradley 1992, fig. 8). Within the U-shaped ditch at Horton there appeared to be 'episodes of deliberate deposition of "domestic" debris' (Ford and Pine 2003, 20) and the outer ditch contained 'deliberate and structured deposition of material', most noticeably in the northern length opposite the open side of the U-shaped ditch (Ford and Pine 2003, 20 and fig. 2.6).

A longer monument described as a long barrow at Eynesbury, Cambs. had some similarities to the enclosures at Barrow Hills and Horton, but is probably a better comparison for L2417 at Biddenham Loop (Fig. 3.16). The Eynesbury monument may have had a timber revetment or façade at the widest, north-east, end and 'structured' deposits (dominated by human and animal remains) were almost exclusively found in the northern part of the ditch (Ellis 2004, 16–23). Only one flint flake was recovered from the ditch defining Bovis L222, although only a tiny percentage of it was excavated (Luke

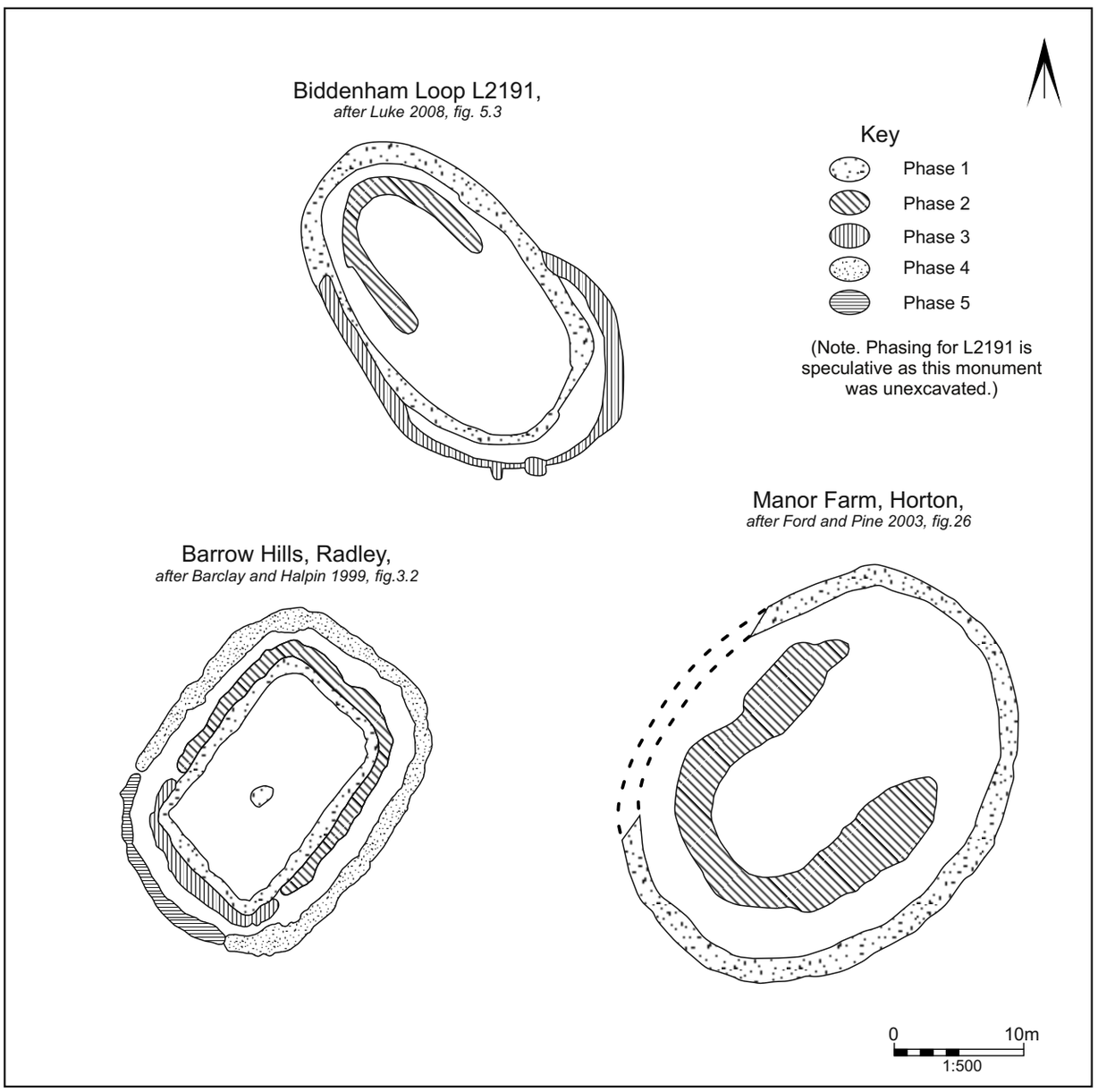


Fig. 3.15 Comparative plans of oval monuments with firm evidence of multi-phase development from Biddenham Loop L2191, Radley and Horton. Scale 1:500

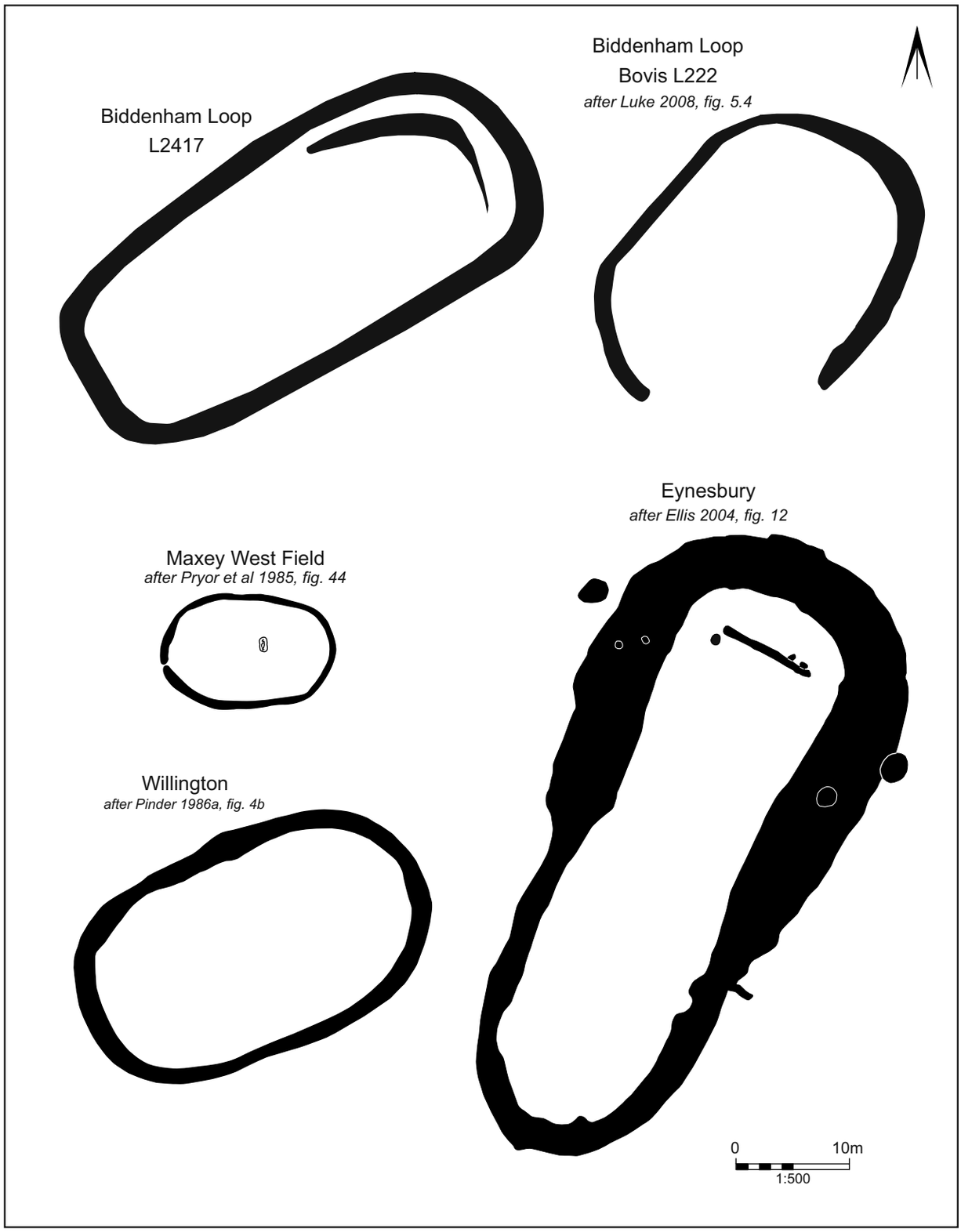


Fig. 3.16 Oval monuments at Biddenham Loop L2417 and Bovis L222, Maxey, Willington and Eynesbury. Scale 1:500

2008, 81 and fig. 5.4). Sterile fills were also observed in similar monuments at Willington, Beds. (Pinder 1986, 21 and fig. 4b) and Oval Barrow 15 at Maxey West Field, Peterborough (Pryor *et al.* 1985, 66). The almost complete absence of artefacts, as with the early Neolithic sub-circular enclosures, could suggest that these monuments were deliberately kept clean.

The Biddenham Loop oval monuments are largely unexcavated and have not produced any dating evidence. Their attribution to the later Neolithic is based purely on radiocarbon dating of comparable monuments — Eynesbury, Cambs. was dated to the early 3rd millennium BC (Ellis 2004, 103) and Horton, Berks. to the late 4th/early 3rd millennium BC (Ambers 2003, 62). However, some have clear evidence of complex histories; the monument at Barrow Hills, Oxon produced both late 4th and early 3rd millennium cal. BC dates (Barclay and Bradley 1999, 19–20), and it is clear that some oval monuments may have been in use for 1000 years. They also have similarities with monuments believed to be associated with burial, variously described as oval ditches/barrows (Drewett 1986; Loveday and Petchey 1982) and ring-ditches (Kinnes 1979).

Rectangular enclosure (?later Neolithic)
(Fig. 3.17)
Only a single rectangular enclosure (L2471) has been identified within the Loop. The long rectangular enclosures tentatively identified from non-intrusive evidence during the Bovis investigations in the north-west of the Loop (Luke 2008, 20) have been proved by the recent investigations to be part of Romano-British enclosure systems and trackways.

Rectangular enclosure L2471 was located in the southern monument and burial cluster SL7, *c.*32m south-west of early Neolithic sub-circular monument L3210 and *c.*36m east of ring-ditch L2460. Its alignment was just off north–south and it defined an area of *c.*15 × 12m. The ditch, which had been truncated in places, was under 0.4m wide and 0.1m deep, with a steep sloping concave profile. The widest gap was on the east side and the way the ditch turns inwards might suggest the presence of an entrance here. All of the ditch fills were excavated by hand but no artefacts were recovered. The monument's dating is, therefore, problematic. However, given that it is truncated by Romano-British trackway ditches and is located within a monument and burial cluster, a Neolithic/early Bronze Age date seems likely. Its assignment to the later Neolithic is more speculative and is based on the fact that the early Neolithic and early Bronze Age monuments are quite distinctive and that there is no burial evidence for the later Neolithic.

The Biddenham Loop rectangular enclosure shares some similarities, such as its near north–south alignment and east-facing entrance, with square enclosures within the Cardington/Willington monument complex. However, there are no similarities in terms of dating, dimensions or ditch size (Luke 2007, 35–6).

Ring-ditches (Beaker and early Bronze Age)
(Figs 3.18–3.26, Table 3.2)

Introduction, location and dating
The presence of a concentration of ring-ditches within the Biddenham Loop has long been recognised from aerial photographs (Woodward 1978). In total, eighteen have been identified on the basis of a variety of evidence (Fig. 3.18). Six were completely excavated within the recent investigations and five were partially excavated within the Bovis investigations (Luke 2008). Spatial associations between the ring-ditches and the Neolithic monuments indicate that the latter were still visible in the landscape and retained significance for the early Bronze Age inhabitants. In one case a ring-ditch was actually dug within the interior of an early Neolithic monument (L3214 within L3210) (Fig. 3.25, Plate 3.1, see p. 54). Ring-ditch L2460 was exceptional because of its small diameter (see Fig. 3.18) and deep grave, which contained a Beaker and other grave goods. As a Beaker burial it should not, in a strict chronological sense, be discussed alongside early Bronze Age ring-ditches; however, at least one of the latter produced a similar radiocarbon date so it seems appropriate to discuss them together.

The ring-ditches occur in the three clusters previously described: to the north-west (SL3); south (SL7); and north-east (SL5). The ring-ditches of the north-east cluster SL5 formed an alignment orientated south-west–north-east that incorporates early Neolithic monuments L2312 and L2356 in what may have been a processional way (Fig. 3.7). It was not possible to establish a firmly dated constructional sequence for this alignment, as was done at Barrow Hills, Oxon (Garwood 1999, 298–309). However, it is probably significant that early Bronze Age ring-ditch L2300, which produced the earliest date, is closest to the multi-phase Neolithic monument L2356. It is therefore tentatively suggested that the sequence within SL5 was constructed outwards from central early Neolithic monument L2312 (see Fig. 3.5). If correct, this could indicate dynastic succession, with the ring-ditches' orientation on ancient monuments intended to convey a sense of permanence. In cluster SL7 two ring-ditches were excavated, the remainder being known only from non-intrusive surveys. All the ring-ditches within cluster SL3 fell within the Bovis investigations (Luke 2008, 94).

The radiocarbon dates for the ring-ditches within the recent investigations are presented in Table 3.2. Hamilton suggested that '[u]sing the central burials provides the best estimate for the construction of L2104 and L2300' (CD Section 2; Hamilton). He estimated that L2104 could have been constructed in 1925–1735 cal. BC (93% probability) and L2300 in 2465–2280 cal. BC (87% probability) (CD Section 2; Hamilton). 'Monument L2104 is clearly later in date than L2300, and probably later than L2106 given that the off-centre burial for L2106 (SUERC-25699: 1383) has a 96% probability of pre-dating the centre burial in L2104' (CD Section 2; Hamilton). It is noticeable that the ring-ditches with the oldest dates, L2300 and L2460, are those closest to the early Neolithic monuments. To an extent this may explain why the only 'classic' Beaker burial (SG25032) in the Biddenham Loop (within ring-ditch L2460) was located where it was, near early Neolithic monument L3210, and took place at this time, when burial was becoming more common (unlike in the later Neolithic). L2460 was also the only ring-ditch constructed to the west of early Neolithic monument L3210. Although the dating evidence is limited, the off-centre burials in two ring-ditches (L2104 and L2300) appear to be a couple of hundred of years later than the central burials, suggesting that they are not part of the primary burial act.

Form
All the excavated ring-ditches, including those within the Bovis investigations, were near true circles (Plate 3.10). Their internal diameters ranged from 7m (Beaker ring-ditch L2460, Plate 3.11) to 36m (L2193). However,

most are in the range 18–28m (Fig. 3.18 and Table 3.2). These sizes are comparable both to those recorded by Field (1973, 60) and those seen at Plantation Quarry, Willington Sites 2 and 3, Beds. (Dawson 1996). No gaps in the ditches were present in the majority of the ring-ditches, clearly distinguishing them from the Neolithic sub-circular and oval monuments.

As excavated, the majority of the ditches were 2–3m wide and around 1m deep (Plate 3.12). More variable widths were most noticeable in ring-ditches L2104 and L2300, which were up to 5.8m wide (Fig. 3.19 and Fig. 3.21, respectively). Similar variations, albeit smaller, were observed in Bovis ring-ditches L110 and L200 (Luke 2008, 26). Other, more minor variations in width were recorded, but there was no evidence to suggest that these were the result of the recutting of the ditches. Such variations may be the result of varying hardness of the subsoil (Green 1974, 88), different episodes of construction/cleaning out or the use of gangs of workers (see Hamlin 1963, 14).

The ditches defining the smallest ring-ditches within the Biddenham Loop, Beaker L2460 (7m diameter), L3214 (13m diameter) and Bovis L98 (also 13m diameter) were under 1m wide and 0.5m deep. Ring-ditches L2460 and L3214 are also unusual for different reasons. L2460 was the only one to contain an inhumation, which was accompanied by a range of grave goods, including a Beaker and the paraphernalia of archery (see below). L3214 was the only one built within an early Neolithic monument (L3210) (Plate 3.1). There was no physical relationship to demonstrate that one ditch was later than the other; however, two pieces of evidence suggest that this was the case. The two ditches were not concentric, which tends to suggest that they were laid out at different times. Furthermore, while the ditch of early Neolithic monument L3210 was crossed by two later ditches (middle Bronze Age and Romano-British), these both appeared to respect the ditch of the early Bronze Age monument L3214 (Fig. 3.26). It therefore seems likely that the latter was still a prominent feature in the middle Bronze Age and later landscape, while the early Neolithic ditch was no longer visible by this time.

Of the eighteen ring-ditches on the Biddenham Loop only L2301 and L2460 within the recent investigations were clearly recut, with, in both cases, the replacement ditch largely following the course of the original. L2460 was unusual again because there is a suggestion that there were entrances to the north-east (only in the original circuit) and to the south-west (which was later blocked by an elongated pit (L2472)). The latter has similarities to some of the early Neolithic sub-circular monuments (see p. 44).

Fills

The ring-ditch fills were fairly uniform in nature with no unusual deposits (Plate 3.13). The basal fills derived from intermittent weathering and erosion; they comprised material derived from the gravel sides occasionally interleaved with dark silty deposits, and produced no finds. Three of the five ring-ditches excavated at Roxton, Beds. were similarly sterile (Taylor and Woodward 1985, table 4). Struck flint was far more common in the secondary and tertiary fills of the Biddenham Loop ring-ditches. Pottery was still scarce and, where present, comprised undiagnostic sherds of early Bronze Age date (CD Section 2; Percival).

The overall quantities of flint recovered from the excavated Biddenham Loop ring-ditches are extremely variable (*e.g.* L2104 (two flints), L2106 (three flints), L2300 (twelve flints), L2301 (one flint), L2314 (nine flints), Bovis L110 (fifty-one flints) and Bovis L200 (170 flints)). Such variation is seen elsewhere in the Great Ouse valley: the two excavated ring-ditches at Willington produced almost no struck flint (Dawson 1996); while ring-ditches B and C at Roxton produced over 1000 pieces (Taylor and Woodward 1985, table 4). The only objects of note from Biddenham Loop were a probable unfinished oblique arrowhead from L2300 (CD Section 2; Bates, Fig. 5, F24), a flake retouched as a scraper from L2301 and a small, thick scraper from L2314. The animal bone assemblage from the ditch fills was also tiny; the only significant find was the tip of a red deer antler beam from L2300.

Possible ring-ditch L709 on Land west of Kempston comprised a feature on the very edge of the excavation area that may represent a ditch. It produced twenty-six sherds from two finely decorated Beaker vessels (CD Section 2; Percival), two small scrapers — one a very neat, sub-circular form characteristic of the late Neolithic/early Bronze Age type — and a retouched flake (CD Section 2; Bates).

Iron Age and Roman artefacts were found within some of the ring-ditches, noticeably L2104, L2314, Bovis L110 and Bovis L214. Similar material has been found within other ring-ditches in the Great Ouse valley, such as Harrold/Odell, Beds. (Eagles and Evison 1970, 21), suggesting that the monuments survived as upstanding earthworks for a considerable period of time. In addition, a pit dug into the fill of L2461 produced a radiocarbon date of 364–171 cal. BC (SUERC-29098: 2184± 30BP).

Mound/bank

No *in situ* mound or bank material survived in association with any of the excavated Biddenham Loop ring-ditches. Therefore, the presence of such features has to be deduced from other evidence, such as variations in the nature of the ditch infilling, as at Barton Hills (Dyer 1962, 7 and fig. 3). With the exception of asymmetrical primary silting patterns within L2106 (Fig. 3.20), Bovis L98 and Bovis L110, which hint at the presence of an internal bank or small mound, no other conclusive evidence was identified. Where the unexcavated fills of ring-ditches were machined out the fill was placed in the middle of the monument in an attempt to illustrate the minimum size of any mound that may have been present (Plate 3.14)

It was suggested, as noted above, that Bovis L110 was associated with an internal bank and small central mound (Luke 2008, 26 and fig. 2.3). This was deduced from the nature of the Roman boundary ditch which crossed it and stone densities within the ploughsoil (following a technique successfully used by Bradley (1984) at Abingdon, Oxon). The way two later ditches respect ring-ditch L3214 hints at the presence of an internal mound (Fig. 3.26).

Human remains

Human remains were found only within ring-ditches L2104 (cremated), L2106 (cremated) and L2460 (Beaker inhumation) from the recent investigations. A small

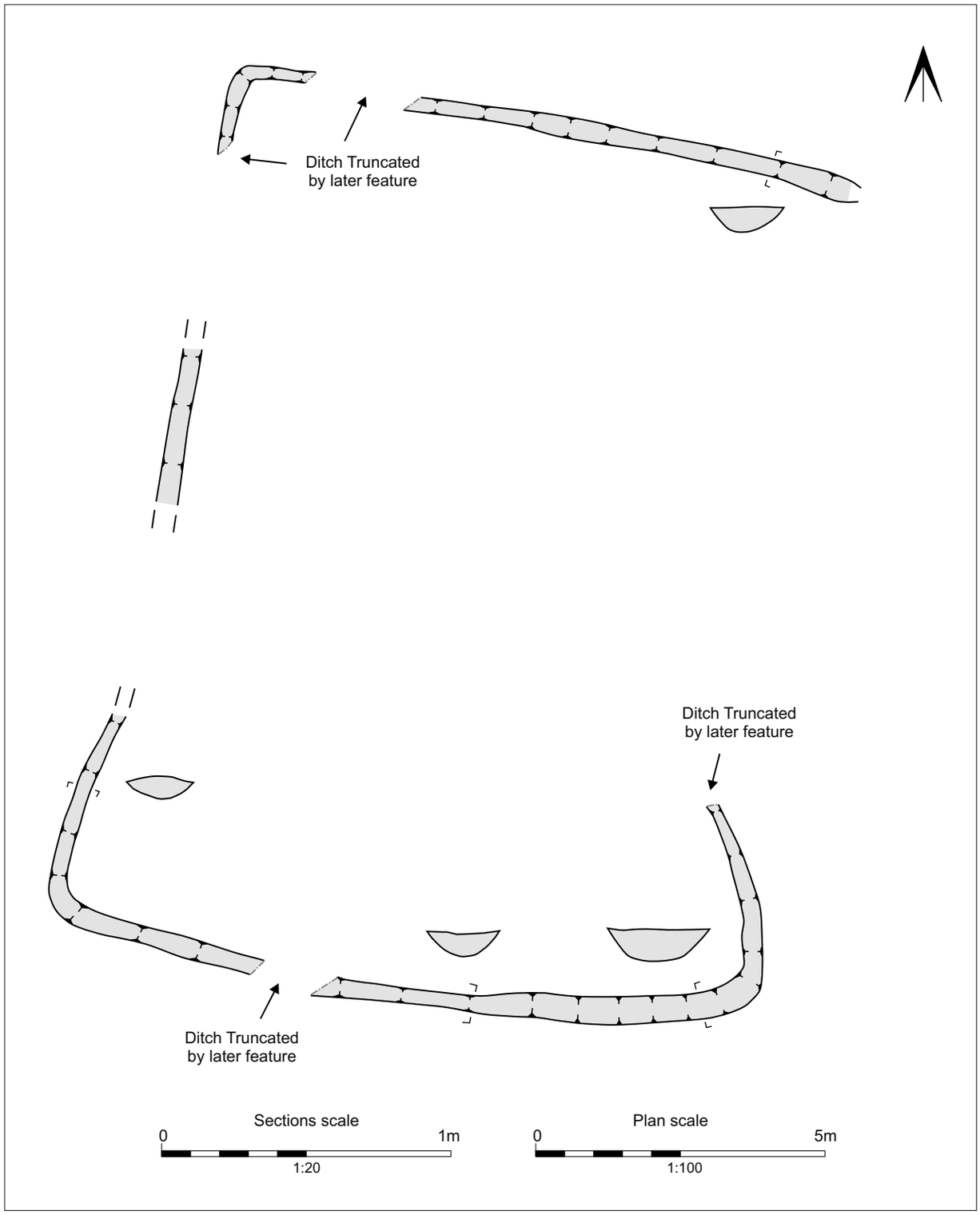


Fig. 3.17 Detailed plan of possible later Neolithic rectangular monument L2471. Scale 1:100

amount of unidentifiable calcined bone was found within a small pit in Bovis L200, suggesting that this may have been a grave (Luke 2008, 103). This paucity of human remains within monuments is not uncommon — two of the five ring-ditches at Roxton, Beds. did not produce human remains (Taylor and Woodward 1985, table 2).

The unurned cremation burials were placed in small graves located both centrally and off-centre within ring-ditches L2104 and L2106 (Fig. 3.19 and Fig. 3.20 respectively). The three dated cremation burials were evenly spaced throughout the early Bronze Age (2130–1820, 1930–1690 and 1670–1500 cal. BC), suggesting that they were not contemporaries. Two small pits

L	*Internal diameter (m)*	*Average dimensions of ditch width:depth (m)*	*Fill*	*Artefacts sherd:weight:vessel (kg)*	*Burials*	*RCD*
2104	28	5.0:1.1	Primary	1:0.01:1 non-specific early prehistoric ware	Central cremation burial SG22023	1930–1690 cal BC (SUERC-25698; 3495±35BP)
			Secondary	1 × flint core fragment (RAl l 32) 31:0.11:1 Non-specific early prehistoric ware	Off-centre cremation burial S22019	1690–1500 cal BC (SUERC-26328; 3305±30BP)
			Tertiary/sole	1 × flint retouched flake (RAl l 27) 1:0.01:1 undiagnostic eBA pottery 9:0.09:1 pre m–lIA pottery (pre-'Belgic')	—	—
2106	18	2.2:0.8	Secondary	2 × flint flake (RA l 1022, 1023) 1:0.01:1 non-specific early prehistoric ware	Off-centre cremation burial SG22050	2130–1820 cal BC (SUERC-25699; 3600±40BP)
			Tertiary/sole	1 × flint flake (RAl l 1030)	Off-centre cremation burial SG22051	—
2300	33	3.1–5.8:1.0	Primary	2 × flint flake 1:0.01:1 non-specific early prehistoric ware	Central possible grave SG23019	2470–2210 cal BC (SUERC-26298; 3880±30BP)
			Secondary	1 × lNeo oblique flint arrowhead (RAl l 3378)	Off-centre possible grave SG23025	2130–1900 cal BC (SUERC-26299; 3635±30BP)
			Tertiary/sole	5 × flint flake (RAl l 3303, 3307, 3308, 3313) 1 × flint keeled core (RAl 3009) 1 × flint retouched flake (RAl l 3312) 1 × flint blade (RAl l 3314) 1 × flint blade-like flake 2:0.01:1 non-specific early prehistoric ware	(Both possible graves contained sherds from urns but no human bone)	—
2301	26	3.0:1.0	Tertiary/sole	1 × flint scraper (RAl 3014)		—
2314	26	3.0:0.9	Primary	1 × flint blade-like flake (RAl 3008) 1 × flint scraper (RAl 3009) 2 × flint flakes (RAl 3016, 3017) 1:0.01:1 non-specific early prehistoric ware	—	—
			Secondary	2 × flint flakes (RAl 3004) 1 × flint retouched flake (RAl 3013) 1 × flint blade-like flake RB coin (RAl 3012) 3:0.01:1 non-specific early prehistoric ware	—	—
			Tertiary/sole	1 × flint retouched flake (RA1 3001) Saddle quern (OA1)	—	—
2460	–	0.2:0.1	–	–	Central inhumation burial SG25032	2456–2145 cal BC (SUERC-43790; 3823±30BP)
2461	7	0.7:0.2	Secondary	Possible whetstone (OA330)	—	2299–2060 cal BC (SUERC-43795; 3784±30BP)
			Tertiary/sole	1 × flint blade-like flake	—	—
3214	13	1.0:0.6	Secondary	0.01 animal bone	—	—

RAl = LWB1289 registered artefact number. OA= Other artefact number; lNeo = late Neolithic; eBA = early Bronze Age; m–lIA = middle–late Iron Age; RB = Romano-British. All weights rounded up to the nearest 0.01g

Table 3.2 Details of Beaker and early Bronze Age ring-ditches subjected to excavation

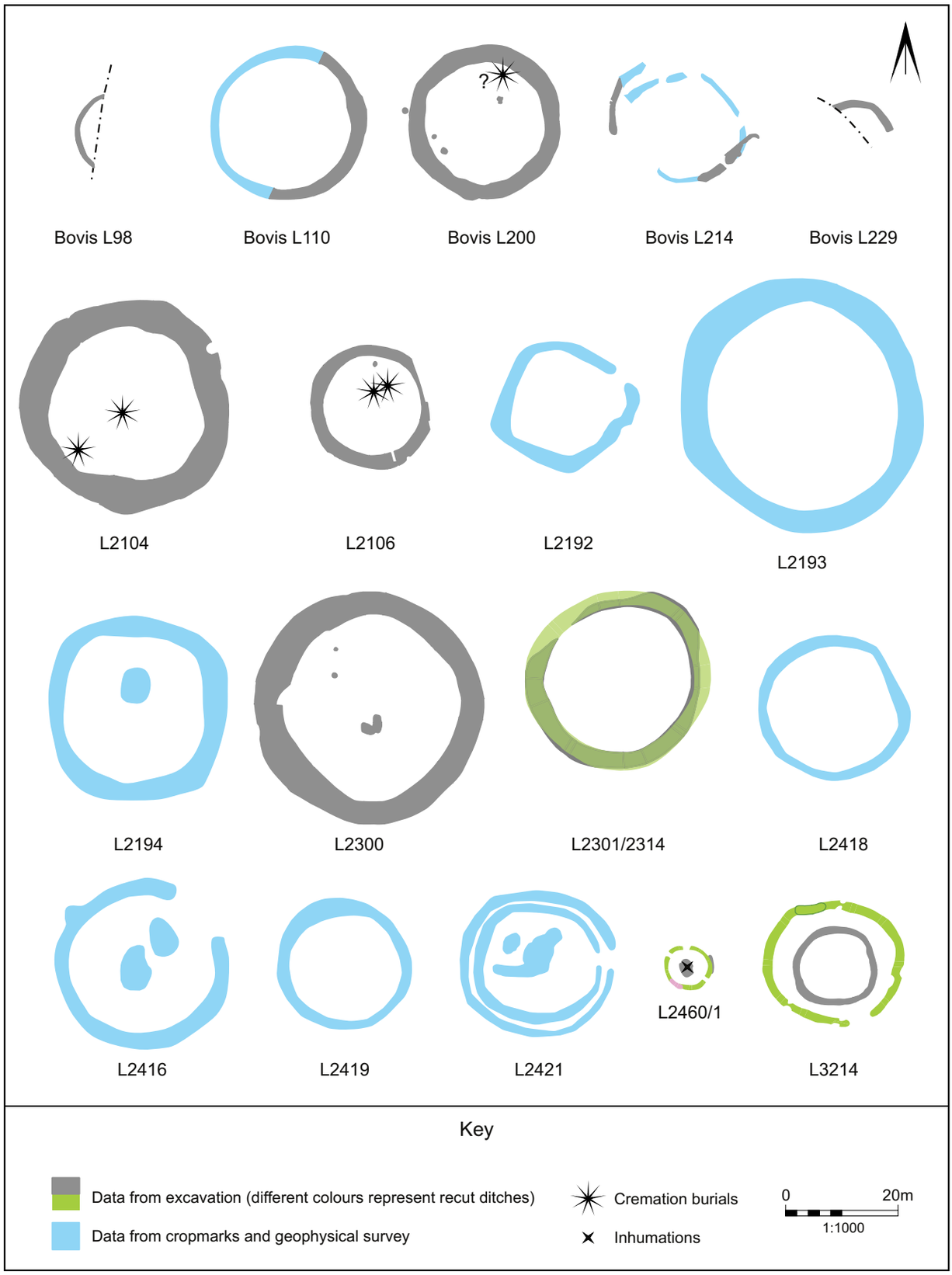


Fig. 3.18 Comparative plans of all early Bronze Age ring-ditches on the Biddenham Loop. Scale 1:1000

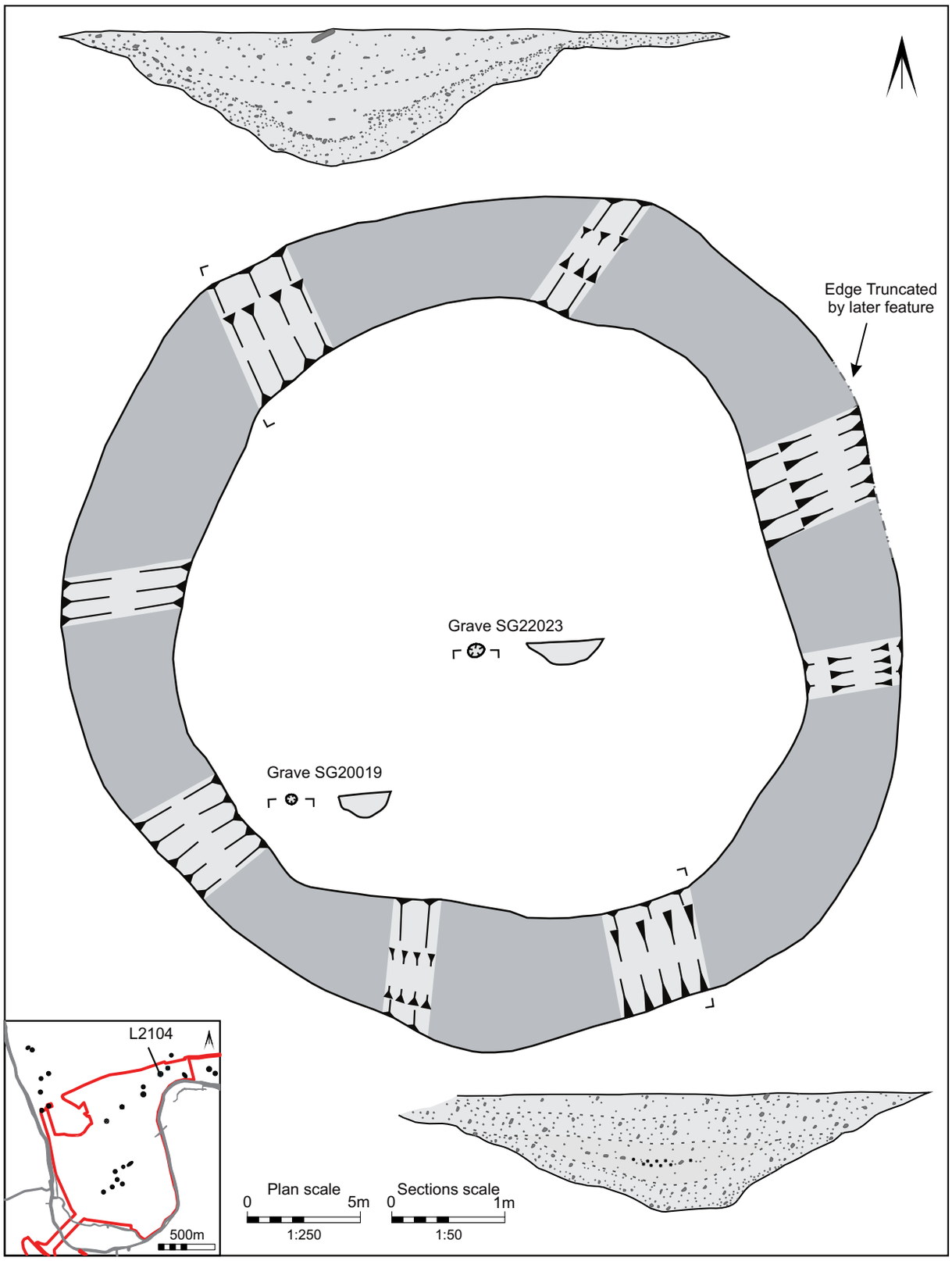


Fig. 3.19 Detailed plan with sections of ring-ditch L2104. Scale 1:250

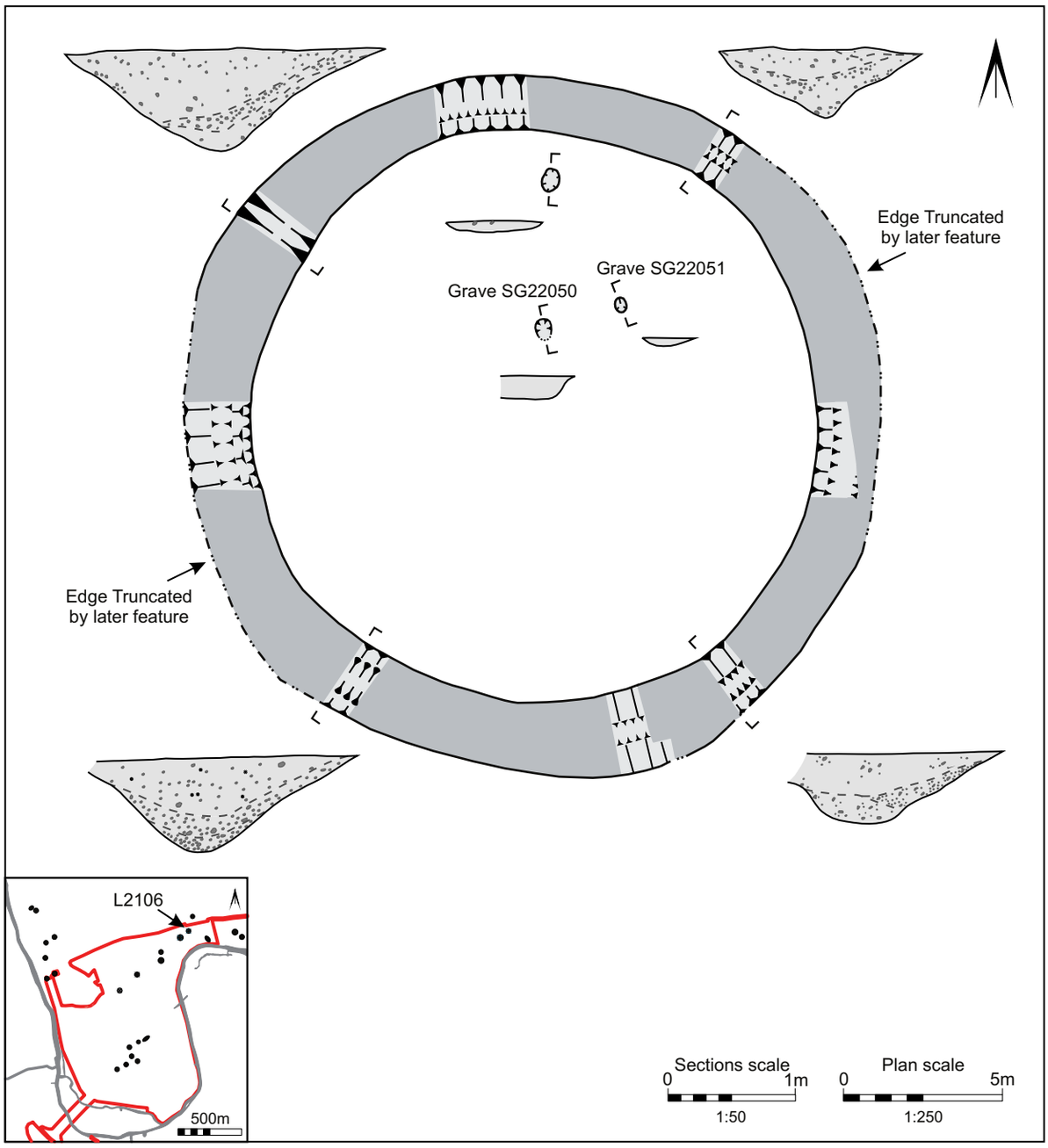


Fig. 3.20 Detailed plan with sections of ring-ditch L2106. Scale 1:250

(SG23019 and SG23025) within ring-ditch L2300 did not contain any human bone but may have been graves because each contained pieces of separate pottery vessels: a possible Biconical Urn (CD Section 2; Percival, Fig. 4, P36) and a small possible Biconical or Collared Urn (CD Section 2; Percival, Fig. 4, P37). Within the Bovis investigations a similar interpretation was assigned to a small pit containing sherds from a Collared Urn just north of ring-ditch L98 (Luke 2008, 103).

Where evidence for cremation burials was identified within the ring-ditches, there was usually evidence for off-centre, presumably secondary, graves (*e.g.* L2104, L2106 and L2300). This confirms the multi-phase use of the monuments. It also highlights the possibility that the absence of burials within some ring-ditches may be the result of truncation, because the surviving graves were shallow and any dug into a mound could easily have been ploughed out.

Only Beaker ring-ditch L2460/61 contained an inhumation (SG25032). It was placed in a large, roughly central grave pit and was accompanied by a range of grave goods including a Beaker (Fig. 3.24, Plate 3.15). This and all burials, including those not from ring-ditches, are discussed in more detail below.

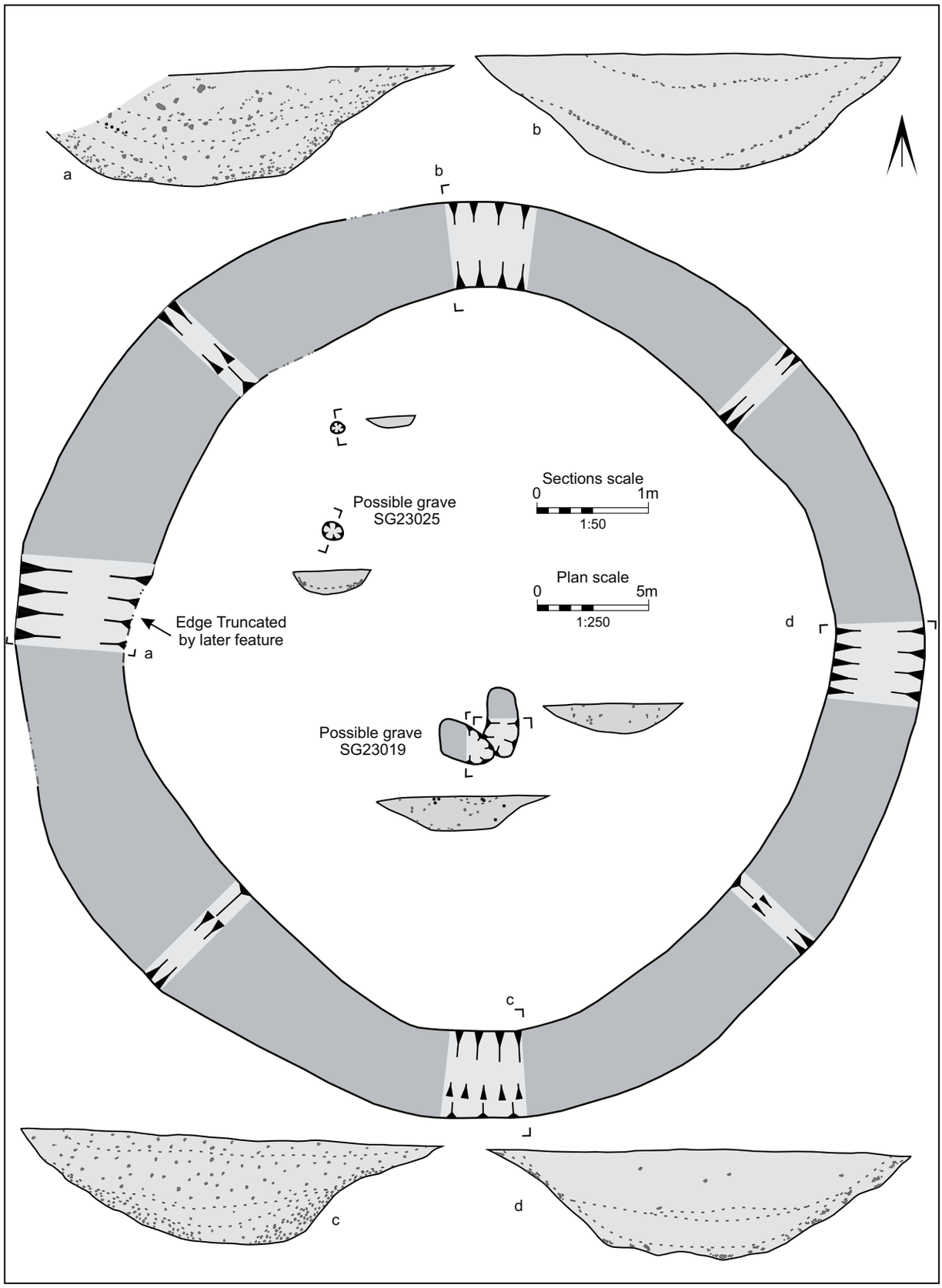


Fig. 3.21 Detailed plan with sections of ring-ditch L2300. Scale 1:250

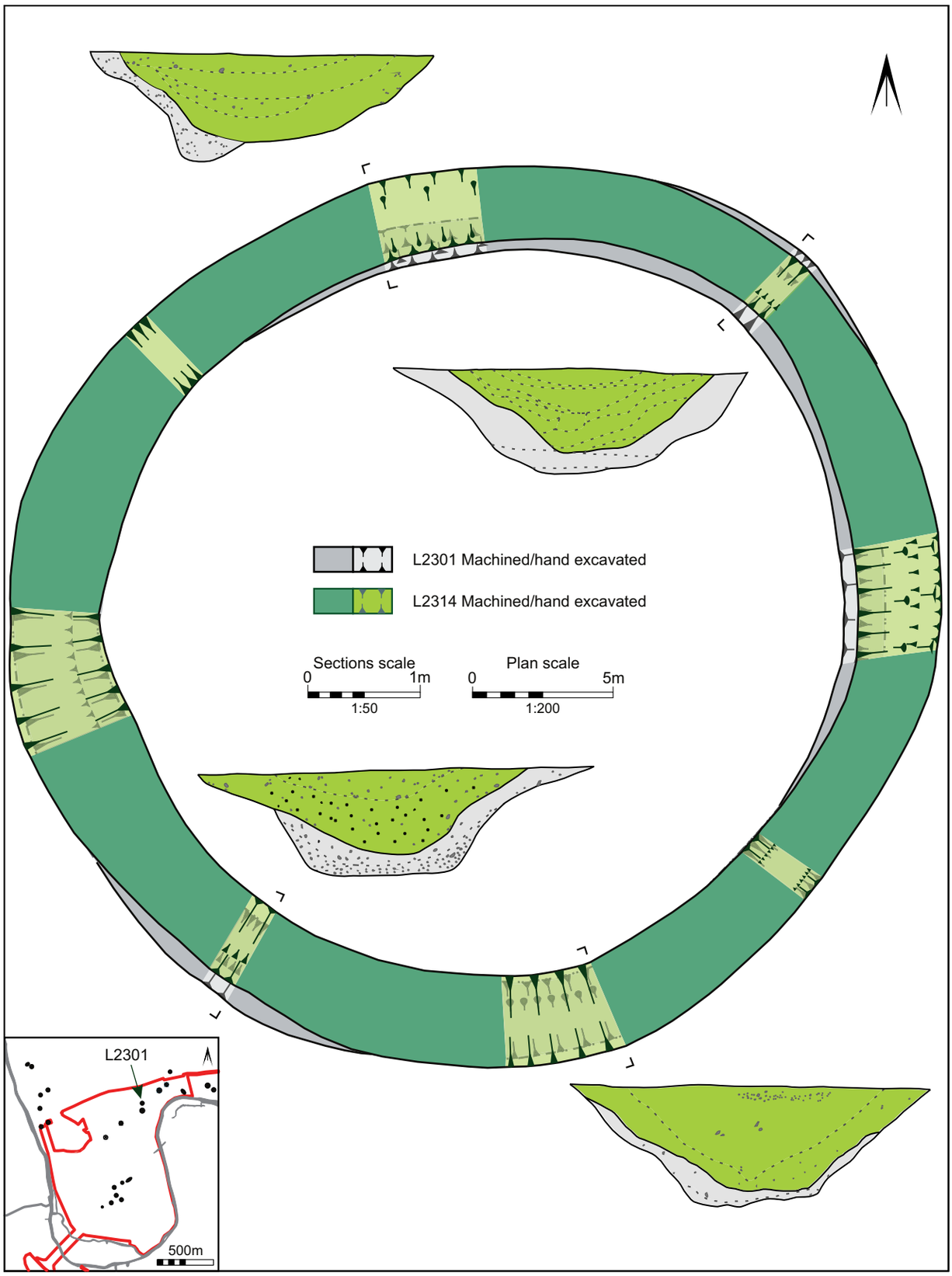


Fig. 3.22 Detailed plan with sections of ring-ditch L2301, with recut L2314. Scale 1:200

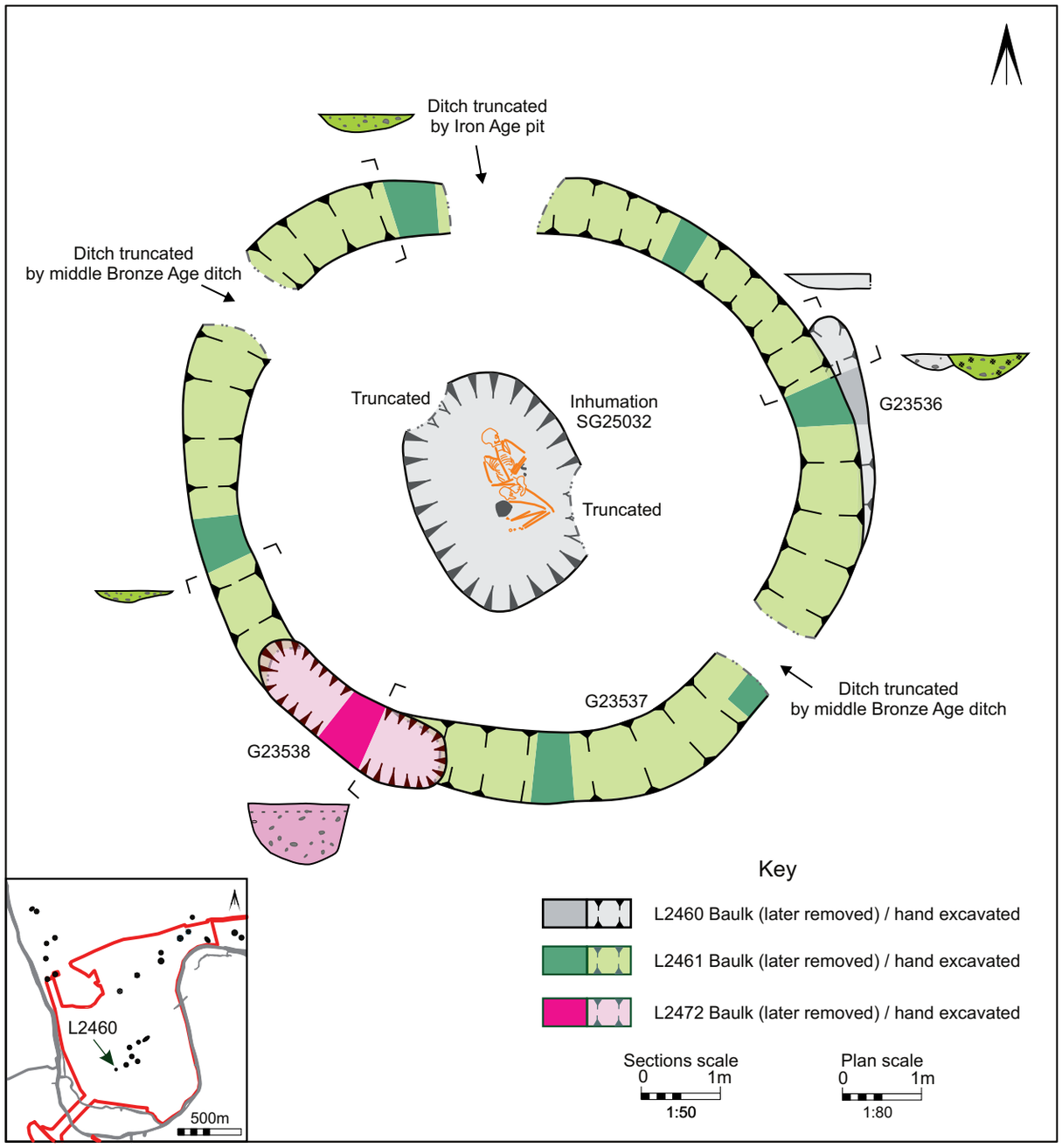


Fig. 3.23 Detailed plan with sections of ring-ditch L2460/61, with blocking feature L2472. Scale 1:80

Burials (Beaker and early Bronze Age)
(Table 3.3)

Introduction and dating evidence
In contrast to the Neolithic, when only inhumations were found and these were associated with the sub-circular monuments (see p. 39), the majority of the early Bronze Age burials took place after cremation. Two inhumations (including one of Beaker period associated with small ring-ditch L2460) and nine definite cremation burials of early Bronze Age date were identified, although sherds from urns may indicate the presence of other cremation burials (CD Section 2; Percival).

Ring-ditches L2104 and L2106 each featured two graves containing cremation burials, while L2460 contained a central inhumation. Six apparently 'flat' graves (*i.e.* where there was no evidence for a monument or mound) were identified across the Biddenham Loop. These comprised five cremation burials and one inhumation. All were situated on the periphery of monument clusters. In addition, four 'flat' graves, all cremation burials, were found within the Bovis investigations (Luke 2008, 107–8, fig. 6.12).

The radiocarbon dates for the burials within the recent investigations are presented in Table 3.3.

Plate 3.10 Aerial view of adjacent ring-ditches L2301 (to left) and L2300, from the west, with river Great Ouse visible in the background

Plate 3.11 Ring-ditch L2460 with central Beaker grave

Plate 3.12 Hand excavation of the ditch defining ring-ditch L2300

Plate 3.13 Cleaning section through the ditch fill of ring-ditch L2104

Plate 3.14 Aerial view of L2104 when the unexcavated ditch lengths were machined out under archaeological supervision, while some of the spoil was stored in the interior to give an impression of what a mound might have looked like had one existed

The Beaker inhumation SG25032
(Fig. 3.24, Plate 3.15)
The buried individual was placed on the flat base of a large oval grave measuring *c.*2.9m × 2.1m × 1.2m deep, just off-centre within ring-ditch L2460 (Figs 3.23 and 3.24). The grave is larger than that dug for the Amesbury Archer (Fitzpatrick 2011, fig. 27). While there is no firm evidence for the type of wooden chamber seen at Amesbury (Dagless *et al.* 2011, 71) and other Beaker graves, that remains a possibility given the grave's steep sides and flat base. It is perhap noteworthy that, with the exception of the flat base, the size and shape of the grave make it not dissimilar to the contemporary large pits (see p. 72). The crouched body was laid on its left side with the head to the north, the knees flexed and the arms bent at the elbow, with the forearms resting over the pelvic area. It was accompanied by a range of grave goods: a stone wristguard; a boar's tusk; a copper knife-dagger with an antler pommel; two barbed and tanged arrowheads (CD Section 2; Duncan); and a Beaker (CD Section 2; Percival). There was sufficient space within the grave, especially on the west side, to suggest the presence of further organic items.

The skeleton was complete but in a poor state of preservation.

> None of the areas used for sex determination on the pelvis could be examined owing to poor preservation, but the six areas that could be assessed on the skull were … male and strongly male … Age is difficult to determine, partly owing to loss of areas of the pelvis and rib, and partly because the dental attrition is contradictory … Overall, no more can be said than that this is an adult of over 26 years and probably not of advanced years (CD Section 2; Duhig).

The Beaker People Project, funded by the Arts and Humanities Research Council, is using isotope analysis to investigate, among other things, the mobility, migration, diet and health of these individuals. Published results include Beaker burials found near Stonehenge (Chenery and Evans 2011). Unfortunately the tooth enamel from SG25032 was unsuitable for strontium and oxygen analysis. However, 'the carbon and oxygen isotope composition [of the collagen extracted from the bone] of this individual are typical of someone with an omnivorous diet based on a terrestrial food chain founded on plants with a typical C3 composition, as are typical in the UK' (CD Section 2; Lamb and Evans).

Plate 3.15 Beaker inhumation SG25032 being recorded

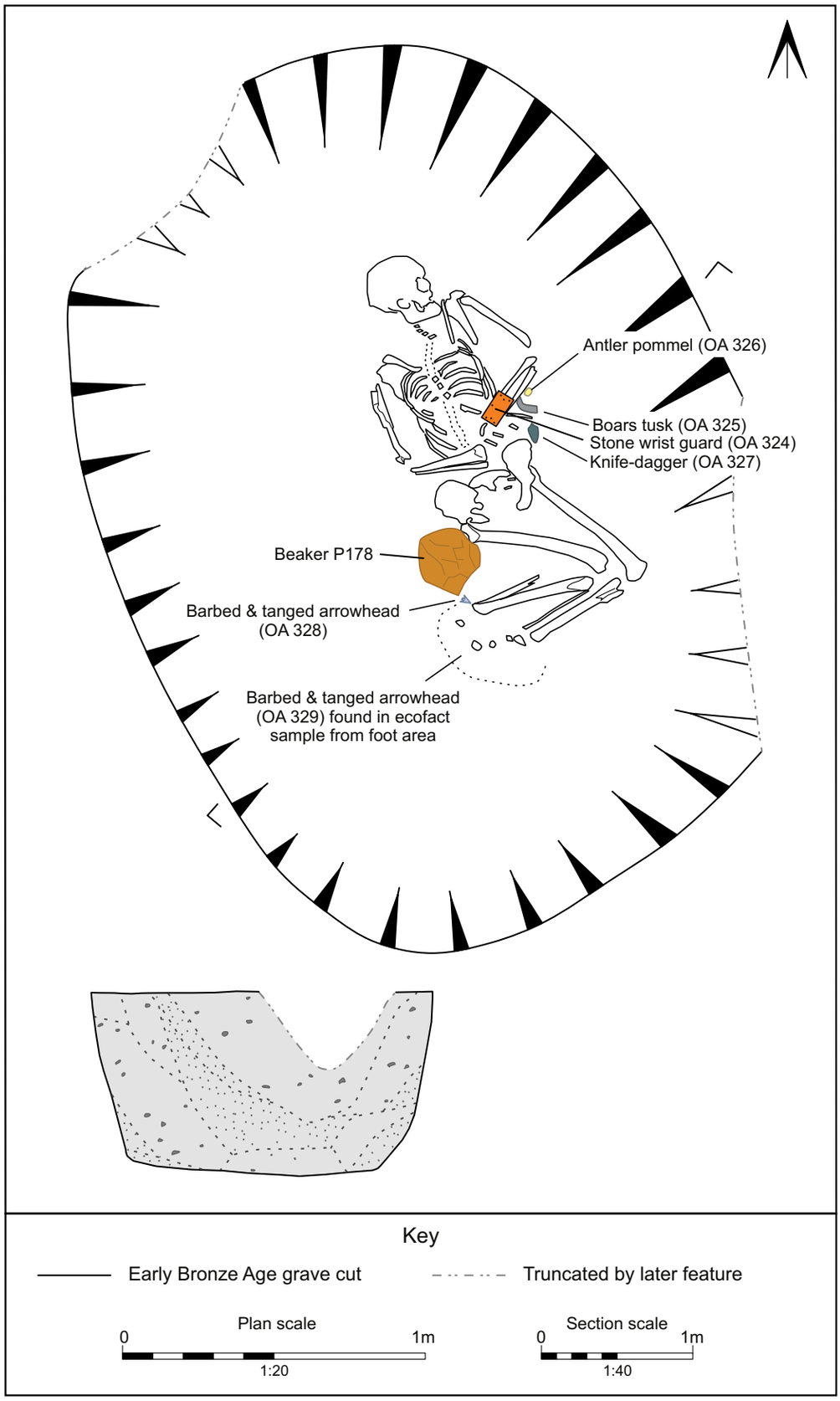


Fig. 3.24 Detailed plan with sections of inhumation SG25032 (L2460/61). Scale 1:20

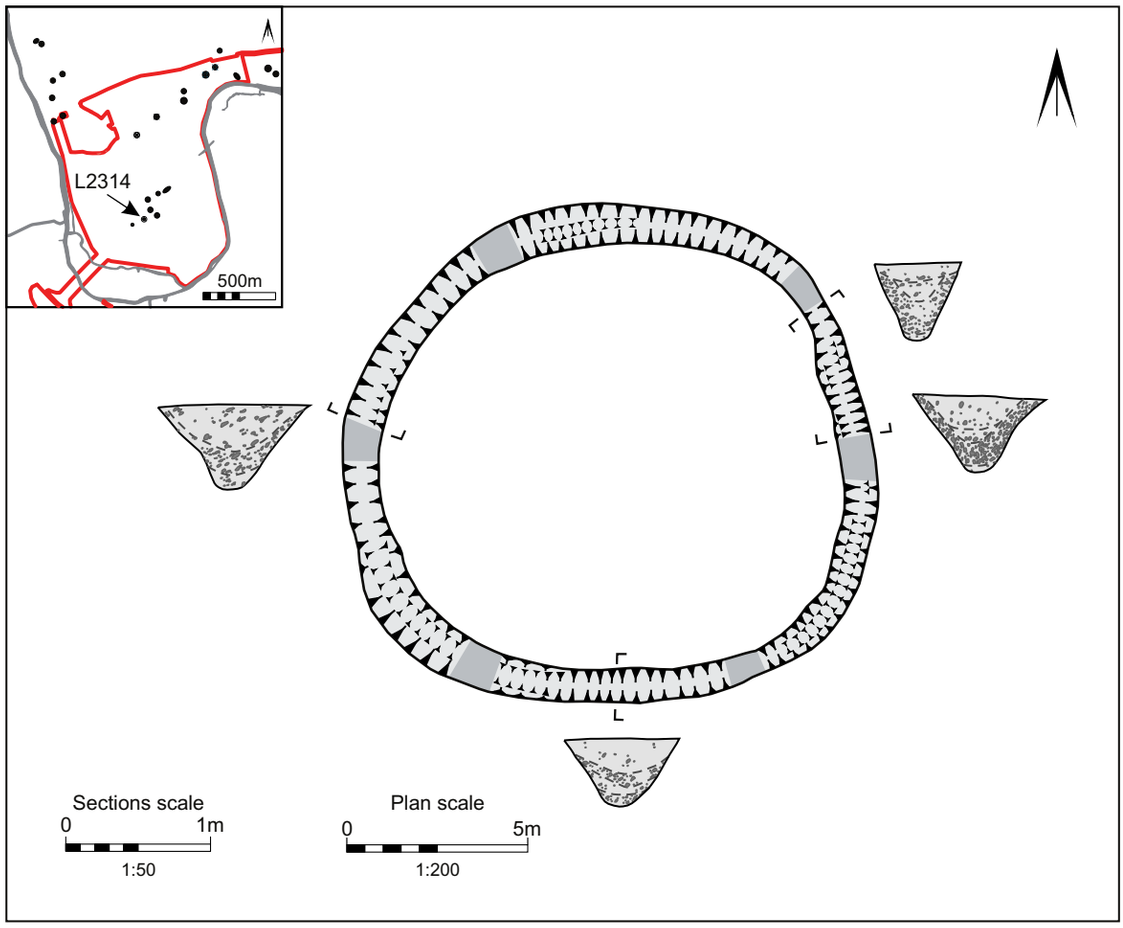


Fig. 3.25 Detailed plan with sections of ring-ditch L3214. Scale 1:200

A ceramic Beaker was placed adjacent to the right hip. It had a globular, low-bellied, sinuous profile and was 'decorated all over with zoned, comb-impressed horizontal bands, each of seven rows interspersed with plain bands' (CD Section 2; Percival, Fig. 23, P178). As such, it is different from those complete vessels found previously within the Biddenham Loop, which had 'zoned-combed decoration forming elaborate filled lozenges or fingertip-impressed motifs (Allen 2008, 113)' (CD Section 2; Percival). It is also the only Beaker found in a definite funerary context in the study area — the precise form of the vessel associated with cremation burial SG32286 (L2363) is uncertain, as are those of the two finely decorated vessels represented by twenty-six sherds from possible monument L709 (SL108) on Land west of Kempston.

The stone wristguard (OA324) was located on the left forearm; unfortunately, owing to a broken elbow joint, it is not possible to state definitively whether the wristguard was on the inner or outer forearm (CD Section 2; Duhig). It was rectangular in shape, with a flat cross section and six holes. 'Roe (2011, 109) states that six-holed examples form 17% of the flat wristguards known in Britain' (CD Section 2; Duncan). 'The stone used for the wristguard is a very fine grained quartzite of greenish grey colour, the colour possibly imparted by chlorite (Eyers 2012)' (CD Section 2; Duncan). It is non-local, and potential sources include Scotland or Europe/Scandinavia (Eyers 2012). The choice of rock may have been made deliberately to mimic the colour of amphibolite wristguards, which are olive grey or greenish grey.

> Recent in-depth study of those found from Britain indicates that while the long and slender red and black wristguards, such as occur with the Amesbury Archer and at Dornoch Nursery, appear to have been the primary form, the amphibolite group of wristguards may well have been in existence fairly soon thereafter (Woodward 2011, 94) …Wristguards are often found in combination with copper daggers (Needham 2005, 204) and burial SG25032 is no exception. In this instance a knife-dagger was included (CD Section 2; Duncan).

The knife-dagger's antler pommel OA326 was probably red deer (CD Section 2; Maltby). 'In form it can be closely paralleled by an example from burial 4013/12 at Gravelly Guy, Stanton Harcourt, Oxon (Gerloff 2004, 85–6)' (CD Section 2; Duncan). The knife-dagger (OA327) lay 80mm to the south of the pommel. The blade is copper, and is almost certainly of Irish origin (CD Section 2; Northover).

> The size of the pommel is disproportionately larger than the surviving blade suggesting that the blade was reworked, perhaps after wear or damage, from a larger dagger … With so little of OA327 surviving, and given the possibility that it had been reworked, it is difficult to assign it to one of the various typologies with any certainty. It would appear to be related to, but earlier than, the later bronze butt-riveted flat daggers (CD Section 2; Duncan).
>
> The positioning of the pommel beneath the left forearm, the knife-dagger heel or butt a short distance to the south, the tip presumably pointing down, may suggest that it was tied to the left upper arm or perhaps worn across the chest, as has been suggested by others (Heyd 2000, 270; Shennan 1977). In general, burials containing

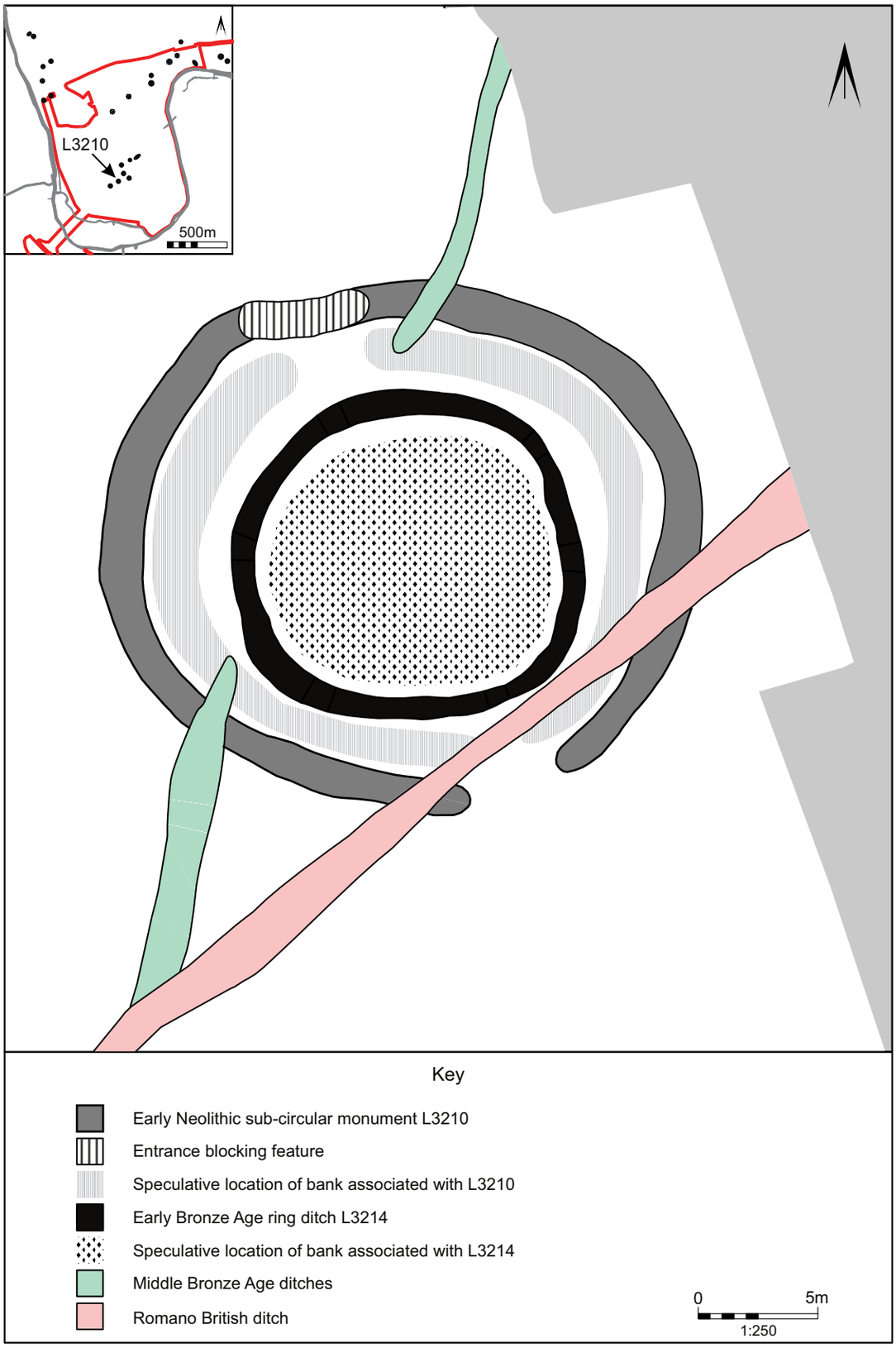


Fig. 3.26 Speculative location of banks and mound associated with L3210 and L3214. Scale 1:250

daggers are those of high status males, usually of advanced age (Sheridan 2011, 37) (CD Section 2; Duncan).

Both the barbed and tanged arrowheads (OA328 and OA329) accompanying the burial are what Green has termed "fancy", defined as possessing geometrically shaped barbs and/or tang, and both can be assigned to Green's Green Low type, arrowheads which possess obliquely cut barbs which are typically longer than the tang (1980, 117). Chapman (1999, 125) has commented upon the almost excessive elaboration of the arrowheads by means of

SP	SL	L	SG	Description	Cremated human bone (kg)	Age	Sex	Urn Sherd:weight:vessel (kg)	Grave goods and other significant finds Sherd:weight:vessel (kg)	RCD
3	1	2312	24590	Crouched inhumation within ditch defining central sub-circular monument.	—	26–35 years	Female	—	Flint flake (RA1 6013) Flint spall	3940–3660 cal BC (SUERC-25529; 4985 ± 35BP)
			24591/ 24592	Crouched inhumation within ditch defining central sub-circular monument	—	≥46 years	Male	—	—	3770–3640 cal BC (SUERC-25530; 4910 ±35BP)
		2356	24617	Inhumation in central grave within sub-circular monument	—	Adult	—	—	—	3520–3350 cal BC (SUERC-25527; 4645 ± 35BP)
			24618	Crouched inhumation in off-central grave within sub-circular monument	—	—	—	—	—	3350–3020 cal BC (SUERC-25528; 4470 ± 35BP)
5	3	117	1246	Isolated unurned cremation burial	1.2	25–45 years	Male?	—	—	1920–1740 cal BC (SUERC-26341; 3500 ± 30BP)
	5	2104	22019	Unurned cremation burial off-centre within interior of ring ditch	0.04	Adult	—	—	—	1690–1500 cal BC (SUERC-26328; 3305 ± 30BP)
			22023	Unurned cremation burial in centre of interior of ring ditch	0.6	Sub-adult	—	—	—	1930–1690 cal BC (SUERC-25698; 3495 ± 35BP)
		2106	22050	Unurned cremation burial off-centre within interior of ring ditch	0.7	Adult	Male	—	Flint spall	2120–1880 cal BC (SUERC-25699; 3600 ±-35BP)
			22051	Unurned cremation burial off-centre within interior of ring ditch	0.06	—	—	—	—	—
		2300	23019	Possible urned cremation burial just off-central within interior of ring ditch	0	—	—	10:0.06 Biconical/ collared urn (P37) (Possible urn)	1:3:1 Beaker	2470–2210 cal BC (SUERC-26298; 3880 ± 30BP)
			23025	Possible urned cremation burial within interior of ring ditch	0	—	—	3:0.04 Biconical urn (P36) (Possible urn)	0.01 Animal bone 0.1 Abraded antler	—
	7	2371	24161	Isolated crouched inhumation	—	26–35 years	Male	—	—	2280–2020 cal BC (SUERC-25547; 3730 ± 35BP)
		2363	24468	Isolated urned and inverted cremation burial	0.3	?Adult	—	16:0.19 Collared urn (P34)		—
			25033	Unurned cremation burial adjacent to ring ditch L3214	0.6	Adult	Male?	—	—	1880–1686 cal BC (SUERC-43789; 3444 ± 30BP)
			25034	Urned inverted cremation burial adjacent to ring ditch L3214	0.2	Adult	—	106:665 Collared urn (P179)		2012–1775 cal BC (SUERC-43788; 3555 ± 30BP)
			32286	Isolated urned and inverted cremation burial	0.2	8–9 years	—	54:0.31 Possible Beaker (P31)		2020–1780 cal BC (SUERC-26308; 3570 ± 30BP)
		2460	25032	Crouched inhumation in central grave within ring ditch	—	>26 years	Male	—	Rectangular wrist guard (OA324) Antler pommel (OA326) Boar's tusk pendant/implement (OA325) CA knife-dagger (OA327) 2 x Flint barbed and tanged arrowheads (OA328, 329) 88:0.4 Beaker (P178)	2456–2145 cal BC (SUERC-43790; 3823 ±30BP)

OA = other artefact number; RAI = LWB1289 registered artefact number; P = illustration number; CA = Copper alloy. All weights rounded to 0.01g

Table 3.3 Details of all Neolithic and early Bronze Age human burials

BOX 11: Beaker period archer

This reconstruction by Cecily Marshall (copyright Bedford Museum) aims to give an impression of what one of the individuals buried in one of the smaller ring-ditch monuments might have looked like. He was probably a tribal leader but whether he was actually an archer, as portrayed in this reconstruction, is open to debate.

He was buried in a large grave, dug just off-centre within a ring-ditch to the south of the Loop. He was over 26 years of age but probably not of advanced years. The skeleton was radiocarbon dated to 2456–2145 cal BC (95% probability). The crouched body was laid on its left side with the head to the north, knees flexed to the left. It was accompanied by a range of grave goods, including some of the 'standard' Beaker package.

The eponymous ceramic Beaker was placed next to the right hip and represents the only example from the investigations to be found in a funerary context. Three objects associated with archery were found — a wristguard of very fine-grained quartzite on the left forearm and two barbed and tanged arrowheads by the feet. Potential sources of the quartzite include Scotland and Europe/Scandinavia. The shape of the arrowheads and their elaborate surface retouch puts them in the 'fancy' category and it is possible that they were never actually fired.

Parts of a knife-dagger were found next to the left hip — the pommel (made of red deer antler) and the copper blade. Metallurgic analysis indicates that the copper was almost certainly of Irish origin. The 8cm gap between the pommel and the blade represents the length of the handle grip, presumably made of wood. The size of the pommel is disproportionately large for the blade, suggesting that the knife-dagger may have been reworked from a larger dagger. The presence of a boar's tusk is unusual for a Beaker burial in Britain. It may have been worn to express hunting prowess or because its shape mirrored that of the bow.

Some Beaker burials of this type are specifically described as archers (e.g. the Amesbury Archer). However, as with the 'fancy' arrowheads, the grave goods may never have been intended for everyday use. Collectively, they signal that this individual, whether an archer or not, was able to access prestige items — some local, such as the flint arrowheads, but others, such as the wristguard and knife-dagger, from much further away. These items should be seen as symbols of power and the individuals buried with them as tribal leaders. A remarkably 'consistent range of themes' can be seen in male Beaker burials in southern Britain, most noticeably in the Thames valley. There is always a left emphasis in the body position; the head is usually to the north; and the range and positioning of the grave goods is similar. The Beaker People Project, funded by the Arts and Humanities Research Council, is using isotope analysis to investigate, among other things, the mobility, migration, diet and health of these individuals. Of particular interest will be whether they were local people or immigrants from elsewhere, either in Britain or Europe.

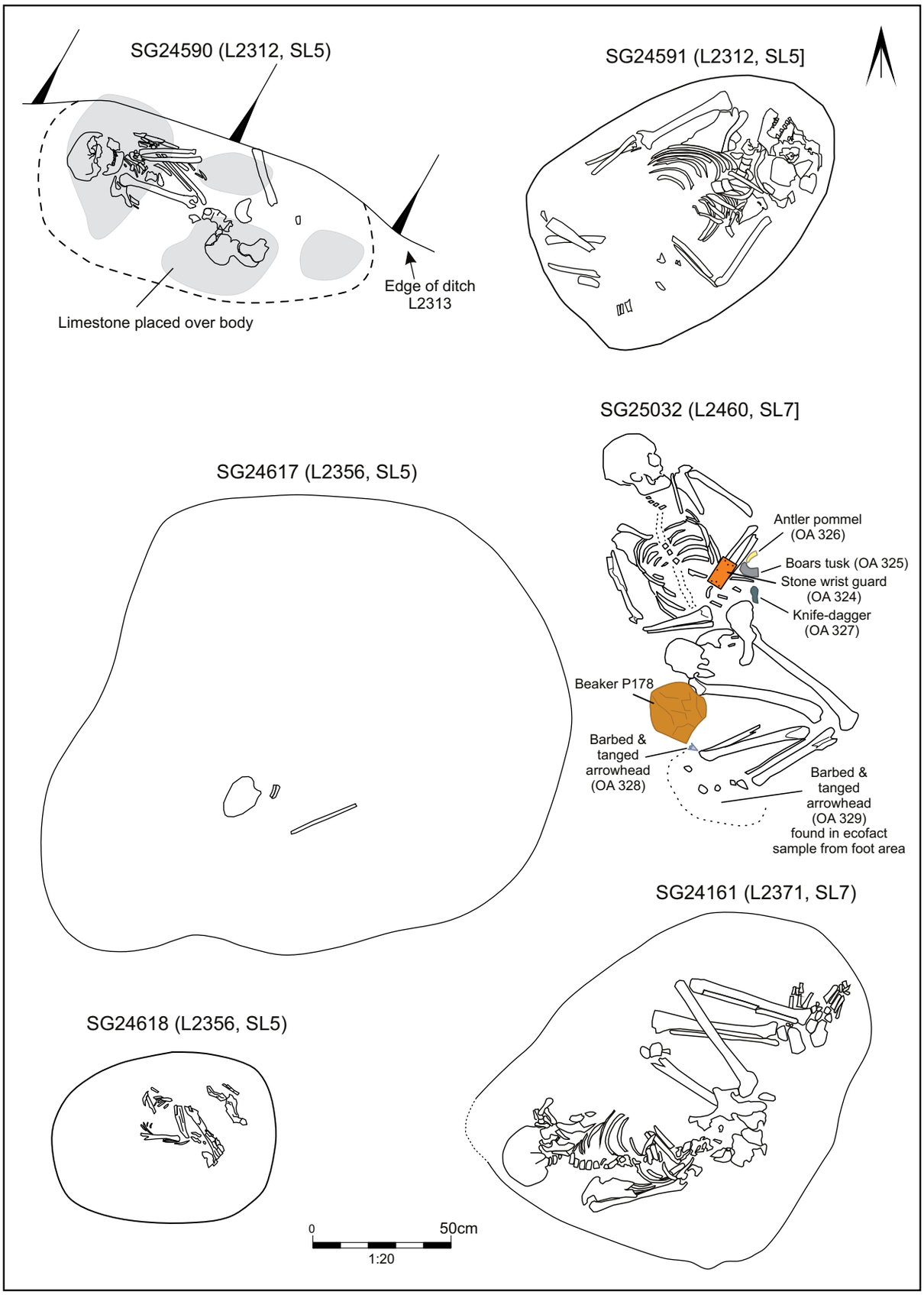


Fig. 3.27 Individual plans of early Neolithic and early Bronze Age inhumations. Scale 1:20

surface retouch; in principle this is not functional but it may have been ideologically important (CD Section 2; Duncan).

The top of tusk OA325 is missing, and it is possible it was originally suspended, along with the knife-dagger, from either the left forearm or from across the chest' (CD Section 2; Duncan).

Although boars' tusks were found in the graves of the Amesbury Archer, the Boscombe Bowman and the 'Companion', they are rare in Beaker graves in Britain (Fitzpatrick *et al.* 2011, 163). As Duncan suggests: 'it may have been included to express hunting prowess but the tusk's basic bow-shape may also have been another criterion for inclusion. Bow-shaped pendants of boar's tusk and bone are found in Moravian and Bohemian Beaker burials (Fokkens *et al.* 2008, 123)' (CD Section 2), where it has been suggested that they are metalworkers' tools (Fitzpatrick *et al.* 2011, 163).

The skeleton in SG25032 yielded a radiocarbon date of 2456–2145 cal. BC at 95.4% probability, with a date of 2350–2195 cal. BC at 83.5% probability (SUERC-43790: 3823±30BP). This is 'somewhat earlier than the date range suggested by Needham for globular Beakers but coincides with the earliest dates for low-bellied sinuous profiled forms (Needham 2005, fig. 13)' (CD Section 2; Percival). Duncan (CD; Section 2) describes Needham's suggested sequence of the important changes in the character of Beaker grave groups (2005, 209–10). SG25032 would appear to fall early in Needham's second phase (c.2250–1950 cal. BC) 'when burials become more frequent, suddenly diversify to reflect distinctions in society and copper is replaced rapidly by bronze' (CD Section 2; Duncan). This would appear to fit well with the knife-dagger (both type and metallurgy), the antler pommel and the wristguard, but less well with the arrowheads, which are more common in the late Beaker period. For a fuller discussion of the dating of the grave goods see Duncan (CD Section 2).

Only one other Beaker burial has been found in Bedfordshire, at Sewell, Houghton Regis (Matthews 1976, 19–24); it was not associated with a visible monument. It comprised a crouched probable male with a Beaker, a four-hole rectangular wristguard, a bone toggle and a copper pin (Kinnes 1985, 11). Grave F3259, central to Barrow 6, near Raunds, *c.*20km north of the Biddenham Loop, contained a Beaker burial (Healy *et al.* 2007, 130). Here a crouched male was accompanied by a Beaker, a flint dagger, a flint flake and a large jet button (Harding and Healy 2007, fig. 4.4).

The crouched body (on its left side with its head to the north), the individual concerned (adult probable male), the nature of the grave goods (with the possible exception of the boar's tusk) and their positioning are elements of a remarkably 'consistent range of themes' seen in Beaker burials (discussed by Garwood 2011, 404 and 406 and others). Clearly the wristguard and arrowheads are associated with archery, which has led to the individuals in some burials being referred to as bowmen or archers (*e.g.* the Amesbury Archer, Boscombe Bowmen (Fitzpatrick 2011)). However, the 'fancy' nature of the arrowheads, suggests that these objects may never have been intended for everyday use. Collectively, they signal that this individual, whether archer or not, was able to control or access prestige items — some probably local, like the flint; others from much further away, like the wristguard and knife-dagger. These items are all part of the paraphernalia of authority and were symbols of power.

Plate 3.16 Urned cremation burial SG32286 under excavation

Cremation burials

All the cremation burials contained relatively small quantities of bone ranging from 60g to 1200g. 'Studies of modern cremations have demonstrated that 1600–3600g of bone will result from the cremation of an adult (McKinley 1989)' (CD Section 2; Powers). Only SG1246, which contained 1200g, comes close to that range. The deficit of bone recovered from the other graves is more likely to be the result of plough truncation than the deliberate selection of small amounts of bone from the pyre in prehistory.

Apart from the possible cremation burial within Bovis ring-ditch L200 (Luke 2008, 103) SL3 contained four other possible cremation burials all apparently in 'flat' graves. Unurned cremation burial SG1246 was located at the southern end of the monument cluster and comprised the remains of a 25–45-year-old probable male. The presence of 'two probable left maxillary first pre-molars … may indicate the presence of intrusive remains from a second individual, perhaps contamination from the pyre site' (CD Section 2; Powers), although 'the presence of numerous small bones from the hands and feet indicate that collection of the remains from the pyre was both efficient and non-selective' (CD Section 2; Powers). Another possible cremation burial comprising an inverted Collared Urn, but no human bone, was found *c.*180m to the east of SG1246 within the Bovis investigations (Luke 2008, 108). Further north two adjacent cremation burials were found within the Bovis investigations *c.*125m west of Bovis ring-ditch L200 (Luke 2008, 107).

Six burials were found within monument cluster SL7 but none of the four cremation burials were directly associated with a monument. Urned cremation burials SG24468 and SG32286 (Plate 3.16), which had overlapping radiocarbon determinations, were located *c.*250m apart to the north and south of monument cluster SL7. Cremation burials SG25033 and SG25034 were located *c.*45m apart within 18m of ring-ditch L3214. SG24468 comprised the remains of a probable adult (CD Section 2; Powers) in an inverted Collared Urn (CD Section 2; Percival, Fig. 4, P34). SG32286 comprised the remains of an individual under *c.*16 years of age in an inverted Beaker which had an elaborate collar (CD Section 2; Percival, Fig. 3, P31). 'The presence of flint-tempering within the fabric suggests this vessel is not a Collared

Urn; however, its identification must remain speculative' (CD Section 2; Percival). The cremated bone from both SG25033 and SG25034 was similar in colour and had been subjected to extremely successful combustion (CD Section 2; Duhig). SG25033 was unurned and possibly represents an adult male. The different types of bone present 'suggests that there was selection which favoured deposition of bone from the head against that of the limbs and, to some extent, the axial skeleton, although there are some fragments from almost every body region other than the shoulder girdle, so selection was not strict' (CD Section 2; Duhig). The cremated bone in SG25034 was placed within a Collared Urn with unusual plaited cord (CD Section 2; Percival, Fig. 23, P179) which had been inverted. The bone was of an adult but there was no evidence for the type of selection seen in SG25033.

With the exception of the early Neolithic inhumations only cremation burials were found in monument cluster SL5; all were unurned and found within ring-ditches. The central burial SG22023 within ring-ditch L2104 is likely to comprise the remains of an 'individual in the 12–17 years age category' (CD Section 2; Powers). Burial SG22019, within the same monument, is likely to be that of 'an adult of undetermined sex' (CD Section 2; Powers). Cremation burial SG22050 within monument L2106 was of an adult male (CD Section 2; Powers). The other burial within this ring-ditch, SG22051, contained only a small quantity of bone and it was not possible to estimate sex or age. 'As no elements are repeated between the two deposits, it is not impossible that they derive from the same individual' (CD Section 2; Powers).

The charred wood recovered from the cremation deposits was all oak. Its use 'is common in the Bronze Age' because 'not only does it provide the high calorific heat necessary to cremate a human body, the wood is also easy to split for use in pyre structures and/or coffins' (CD Section 2; Challinor). Charred onion couch was present within many of the cremation deposits. 'This plant may have been gathered for use as tinder for the cremations or may represent burnt grassland vegetation under a pyre or the use of turves in its construction (Murphy 2007a, 52). Onion couch may also indicate the presence of relatively ungrazed grasslands in the vicinity of the cremations (Robinson 1988)' (CD Section 2; Giorgi). Challinor (CD Section 2) noted that 'research on early Bronze Age cremation burials from Raunds, Northamptonshire, suggests that there may be a correlation between the age/sex of the deceased and the fuelwood used, where infants and male adults tend to be associated with a single species and children with mixed assemblages (Campbell 2007)'. At Biddenham Loop, the osteological evidence indicates that, with the exception of SG32286, all cremation burials of this period represent adults or sub-adults (CD Section 2; Powers), which might corroborate the theory.

The Collared Urns from Biddenham Loop all had an upright, moulded collar with simple rim and decoration both on the collar and just below (CD Section 2; Percival). Inverted Collared Urns containing cremation burials, as found at Biddenham Loop, are relatively common, being seen also at Goldington Site 2, Beds. (Mustoe 1988, 5) and Eynesbury, Cambs. (Ellis 2004, 33 and plate IX). More unusual is the use of an inverted Beaker with elaborate collar to bury the cremated remains of a child in SG32286. A Beaker was used to hold the bones of a neonate and a small amount of cremated bone from a two–three-year-old at Barrow Hill, Oxon (Barclay 1999a, 56). None of the cremation burials from the recent investigations on the Biddenham Loop contained grave goods or obvious food offerings. However, one of the 'flat' graves within the Bovis investigations, S377, contained a copper alloy awl and a plano-convex flint knife (Luke 2008, 107 and fig. 6.12). As is often the case, no evidence for pyre sites was located within the investigations and there is no reason why these should be located particularly near the grave. The number of burials within the Biddenham Loop, whether associated with monuments or not, must represent a small proportion of the population. Therefore, when they occur, whether associated with grave goods or not, they must still represent significant acts. Even where

Plate 3.17 Hand excavation of the lower part of shaft G21061 after the surrounding ground had been lowered by machine for safety reasons

grave goods are present, none of the cremation burials within the Biddenham Loop could be described as 'rich' in the manner of Barrow Hills (Barclay 1999b, 323–4).

Isolated inhumation
(Fig. 3.27)
Inhumations SG24161 was radiocarbon dated to the early Bronze Age. It was crouched and placed in a shallow grave *c.*150m from the nearest monument. It comprised a 'robust 26–35 year old male' who 'had suffered at least one traumatic incident with a well-healed transverse fracture at the angle of a left mid rib' (CD Section 2; Powers).

Shafts and large pits (later Neolithic/early Bronze Age)
(Fig. 3.28–3.32, Tables 3.4 and 3.5, Plates 3.17–3.22)

Introduction, location and dating
Twenty-five individual large features over 2.5m in diameter and over 1.1m deep were found within the Biddenham Loop. Their classification as either a shaft or a large pit is clearly a matter of judgement. Shafts are defined as

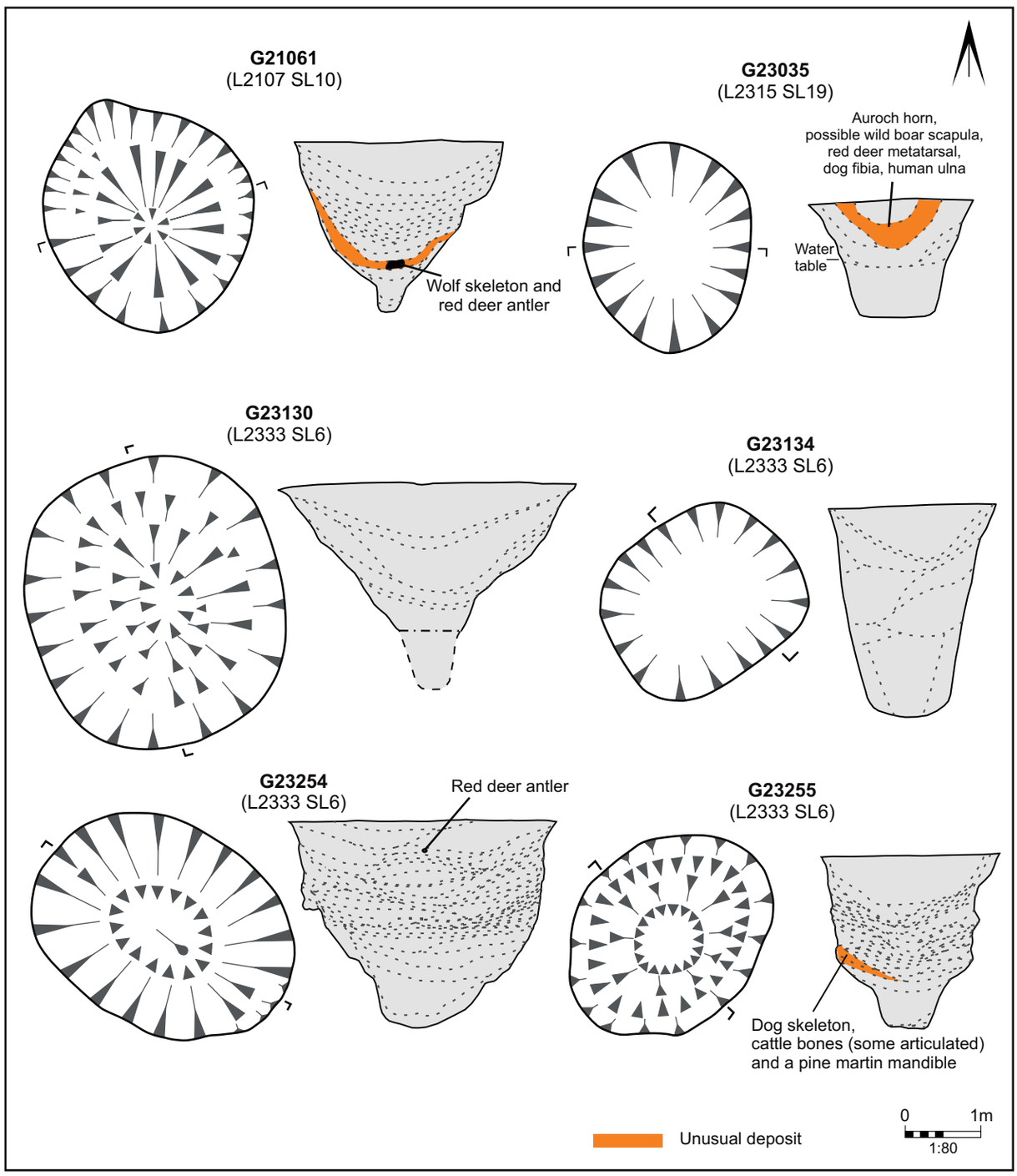


Fig. 3.28 Plans and sections for shafts (1 of 2). Scale 1:80

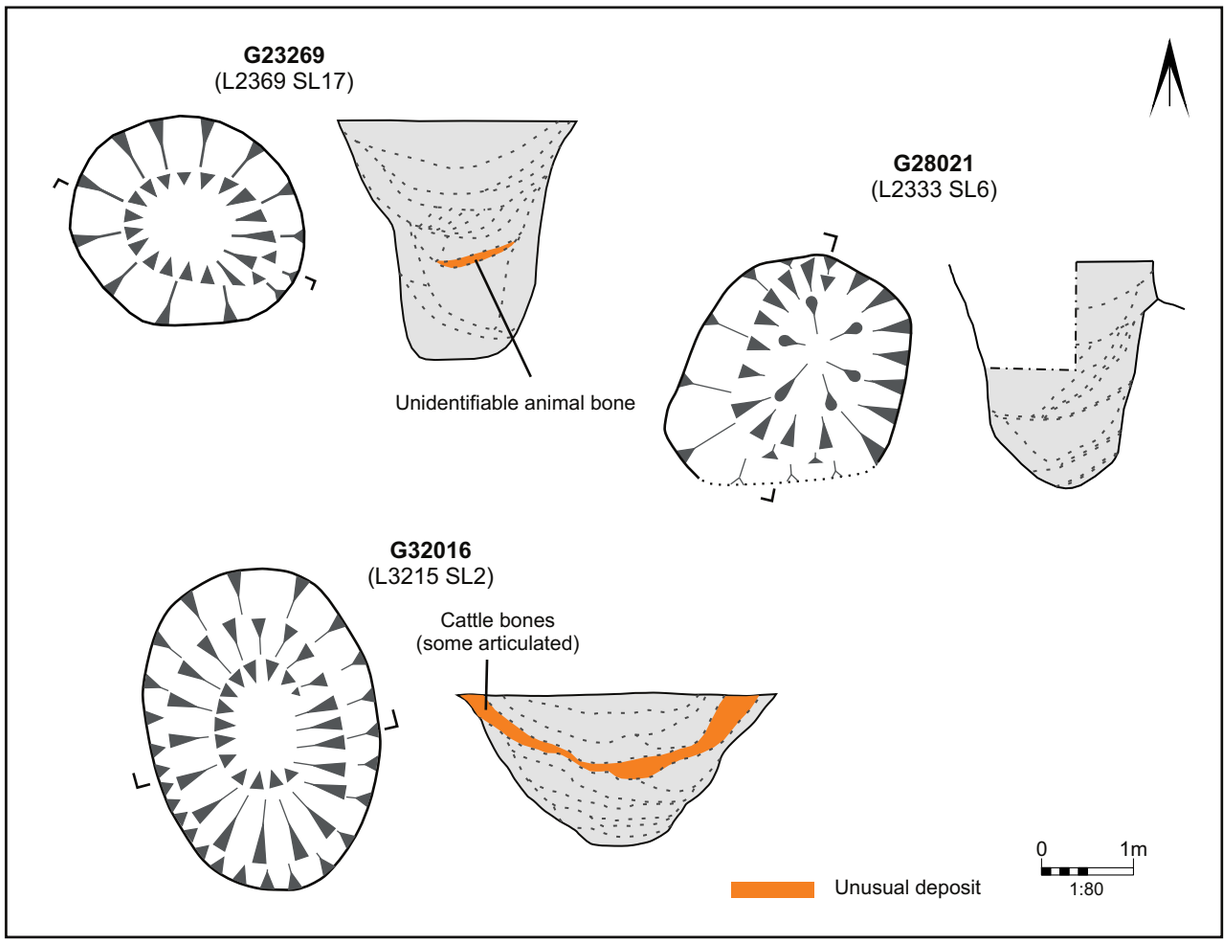


Fig. 3.29 Plans and sections for shafts (2 of 2). Scale 1:80

features which are more oval in plan, have near vertical sides, a greater depth (often over 2.5m) and a narrow base when compared to large pits (compare Figs 3.28 and 3.29 with Fig. 3.30, 3.31 and 3.32, compare Plates 3.18 and 3.19 with Plates 3.20 and 3.22). Nine shafts and sixteen large pits were identified on the Biddenham Loop during the recent investigations. Only one definite shaft was identified within the Bovis investigations (Luke 2008, 84). A further nine pits which share some of the characteristics of large pits were identified during the Bovis investigation, but were considered to be of late Bronze Age/early Iron Age date (Luke 2008, 37).

The shafts and deep pits occur on the periphery of monument clusters (Fig. 3.3), suggesting that they are contemporary and in some way associated. Five shafts L2333 and seven large pits L2334, assigned to SL6, were clustered mainly to the south-west of early Neolithic sub-circular monument L2312 (Fig. 3.5). The latter must still have been a significant feature in the landscape, although there is no direct evidence for its reuse in this period. The cluster of shafts and large pits also accentuates the presence of a ceremonial way following the alignment of monuments in cluster SL5 and terminating where they were dug to the south-west of L2312. A single shaft, G23269 (L2369), and six large pits, L2370, all assigned to SL17, were located on the north-west side of monument cluster SL7 (Fig. 3.6). Shaft G32016 (L3215, SL2) was the only one located to the south of monument cluster SL7 (Fig. 3.6). Shaft G23035 (L2315), later Neolithic shaft G21061 (L2107) and two large pits L2368, all except G21061 assigned to SL19, lay to the south-east of and parallel to monument cluster SL5 (Fig. 3.5).

Pottery and flint was almost non-existent from the shafts and, with the exception of G23181, which produced a large flint assemblage, was found in only small quantities within the large pits. 'Apart from a small number of possibly residual blade-like pieces, the flint from the shafts and large pits seems likely to be of late Neolithic/early Bronze Age date' (CD Section 2; Bates). Large pit G23132 produced a single sherd of Collared Urn; others produced sherds of undiagnostic early prehistoric pottery. A later Neolithic date was also proposed for shaft G564 within the Bovis investigations purely because it was stratigraphically earlier than a ring-ditch (Luke 2008, 23).

The radiocarbon dates for shafts from the recent investigations are presented in Table 3.4. 'One shaft, G21061, is dated considerably earlier but has a radiocarbon measurement taken from an *in situ* and articulated wolf burial, which leaves little room to doubt that it dates from the Neolithic' (CD Section 2; Hamilton). The early Bronze Age dates for the other shafts are remarkably consistent given that many were taken from animal bone which was not always articulated and not obviously structured in deposition.

Plate 3.18 Shaft G21061 excavated to full depth (c. 0.2m into the limestone) but with some fills still in situ (1m scale)

The modelling estimates that the Bronze Age period of shaft digging began in 2630–2210 cal. BC (95% probability) and probably in 2415–2235 cal. BC (68% probability). This activity was long-lived, lasting as many as 330–995 years (95% probability) and probably for 405–695 years (68% probability). The Bronze Age digging of shafts ended in 1920–1520 cal. BC (95% probability; Fig 5; end: Shafts) and probably in 1875–1715 cal. BC (68% probability) (CD Section 2; Hamilton).

Only one of the large pits (G23181) produced material suitable for radiocarbon dating (Table 3.5) and, intriguingly, the determination is towards the end of the dates for the shafts.

Shafts

(Fig. 3.28 and 3.29, Table 3.4, Plates 3.17–3.19)

Nine shafts were located in the recent investigations and one in the Bovis investigations (Luke 2008, 84). All were subject to full excavation. The majority, as in the Bovis investigations, were dug through the gravel and *c.*0.2m into the underlying limestone (see Plate 3.18). They all contained pale fills comprised of fairly clean gravel presumably derived from the digging of the shaft mixed with sandy silts with occasional limestone fragments. The position of the fills was asymmetrical in some shafts (*e.g.* G23134, G28021), possibly suggesting deliberate infilling, but symmetrical in others (*e.g.* G21061, 23255), suggesting erosional weathering.

The quantities of worked flint were unexceptional and small (one flint in two shafts and two flints in another), although they included a scraper in the tertiary fill of G23269. However, the animal bone assemblages, below, were certainly 'unusual'.

- **Wolf skeleton and slightly charred red deer antler** (G21061). In the case of the wolf, 'although incom-

Plate 3.19 Shaft G32016 excavated to full depth but with some fills still in situ (1m scale)

G	*L*	*SL*	*Profile*	*Diameter top: base (m)*	*Depth (m)*	*OD height at base (m)*	*Fill*	*Artefacts Sherd:weight:vessel (g)*	*Animal bone*	*RCD*
21061*	2107	10	Near vertical sides, narrow flat base	3.0:0.3	2.5	28.22	Primary	—	Unidentified animal bone	—
							Secondary	—	Wolf skeleton Charred red deer antler	3330–2920 cal BC (SUERC-25522; 4420± 35BP)
							Tertiary	—	—	—
23035	2315	19	Near vertical sides, narrow flat base	2.2:1.1	1.6	25.00	Secondary	—	—	—
							Tertiary	Flint flake Flint blade	Ulna of human adult Auroch horn Red deer metatarsal Possible wild boar scapula Dog tibia	2030–1830 cal BC (SUERC-26300; 3580±30BP) 2200–1940 cal BC (SUERC-25523; 3675± 35 BP)
23130	2333	6	Steep sides, V-shaped profile, flat base	3.8:<0.7	3.2	27.72	—	—	—	—
23134			Vertical sides, narrow flat base	2.5:1.5	2.8	29.55	—	—	—	—
23254			Vertical sides, narrow concave base	3.5:1.2	2.7	28.97	Secondary	—	Part of a red deer OA2 (with cut marks and smoothed tip)	2340–2130 cal BC (SUERC-25550; 3790± 35 BP)
23255			Vertical sides, narrow flat base	3.0:0.7	2.4	28.71	Secondary	—	Dog skeleton Articulated cattle bones Mandible of pine marten	2140–1930 cal BC (SUERC-25531; 3655±35 BP)
23269	2369	17	Near vertical sides, narrow flat base	2.6:1.2	2.6	26.76	Secondary	—	Unidentified animal bone fragments	2470–2200 cal BC (SUERC-26309; 3855±30 BP)
							Tertiary	Flint end/side scraper	—	—
28021	2333	6	Vertical sides, narrow concave base	2.5:0.9	2.5	29.2	Secondary	Flint flake	—	—
32016	3215	2	Near vertical sides, narrow flat base	3.5:0.8	1.7	26.00	Secondary	—	Cattle bones: some articulated, including one more likely to be auroch	2210–2030 cal BC (SUERC-26311; 3725±30 BP)

OA = other artefact number. All weights rounded up to the nearest 0.01g

Table 3.4 Details of late Neolithic* and early Bronze Age shafts

G	*L*	*SL.*	*Profile*	*Diameter top: base (m)*	*Depth (m)*	*OD height at base (m)*	*Fills*	*Finds sherd:weight:vessel (kg)*	*RCD*
23117	2334	6	Steep concave sides, concave base	3.5:1.5	1.2	28.84	—	—	—
23126			Steep stepped sides, narrow concave base	3.0:0.3	1.7	29.49	—	—	—
23127			Almost vertical sides, flat base	3.2:1.5	1.7	29.6	Secondary	Flint scraper (RAl 222)	—
23128			Steep stepped sides, concave base	3.5:1.3	1.4	29.52	—	—	—
23132	2368	19	Moderate sloping sides, concave base	2.4:1.0	0.7	26.94	Secondary	1:0.01:1 Collared Urn	—
23133			Moderate sloping sides, concave base	3.0:1.1	1.1	26.54	—	—	—
23135	2370	17	Steep stepped sides, concave base	3.3:1.0	1.1	26.52	—	—	—
23180	2334	6	Steep stepped sides, concave base	3.6:1.0	1.2	30.15	Primary	—	—
23181			Steep stepped sides, flat base	4.0:1.8	2.1	28.27	Primary	Flint blade-like flake (RAl 10068)	—
							Tertiary	10 × flint blade-like flakes 10 (RAl 10015, 10025, 10033, 10038, 10040, 10045–46, 10054, 10062–63) 7 × flint blade (RAl 10011–12, 10019–20, 10027, 10035, 10064) 2 × flint bladelet (RAl 10032, 10036) 2 × flint chip (RAl 10043, 10058) Flint core fragment (RAl 10030) 15 flint flakes (RAl 10014, 10017–18, 10024, 10026, 10037, 10039, 10044, 10048, 10053, 10059, 10061, 10065, 10066–67) Flint Knife (RAl 10056) Multi-platform flint blade core (RAl 10047) Flint piercer (RAl 10031) 2 × retouched flint fragments (RAl 10013, 10042) Flint scraper (RAl 10016) Serrated flint blade (RAl 10022) 6 × flint spalls (RAl 10021, 10023, 10028, 10034, 10041, 10060) Struck flint fragment (RAl 10055) 1:0.01:1 undiagnostic prehistoric pottery	1900–1690 cal BC (SUERC-28028; 3480 ± 35BP)
23182			Steep sides, concave base	3.6:1.1	1.7	28.85	Tertiary	Combination flint scraper/knife (RAl 10010)	—
23249	2396	16	Steep sides. Not bottomed	3.2:<1.7	1.2	29.45	—	—	—
23256	2370	17	Steep sides, concave base	2.8:0.8	1.2	27.00	Tertiary	Flint blade-like flake Utilised flint flake	—
23264			Steep sides, concave base	2.9:1.0	1.3	28.42	—	—	—
23267			Steep sides, concave base	2.2:1.1	1.1	28.3	—	—	—
23268	2370	17	Steep sides, flat base	3.4:2.1	1.4	28.53	Secondary	Flint bladelet (RAl 14092) 4:0.02:1 undiagnostic prehistoric pottery	—
							Tertiary	Utilised flint blade (RAl 14091) 9:0.03:7 undiagnostic prehistoric pottery	—
23334			Steep sides, flat base	2.9:0.8	1.7	26.44	Tertiary	2 × flint flakes	—

RAl = LWB1289 registered artefact number. All weights rounded up to the nearest 0.01g

Table 3.5 Details of the early Bronze Age large pits

plete, all parts of the body are represented, suggesting that the entire body was originally deposited' (CD Section 2; Maltby). The animal is believed to be a young adult but sex determination was inconclusive.

- **Twenty-six bones, from at least three animals, some articulated**, of which the majority were identified as cattle (G32016). Although the majority of the bones were quite large, they 'are more likely to be from a domestic than a wild bovid' (CD Section 2; Maltby). However, one bone 'is more likely to have belonged to an aurochs' (CD Section 2; Maltby). All the bones in this assemblage were eroded and none showed any evidence of butchery.
- **Dog skeleton, articulated cattle bones and pine marten mandible** (G23255). The dog skeleton was of a young adult; some bones are missing but 'it seems very likely that this is a primary deposition of a complete carcass, although it is possible that the skull and the top of the neck were subsequently disturbed or removed' (CD Section 2; Maltby). In the case of the articulated cattle bones 'Although there is no evidence of butchery marks, it is likely that it is a butchered segment of the trunk that was deposited' (CD Section 2; Maltby)
- **Four eroded bones comprising aurochs horn, possible wild boar scapula, red deer metatarsal and dog tibia** (G23035). This shaft also contained an ulna of a human adult of undetermined sex (CD Section 2; Powers). The radiocarbon dates from the human bone and the red deer metatarsals are statistically the same. The human bone 'was poorly preserved and the joint surfaces and cortex eroded, which suggests that the bone had been exposed in a defleshed state for some time prior to burial' (CD Section 2; Powers).
- **Part of a red deer antler** with smoothed tip and cut marks (OA2, CD Section 2; Duncan Plate 1.1a) (G23254). 'Whether this was a modified pick is unclear, but the cut marks indicate at least antler working' (CD Section 2; Duncan).
- **Unidentified animal bones** (G23269).

None of the bone assemblages came from primary fills or, with the exception of the articulated remains, exhibited evidence that they had been 'placed'. While they could be interpreted as butchery waste or food refuse, the range of species is certainly unusual. A similar deposit was found in the lower fill of Bovis shaft G564 — 'three animal bones identified to species, which included aurochs, all from the left side of the body' (Luke 2008, 23). The burial of a wolf and a dog in this period is unusual, as is the presence of aurochs, wild boar and human bone. These bones, including the small groups of mainly cattle vertebrae and ribs which may have been collected from special meals or sacrifices, all appear to represent offerings. Whether these events were directly connected with the digging, rather than the backfilling, of the shafts is unclear, although all the recent examples are from secondary fills.

Comparable animal bone assemblages have been found elsewhere in the region, as at pit L313 at Baldock Bypass, Herts. (Keir and Phillips 2009, 16). An exceptional assemblage found in pit F.1091 at Broom, Beds., contained the skulls and horn cores of five aurochs (two exhibiting evidence of pole-axing) and one domestic cow (Cooper and Edmonds 2007, 51–3). Although the pit itself was comparable in size to the large pits at Biddenham Loop the assemblage is more comparable to the assemblage from G32016 and the Bovis shaft (Luke 2008, 23). Cattle skulls, antler and articulated parts of animal skeletons occur widely in the Thames valley, often found associated with monuments (Garwood 2011, 377). For example, at Barrow Hills red antlers were associated with the ditches of the oval barrow, the linear mortuary enclosure and ring-ditch 611, with cattle limbs at the latter (Levitan and Serjeantson 1999, 237–8). It is likely that the hunting of wild species such as wolf, aurochs, deer and wild pig was more than just a practical activity; it could have been linked to ceremonial activities including coming of age rituals. Therefore, the domestication of wild animals while alive and the curation of animal parts such as horns and antler as trophies are highly significant.

Only shaft G23255 contained a rich charcoal assemblage, which was dominated by oak. Challinor (CD Section 2) considered that 'the presence of a single taxon in a large charcoal assemblage might support' ritual deposition and that 'feasting debris or pyre debris are plausible origins for the charcoal'.

Large pits

(Fig. 3.30–3.32, Table 3.5, Plates 3.20–3.22)

Sixteen features were classed as large pits rather than shafts: they had steep rather then vertical sides, were less than *c*.1.7m deep and had a larger basal diameter compared to those features classed as shafts (see Plates 3.20 and 3.22). In contrast to most of the shafts, none contained any animal bone. Approximately half were subject to full excavation. As with the shafts, the fills of the large pits were pale and comprised fairly clean gravel, presumably derived from the digging of the pit, mixed with sandy silts. With the exception of G23334 the position of the fills was fairly symmetrical, suggesting infilling through weathering and erosion. Loss-on-ignition and phosphate-P concentrations from the lower fills were high but only those from G23181 appeared from the regression analysis to potentially include 'bone-derived phosphate' (CD Section 2; Crowther).

Several of the large pits contained worked flint and pottery, albeit in very small quantities. Three pits contained tiny quantities of early prehistoric pottery; the only diagnostic piece was a Collared Urn sherd (from G23132). However, the tertiary fill of G23181 was exceptional in that it contained around fifty-one flints.

> Fifteen flakes, seven blades and eleven blade-like flakes are mostly small and sharp. Two of each type, six in all, have abraded platforms. A few spalls, chips and bladelets are also present. Retouched pieces include a small sub-circular bi-facially flaked knife (Fig. 5, F25) very similar to a piece from SL4 (SP4, Fig. 4, F16), a very small cortical flake with a tiny protruding distal point used as a piercer, a thin possible scraper, part of a possible serrated blade and two retouched fragments, one of which is from a bi-facially flaked tool (CD Section 2; Bates).

With the exception of the tertiary fill of G23181 the large pits were devoid of dating evidence (see above). However, their proximity to the shafts and their location on the periphery of monument clusters suggest that they were all dug in the later Neolithic/early Bronze Age. They have some similarities with pits interpreted as water pits at both Perry Oaks, Heathrow (Lewis *et al*. 2006, 133–149) and within the Bovis investigations, where they were assigned to the late Bronze Age/early Iron Age

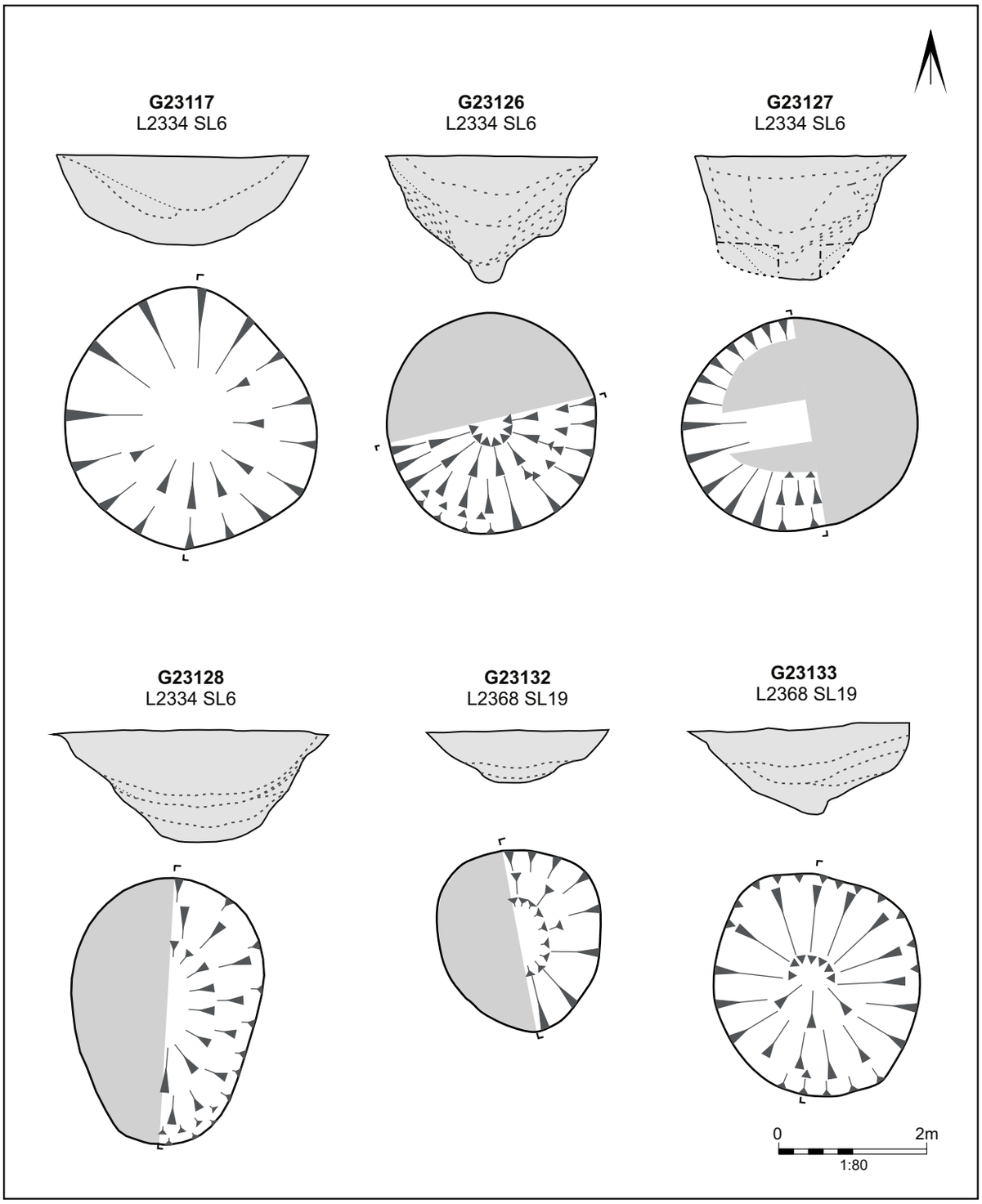


Fig. 3.30 Plans and sections for large pits (1 of 3). Scale 1:80

(Luke 2008, 37). However, nearly all those within the recent investigations lacked any evidence for water-lain silts or water-derived subsidence (James Rackham pers. comm.). This presumably reflects the level of the water table at the time they were dug and the fact that most were located on the higher ground away from the present flood plain (see Fig. 3.2).

Discussion

The distinction made between shafts and large pits in the recent investigations reflects real differences in profile, dimensions and content. However, the features will be discussed together because there is no evidence to suggest functional differences and such a classification has not been used in the discussion of similar features found elsewhere.

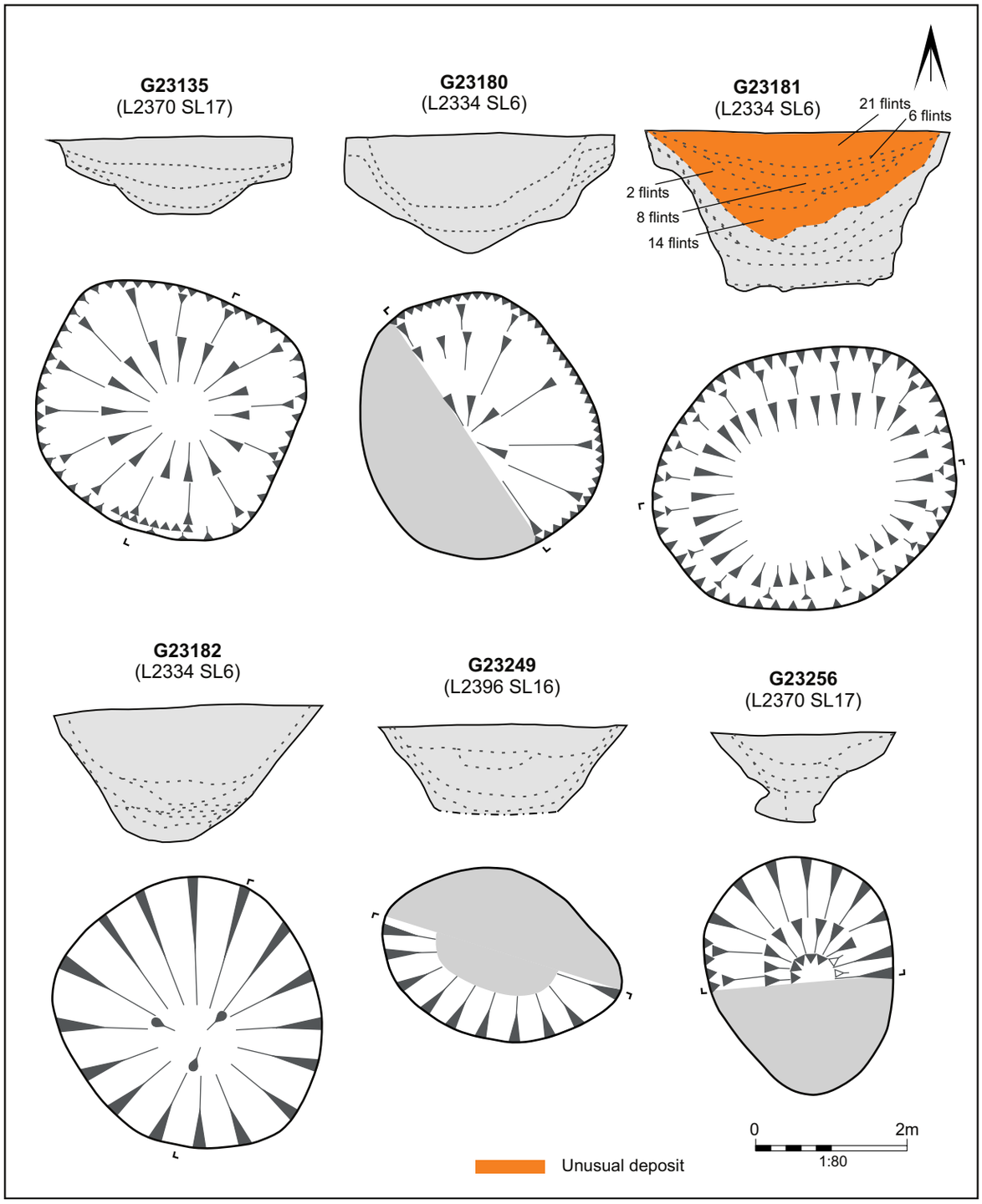


Fig. 3.31 Plans and sections for large pits (2 of 3). Scale 1:80

Similar features, while not common, have been found elsewhere in southern England, sometimes in the vicinity of monuments. They are typically found in small numbers: *e.g.* three along the line of the Baldock bypass, Herts. (Phillips 2009a); one at Holloway Lane, Heathrow (Cotton *et al.* 2006, 151–3 and fig. 11.3); two at Easton Lane, Winchester (Fasham *et al*. 1989, 20–21, figs 13 and 16); and one at Barrow Hills, Oxon (Barclay and Bradley 1999, 28 and fig. 3.8). An exceptional group of twenty-one shafts was found at Eaton Heath, Norfolk (Wainwright 1974). At Barrow Hills a number of other pits were similar to the large pits at Biddenham Loop in terms of their dimensions, steep sides, flat bases and general dearth of finds. These include pit 2179 (Barclay 1999a, 64–5 and fig. 4.25), located *c.*10m from the oval barrow; pit 3430 (Barclay 1999a, 67 and fig. 4.28), located *c.*10m from ring-ditch 801; and pit 900 (Barclay 1999a, 67–71 and fig. 4.28), located *c.*10m from the segmented ring-ditch. Although it was suggested that these features could be tree-throw holes, their depth suggests otherwise.

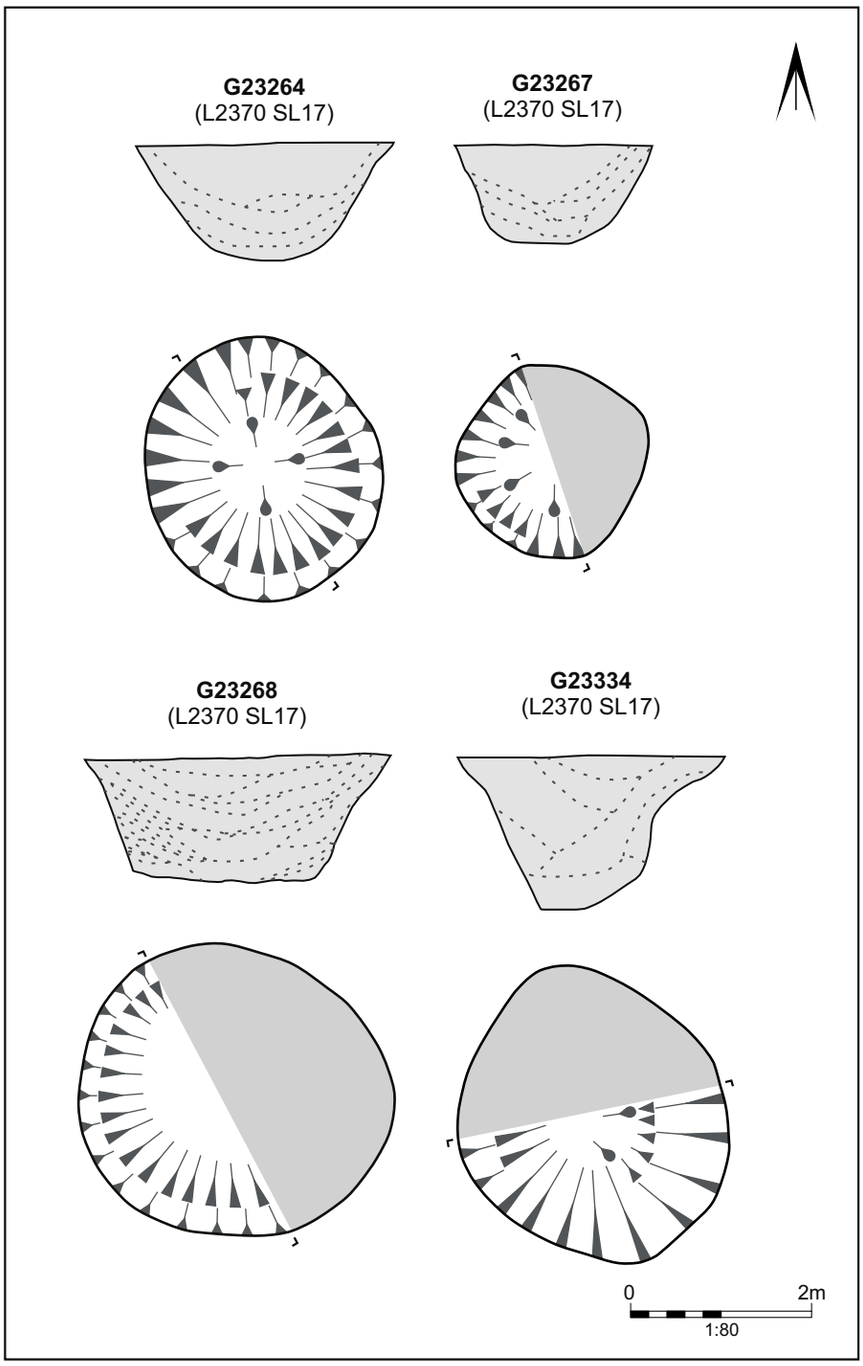


Fig. 3.32 Plans and sections for large pits (3 of 3). Scale 1:80

Perhaps the most comparable shaft to those at Biddenham Loop, in terms of profile and dimensions, is that at Holloway Lane, near Heathrow (Cotton *et al.* 2006, 151–3 and fig. 11.3). The pit was oval, 3.1m × 2.15m, and had an overall depth of at least 1.85m. Like the majority of the Biddenham Loop shafts, it had been dug through one geological layer and into the next — in this case, through brickearth and 0.13m into the underlying gravel. The lower walls were nearly vertical, the upper more rounded. The three shaft-like pits 1.7–2.7m in depth found along the line of the Baldock bypass, Herts., were also comparable to those at Biddenham Loop (Mallows and Phillips 2009, 11 fig. 2.2; Phillips 2009b, 15–16; Duncan *et al*. 2009, 143). Of those at Eaton Heath, Norfolk, only those in Wainwright's shallow category (up to 2.8m deep) are comparable; others were up to 8m deep (1974, 15).

Both the Bovis shaft (Luke 2008, 23) and many of those from the recent investigations appear to have been, at least partially, infilled soon after they were dug. This is often put foward as an explanation for the preservation of vertical sides in the lower part of shafts. The presence of a 'clean chalk rubble fill in the lower part' of pit L218 on the Baldock bypass, Herts., led the excavator to speculate that this 'may be the result of deliberate infilling, possibly using chalk excavated from the pit' (Phillips 1999, 15).

Plate 3.20 Large pit G23181 (L2334, SL6) with upper fills removed

Plate 3.21 Recording the lower part of large pit G23181 after surrounding ground had been lowered by machine for safety reasons

Plate 3.22 Sampling the lower fills of large pit G23182 (L2334, SL6)

Similar reasoning was used to account for the presence of a clean gravel deposit at the base of the pit at Barrow Hills, Oxon (Barclay and Bradley 1999, 28).

Artefacts in the form of pottery and flint are typically absent or present in only very small numbers, especially in primary fills. At Eaton Heath, Norfolk, Wainwright commented: 'finds were not numerous in any instance, and ten shafts produced no significant finds at all' (1974, 12). However, in contrast to other shafts, where, at most, only a few sherds of pottery were found, a virtually complete Beaker was found at a depth of 3.5m in Shaft 5 (Wainwright 1974, 12). Six barbed and tanged arrowheads were found within the shafts at Easton Lane, Winchester (Fasham *et al*. 1989, 21), and Holloway Lane, near Heathrow (Cotton *et al.* 2006).

Bones of wolf, deer, aurochs, wild boar, dog, cattle and pine marten were found in the shafts at Biddenham Loop. Such finds are occasionally recorded in other shafts: a small quantity of cow-sized and sheep-sized bone within pit L127 at Baldock bypass, Herts. (Mallows and Phillips 1999, 11); a cow-sized vertebra and a cow humerus within pit L218 on the same site (Phillips 1999, 13); antler from pit 80 at Easton Lane, Winchester (Fasham *et al.* 1989, 21); and two pieces of antler from the pit at Barrow Hills, Oxon (Barclay and Bradley 1999, 28). However, the bodies of a wolf and a dog were also buried in separate shafts at Biddenham Loop. This is comparable in some ways to the burial of a partly dismembered young adult aurochs in the shaft at Holloway Lane, near Heathrow (Cotton *et al.* 2006). The aurochs was deposited just above the primary fill, which was itself interpreted as 'the result of a combination of silting, slumping and trampling prior to the deposition of the animal remains' (Cotton *et al.* 2006, 152). It is believed that the carcass had been dismembered while flesh was still present, possibly to assist in transport to the pit (Cotton *et al.* 2006, 160). The presence of barbed and tanged flint arrowheads, concentrated 'in the area of the animal's hindquarters', was taken as evidence for hunting (Cotton *et al.* 2006, 153). Human bone, like that in shaft G23035 at Biddenham Loop, is found more rarely, although pit 1017 at Easton Lane, Winchester did contain a burial (Fasham *et al.* 1989, 21).

The dating of the shafts at Biddenham Loop is based on radiocarbon dating of animal bone, which was not always articulated or deposited in an obviously 'structured' manner. However, the dates achieved are similar to and consistent with those from similar features elsewhere in southern Britain. At Eaton Heath, Norfolk, Neolithic plain bowls and Ebbsfleet and Beaker pottery were found and although the radiocarbon dates were inconsistent they were considered to 'suggest a date in the second half of the 3rd millennium BC' (Wainwright 1974, 13). The pottery assemblage from the upper fills of the shafts at Easton Lane, Winchester was mixed but suggestive of a later Neolithic/early Bronze Age date (Fasham *et al.* 1989, 21). Unfortunately radiocarbon dating of the aurochs bones at Holloway Lane, near Heathrow, was not possible. However, on the basis of the abraded Grooved Ware and arrowhead type it was concluded that a 'final Neolithic/earlier Bronze Age date for the aurochs deposit looks to be the most appropriate' (Cotton *et al.* 2006, 159).

A number of shaft-type features have been found elsewhere in southern Britain, often in the vicinity of monuments, although not usually in the same numbers as at Biddenham Loop. For example, individual examples were found near a barrow cemetery on the Baldock bypass, Herts. (Phillips 1999, fig. 3.1), and within the monument complex at Barrow Hills, Oxon (Barclay and Bradley 1999, 28).

At the time of Wainwright's 1974 report on Eaton Heath, Norfolk, very few shafts of later Neolithic/early Bronze Age date were known and he therefore compared them to 'Romano/Celtic' examples (Ross 1968). It is now clear that they are often connected with activities associated with early prehistoric monument complexes. As at Biddenham Loop, they are often located away from the actual monuments and in the case of SL6 were clustered at the end of a possible processional route (see above). There is clear evidence that the aurochs at Holloway Lane, near Heathrow (Cotton *et al.* 2006), was hunted, and a similar interpretation is likely for the wolf within shaft G21061 at Biddenham Loop. Wild animals are rare in Neolithic and Bronze Age faunal assemblages (Cotton *et al.* 2006, 160) and it is likely that some of the bones deposited in the Biddenham Loop shafts derived from hunted wild animals.

It is uncertain whether the shafts were specifically dug to receive whole or partial animal carcasses. Most were placed in the secondary fills, suggesting at least a delay between death and burial. The more articulated bones could represent parts of animals that were killed shortly prior to deposition, while the individual bones could represent the placement of trophies from earlier hunts, possibly undertaken by ancestors. As Roman histories reveal, both hunting and the keeping of trophies such as antler and horns were an important part of prehistoric life. The successful hunting of the rarer or more difficult to kill animals, such as aurochs and wolves, would have brought great personal or group prestige, and might even have been used to assert an individual group's rights to power and territory at a time when the natural landscape was being changed. This may also explain the burial of a possible archer in pit 1017 at Easton Lane, Winchester (Fasham *et al.* 1989, 143).

In summary, the shafts, and possibly the large pits, were probably dug, used for offerings and deliberately backfilled as part of ceremonial events undertaken around the monuments at Biddenham Loop. What is less clear is whether this was a single event such as a coming of age ceremony, after which the shaft was abandoned, or whether the same shaft was used repeatedly over a number of years.

Linear segmented ditch L2108

(Fig. 3.33)

Immediately to the east of the later Neolithic oval monument L2191 was a segmented ditch L2108 (SL96). It was visible for only a short length within the excavation area but cropmarks suggest that it extends for at least 500m. Within the excavation area it comprised two segments with a total length of *c.*18m; both were *c.*1.2m wide and *c.*0.4m deep with a fairly flat base. The steep profile and depths of the ends of the segments suggest that they were genuine terminals and not the result of truncation. The ditch's significance was not fully appreciated during fieldwork but, where excavated, it produced three flints (a blade-like flake, a core fragment and a flake) and a mixed assemblage of pottery — undiagnostic later

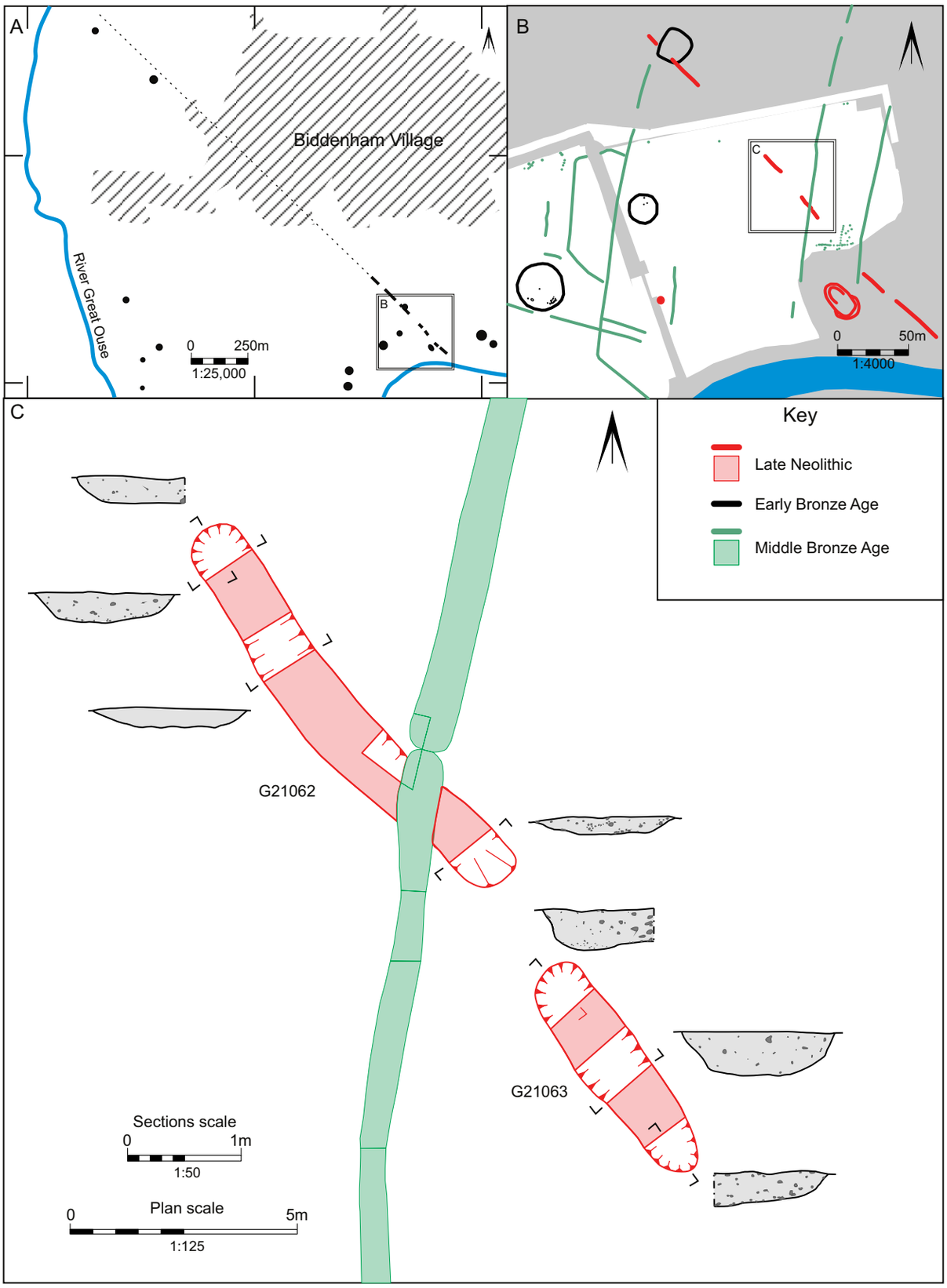


Fig. 3.33 Later Neolithic segmented ditch L2108 and its relationship to early Bronze Age ring-ditches and middle Bronze Age fields

Neolithic/early Bronze Age types, a possible Biconical Urn with fingernail-impressions on the shoulder (CD Section 2; Percival, Fig. 4, P38) and early–middle Iron Age types. Its assignment to the later Neolithic is largely

based on its being stratigraphically earlier than middle Bronze Age field ditches and the fact that it was parallel to oval monument L2191. Its alignment does not correspond with any other known landscape alignment within the Biddenham Loop. It may also be significant that it is perpendicular to the south-west–north-east monument alignment and adjacent postulated ceremonial route SL5 (see above). With this in mind it it is worth noting that its alignment passed through possible square ring-ditch L2192, *c.*40m to the north of the excavation area, and that, if extended, it lines up with two of only a small number of ring-ditches (1.6km and 2km distant) to the west of Biddenham village.

Long, straight lengths of later Neolithic ditch are usually associated with cursus or rectangular enclosure monuments (Luke 2007, 33–4). However, a parallel ditch was not present within the excavation area, nor is one visible in the non-intrusive surveys. A similar date has been suggested for the 'long straight ditch about a hundred yards in length' with at least one causeway, found in 1936 in a gravel pit in Kempston (Dunning 1938, 284) — a feature which has often been cited as a cursus (see Luke 2007, 33 for discussion). Perhaps comparable is the probable late Neolithic segmented ditch found at the Western International Market, near Heathrow (Pre-Construct Archaeology in prep.). The Biddenham Loop segmented ditch is one of only a small number of such landscape features currently known in Britain. Given its overall length, close association with monuments and spatial relationship to the river Great Ouse, it is likely that it served a similar purpose to that of cursus monuments. The most basic interpretation of the latter, sees them as ceremonial routes possibly following existing pathways (Harding and Barclay 1999, 6).

V. Settlements (early Neolithic/early Bronze Age)

Introduction

Evidence for settlements or camps within the study area up until the late 4th millennium BC is elusive and, even though there is considerably more evidence from the 3rd millennium BC, its meaning in terms of settlement character is difficult to interpret. It is possible that people throughout this period continued to be quite mobile, moving with their animals between woodland clearings. There are two principal strands of evidence — flint concentrations in the modern ploughsoil and small pits, both isolated and clustered. Although small pits have been found on Neolithic and early Bronze Age sites for over a century (Clark 1960, 208–11) their interpretation has been quite broad (Garrow 2006, 3–11), although they are nearly always considered to be associated with settlement. The main issues as yet unresolved are whether they are part of permanent long-term settlement or not and what their fills can tell us about related activities, including rituals undertaken (Garrow 2012, 127).

Isolated small pits and clusters of small pits

(Figs 3.34–3.43, Table 3.6)

Approximately 161 small, generally bowl-shaped pits dating to this period have been investigated within the Biddenham Loop (117 within the recent investigations, excluding the fourteen associated with possible building L2705, and thirty within the Bovis investigations). Their discovery to the west of Bedford is significant, because they are under-represented in the archaeological record for Bedfordshire (Luke 2007, 39) and the eastern region more widely (Brown and Murphy 1997, 14–16). This is probably due in part to their small size (most on the Biddenham Loop were <0.7m in diameter and <0.3m deep, see Plate 3.23), sterile fills and dispersed nature, which makes them difficult to find by anything other than open area excavation. Hey estimated that 'over the last 20 years perhaps thousands have been excavated in development-led excavations in the Thames valley and surrounding areas, including over 150 at Yarnton alone' (2011a, 241). Such excavations are typically targeted on prehistoric monuments and later settlements because, as at Biddenham Loop, no small pits were found in evaluation trenches. Although only five pits were found on Land west of Kempston, they are significant because such features of this date are very rarely found on the Bedfordshire clays.

Plate 3.23 Small pit G2017 (L213, SL8) under excavation

The pits occur in isolation, in two or threes, and in loose clusters of up to thirteen (Plates 3.24 and 3.25), as in the Thames valley (Hey 2011b, 315). Debate continues as to whether the clusters represent permanent settlements or sites that were repeatedly occupied for relatively short periods of a time by an essentially mobile population (Thomas 1999; Garrow *et al.* 2005). Throughout this period the individual and clustered pits on the Biddenham Loop are located away from the monuments (Fig. 3.3), as at Yarnton, Oxon (Hey 2011b, 316). This suggests that the activities associated with small pits and monuments are mutually exclusive. It is also noteworthy that they tend to be located either on the periphery of or adjacent to, rather than directly under, ploughsoil flint concentrations. One area *c.*250m × 60m to the south-west of the Biddenham Loop contained small pits dated to the 4th and 3rd millennium BC (see Fig. 3.34) all situated on the slope leading down to the present-day flood plain. However, there is insufficient evidence to determine whether this is permanent settlement that shifted over two millennia or a preferred site that was repeatedly reoccupied. Interestingly, this was one of the few areas where sub-surface pits coincided with ploughsoil flint concentrations. Although small in number, the pits within Land west of Kempston were all located within *c.*160m

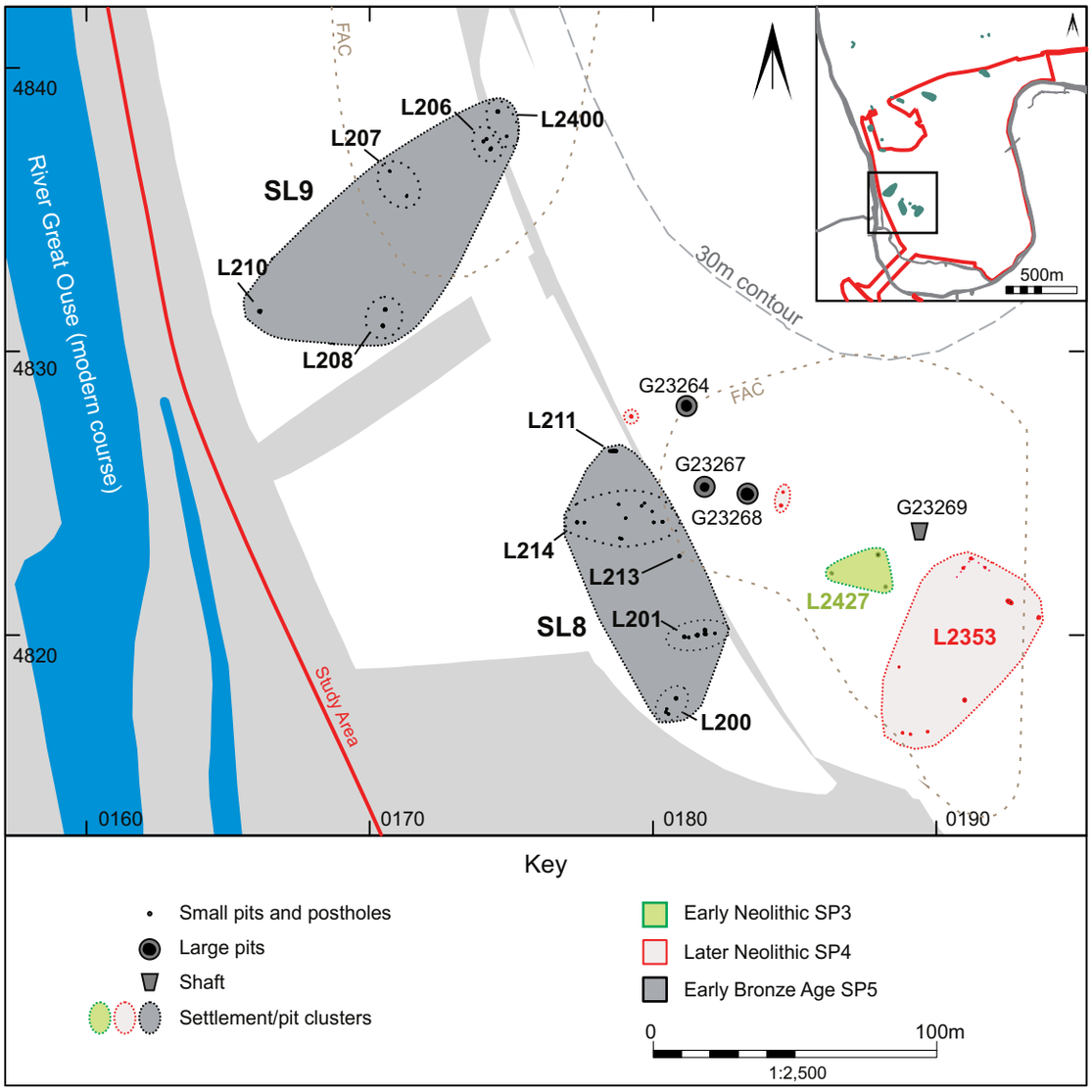


Fig. 3.34 Neolithic and early Bronze Age pits clusters to the south-west of Biddenham Loop: SP3 (L2427), SP4 (L2353), SP5 (SL8 and SL9). Scale 1:2500

of each other on the slope down to the present-day flood plain (Fig. 3.35).

The contents of the pits varied greatly. Some fills were derived from the underlying drift geology and were sterile of finds; others contained small quantities of mundane material with no indication of special treatment; and a few were charcoal-rich and contained large quantities of pottery and flint. Despite extensive sieving, animal bone (CD Section 2; Maltby) and charred plant remains (CD Section 2; Giorgi) were scarce. Traces of charred wheat (including hulled wheat in the later Neolithic phase) and barley were found. Oak charcoal is present in almost all samples; hawthorn, followed by hazel, are the next commonest species. Challinor (CD Section 2) notes that: 'a potential correlation between food and fuel gathering is indicated by the presence of hazelnut shells, hawthorn and sloe berries in the charred plant assemblages'. Furthermore, '… [i]n contrast to the cremation and shaft samples discussed above, the domestic assemblages demonstrate a greater taxonomic diversity' which is 'entirely appropriate for domestic fuelwood gathering which tends to be more *ad hoc* and less focused than collection for ritual purposes and often includes a quantity of shrubby species (for instance, Heathrow, Challinor 2010; Newbury Pipeline, Gale 2005)' (CD Section 2; Challinor).

The pits were dated on the basis of diagnostic pottery or flint and a small number of radiocarbon dates. Where dating evidence was not available, undated pits in clusters were assigned to the period of the nearest dated pit.

Early Neolithic pits

(Fig. 3.35 and 3.36)

A small number of pits were dated to this period: three in the south-west part of the Biddenham Loop (L2427, SL97) and two on Land west of Kempston (L4539, SL123).

The pits in L2427 on the Biddenham Loop were confined to an area 15m × 25m (Fig. 3.36). They produced 133 worked flints and pottery comprising 'shell-tempered rim and body sherds from nine earlier Neolithic plain bowls' (CD Section 2; Percival). The finds assemblage

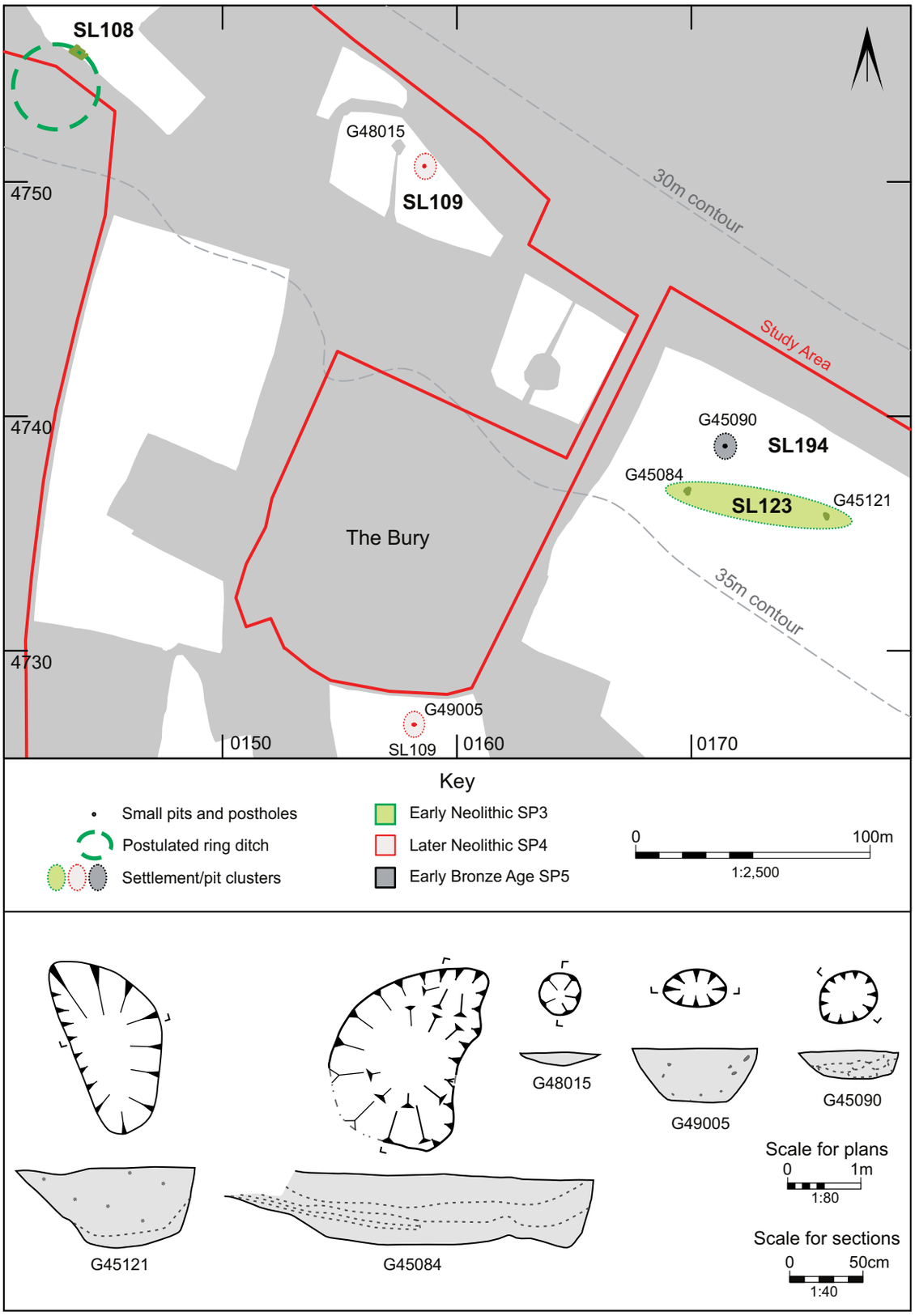


Fig. 3.35 Neolithic and early Bronze Age pits near The Bury, land west of Kempston: SL123, SL109 and SL123. Scale 1:2500

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
3	97	2427	23274	1.2:0.4	Sole	4 × flint core fragments 41 × flint flakes (RAI 14096, 14095) 9 × flint blade-like flakes 16 × flint blades 3 × flint shatter 12 × flint spalls 4 × flint end scrapers Combination flint end scraper/serrated edge 6 × serrated flint blades 4 × serrated flint flakes Flint piercer Retouched flint blade Retouched flint flake 14 × utilised flint flakes 2 × utilised flint blades 2 × flint flakes from polished tools	63:0.5:6: lBA–eIA 93:0.7:6 eNeo Plain Bowl	—	3780–3640 cal BC (SUERC-28030; 4915 ± 35BP)
			23354	0.9:0.1	Sole	4 × flint flakes (RAI 14094) Utilised flint blade 21 × serrated flint blade	5:0.1:2 eNeo Plain Bowl	—	3790–3640 cal BC (SUERC-28029; 4925 ± 35BP)
			23355	0.9:0.4	Secondary		—	—	—
					Tertiary	Flint flake Utilised flint flake 3 × flint scrapers (RAI 14645)	13:0.2:2 Grooved ware	—	—
	123	4539	45084	1.7:0.5	Primary	—	—	—	—
					Secondary	—	—	—	—
					Tertiary	Flint core rejuvenation flake	1:0.01:1 eNeo Plain Bowl	—	—
			45121	2.5:0.6	Primary		—	—	—
					Secondary	2 × flint blade-like pieces 17 × flint flakes 5 × flint spalls Flint end/side scraper Serrated flint blade	1:0.01:1 lBA–eIA	—	—
4	4	131	1087	0.9:0.1	Sole	—	10:0.03:1 Non-specific early prehistoric	—	—
		2335	23109	0.9:0.2	Sole	—	14:0.19:6 Mortlake ware (P10, 11, 12)	—	—
			23110	0.7:0.2	Primary	Polished flint axe fragment (RAI 2) Flint blade (RAI 3) Utilised flint blade (RAI 1) Serrated flint flake	25:0.1:5 Mortlake ware (P14)	—	3360–3090 cal BC (SUERC 26336; 4510 ± 30BP)
					Secondary	Flint blade-like flake	3:0.01:2 Non-specific early prehistoric	—	—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
4 cont.	4 cont.	2335 cont.	23111	0.4:0.3	Secondary	—	—	—	—
			23318	0.6:0.2	Sole	—	—	—	—
			23319	0.6:0.2	Sole	—	—	—	—
			23320	0.6:0.1	Sole	—	—	—	—
			23321	1.0:0.3	Primary	—	—	—	—
					Secondary	—	—	—	—
		2353	23265	0.6:0.1	Sole	—	—	—	—
			23266	1.1:0.3	Secondary	—	—	—	—
					Tertiary	—	—	—	—
			23271	0.9:0.3	Secondary	—	—	—	—
					Tertiary	—	—	—	—
			23272	0.7:0.3	Sole	Flint flake	1:0.01:1 lBA–eIA 1:0.02:1 e–mIA	—	—
			23276	0.7:0.3	Sole	—	—	—	—
			23278	1.0:0.2	Sole	Flint flake 2 × flint spalls	—	—	—
			23280	2.4:0.3	Sole	—	—	—	—
			23281	0.4:0.2	Sole	—	—	—	—
			23356	0.6:0.3	Sole	—	—	—	—
			23357	0.6:0.5	Sole	—	—	—	—
			23358	0.5:0.1	Sole	Flint flake 2 × flint spalls	1:0.01:1 e–mIA	—	—
			23359	0.6:0.3	Secondary	—	—	—	—
					Tertiary	—	—	—	—
			23360	0.5:0.1	Sole	—	12:0.08:2 Mortlake ware	—	—
		2374	23071	1.0:0.4	Sole	—	—	—	—
			23323	0.6:0.2	Sole	—	—	—	—
			23324	0.4:0.1	Sole	—	—	—	—
			23325	1.5:0.5	Sole	—	—	—	—
			23326	0.6:0.1	Sole	—		—	—
			23327	0.8:0.2	Sole	—		—	—
			23328	1.3:0.3	Sole	—	—	—	—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
4 cont.	4 cont.	2374 cont.	23329	0.6:0.3	Sole	—	—	—	—
			23330	0.5:0.1	Sole	—	—	—	—
			23331	0.6:0.2	Sole	—	—	—	—
			23332	0.7:0.2	Sole	—	3:0.01:1 Ebbsfleet ware (P2)	—	—
			23333	0.6:0.2	Sole	—	—	—	—
		2411	23113	1.4:0.3	Sole	—	3:0.02:2 Peterborough ware	—	—
			23322	1.7:0.3	Sole	—	—	—	—
		2412	23197	3.6:0.6	Sole	—	6:0.1:3 Fengate ware (P5)	—	—
		2704	23114	0.9:0.3	Sole	Polished axe flint flake (RAl 203) Flint blade-like flake (RAl 204) Flint spall (RAl 206) Flint flake (RAl 205)	1:0.01:1 Unidentified	—	—
			23121	0.5:0.4	Sole	—	—	—	—
			23124	0.5:0.1	Sole	—	1:0.01:1 Non-specific early prehistoric	—	—
			27000	1.1:0.2	Primary	—	—	—	—
					Secondary	—	6:0.04:2 Mortlake ware (P19)	—	—
		2705	27017	1.3:0.3	Sole	—	—	—	—
			27018	0.7:0.2	Sole	—	—	—	—
			27019	1.9:0.2	Sole	—	—	—	—
			27020	0.8:0.2	Sole	Flint Flake 1	—	—	—
			27021	1.2:0.5	Primary	—	—	—	—
					Secondary	—	—	—	—
					Tertiary	—	—	—	—
			27022	1.4:0.1	Sole	—	1:0.01:1 Unidentified	—	—
			27024	1.2:0.2	Sole	—	12:0.04:1 Mortlake ware	—	—
			27025	1.3:0.2	Primary	—	—	—	—
					Secondary	Flint Flake 1	26:0.18:2 Mortlake ware (P18)	0.01g animal bone	—
			27027	1.0:0.2	Sole	—	—	—	—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
4 cont.	4 cont.	2705 cont.	27028	1.2:0.2	Primary	—	—	—	—
					Secondary	—	—	—	—
			27029	0.7:0.1	Sole	Flint blade-like flake 1 Flint knife 1	—	—	—
			27030	0.8:0.1	Primary	—	—	—	—
					Secondary	—	—	—	—
			27031	0.8:0.1	Sole	—	—	—	—
			27032	0.7:0.1	Primary	—	—	—	—
					Secondary	—	—	—	—
		2902	29008	0.9:0.3	Sole	—	—	—	—
			29009	0.5:0.2	Tertiary	—	2:0.02:1 Peterborough ware	—	—
			29010	0.6:0.1	Tertiary	—	1:0.02:1 Fengate ware (P4) 3:0.01:1 Non-specific early prehistoric	0.01 animal bone	3350–3020 cal BC (SUERC-26310; 4475± 35BP)
		2903	29006	2.0:0.3	Sole	—	—	—	—
		2904	29003	0.8:0.2	Sole	—	10:0.05:2 Mortlake ware (P9)	—	—
	109	4808	48015	0.5:0.1	Sole	Flint petit tranchet	—	—	—
		4904	49005	0.9:0.4	Sole	2 × flint blade-like flake	44:0.52:9 Mortlake ware (P13, 15, 16)	—	—
5	8	200	2006	0.5:0.2	Sole	2 × flint flakes 2 Flint spall	13:0.1:2 Biconical urn (P33)	—	—
			2007	0.6:0.1	Sole	Flint spall	—	—	—
			2008	0.5:0.1	Sole	—	—	—	—
			2009	0.9:0.2	Sole	2 × flint flakes (RAb 2043) 4 × flint spalls Serrated flint blade (RAb 2044) Utilised flint blade (RAb 2045) Flint bladelet (RAb 2113)	29:0.17:1 Biconical urn	—	—
		201	2010	0.9:0.2	Sole	—	—	—	—
			2011	0.5:0.2	Sole	—	—	—	—
			2012	1.1:0.9	Primary	—	—	—	—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
5 cont.	8 cont.	201 cont.	2012		Secondary	Backed flint knife Flint blade Flint blade-like flake 7 × flint flakes (RAb 2169) Flint piercer (RAb 2031)	1:0.01:1 Mortlake ware	—	—
			2013	1.0:0.4	Sole	—	—	—	—
			2014	1.0:0.2	Sole	2 × flint scrapers (RAb 2001) Flint blade-like flake Flint scale flaked knife (RAb 2027) 5 × flint flakes 8 × spalls Backed flint knife (RAb 2029)	87:0.23:10 Beaker (P24)	0.02 animal bone	—
			2015	0.5:0.2	Sole	2 × spalls	24:0.09:1 Collared Urn (P32)	0.01 animal bone	—
		211	2049	2.9:0.3	Sole	Flint blade Flint blade-like flake (RAb 2030) Flint flake (RAb 2036)	1:0.01:1 Beaker	—	—
		213	2017	0.9:0.4	Sole	Single flint platform blade core (RAb 2017) Flint core fragment (RAb 2003) Flint blade (RAb 2019) 10 × flint flakes (RAb 2008–10, 2014, 2024–25, 2065) 3 × flint spalls (RAb 2012) Flint shatter (RAb 2016) 2 × retouched flint flake (RAb 2005, 2006) Combination flint scraper/point (RA2012) 4 × flint scrapers (RAb 2004, 2015, 2018, 2023) 3 × utilised flint blades (RAb 2013,2020, 2022) Struck flint fragment (RAb 2021)	73:0.44:4 Beaker (P27) 9:0.05:3 Non-specific early prehistoric	Antler tine (OA3) 0.02 animal bone	2630–2460 cal BC (SUERC-25551; 4020 ± 35BP)
		214	2019	0.6:0.3	Sole	—	—	—	—
			2020	0.8:0.3	Sole	—	—	—	—
			2021	0.8:0.30.6:0.3	Sole	—	—	—	6360–6090 cal BC (SUERC-25510; 7365 ± 35BP)
			2022	0.6:0.3	Sole	Flint blade-like flake (RAb 2100) Flint spall (RAb 2024)	—	—	—
			2023	0.5:0.3	Sole	Flint blade-like flake (RAb 2129)	—	—	—
			2024	0.4:0.7	Sole	—	—	—	—
			2025	0.5:0.3	Sole	—	—	—	—
			2026	0.8:0.2	Sole	Flint scraper (RAb 2042) Flint spall	1:0.01:1 Non-specific early prehistoric 3:0.01:2 Beaker (P25)	—	2580–2460 cal BC (SUERC 26288; 3985 ± 30BP)
			2027	0.6:0.2	Sole	—	—	—	—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
5 cont.	8	214	2048	0.6:0.2	Sole	—	2:0.02:2 Mortlake ware (P1)	—	—
			2051	0.5:0.1	Sole	—	—	—	—
	9	206	2059	1.:0.3	Sole	—	—	—	—
			2060	0.7:0.2	Sole	—	—	—	—
			2061	0.7:0.1	Sole	—	—	—	—
		207	2057	0.8:0.2	Sole	—	—	—	—
			2058	0.6:0.1	Sole	—	—	—	—
		208	2054	0.1:0.2	Sole	—	—	—	—
			2055	0.0:0.2	Sole	—	—	—	—
		210	2053	1.2:0.1	Sole	—	—	—	—
		2400	23205	1.0:0.2	Sole	Flint core trimming flake (RAl 227) 2 × flint flakes (RAl 226) Flint blade-like flake (RAl 247) Flint spall Flint fabricator (RAl 225)	1:0.01:1 Fengate ware (P3)	—	—
			23317	0.5:0.2	Secondary	—	—	—	—
					Tertiary	—	—	—	—
			1065	0.7:0.2	Sole		—	—	—
			1115	1.1:0.4	Tertiary	Flint flake	—	—	1870–1630 cal BC (SUERC-26295; 3415 ± 30BP)
	90	2388	23152	1.4:0.4	Sole/ ‘unusual’	Flint bladelet Flint flake Utilised flint flake	15:0.07:3 Beaker (P29)	—	—
			23240	0.5:0.2	Primary	—	—	—	—
					Secondary	—	2:0.12:1 Grooved ware 1:0.04g:1 Non-specific early prehistoric	—	—
					Sole	—	—	—	—
			23273	1.6:0.2	Sole	—	2:0.01:1 Beaker 1:1:1 Non-specific early prehistoric		—

SP	*SL*	*L*	*G.*	*Dimensions diameter:depth (m)*	*Fills*	*Flint*	*Pottery sherd:weight:vessel (kg)*	*Other finds*	*RCD*
5 cont.	90 cont.	2413	23077	2.0:0.2	Sole	10 × flint core/core fragments 6 × flint blades 10 × flint blade-like flakes 24 × flint flakes 24 8 × flint spalls Flint barbed and tanged arrowhead Tip of flint arrowhead 2 × flint combination scraper/notch/piercer Flint denticulate Flint knife Flint microlith Flint notched flake 2 × flint awls 2 × flint piercers 3 × truncated flint blades 15 × retouched flint flakes 5 × flint scrapers	6:0.02:1 Fengate ware (P6)	—	—
			23123	1.1:0.3	Primary	—		—	—
					Secondary	—	2:0.01:1 Fengate ware (P8) 1:0.01:1 Non-specific early prehistoric	—	—
			23125	0.9:0.3	Sole	Flint scale flaked knife (RAl 201)	4:0.02:2 Non-specific early prehistoric	—	—
		2414	23179	0.9:0.3	Primary	—	—	—	—
					Secondary	—	8:0.06:4 Grooved ware (P23)	0.06 animal bone	—
			23397	0.5:0.2	Sole	—	—	—	—
		2706	27001	1.1:0.8	Primary	—	17:0.05:1 Non-specific early prehistoric	0.06 animal bone	—
					Secondary	—	—	—	—
					Sole	—	5:0.01:1 Beaker 7:0.02:1 Grooved ware (P20)	0.01 animal bone	—
			27026	1.4:0.2	Primary	—	—	—	—
					Secondary	—	—	—	—
					Tertiary	2 × flint flakes	4:0.01:1 Beaker	0.06 animal bone	—
	194	4538	45090	0.8:0.2	Primary	—	—	—	—
					Secondary	—	—	—	—
					Tertiary	—	8:0.03:1 Fengate ware	—	—

OA = other artefact; RAl = LWB1289 registered artefact number; RAb = BWB1124 registered artefact number; P = Pottery illustration number; eNeo = early Neolithic; lBA–eIA = late Bronze Age–early Iron Age; e–mIA = early–middle Iron Age. All weights rounded up to the nearest 0.01g

Table 3.6 Details of all Neolithic and early Bronze Age small pits

from pit G23274 (L2427) was exceptional — it contained 121 flints and pottery from six different vessels.

> Forty-nine flakes are mostly quite irregular but some neat thin pieces are present. Additionally, there are nine blade-like flakes and sixteen blades, mostly small and neat … Retouched tools from the pit include three end scrapers on blade-like pieces' (CD Section 2; Bates). 'The nature and condition of the debitage suggests knapping was contemporary and occurred nearby (CD Section 2; Bates).

Overall, 'the pits contained flints highly characteristic of earlier Neolithic assemblages. There are blades, other blade-like pieces, end scrapers, serrated pieces, a neat pointed blade-type piercer, and two flakes from polished implements' (CD Section 2; Bates). The pottery comprised 'undecorated, round based bowls [with] globular or rounded shoulders … several have long curved necks' (CD Section 2; Percival). Radiocarbon dates were obtained from charred remains in two pits within the cluster: pit G23274 (3780–3640 cal. BC, SUERC-28030: 4915 ± 35BP) and pit G23354 (3790–3640 cal. BC, SUERC-28029: 4925 ± 35BP).

On Land west of Kempston two pits L4539 (SL123) (Fig. 3.35) contained twenty-seven flints, all but one from pit G45121.

> At Kilverstone, Norfolk, refits between tools and waste flint suggested that flint was knapped for immediate use (Beadsmoore 2006, 68–9) and the presence of two flakes which may be from the same core and one of which is utilised, in the same pit (SL123), could be similarly interpreted (CD Section 2; Bates).

A single sherd of early Neolithic pottery was found in the other pit, G45084, of this pair. Charcoal from pit G45084 'suggests the utilisation of wood from a mature oak tree' (CD Section 2; Challinor).

Later Neolithic pits
(Figs 3.37–3.40)

The majority of the later Neolithic small pits was located on the Biddenham Loop (SL4); only two were found on Land west of Kempston (SL109). Within the Biddenham Loop a total of thirty-two small pits and thirteen post-holes was found, mainly to the north and west. Significantly, they occupied areas devoid of monuments, possibly suggesting a zoning of different types of activities within the landscape. They occurred in clusters (*e.g.* L2335, L2353, L2374), dispersed over quite large areas (*e.g.* L2411, L2412, L2704) and in an alignment (*e.g.* L2902, L2904). Where undated pits fell within clusters of better dated features they were assumed to be contemporary. Only pit clusters L2335 and L2353 were found directly beneath a ploughsoil flint concentration, although a number were adjacent to such concentrations (*e.g.* L2902, 2904, L2374). L2353 was located in an area of similar pits dated to the early Neolithic (discussed above), suggesting that this area was preferred for settlement during both periods.

The majority of the pits contained small quantities of Peterborough Ware and worked flint. The vast majority of the recognisable Peterborough pottery was Mortlake — only two pits contained sherds from Ebbsfleet and Fengate vessels.

> The pottery from the small pits is moderately well preserved and includes large rim and bodysherds, somewhat contradicting Garrow's observations that assemblages of Peterborough Ware tend to be small, weathered and sometimes burnt (2006, 78). Although they are fragmentary and incomplete, the good condition of the sherds indicates that they had not been exposed to a high degree of weathering or attrition prior to deposition and the high numbers of rim sherds perhaps suggest a degree of selection within the deposits (CD Section 2; Percival).

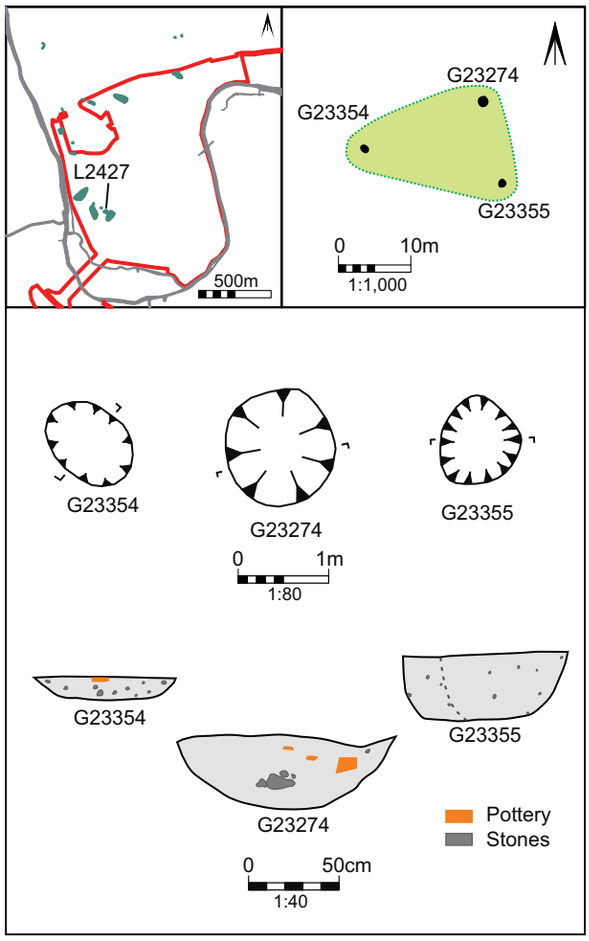


Fig. 3.36 Early Neolithic pit cluster SL97 (L2427) to the south-west of Biddenham Loop, with sections. Scale 1:80

Notably large assemblages of Mortlake pottery were found in pits G23109 and G23110 (L2335), which each contained sherds from six vessels (CD Section 2; Percival). Smaller quantities of Mortlake pottery came from G23360 (L2353) and G27000 (L2704). Sherds from single Mortlake vessels came from G29003 (L2904) and 29010 (both L2902). The single Ebbsfleet vessel came from G23332 (L2374) and the only Fengate bowl from G23197 (L2412). The latter had incised decoration and unusual fingertip impressions below the neck.

Only a small flint assemblage (twenty-three pieces) was recovered from the pits, the majority from single pits in L2335 and L2704 (CD Section 2; Bates). The flints in pit G23110 (L2335) 'are sharp and the blades could be from the same core, suggesting the knapping of flint for immediate use' (CD Section 2; Bates). Pit G23110 also contained a fragment from the face of a polished axe type tool. Another flake from a polished tool was found in pit G23114 (L2704), *c.*180m to the south. Although *c.*230m away, these two pits are the nearest to the early sub-circular monument L2313. The presence of spalls, albeit in small numbers, in two pits in L2353 suggests that knapping occurred in this area too. Two samples from pit clusters L2335 and L2353 contained oak char-

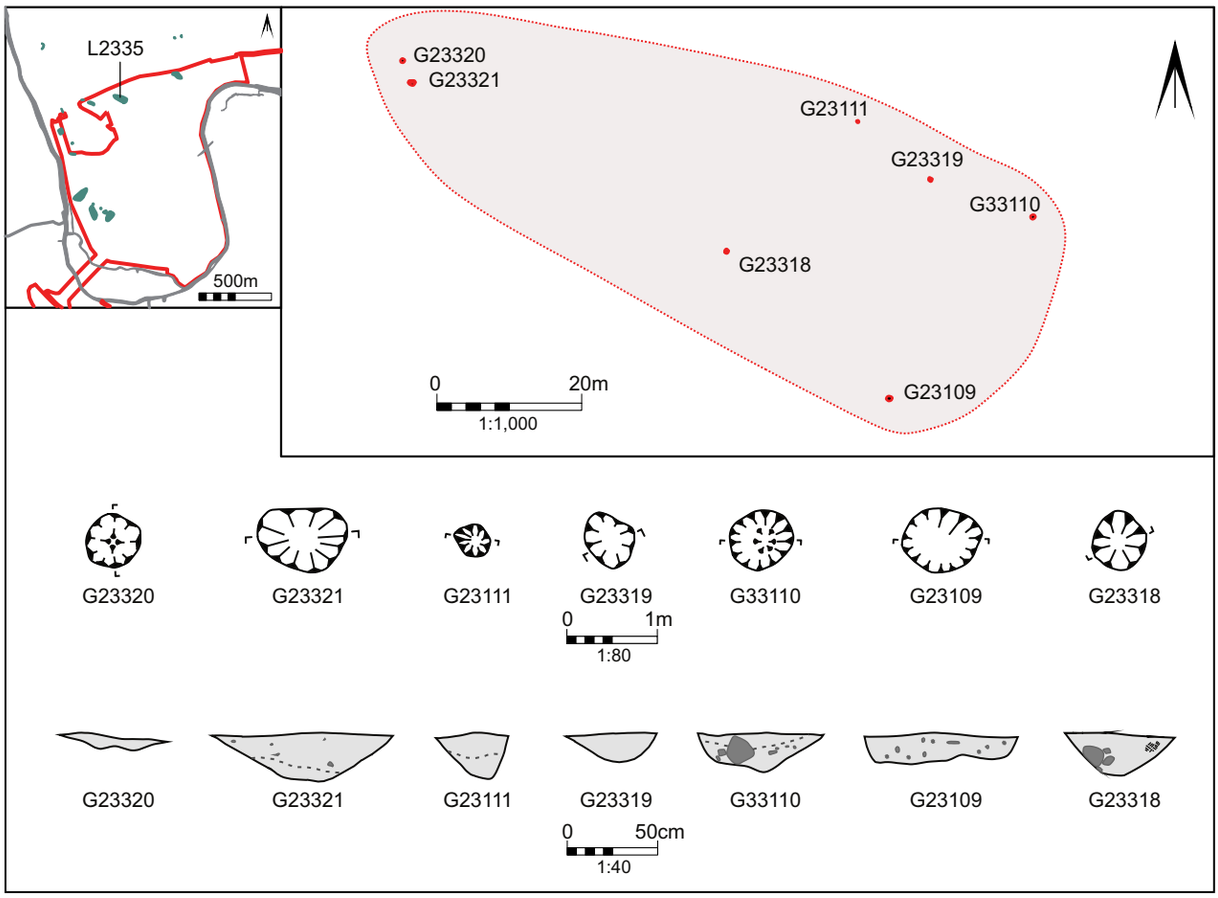


Fig. 3.37 Later Neolithic pit cluster L2335 to the north of Biddenham Loop, with sections. Scale 1:80

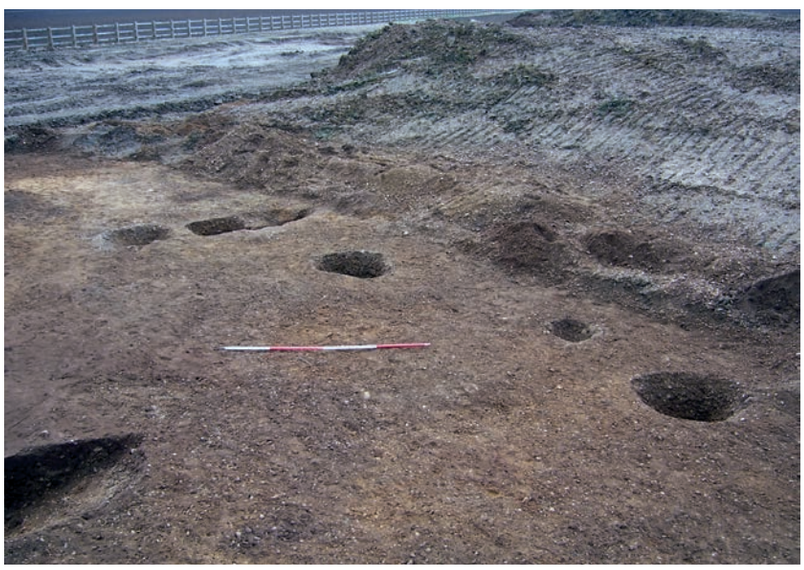


Plate 3.24 Pit cluster L201 (SL8), from the north-west (2m scale). The edge of the excavation area as visible was later extended

coal. A radiocarbon date was obtained from charred remains in pit G23110 (cluster L2335) of 3360–3090 cal. BC (SUERC 26336: 4510 ± 30BP).

The two small pits on Land west of Kempston were *c.*230 apart. Pit G49005 (L4904) contained two flakes and sherds from seven Mortlake bowls; pit G48015 (L4808) contained a broken petit tranchet arrowhead

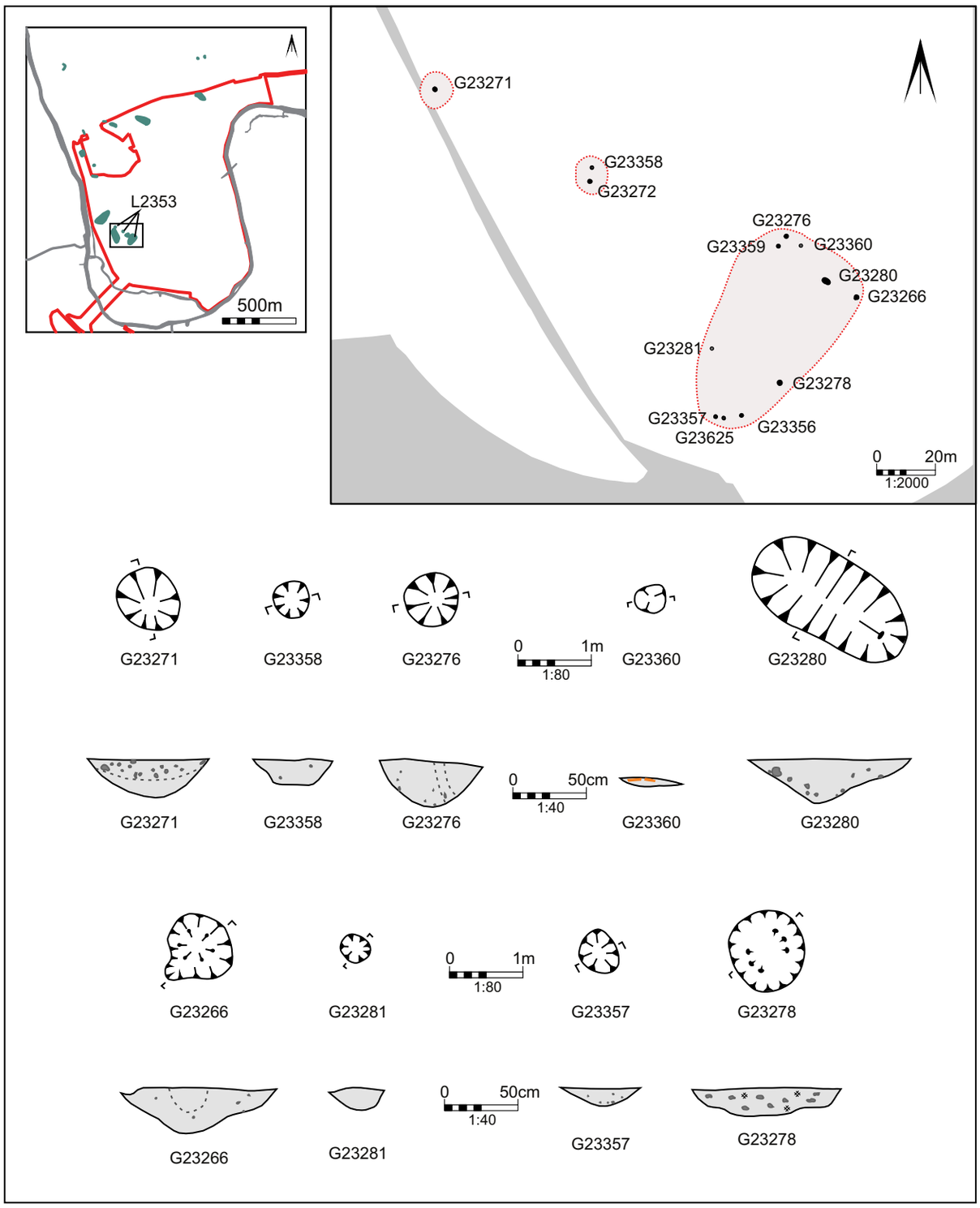


Fig. 3.38 Later Neolithic pit cluster L2353 to the south-west of Biddenham Loop, with sections. Scale 1:80

of late Neolithic date L4808 (CD Section 2; Bates, Fig. 4, F17). Both pits were located *c.*170m from the early Neolithic pits L4539.

Early Bronze Age pits
(Figs 3.41–3.43)
Isolated and clustered small pits/post-holes SL8, SL9 and SL90 were identified within the Biddenham Loop, while only a single pit SL194 was identified within Land west of Kempston. Where pottery was present it was usually Beaker or Collared Urn, although small quantities of Grooved Ware were also recovered. Isolated pit G27001 (L2706) was exceptional in that its fill contained both Beaker and Grooved Ware pottery.

The clustered small pits and post-holes to the south-west of the Loop (SL8) (Fig. 3.41, Plates 3.24 and 3.25)

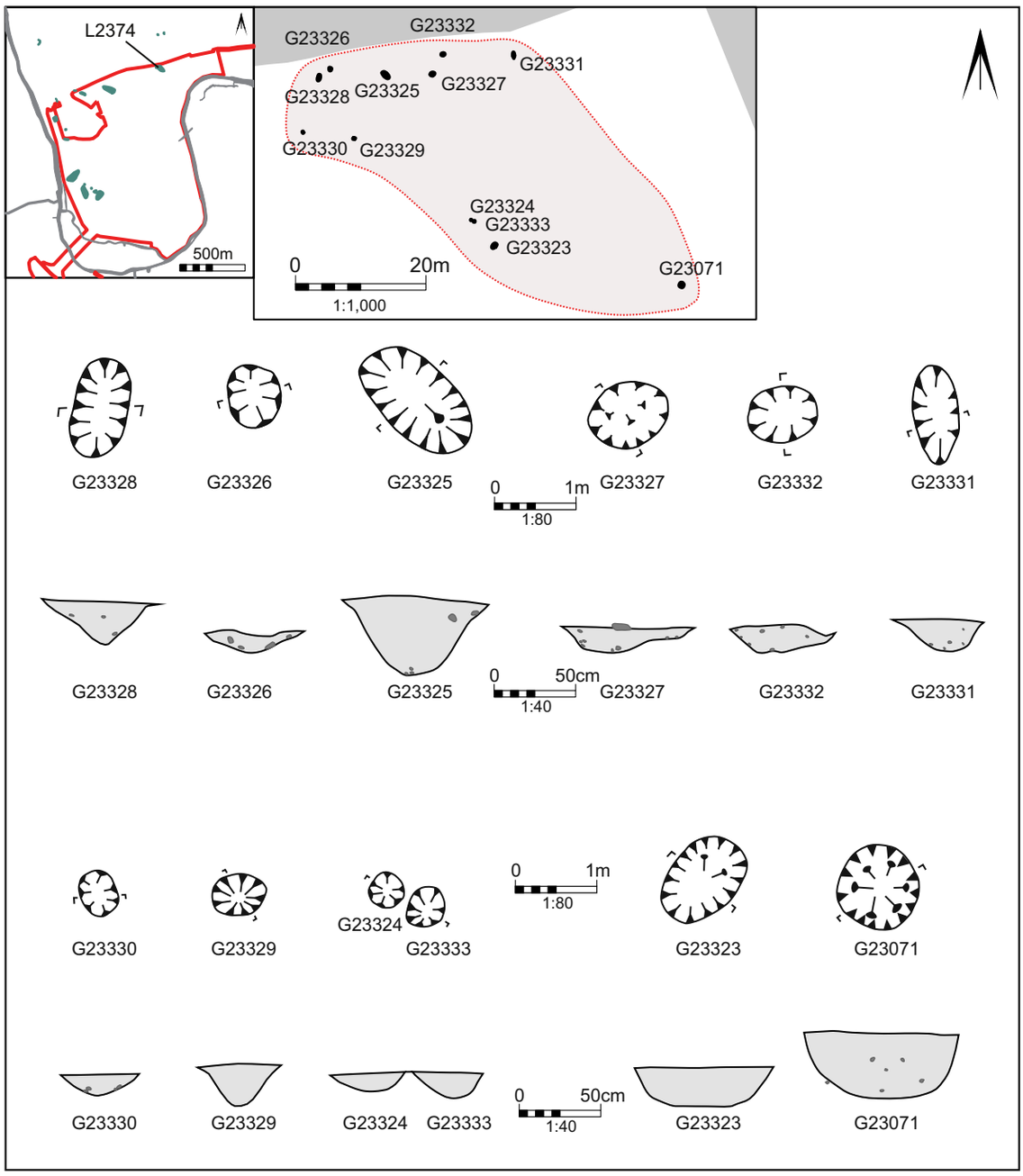


Fig. 3.39 Later Neolithic pit cluster L2374 to the north-east of Biddenham Loop, with sections. Scale 1:80

and SL9 (Fig. 3.42) were noticeably more concentrated than the other pits across the remainder of the Loop SL90. This could suggest that they represent a site of either repeated short-term occupation or more permanent settlement. They were located adjacent to early and later Neolithic pits, suggesting some degree of continuity in occupation (Fig. 3.34). All were situated on the gravel terrace just above the slope down to the present-day flood plain. Some of the small pits contained deposits with relatively large quantities of pottery and/or flint, whereas others were sterile (Table 3.6). Radiocarbon dates were obtained from charcoal from pit G2017 (L213) of 2630–2460 cal. BC (SUERC-25551: 4020 ± 35BP) and pit G2026 (L214) of 2580–2460 cal. BC (SUERC 26288: 3985 ± 30BP). In contrast to the pits in SL8, only one pit in SL9 contained datable pottery and therefore the assignment of the other pits to this period is tentative.

The small pits (SL8) representing possible settlement in the south-west of the Loop produced eighty struck flints and sherds from both Beakers and Collared Urns. 'The quantity and preservation of the [Beaker] sherds varied between the features, with large assemblages being recovered from G2014 (L201) and G2017 (L213), which contained the remains of five and four vessels respectively, and G2026 (L214) and G2049 (L211), which each contained fewer than fifteen sherds' (CD Section 2; Percival). Twenty-four sherds from a single Collared Urn were found in pit G2015 (L201).

> [It] has a narrow, upright collar with twisted-cord-impressed decoration and simple rim. The decoration forms filled triangular

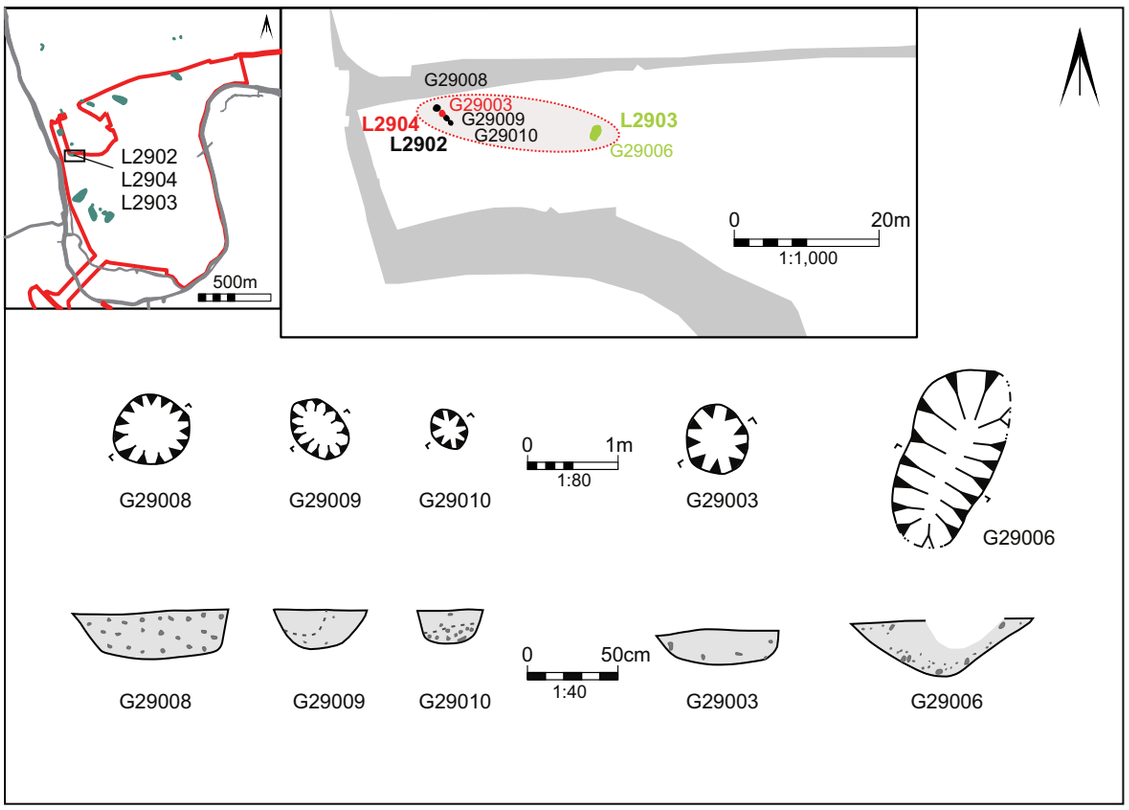


Fig. 3.40 Later Neolithic pit cluster L2902, 2904, 2903 to the north-west of Biddenham Loop, with sections. Scale 1:80

panels on the collar and a herring-bone motif on the rim top. Below the collar the vessel appears to be undecorated (CD Section 2; Percival).

The pit contained no cremated bone and is in a line with four others, so this probably represents the deposition of a Collared Urn in a non-funerary context. 'Finds of Collared Urn on the settlement site of West Row Fen, Mildenhall have associated radiocarbon dates suggesting that the pottery was deposited between 2140 and 1310 cal. BC (Healy 1995, 181)' (CD Section 2; Percival).

'Thirty-one of [the flints] were from three of six pits forming L201, with just over half of these found with

Plate 3.25 Pit cluster L200 (SL8), from the south-west (1m scale)

over fifty sherds of Beaker in pit G2014' (CD Section 2; Bates). The flints from three of the four small pits L200 were 'mostly small sharp flakes and spalls' (CD Section 2; Bates). Most were from one pit, G2009, which also contained thirty sherds of an early Bronze Age biconical urn' (CD Section 2; Bates). Pit G2017 (L213) was exceptional in that it contained twenty-eight flints, the remains of four Beaker vessels and a red deer antler tine (CD Section 2; Duncan, Fig. 1, OA3). '[A]lthough no cut marks survive … the tine tip is worn and has a slightly bevelled point' (CD Section 2; Duncan). Along with flakes, spalls and shatter were tools which included 'four scrapers (or fragments of scrapers), one of which is a neat sub-circular piece with patinated and abraded cortex (Fig. 4, F23) and another small 'combination' side scraper/point with retouched or utilised proximal end' (CD Section 2; Bates). Pit G23205 (L2400) was the only feature in concentration SL9 to contain any finds. 'The otherwise unremarkable flint assemblage includes part of a neat bi-facially retouched rod-like fabricator of likely late Neolithic/early Bronze Age date (Healy 1988, 46)' (CD Section 2; Bates, Fig. 5, F28).

With the exception of pit G23152, all the dispersed pits across the Loop assigned to SL90 produced tiny quantities of small and abraded Beaker pottery and flint. Pit G23152 contained a large assemblage of Beaker pottery with sherds from at least three distinct vessels, but only three flints. A small cluster of pits (L125) was found in a similar topographical location to SL8, but *c.*500m to the north. The six pits contained very few finds despite being on the periphery of a ploughsoil flint concentration. A radiocarbon date obtained from charred hazelnut shells

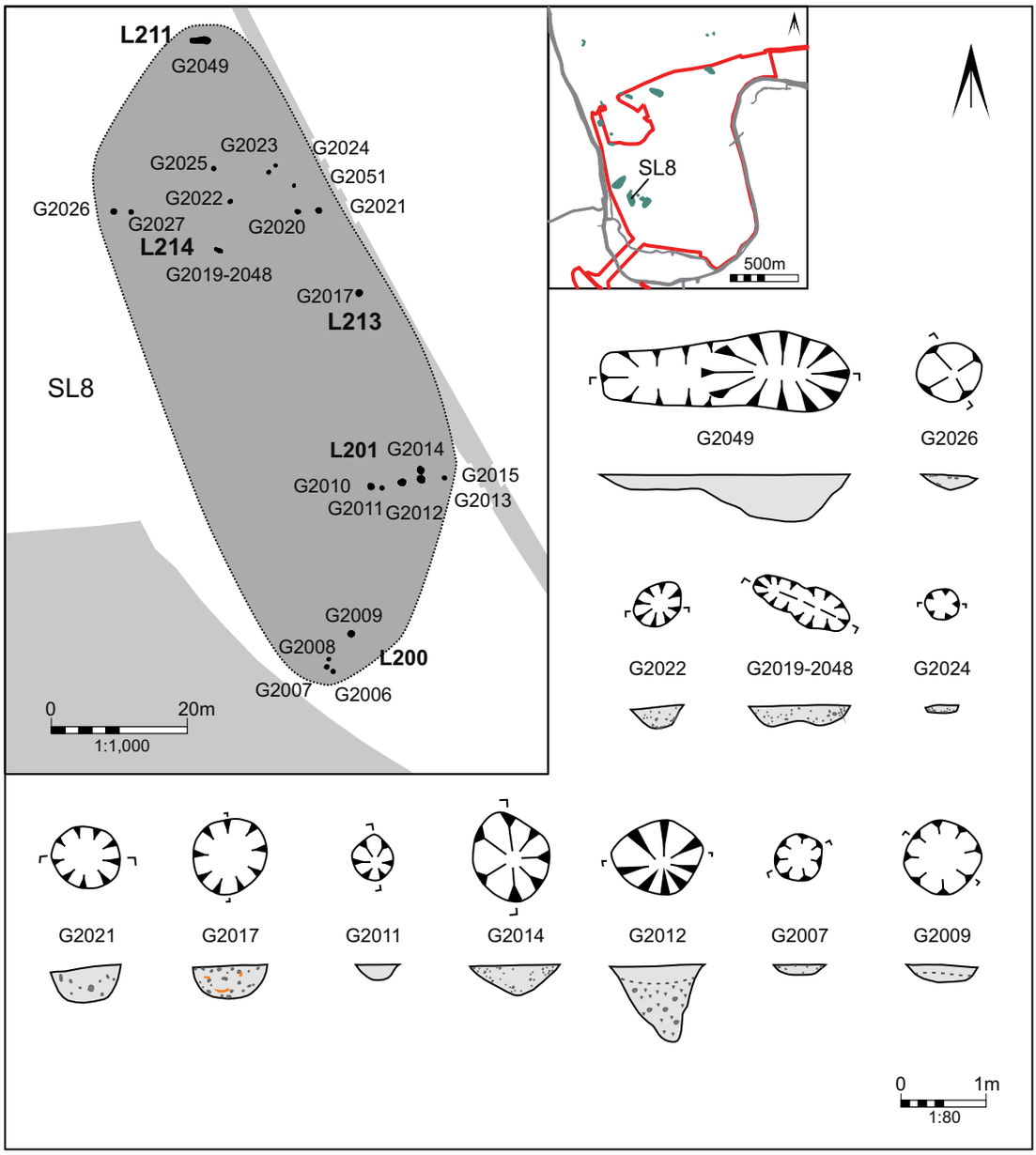


Fig. 3.41 Early Bronze Age pit clusters SL8 to the south-west of Biddenham Loop, with sections. Scale 1:80

in pit G1115 was 1870–1630 cal. BC (SUERC-26295: 3415 ± 30BP).

An isolated pit G45090 (L4538, SL194) within Land west of Kempston contained sherds of Fengate Ware. It was located in the vicinity of early Neolithic pits L4539 (SL123), *c.*300m south-east of possible monument L709 (SL108) and *c.*300m west of the ring-ditches located by the Cutler Hammer evaluation (BCAS 1999a).

Discussion

The majority of the small pits at Biddenham Loop were either sterile or contained small quantities of finds, many of which were not 'fresh' — a pattern similar to that seen in the Thames valley (Hey 2011a, 244) and East Anglia (Garrow 2006, 59). Very few objects or deposits within them could be described as 'special' in any way. This is in contrast to the shafts, the animal bone assemblages from which can, at the very least, be described as 'unusual' (see p. 78).

The possible 'special' elements identified within the small pits at Biddenham Loop comprised:

- **Exceptional quantities or combination of finds:** for example, early Neolithic pit G23274 (L2427, SL97) contained ninety-three flints including a mixed range of thirty-five tools and pottery from six different vessels; early Bronze Age pit G2017 (L213) contained twenty-eight flints, sherds from four Beakers and a red deer antler tine; and early Bronze Age pit G23152 (L2388, SL90) contained sherds from three Beaker vessels but only three flints.
- **Significant individual artefacts:** for example, later Neolithic pit G23110 (L2335, SL4) contained a polished flint axe fragment and later Neolithic pit

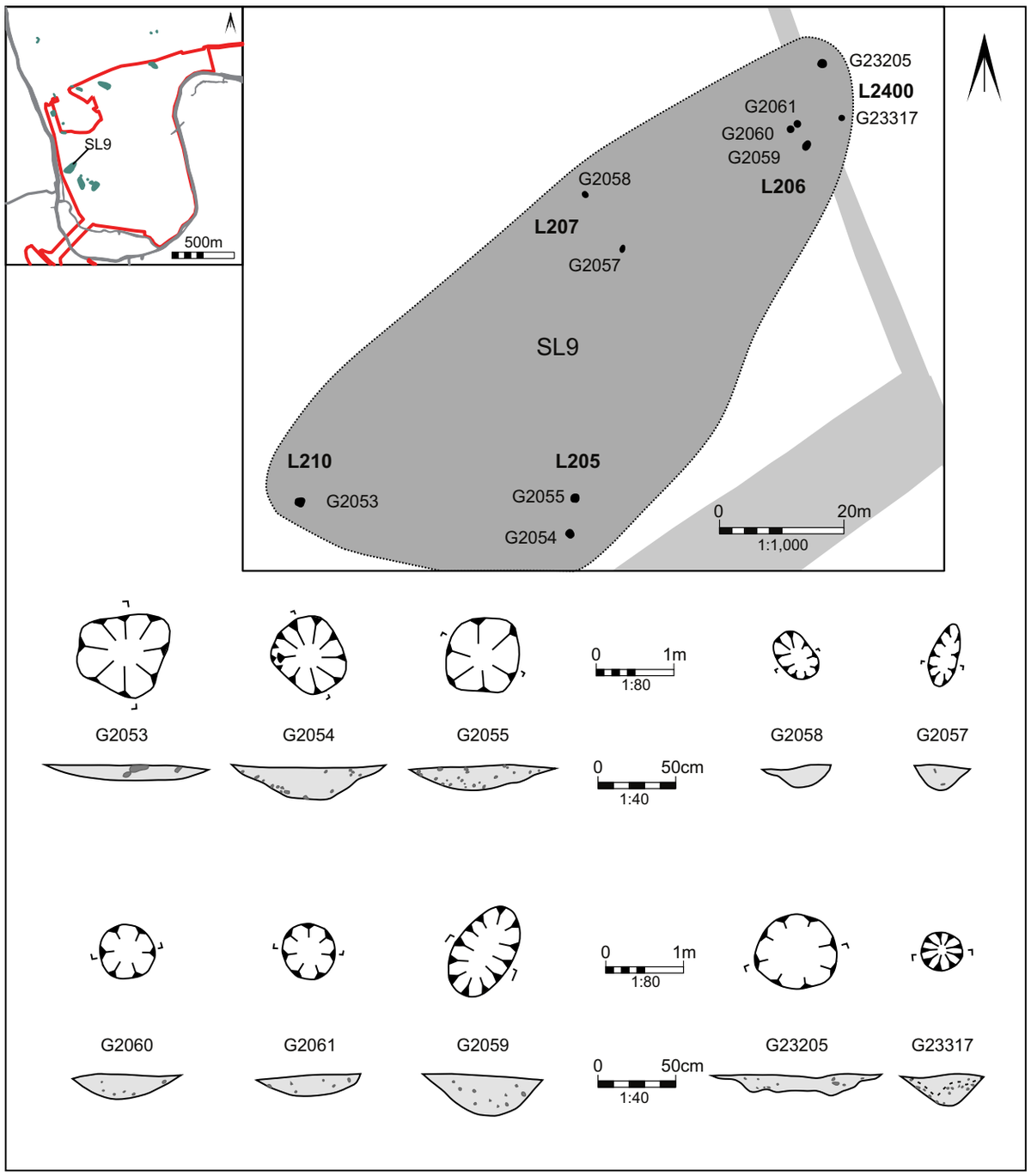


Fig. 3.42 Early Bronze Age pit clusters SL9 to the south-west of Biddenham Loop, with sections. Scale 1:80

G23114 (L2704) contained a flake from a polished tool.

- **Highly decorated or particularly fine pottery:** for example, the Beakers (one of which been deliberately broken) from Bovis pit L206 (Luke 2008, 111–12) within monument cluster SL3.

Similar 'special' deposits were identified at Yarnton, Oxon, on the basis of highly decorated pottery and good-quality flint work (Hey 1997, 107) and they have been seen elsewhere in the Thames valley (Hey 2011a, 243). Nationally, there has been considerable discussion over the significance, or not, of the material found within small pits. Bruck has suggested that distinguishing ritual and domestic sites is difficult in part because this distinction is a modern western concept which is unlikely to have been made in the past (1999, 324 and 326). In addition, as Garwood stated: 'ceremonial acts are performed as ritualisations of everyday practices', which makes it 'unsurprising that interpretations of pit deposits are often ambiguous' (2011, 372). That 'the excavation of pits in the Neolithic represents a "sense" quite different to our own' is illustrated by Garrow's description of an intriguing ceremony by the freemen of Huntingdon which would be impossible to understand based on the evidence left behind (2012, 216 and 222). Thomas (1999,

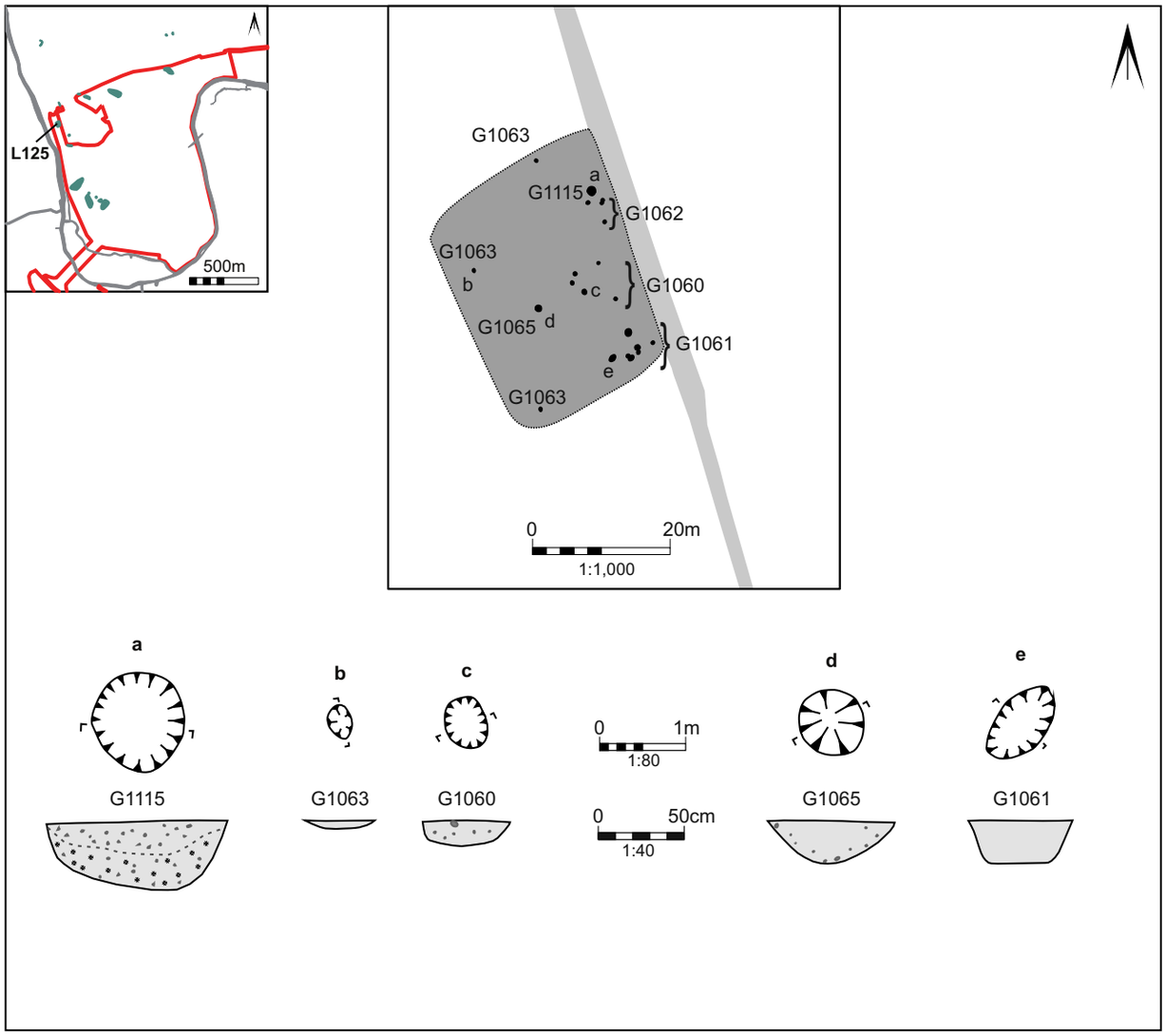


Fig. 3.43 Early Bronze Age pit cluster L125 to the north-west of Biddenham Loop, with sections. Scale 1:80

64–74) suggested that small Neolithic pits were 'dug and backfilled within a relatively short span of time' (1999, 68), citing their steep, unweathered sides, absence of primary fill and the presence, often, of only one fill. He also believed that 'at a number of sites, more spectacular depositional practices alert one to the likelihood that something more complex than the routine disposal of waste material was happening' (1999, 65).

At Kilverstone, Norfolk, analysis of the deposition pattern and condition of the assemblages suggested that the pit contents represented the detritus of everyday life (Garrow *et al.* 2005; Garrow *et al.* 2006). Summarising the evidence from the ten sites in East Anglia, Garrow said

> without exception, pits were filled with dumps of a matrix that included soil, charcoal and broken, weathered and burnt artefacts, which had not clearly been arranged or even selected for deposition. It appears, therefore, to have been the process of depositing this material, rather than the individual artefacts themselves, that mattered (2006, 59).

The same is largely true of the assemblages from the Biddenham Loop. At Kilverstone it was suggested that a 'delay' occurred between the creation of the material and its deposition in the pits. During this interval material would have accumulated in open areas and been subject to weathering and animal disturbance. As Thomas had suggested (1999, 68), at Kilverstone it was proposed that the pits were excavated for the sole purpose of depositing the accumulated material and that where pits were found in clusters they might represent sequential deposition episodes (Garrow *et al.* 2005, 149–52). This matches the evidence from the Biddenham Loop, where few pits contained primary fills, although these are always difficult to identify in shallow features. It is also worth noting that the charcoal assemblage from the small pits 'is entirely appropriate for domestic fuelwood' (CD Section 2; Challinor). There is, however, insufficient evidence to argue that different pits in the same cluster contained a complementary range of material, as suggested by Lamdin-Whymark (2008, 102–16).

Hey believes that pits may not necessarily

> … have been dug next to houses and shelters as part of domestic activity areas, but they do reflect occupation events and are good indicators of the location of settlements within the landscape, as

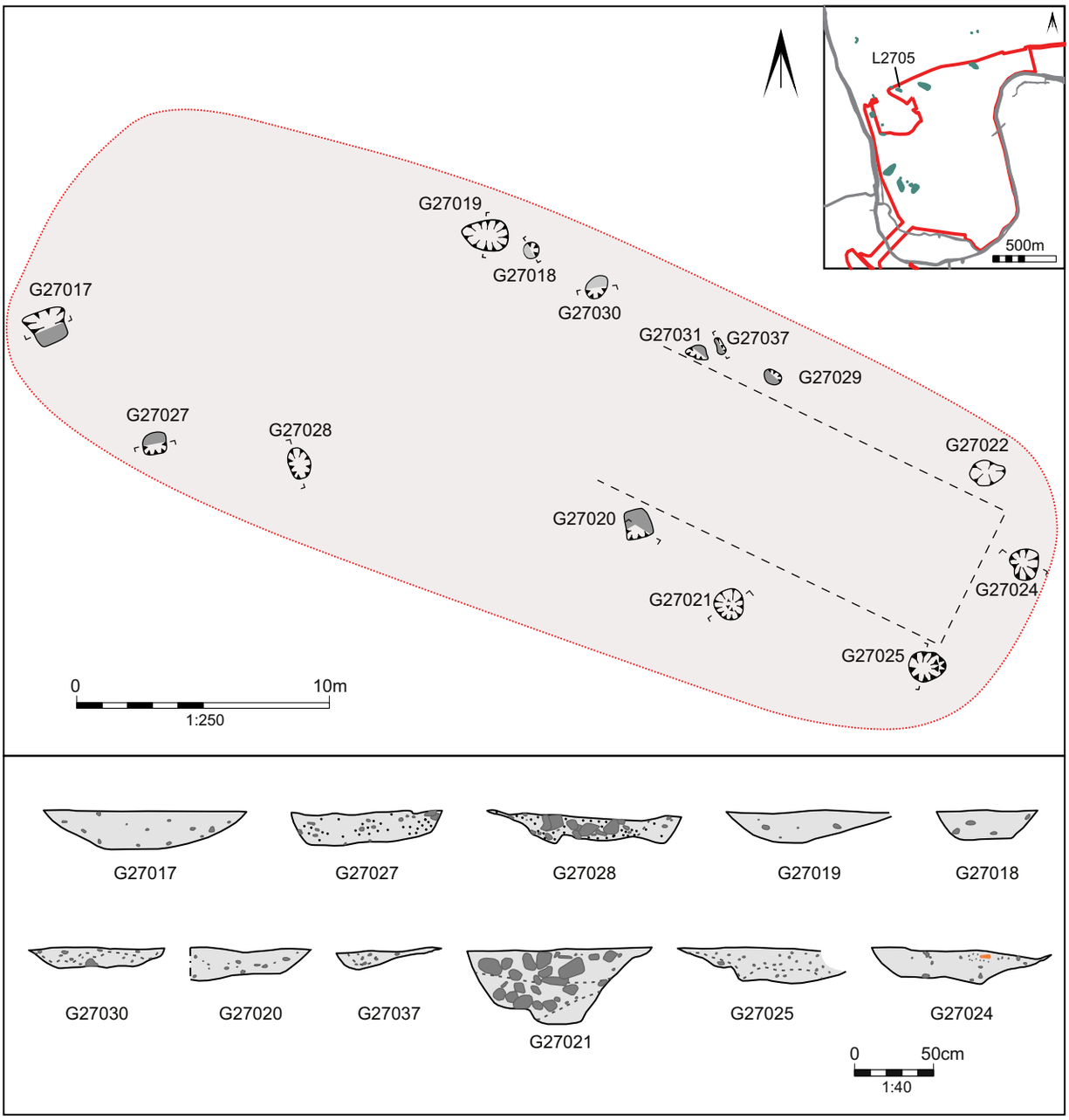


Fig. 3.44 Evidence for possible later Neolithic building L2705, with sections. Scale 1:250

well as the character of some of the activities that went on there (Hey 2011a, 244).

The occurrence of an unusual deposit or object within a single pit in a cluster may represent a 'special' event undertaken within the context of daily life but associated with an individual rather than the community as a whole.

Other excavated evidence

Other evidence for activity potentially associated with settlement comprised a possible later Neolithic building and two possible early Bronze Age water pits/ponds.

Evidence for possible later Neolithic building
(Fig. 3.44 and 3.45)

Evidence for a possible building L2705 was located to the north-west of the Biddenham Loop. In plan, it took the form of a *c.*26m × 8m roughly rectangular arrangement of fourteen small pits aligned north-west–south-east. The pits varied in form but were generally under 0.9m in diameter and 0.3m deep. In many ways they are similar to the small pits described above (see p. 85–6). None contained evidence for post-pipes or packing, hence their designation as small pits rather than post-holes. The general arrangement of the pits to the south-east, especially eight of them (Fig. 3.44), might suggest that they were arranged around a rectangular building (for which no other evidence survives).

Finds from these small pits were scarce. The main exception was thirty-four sherds (representing two possible Mortlake vessels) from two pits (G27024 and G27025) at the south-east end of the possible building (CD Section 2; Percival). The pottery 'is extremely abraded and includes seven joining sherds from a rim which is too incomplete to identify with confidence and nine scrappy sherds which have a mineralised encrustation similar to that found on sherds which have been waterlogged. This appears more like the condition expected of Peterborough Ware deposits and perhaps suggests that the pottery spent some time in a curated deposit before being deposited' (CD Section 2; Percival). The pits also produced a small, squat, bifacially flaked tool, possibly an unfinished knife (CD Section 2; Bates, Fig. 4, F16); two flakes; and one blade-like flake. The charcoal assemblage was mixed, with oak, hazel, hawthorn, popular/willow, blackthorn, elm and hazel nutshell all present (CD Section 2; Challinor). Challinor noted that 'fuel from domestic hearths is often characterised by shrubby species, as at Horcott Pit (Challinor 2009a, 115) and Newbury (Gale 2005, 299)'.

Far more convincing evidence for large post-built rectangular buildings (early Neolithic, so not contemporary with L2705) has been found at Lismore Fields, Derbys. (Hey *et al.* 2011a, fig. 11.8) and Yarnton, Oxon (Hey 2011a, 231). The latter was exceptionally large, but the *c.*15m × 6m building at Lismore Fields would fit neatly within the space between the pits at the south-east end of L2705 (Fig. 3.45). The pits assigned to L2705 may have served as quarry pits, and it is therefore interesting to note that 'at the recently-excavated late Neolithic settlement at the eastern entrance of Durrington Walls, the construction of each house was preceded by a series of borrow pits from which material was extracted for wall daub and floor plaster' (Thomas 2012, 3).

The contrast between the number of features associated with a Neolithic building and the tiny assemblages of cultural material that they typically produce has led some to suggest that they might have been cult houses or halls (Thomas 1996). However, if the pits in L2705 represent quarry pits they could have been backfilled by the time the building was in use. At Yarnton, with

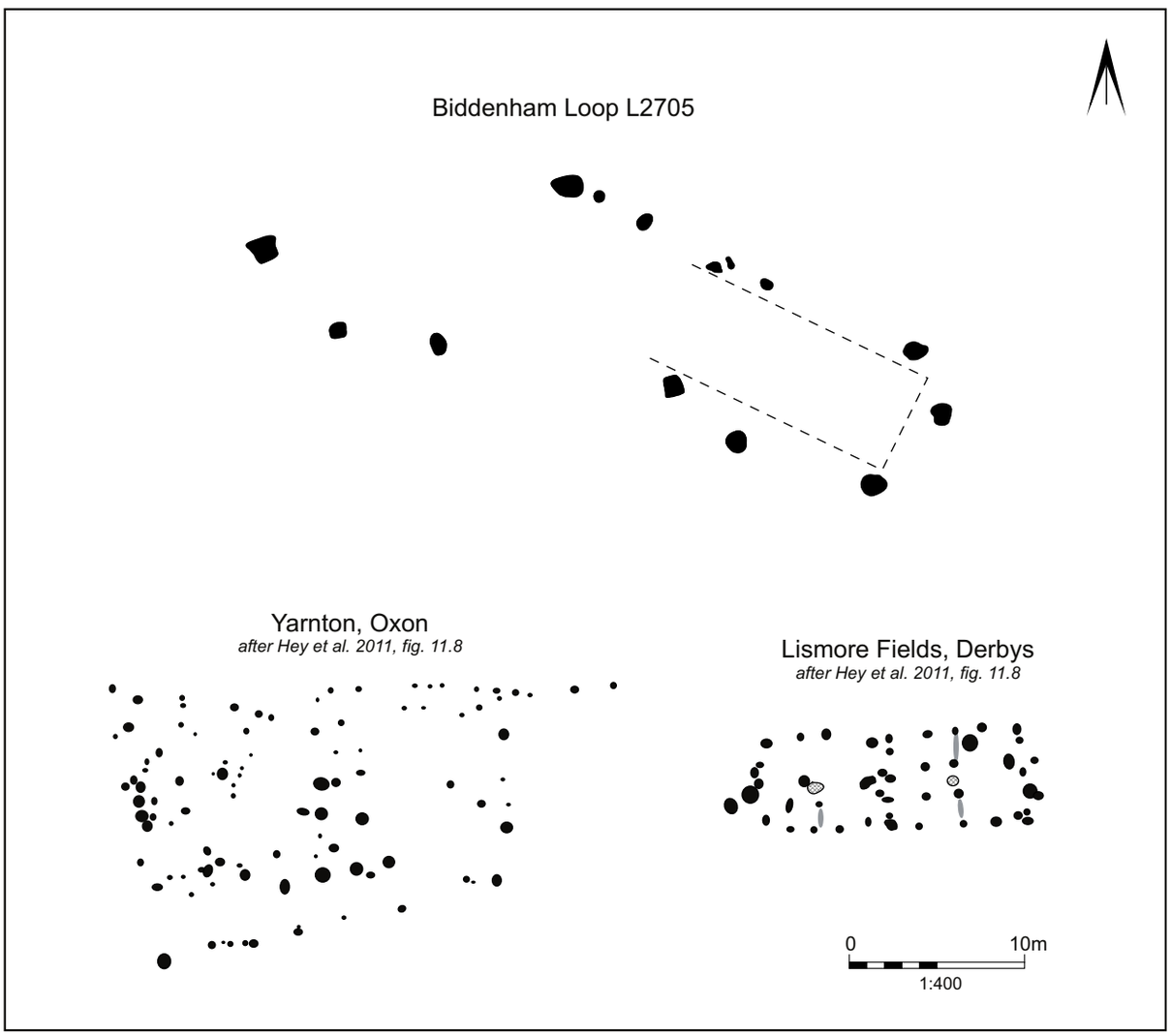


Fig. 3.45 Comparative plans of possible Neolithic building L2705, with more certain examples from Yarnton and Lismore Fields. Scale 1:400

the exception of a possible foundation deposit, 'finds were extremely scarce: a few flint flakes and fragments of animal bone, some fired clay, burnt stone and wood charcoal' (Hey 2011a, 231). Each of the houses at Durrington Walls had a 'decommissioning pit' which 'contained large quantities of pottery, animal bones, and stone tools, and are comparable with rich Grooved Ware pits reported from elsewhere in Britain (Parker Pearson 2007, 138)' (Thomas 2012, 3). Pits G27024 and G27025 within L2705 are perhaps best seen in this context. Domestic debris associated with L2705 may have been placed in middens some distance from Neolithic buildings and it may be significant that L2705

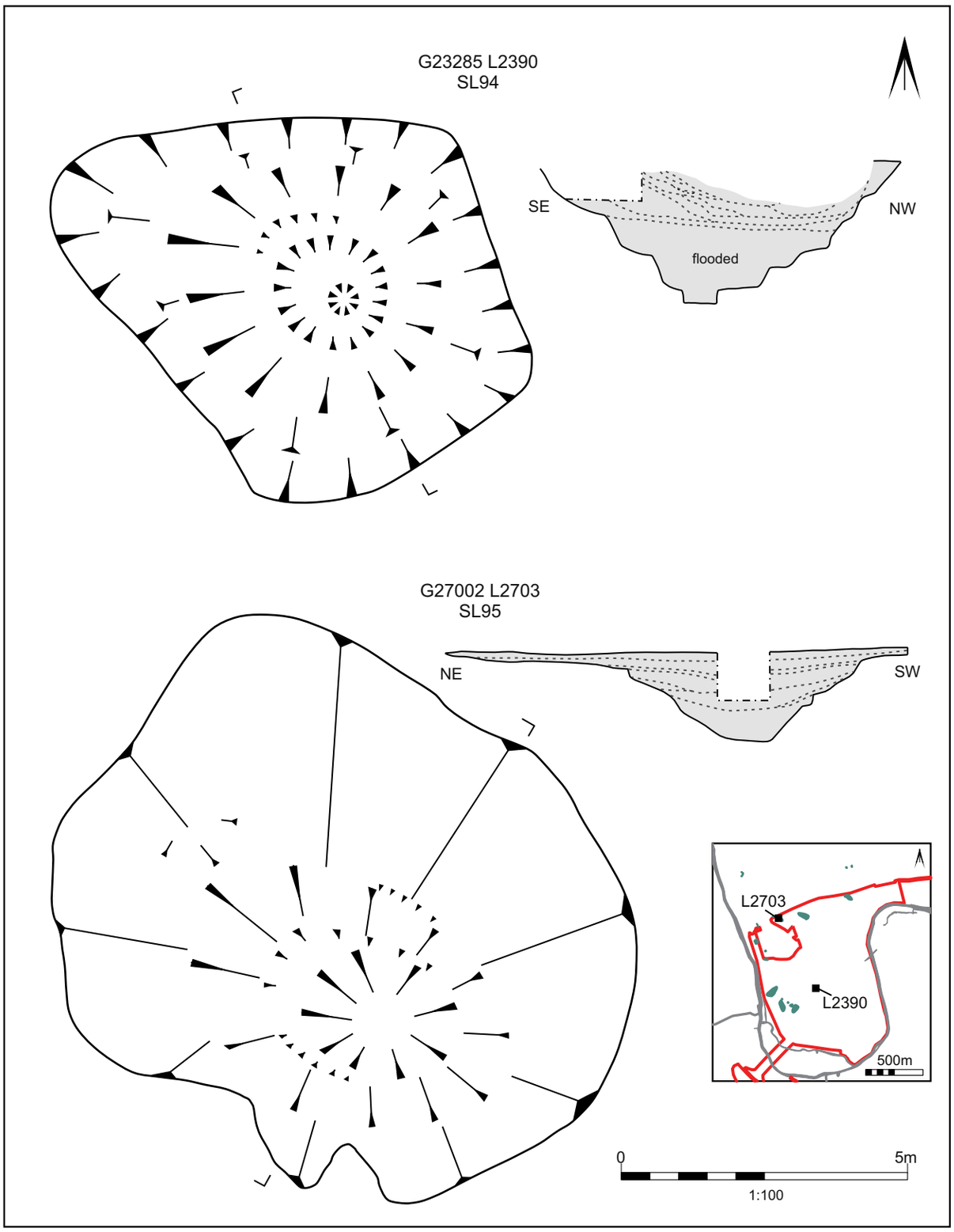


Fig. 3.46 Early Bronze Age ponds on the Biddenham Loop. Scale 1:100

Plate 3.26 Hand excavation underway of the lower fills of water pit G27002 (L2703, SL95)

is located between two ploughsoil flint concentrations (Fig. 3.3).

Possible water pits/ponds
(Fig. 3.46, Plate 3.26)
Two large features, G27002 (L2703, SL95) and G23285 (L2390), interpreted as ponds during fieldwork, were identified within the Biddenham Loop and have tentatively been assigned to the early Bronze Age.

G27002 was located in the northern part of the Loop, *c.*22m to the north of contemporary pits L2706 (SL90). Perhaps more significantly, it was adjacent to the possible later Neolithic building L2705 (SL4) and appeared to share its alignment. At the surface the pond was sub-rectangular in shape and *c.*10.2m × 7.7m; on excavation it proved to be more oval in shape, particularly to the south-east, and measured *c.*3m × 4m × 1.7m deep. Its lower fill comprised dark blue-grey silty clay, which was not waterlogged, and samples taken for pollen analysis proved unsuccessful (Jones, CD section 2). Its uppermost fill produced a blade-like flake, a retouched blade, a possible loomweight (OA4) and 16g of animal bone. A single radiocarbon date was obtained from charcoal in the lower fill of 2030–1820 cal. BC (SUERC-26338: 3575±30BP).

Feature G23285 (L2390, SL94) was located to the south of the Loop on the periphery of monument cluster SL7. It was sub-square, *c.*7m × 6.5m in extent, and had steep, stepped sides leading to a narrow flat base (Plate 3.26). It had been dug to a depth of *c.*2.5m into the underlying limestone. The lower fill comprised mid grey-brown silty clay, which, although wet at the time of excavation, did not preserve waterlogged organic material. The only finds comprised burnt stones and twenty-two fragments of animal bone from the secondary fills. Five of these are likely to belong to the same sub-adult or young adult cow, as are the eleven unidentified large mammal ribs. Such an animal bone group has some similarities with those found within the shafts (see above). Although no dating evidence was recovered, this feature was assigned to the early Bronze Age because radiocarbon dating indicates that it was redug in the form of a pit in the middle Bronze Age (see below).

These were the largest isolated features within the Loop and their interpretation remains uncertain. Their overall dimensions are comparable to those of the pond barrow at Barrow Hills, Oxon (Barclay 1999a, 115), but they produced no evidence for burial. During fieldwork they were interpreted as ponds but the evidence for actual waterlain deposits is unconvincing, as with the other large features on the Biddenham Loop. It is possible that they could have served a similar function to the large pits (see above). While L2390 would be in a comparable spatial location in relation to the monument clusters (north of SL7), the position of L2703 would be more unusual. However, it could be argued that it is on the eastern periphery of monument cluster SL3, an area left largely unexcavated within the Bovis investigations.

Flint concentrations
(Fig. 3.1)
In contrast to the earlier ploughsoil flint concentrations (see above) those assigned to the late Neolithic/early Bronze Age were far more widespread and extended into the interior of the Biddenham Loop (Luke 2008, 31). This suggests that extensive woodland clearance had taken place by this time, possibly alongside an intensification of cultivation and an increase in population. At around twenty, the number of concentrations assigned to this period is double that assigned to the late Mesolithic/early Neolithic; they also have area configuration estimates suggestive of longer occupation by larger social groups (Boismier 2003). The five concentrations interpreted as long-lived/permanent (Boismier 2003) were situated within the interior of the Loop, away from the river edge. It was thought that this might indicate a significant change in lifestyle (Luke 2008, 31). However, while there are certainly possible settlements within the interior of the Loop (*e.g.* pit clusters L2335, L2374, L2411, L2705) there remains abundant evidence to suggest that people were still living just above the slope down to the modern flood plain (*e.g.* later Neolithic pit clusters L2902/04 and L2353 and the more extensive early Bronze Age pit clusters SL8 and SL9).

It has sometimes been assumed that the ploughsoil flint concentrations are associated, in some way, with sub-surface pits. At Biddenham Loop very few of the pit clusters are located directly beneath the ploughsoil flint concentrations; if anything, they appear to be situated on the periphery of or just outside concentrations (Fig. 3.3). Given that more than 100 small pits survived, their absence below ploughsoil flint concentrations is

unlikely to be an effect of plough truncation, and some other explanation is required. One possibility is that the flint concentrations reflect the location of middens or even arable land which once existed adjacent to settlements. The presence of only flint, rather than pottery or animal bone, is the inevitable consequence of thousands of years of ploughing. This suggestion may also go some way to explain why the flint assemblages tend to be very mixed and difficult to interpret in terms of dating or origin.

Finally it is noticeable that the flint concentrations, like the clusters of small pits, are nearly all located on the periphery of the monument and burial areas (Fig. 3.3).

4. Farming around the ancestors (1600 BC–100 BC)

I. Introduction

(Fig. 4.1)

The Biddenham Loop was transformed at the start of the middle Bronze Age — the open, monument-dominated landscape which had probably become permanent grazed grassland was replaced by one with enclosed fields, hedgerows and trackways. No new ceremonial or burial monuments were constructed but some of the older monuments, probably together with natural features such as the river, woods or even isolated trees, remained or became important foci of ritual activities. The creation of land division is clearly, in part, a reflection of changes in society itself, perhaps a response to increased population and consequent pressure on land. Similar transformation has been identified in other parts of the eastern region, most noticeably along the river Great Ouse in Cambridgeshire (Yates 2007, 94–6) and around the river Nene and Flag Fen Basin (Yates 2007, 87–93). It has also been seen across south-east England and in the Middle Thames valley; Hey commented that 'sites with Neolithic pits and small funerary monuments were usually succeeded by middle or late Bronze Age field systems' (2011b, 317). However, up until the fieldwork reported on in this publication, the evidence for such a change in Bedfordshire had been, at best, rare. The discovery of an extensive and well dated middle Bronze Age landscape on the Biddenham Loop is one of the most significant results of the recent investigations.

The two middle Bronze Age field systems within the Biddenham Loop contained evidence for possible settlements and dispersed activity in the form of small pits, post-alignments and burnt mound-type deposits. A total of thirty-five graves (nineteen within a cremation cemetery) provide direct evidence for the middle Bronze Age inhabitants. Burials were often located within or adjacent to earlier prehistoric monuments, demonstrating that these still held significant meaning for the local population. There is very little evidence for late Bronze Age activity within the fields. However, two late Bronze Age/early Iron Age settlements, one large and excavated in its entirety, were located within the Bovis investigations (Luke 2008, 34) on the periphery of the two field systems. At least one of the settlements was quite extensive compared with its Neolithic and early Bronze Age precursors. Three pit alignments, broadly dated to the late Bronze Age/early Iron Age, were dug within the Loop. One crosses the Loop, mainly within land between the two field systems. It 'cuts' some field boundaries but does so in such a way that the majority of the fields could have remained in use, although this is, of course, difficult to prove. By the middle Iron Age the Biddenham Loop appears to have been quite densely inhabited, with families living in small farmsteads, in contrast to the larger late Bronze Age/early Iron Age settlement. As is often the case, it is impossible to demonstrate conclusively that all the farmsteads were occupied at the same time, although this is possible. Again, although there is no proof that the fields established in the middle Bronze Age remained in use, all the middle Iron Age farmsteads lay between them and the flood plain, suggesting that this was the case. In contrast to the situation in the middle Bronze Age, there was very little burial evidence for the period between the late Bronze Age and the middle Iron Age. The presence of at least one large late Bronze Age/early Iron Age settlement and a string of middle Iron Age farmsteads argues against there being a reduction in population at this time; treatment of the dead must have either been burial outside the excavation areas (*e.g.* on the largely unexcavated flood plain) or taken some form other than burial (*e.g.* excarnation or deposition in the river).

In contrast to the Biddenham Loop, there was considerably less evidence for contemporary activity within Land west of Kempston, where no fields were identified. However, the presence of possible small-scale settlements and evidence for dispersed activity, post-alignments, two pit alignments and a major boundary ditch indicate that this clayland was not entirely devoid of activity during this period, as has sometimes been suggested. For example, the A421 road scheme, which was largely routed through claylands, produced only limited evidence for activity pre-dating the early Iron Age to the east of Bedford (Webley 2007a, 11) and none to the west of Bedford (Simmonds and Welsh 2013, 274). In the case of the latter even the pit alignments which should have continued into the road corridor were not found. It should be noted that none of the evaluations within Land west of Kempston identified remains of this period — all the evidence reported on here was found in open areas stripped to investigate the remains of other periods. The dispersed nature of the evidence and the presence of only small quantities of artefacts make it difficult to identify remains of this period by 'standard' geophysical survey and trial trenching techniques.

II. Dating evidence

The identification of middle Bronze Age activity in Bedfordshire is extremely rare; this may be largely due to the absence of diagnostic flints, pottery and metalwork. Only a single feature was assigned to this period within the 19ha Bovis investigations — significantly, as a result of radiocarbon dating (Luke 2008, 111). The apparent lack of evidence was considered to be partly a reflection of the difficulty of dating archaeological features to this period in the absence of Deverel-Rimbury pottery (Luke 2008, 66). Given the weight of evidence from the recent investigations it is now considered possible that the settlements within the Bovis investigations assigned to the late Bronze Age/early Iron Age may have originated in the middle Bronze Age.

In terms of the pottery assemblage from the recent investigations:

> most middle Bronze Age sherds are fragile and highly fragmented, with an average weight of only 5g (excluding sherds from

BOX 12: Middle Bronze Age landscape on Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Biddenham Loop might have looked like in the middle Bronze Age. It is one of a series in this publication showing different chronological periods from the same viewpoint.

The Biddenham Loop was transformed at the start of the middle Bronze Age, the open, monument-dominated landscape being replaced by one of enclosed fields, hedgerows and trackways. The emergence of land division is clearly, in part, a reflection of changes in society itself, perhaps a response to increasing population and consequent pressure on land. The earlier monuments tended to be incorporated into the fields, albeit towards their margins or included in the field boundaries. Each of the two field systems broadly occupied the site of a Neolithic/early Bronze Age monument cluster. Thirty-five burials were found, mostly in the vicinity of the earlier monuments. These two strands of evidence seem to imply that the land was being farmed by the descendants of the monument-builders. It is therefore intriguing that the unenclosed land between the two field systems included the central early Neolithic monument (see Box 9).

For many years middle Bronze Age Bedfordshire has remained elusive and the evidence from the Biddenham Loop is, by far, the most extensive found to date. The fields are unlikely to have been created in a single undertaking; each 'system' probably had a complex development history. Unusually for fields of any period, their creation can be quite precisely dated thanks to Bayesian modelling of radiocarbon dates from a number of skeletons in the ditches. It is less clear how long the fields, rather than just their ditches, remained in use. There is no direct evidence that they were maintained, or even used, into the Iron Age and Roman periods, but circumstantial evidence suggests that this was the case.

As with the Neolithic and early Bronze Age, contemporary settlements have been difficult to identify — the evidence is confined to loose clusters of pits and postholes producing only small quantities of domestic debris. It must be significant that the two large areas of dispersed settlement identified within the Bovis investigations are now known to be situated on the north-western periphery of the field systems. Originally thought to date to the late Bronze Age/early Iron Age, it now seems likely that they are in fact contemporary with the middle Bronze Age field systems (as shown in the reconstruction).

NOTE. As with the previous reconstruction there is no firm evidence for the position of woodland within the Loop at this time. And, again, although the palaeo-environmental study yielded some information about the flood plain, the precise configuration of the river channels remains uncertain.

samples). Where no form or decoration was apparent, it proved difficult to be certain of their type and date … Diagnostic vessels are generally in the Deverel-Rimbury tradition (Knight 2002, 123), and are largely undecorated (CD Section 2; Wells, Pottery).

Of the late Bronze Age/early Iron Age assemblage Wells (CD Section 2) states that 'although small, the diverse assemblage contains a number of different ware groups characteristic of the period (*cf.* Bovis Biddenham

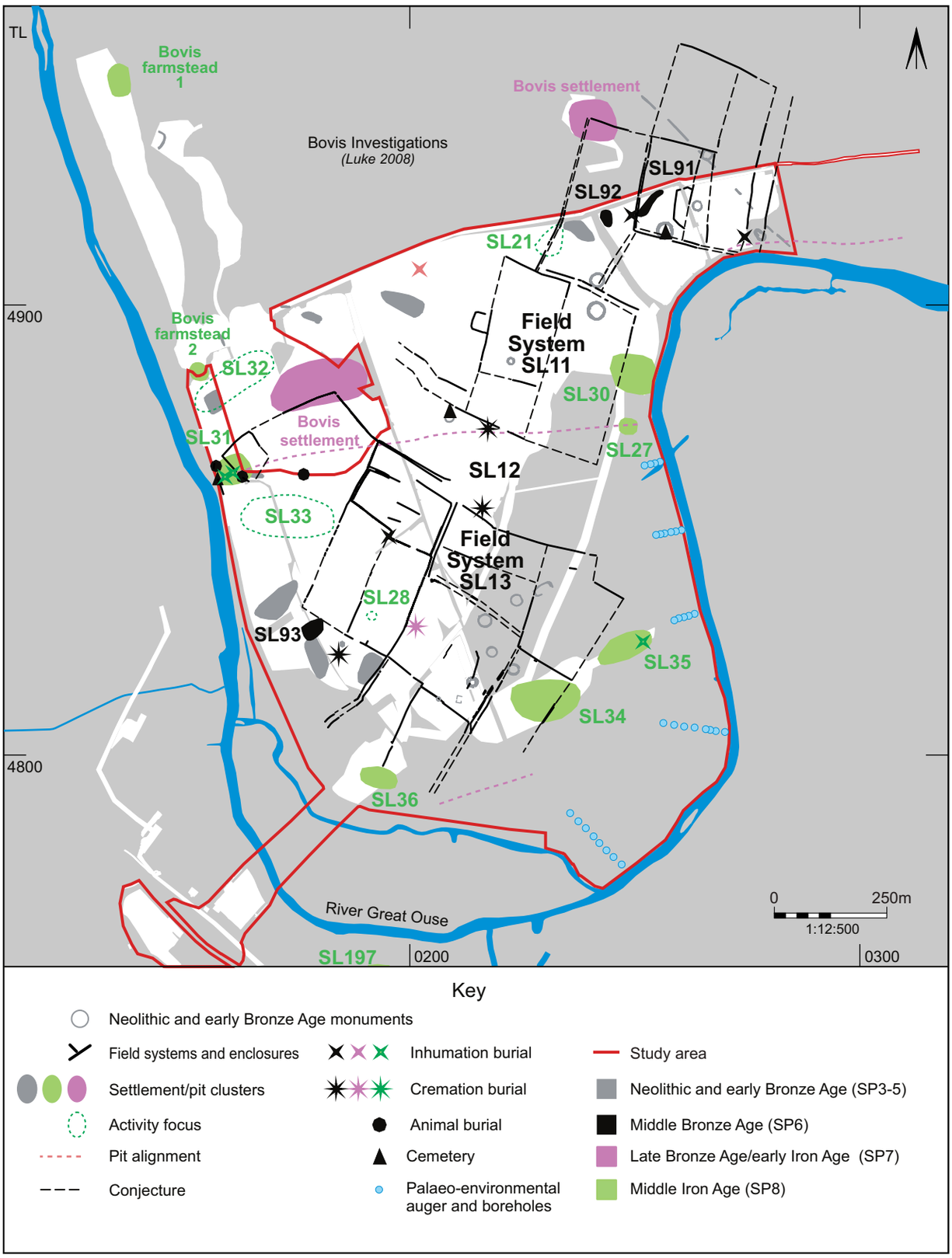
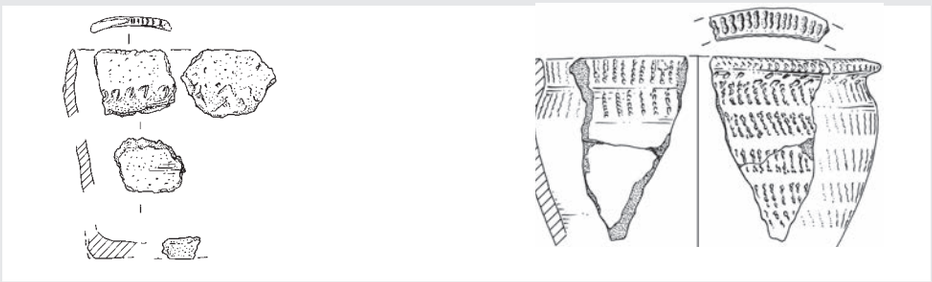


Fig. 4.1 Evolution of the landscape on the Biddenham Loop from the middle Bronze Age to the middle Iron Age. Scale 1:12,500

BOX 13: Middle Bronze Age–middle Iron Age pottery

by Jackie Wells

Middle Bronze Age

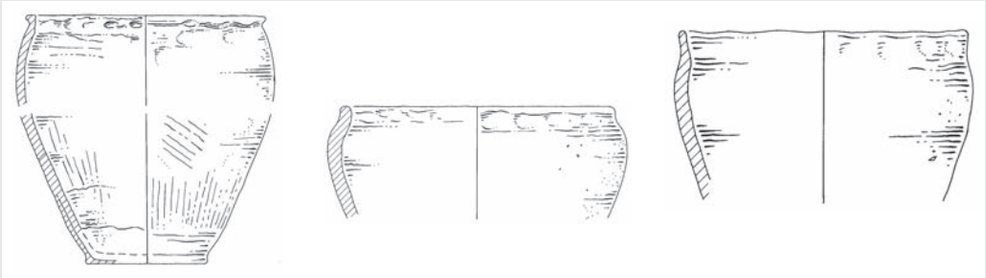


Most middle Bronze Age sherds are fragile and highly fragmented. Where no form or decoration was apparent it proved difficult without radiocarbon dating to be certain of their type and date. Diagnostic vessels are generally in the Deverel-Rimbury tradition and are largely undecorated. One vessel has a bevelled rim and fingernail decoration on the shoulder (above left). Fragmentary remains of three bucket urns with a range of simple decorative elements also occurred. These include small raised or applied cordons and fingernail/fingertip impressions on the cordon and/or body (above right).

Late Bronze Age/early Iron Age

Although small, the late Bronze Age/early Iron Age assemblage from the recent investigations contains a number of different ware groups characteristic of the period. Fabrics containing shell are dominant, reflecting the influence of local geology upon pottery manufacture. The examples shown are more complete vessels of this period recovered from the Bovis investigations.

Middle Iron Age



The middle Iron Age assemblage, although dominated by shell-tempered vessels, which constitute nearly half of the pottery (by weight), sees the appearance of a broader range of fabrics containing a mixed suite of inclusions. Diagnostic vessels are mainly variants of the slack- or round-shouldered, fairly open jars and bowls which dominate middle Iron Age assemblages in the region.

For details of the pottery assemblage and more figures see CD Section 2; Wells, Pottery.

Loop (Wells 2008, 146), Great Barford (Webley 2007b, 221) and Salford (Slowikowski 2005, 106)). Fabrics containing fossil shell are dominant'. The middle Iron Age assemblage:

> … is dominated by shell-tempered fabrics … which constitute 47% of the pottery (by weight). The fabric range is broadened by the appearance of 'mixed' fabric types, which total 41% … Diagnostic vessels … are mainly variants of the slack- or round-shouldered, fairly open jars and bowls which dominate middle Iron Age assemblages in the region (CD Section 2; Wells, Pottery).

The flint assemblage mainly derived from ditch fills within the middle Bronze Age field systems. 'The irregular or squat nature of many flakes and the presence of other irregular pieces are all consistent with a middle Bronze Age date and evidence for the possible reuse of earlier flakes is also characteristic of the period' (CD Section 2; Bates). Some residual material is, however, clearly present in the assemblages from middle Bronze Age deposits. This is unsurprising considering the presence of earlier activity within the Loop.

> Flint-working is not widely known in the region during the later Bronze Age to early Iron Age; material from some other sites of this date has often been considered as being residual (McSloy 2005, 144) and the presence of residual material in late Bronze Age/early Iron Age deposits is clear — particularly in the high numbers of blade types and diagnostic pieces in some of the westernmost pits of the main [pit] alignment. Possible Iron Age flint work was, however, identified in an assemblage from Stotfold (Devaney 2007, 62) and evidence for the increased use of poor-quality raw material and the production of small irregular pieces was also seen during the later Bronze Age/early Iron Age in the assemblage recovered during earlier work at Biddenham Loop (Bates 2008e, 149), where, although residual flint was clearly present, it was thought possible that some of the material could be contemporary with the later prehistoric features (CD Section 2; Bates).
>
> It has long been considered likely that flint-working continued into the Iron Age (Martingell 1988, 73; Robins 1996, Young and Humphrey 1999) and more recently Humphrey (2007, 145) has highlighted attributes which may help identify Iron Age lithics. These include, among other things, simple hard hammer technology, a lack of skill/concern in knapping, a restricted range of tool types and the probable recycling of earlier lithic material. It is possible that some of the flint from middle Iron Age deposits may be contemporary with the Iron Age activity. Such pieces include two small and quite similar tools formed on hard hammer struck cortical flakes and found in the same pit. Many pieces from middle Iron Age deposits are, however, residual (CD Section 2; Bates).

In a few cases, stratigraphical relationships assisted in the dating of major boundaries within this period. For example, pit alignment L105/2801 was truncated by storage pits dated by pottery and radiocarbon dating to the middle Iron Age. The same pit alignment also truncated some of the ditches of the southern field system (Plate 4.1), suggesting the latter could be middle–late Bronze Age in date. However, radiocarbon dating and Bayesian modelling (CD Section 2; Hamilton) provide the securest middle Bronze Age dating evidence:

- **Three human skeletons and seven cremation deposits** within cemetery L2102/L2103 (SL11)
- **Two human skeletons** found in ditches of field system SL11
- **Five cremation deposits** within central zone SL12
- **One human skeleton and one sheep skeleton** found in two ditches of field system SL13
- **Four human skeletons and one animal skeleton** within the segmented ditch SL15
- **Two isolated animal skeletons** — one within peripheral area SL14 and the other in SL15 but away from the segmented ditch
- **Charred plant remains** within one post-hole and two small pits within possible settlement SL93
- **Charred plant remains** within one post-hole in SL116 and one post-hole in SL117 (Land west of Kempston)

In addition, a small number of radiocarbon dates were obtained for the late Bronze Age/early Iron Age and the middle Iron Age (CD Section 2; Hamilton), although features of these periods were largely assigned on the basis of artefact typology, specifically pottery.

III. Environment, plants and animals

The two palaeochannels in the flood plain that were examined by boreholes provide valuable information on the palaeo-environment. At the start of the middle Bronze Age *c.*1600 BC:

> … there is another episode of clearance of the oak, hazel and lime woodland. This is associated with the final loss of lime from the woodlands, and a pronounced fall in hazel and alder, while oak continues to fall off slowly. Increased run off is suggested by the influx of pre-quaternary palynomorphs into the sediments, and grasses expand through the early and middle Bronze Age. Cereals continue to be cultivated locally and a much more open landscape of arable and pasture is indicated. There was a significant loss of alder carr from the flood plain and its margin, although willow continued to be present. The flood plain environment appears wetter on the pollen evidence, with grass and sedge fen, but the plant macrofossils show a diversification of grassland elements and the snails continue to suggest marsh, open and damp grassland environments, with occasional woodland taxa. The clearance episode at the start of, or just before, the middle Bronze Age is coincident with the laying out of a major field system across the Loop, suggesting that at least some of this loss of woodland is likely to have been local and the peak in pre-quaternary palynomorphs may reflect the erosion from this episode of woodland clearance and the laying out of the fields (CD Section 2; Rackham *et al.*).
>
> While oak and hazel are still the predominant elements of the woodland, this woodland has reduced dramatically … probably [by] some time in the later middle Bronze Age. Aquatic and marsh taxa are more abundant, suggesting a wetter flood plain, while grassland and arable indicators remain fairly stable, although Lactucoideae, the dandelion family, and grasses have increased, but this might reflect taxonomy and pollen preservation (Lactucoideae pollen is robust and survives well) rather than vegetational change (CD Section 2; Rackham *et al.*).

The plant and molluscan macrofossils in middle Bronze age sediments:

> … continue to reflect an open flood plain with grassland and/or disturbed ground taxa and marsh species, and with possible indications of wetter conditions … suggests another channel episode or open water standing in the former palaeochannel. The terrestrial snail assemblages … tentatively assigned to this period indicate an open grassland flood plain, with damp grassland and marsh, probably seasonally flooded (CD Section 2; Rackham *et al.*).

A greater range of wood taxa than was evident in the earlier phases and increased openness in the landscape is indicated by the charred wood in ecofact samples from the middle Bronze field systems. Wood taxa present included oak, hazel, blackthorn and wild cherry, hawthorn group, buckthorn, field maple and ash.

> … oak is still widely represented, but there is little hazel compared to earlier phases (noted in only one sample) and of greatest

Plate 4.1 Aerial view of one of the few areas of significant stratigraphy — pit alignment L2801 cuts the middle Bronze Age ditch fills in the north-west corner of field system SL13. The houses in the background of this photograph were constructed after the 1996–7 Bovis investigations were completed

> significance is the apparent rise in the utilisation of *Fraxinus* wood[, which] is a coloniser … its presence in over 50% of the samples points to an increased degree of openness in the landscape than previously (CD Section 2; Challinor).
>
> [I]t is interesting to note that ash is predominant among the taxa identified in late Bronze Age/early Iron Age (non-cremation) contexts at Gold Lane, Biddenham (Cartwright 2004) (CD Section 2; Challinor).

The charred plant remains from the middle and late Bronze/early Iron Age settlement, fields and funerary features:

> produced fairly small charred plant assemblages … These comprised a similar range of cereals to the early Bronze Age, with emmer wheat (and possibly spelt wheat in the later period) (six-row hulled) barley and free-threshing wheat. A few oat grains and one rye grain (in the later Bronze Age), are probably weeds. Hulled barley, emmer and emmer/spelt were also found in late Bronze Age/early Iron Age deposits within the Bovis investigations (Pelling 2008, 154)' (CD Section 2; Giorgi).

Charred hazelnut shell fragments and a few possible hawthorn fruit stones occurred in middle Bronze Age samples, both of which were also identified in the early Bronze Age and may have been used for food. 'Both plants may point to the presence of local shrubby, hedgerow and woodland vegetation' (CD Section 2; Giorgi).

The pollen spectra suggest:

> … a generally stable picture during the later middle and late Bronze Age. Spelt wheat and hulled barley are represented in the macrofossil remains, suggesting that both crops were grown in the fields established in the middle Bronze Age, possibly with rye, which first appears in the pollen at this time, and also flax, which is identified from seeds. The flood plain has a grass sedge fen with very reduced alder, suggesting bank side trees rather than woodland carr. The macrofossil element still indicates a reed and sedge swamp community with possible arable and disturbed ground/grassland communities. Occasional charred grain … indicates the inwash of domestic debris into the river, and the presence of a firecracked pebble … might reflect relatively local human activity on the river bank (CD Section 2; Rackham *et al.*).

The possibility of changes in wood taxa is difficult to address given the paucity of the charcoal data-set from ecofact samples for the late Bronze Age/early Iron Age (CD Section 2; Challinor). In terms of the charred plant remains the late Bronze Age/early Iron Age samples tentatively provide the first evidence that cultivation was occurring on Land west of Kempston. 'The presence of … stinking chamomile and possibly … cleavers could suggest the use of clay soils, although it is difficult to make any definitive statement on the basis of such small numbers of seeds' (CD Section 2; Giorgi).

The molluscan evidence tentatively assigned to the 1st millennium BC:

> shows an increasing terrestrial molluscan component as the sediments change from aquatic fluviatile to overbank alluvial sediments, and the former channel is likely to have been seasonally water filled at this time, with a possible permanent but seasonally shrinking water body in the early part. The terrestrial element of the fauna is suggestive of open grassland, with some damp and marshy habitats and limited shade, with the seasonal flooding decreasing through time (CD Section 2; Rackham *et al.*).
>
> In the early Iron Age, by extrapolation perhaps 500–600 BC, the pollen data shows an episode of woodland regeneration. Hazel scrub expands first, followed by the appearance of beech and then expansion of oak and ash; this continues into the middle Iron Age. This would suggest a period of shrinkage of the agricultural landscape, but although there is a slight fall in grasses, cereal pollen is still strongly represented in this period … The archaeological

evidence from the investigations within the study area for the late Bronze Age/early Iron Age could be interpreted as indicating a drop in population or activity within the Loop, which might be reflected in this woodland regeneration, but it is important to remember that the pollen data will derive from a much wider catchment than merely the Biddenham Loop. The cereal pollen is more local than the tree pollen but in a palaeochannel some of the pollen in the sediments will have been washed downriver from localities upstream and may not reflect the immediate interfluves. The flood plain is a grass sedge fen with willow along the river banks and fen edge. The macrofossil evidence continues to show an aquatic and wetland environment, with the deposits clearly indicating a channel with a very limited terrestrial component of marsh and grassland taxa. In the adjacent earlier palaeochannel … which is no longer functional, being already largely filled by this time, and accreting through overbank flooding, the snail assemblages indicate an open grassland habitat with limited marsh elements and probably fairly limited seasonal flooding. The presence of *Pupilla muscorum* in four of the samples in this zone suggests baking or ground disturbance (Evans 1972; Davies 2008), leading to bare patches of earth. Evans *et al.* (1988) found it typical of the early stages of alluviation in the Upper Kennet sequence and it is in a similar stratigraphic context here. This period marks a relatively dry episode on the flood plain and on the present estimates of phasing the half metre of alluvium may have built up over a millennium or so (CD Section 2; Rackham *et al.*).

The regenerated oak and hazel woodland is maintained through the middle Iron Age …. An expansion of the *Plantago lanceolata* curve … and Lactucoideae at the end of this zone suggests expanding pasture land, … while cereal cultivation, including rye, continues and a flax seed … suggests the continued cultivation of flax. There may be a short period in the middle–late Iron Age when pasture expands at the expense of arable (CD Section 2; Rackham *et al.*).

The archaeological evidence for the middle Iron Age … shows several farmsteads across the Loop during this period, suggesting a much higher level of farming activity than recorded in the previous phase. The flood plain aquatic and wetland character appears to continue as before. The pollen indicates a grass and sedge fen. The plant macrofossils include aquatic taxa, such as the freshwater alga *Chara* sp. and a wetland vegetation of sedges, spike and club rush, and rushes (*Juncus* sp.), The molluscan assemblage is largely restricted to aquatic taxa, with a poor terrestrial fauna of *Vallonia excentrica*, *V. pulchella* and rare Succinidae and Clausilidae shells. Increasing charcoal levels appear … in the middle Iron Age, probably reflecting the greater density of occupation within the Loop during [this period]. At this period [one of the channels] is probably cut off from the main river channel but still forms a permanent body of water in which aquatic molluscs, caddis and other freshwater invertebrates are breeding (CD Section 2; Rackham *et al.*).

In terms of charcoal from ecofact samples away from the flood plain:

… the assemblages from the middle Iron Age are not particularly diverse, which might be expected from domestic type waste, but the taxa identified are comparable to results from Shillington Bury (Cartwright 2004), Salford (Robinson 2005) and the A421 Great Barford Bypass (Challinor 2007a). In common with the earlier phases, there is a component of light-demanding species such as [blackthorn/cherry, buckthorn and ash]. This indicates that the settlements were using scrub in addition to a woodland source for fuel (CD Section 2; Challinor).

The middle Iron Age samples produced a significantly larger amount of charred plant remains compared to the earlier periods although the range of cereals was similar, with hulled wheat (emmer and the first definite evidence for spelt) and (six-row hulled) barley being the main cereals. There were also traces of free-threshing wheat and oats (the latter probably weeds). Early to middle Iron Age deposits from the Bovis investigations within the Biddenham Loop also produced evidence for spelt and hulled barley (Pelling 2008, 192) while there were traces of spelt and emmer/spelt in middle Iron Age deposits at Gold Lane, Biddenham, *c.*1.5km to the north (Scaife 2004, 267). It was not possible to establish from the middle Iron Age samples whether emmer or spelt was the main hulled wheat grain, although other sites in Bedfordshire suggest that spelt had become the dominant hulled wheat cereal by the Iron Age or became so during this period, together with hulled barley. Archaeobotanical research from other Iron Age sites suggests a similar pattern across southern England (Greig 1991, 306). The only potential wild food resource in the middle Iron Age samples was represented by small amounts of charred hazel nut debris (CD Section 2; Giorgi).

The middle Iron Age weed seeds were fairly similar to previous periods (and compared well with early to middle Iron Age deposits from earlier investigations within the Biddenham Loop), suggesting the use of the sands and gravels of the river terraces and alluvial deposits for cultivation; some of the weeds suggest spring and possibly autumn sowing of crops and possibly the harvesting of cereals by reaping low on the straw or by uprooting (CD Section 2; Giorgi).

There was a notable increase in the number of small leguminous seeds compared with earlier periods, which could suggest low nitrogen levels and declining soil fertility by the middle Iron Age (previously suggested on the basis of similar evidence from early to middle Iron Age deposits within the Bovis investigations (Pelling 2008, 193)); on the other hand these remains, together with other grassland plants represented in the middle Iron Age samples, may have been collected from meadows and pastures along the banks and flood plain of the river and used as fodder, animal bedding, flooring materials or simply for fuel (CD Section 2; Giorgi).

Cattle and sheep would have formed a significant part of the developing landscape organisation that was taking place in this area. As discussed in relation to later prehistoric and Roman settlement within the Bovis investigations (Maltby 2008), the areas around the river would have provided excellent pasture for cattle in particular (CD Section 2; Maltby).

The only change in animal species representation in the late Bronze Age/early Iron Age from earlier periods is the appearance of horse. The middle Iron Age animal bone assemblage was relatively small, comprising cattle, sheep, dogs and pig.

In all areas, apart from SL32 where sheep/goat were more abundant, cattle were the most common species identified. A similar pattern was found in the Iron Age farmsteads from the Bovis investigations to the north, where most of the farmsteads produced more cattle than sheep/goat bones and pig were also relatively poorly represented (Maltby 2008, 189–91). It should be noted that the bones of wild species were virtually absent, in contrast to some of the earlier phases (CD Section 2; Maltby).

IV. Establishment and layout of field systems

(Figs 4.2–4.8, Table 4.1)

Introduction

Middle–late Bronze Age fields are increasingly being identified in southern England (Yates 2007, 12) but, although known in the Fens and its feeder rivers (Yates 2007, fig. 10.1), they are not common in Bedfordshire (Yates 2007, 96). Prior to the West of Bedford investigations the only firm evidence for them in the county was on the river Ivel at Broom, in the form of a small number of short ditch lengths and post-alignments (Cooper and Edmonds 2007, 83–7) (Fig. 4.4). The existence of late Bronze Age fields, on the basis of stratigraphically early ditches, has been suggested at Octagon Farm and Eastcotts within the Bedford Southern Bypass corridor (Dawson 2007, 61; Yates 2007, fig. 10.5). All are imprecisely dated and were examined over small areas only. The evidence from Biddenham Loop tends to suggest that the apparent dearth of fields in Bedfordshire may simply reflect difficulties in recognition — *e.g.* ditches

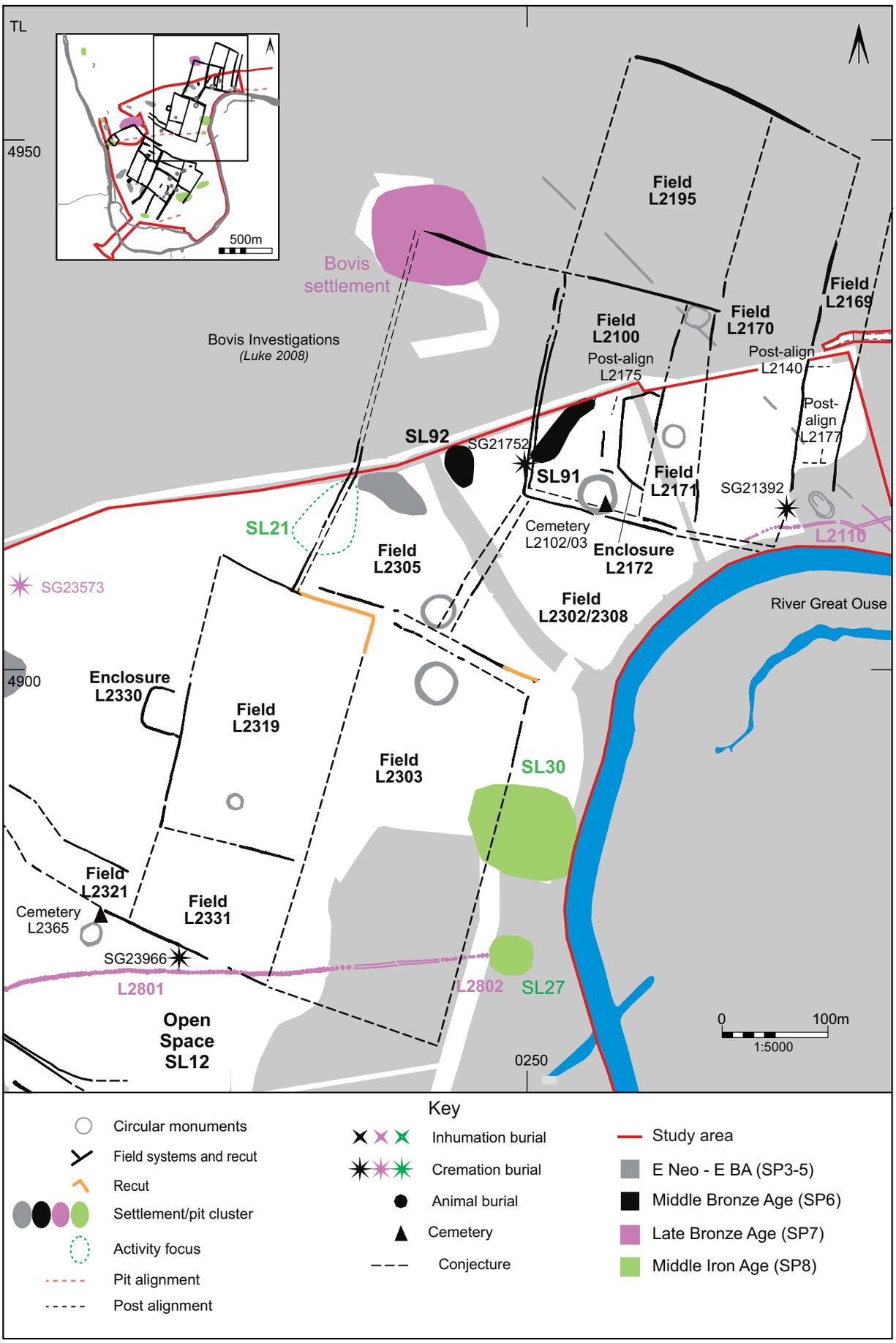


Fig. 4.2 Northern middle Bronze Age field system SL11, with late Bronze Age and early–middle Iron Age. Scale 1:5000

SL	*L*	*Approx. Length: width (m)*	*Approx Area (ha)*	*Recuts*	*Internal features*	*Significant earlier activity*
11	2100	211:80	1.7	—	Possible settlement SL91 (3 clusters of pits and post-holes L2176, post-hole alignment L2175) Cremation cemetery L2103 Inhumations L2102 (× 3) Isolated inhumation SG21752 (L2136)	eBA circular burial monument L2104
	2169	202:40	0.8	—	Post-hole clusters L2178 and L2180 Post-hole alignments L2177	l.Neo oval monument L2191
	2170	196:90	1.8	—	Isolated inhumation SG21392 (L2158)	
	2171	130:46	0.6	—	Small pits × 3 (L2159)	eBA circular burial monument L2106
	2172	81:30	0.2	—	Pit and post-hole cluster L2179	—
	2195	202:178	3.6	—	—	—
	2302	92:70	0.6	Partial recut L2308	—	—
	2303	161:90	1.4	—	—	eBA circular burial monument L2300
	2305	358:130	4.7	—	Possible settlement SL92 (small pits and possible tree clearance holes L2138)	eNeo circular monument L2301
	2319	240:160	3.8	—	Cluster of pits L2403	eBA circular burial monument L2356
	2321	139:38	0.5	—	Isolated small pit	—
	2330	38:37	0.1	—	—	—
	2331	170:114	1.9	—	Isolated small pit	—
13	2332	127:88	1.1	—	—	—
	2339	200:120	2.3	—	Small pits (× 4) Large pit and ditch L2391	eBA circular monument L3214 2 eBA large pits L2370
	2342	128:90		Partial recut L2343	—	—
	2344	217:202	4.4	—	—	3 eBA large pits L2369
	2345/ L314	142:96	1.4	Partial recut L2387	—	
	2346	240:112	2.7	—	Small–medium pits (× 3)	eBA circular monument L2460
	2348	262:111	2.9	Partial recut L2383	Isolated inhumation SG23997 (L2375) Pair of small pits/gate-posts and 1 small pit	—
	2349	202:138	2.8	Extensive recut L2350 Partial recut L2351 Partial recut L2355	Stock management system Cluster of pits (× 6) and post-hole L2404 Post-hole alignment L2405	eBA large pit L2333
	2352	119:50	0.6	Partial recut L2354 Partial recut L2406 Partial recut L2407	—	—

SL	*L*	*Approx. Length: width (m)*	*Approx Area (ha)*	*Recuts*	*Internal features*	*Significant earlier activity*
13 cont.	2423	188:134	2.2	Partial recut L2462 Partial recut L2463	—	eBA circular burial monument L2460
	2424	213:173	3.7	—	—	—
	2475	176:121	2.1	—	Internal partition L2477/L2402 Fenceline L2476	—
	3203	200:120	2.4	Extensive recut L3204	—	eBA circular monument L2421

eNeo = early Neolithic; lNeo = late Neolithic; eBA= early Bronze Age

Table 4.1 Details of the middle Bronze Age fields on the Biddenham Loop

are often found in isolation or on a small scale, while accurate dating is impossible without diagnostic artefacts or radiocarbon dates.

Far more extensive systems are known lower down the Great Ouse (Yates 2007, 94–7) and in the Thames valley (Yates 1999; 2007). The Biddenham Loop field systems share a number of similarities with those at Barleycroft/Over, Cambs. (Evans and Knight 2000; 2001) and Perry Oaks, Heathrow (Lewis *et al.* 2006, 95–164) (Fig. 4.4). For example, they developed in areas previously dominated by monuments; they display similarities in layout; they were not established as a single event (although the precise sequence of development is difficult to determine); the dating evidence is consistent; the fields contained evidence for settlement and dispersed activity.

The precise use of the fields at Biddenham Loop is not clear, although the majority are presumed to have been used for animal husbandry. While function is likely to have influenced their size, shape and form it may have changed over time and even during the agricultural year. Known rotation systems whereby stock are 'allowed to graze widely by day and [are] enclosed in the fields overnight would bring nutrients to the fields from the landscape in their dung' (Hey 2011b, 329).

Layout and extent

(Figs 4.2–4.4)

The identification of two field systems was based on the presence of two separate, coherent layouts: SL11 to the north-east and SL13 to the south-west. Both systems were aligned NNE–SSW, reflecting the natural topography (parallel to the 30m contour). Both comprised rectangular fields defined by boundaries that were probably only intermittently visible as archaeological features. Although no definitive limits of either field system were visible, their layouts suggest that their full extent was identified: SL11 covered *c.*25ha and SL13 *c.*30ha. The fields were located on both the (present-day) flood plain and on the slightly higher ground to the north-west.

The southern system, SL13, can be described as coaxial. At least three parallel ditches/trackways, spaced *c.*110m and 200m apart, extended consistently for *c.*600m with the spaces in between subdivided by perpendicular ditches. At Perry Oaks, Heathrow, major boundaries/trackways extending over 380m were spaced at intervals of 100m, 130m and 145m, together providing the framework for the field system (Lambrick 2009, 73) (Fig. 4.4). The northern system, SL11, was not coaxial; the ditches did not form boundaries to more than one field. It seems likely that the northern system was created incrementally with the addition of blocks of fields. By contrast, the framework of the southern system, with its extensive boundaries/trackways, could suggest that it was laid out in a single operation.

A number of parallel ditches within both systems give the appearance of trackways. Some, such as L2341 (SL13), which has ditches *c.*7m apart, are convincing. Others are spaced less than *c.*3m apart and, on closer examination, it is clear that the ditches cannot be contemporary (*e.g.* between field L2339 and L3203; and between field L2352 and open area SL12). Some of the latter may be a distinctive form of boundary known as 'hedge banks', which in the Thames valley appear to be of middle or late Bronze Age origin. 'The spoil from

Fig. 4.3 Southern middle Bronze Age field system SL13 with late Bronze Age and early–middle Iron Age.

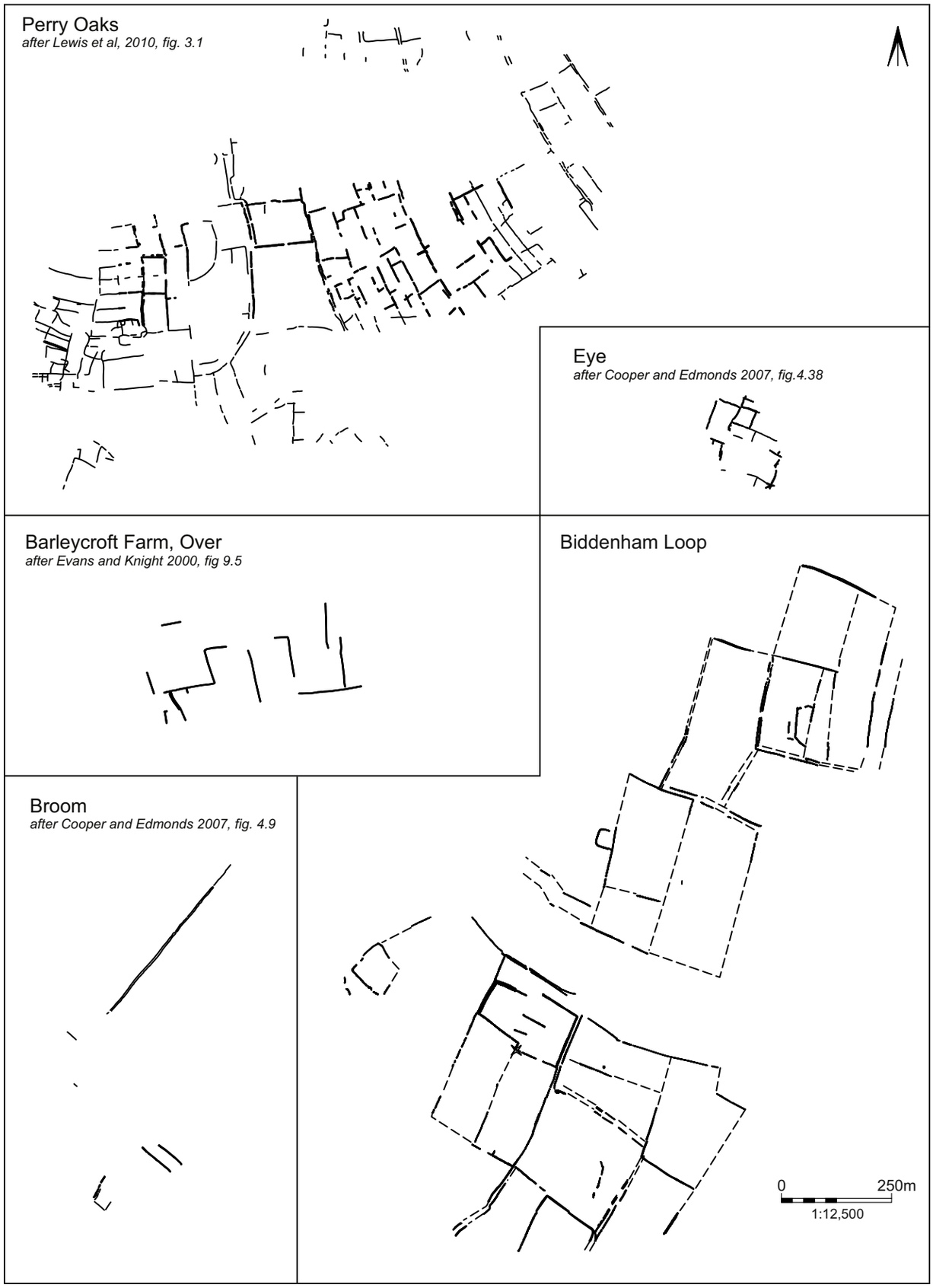


Fig. 4.4 Comparative plans of Bronze Age field systems from Perry Oaks, Eye, Barleycroft/Over, Broom and Biddenham Loop. Scale 1:15,500

the ditches piled up in a bank between them, creating a double or treble thickness of topsoil for the hedge to grow in' (Lambrick 2009, 58). The redigging of the ditch on only one side of a hedge bank might, of course, give the impression that parallel ditches are *not* contemporary, even if they originally were.

Plate 4.2 Middle Bronze Age ditches defining the north-west side of field L2305 (SL11)

To the north-west of the southern system (SL13) was a large space (SL14), which contained only a small number of ditches (mainly within the Bovis and Bypass investigations) on slightly different alignments to the field system. This could suggest that they were of a slightly different date, although one L-shaped ditch was the continuation of the north-east boundary of field L2352 (SL13). Similar L-shaped ditch arrangements have been noted in the Thames valley (Lambrick 2009, 70–73 and fig. 3.11) and Lambrick discusses the possibility that they 'were either formative elements or later additions in the development of early field systems' (2009, 71). Although the ditches within the Bovis investigations were believed to be of probable Roman origin, they did produce a moderate assemblage of early–middle Iron Age pottery (Luke 2008, 269) which might suggest that they are slightly later than the middle Bronze Age field systems. Their most likely practical function would be the corralling of animals. The L-shaped ditch also became the focus of a large late Bronze Age/early Iron Age settlement (see p. 145). A concentration of inhumations and animal burials to the west of enclosure L100 in this area is discussed below (see p. 186–7).

Continuity from the Neolithic/early Bronze Age

The two field systems within the Biddenham Loop broadly coincide with two of the Neolithic/early Bronze Age monument clusters. A similar occurrence was observed at Barleycroft/Over, Cambs., where field systems are 'focused on known areas of earlier monumental construction' (Yates 2007, 95). It is therefore possible that in the middle Bronze Age the land was used by people whose ancestors built the monuments. At the Biddenham Loop it is curious that no field system was established over the north-west monument cluster (largely within the Bovis investigations). Possible reasons for this are that

Plate 4.3 The dog-leg in the middle Bronze Age ditches separating fields L2346, L2348 and L2349 (SL11) and where inhumation SG23997 was buried, from the south (1m scale)

Plate 4.4 Middle Bronze Age ditches with fills that were noticeably light in colour and stone-free in the northern corner of field L2352 (SL13)

the people in this area had no need for fields defined by ditches or perhaps simply that they was no longer occupied this land. The more restricted extent of the Bovis investigations in this area means that, while no middle–late Bronze Age activity was identified, we cannot be certain it was not present in the many unexcavated parts of the development area.

The change from an open landscape to one subdivided by fields and trackways could be described as 'dramatic'. However, as at Barleycroft/Over, Cambs., where ring-ditches appear to have 'served as nodal points' (Evans and Knight 2001, 85), and at Perry Oaks, Heathrow, the earlier monuments were still visible; their incorporation into the field layout shows that they were not ignored or forgotten. In the case of the field system to the north-east of the Biddenham Loop individual monuments appear to have been incorporated into separate fields. The monuments always tended to be situated towards the edges of the fields and in a number of cases they were actually incorporated into the field boundary.

The two field systems within the Biddenham Loop were separated by a largely unenclosed zone *c.*160m wide

Plate 4.5 After the completion of hand excavation all unexcavated middle Bronze Age ditch fills were removed by machine under archaeological supervision — in this case, the northern ditch of field L2331 (SL11)

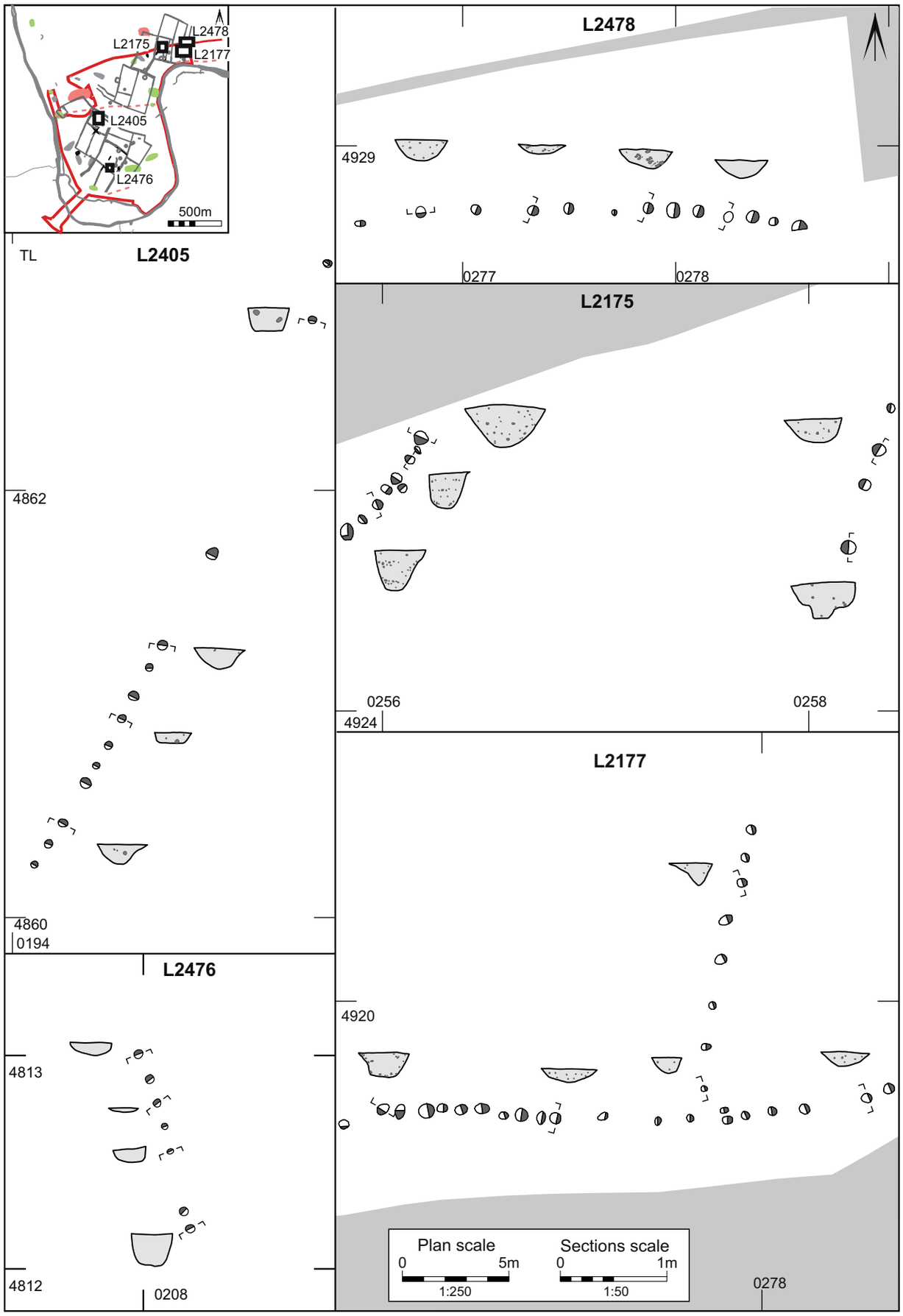


Fig. 4.5 Middle Bronze Age posthole alignments L2175, L2177, L2405, L2476 and L2478 on Biddenham Loop. Scale 1:250

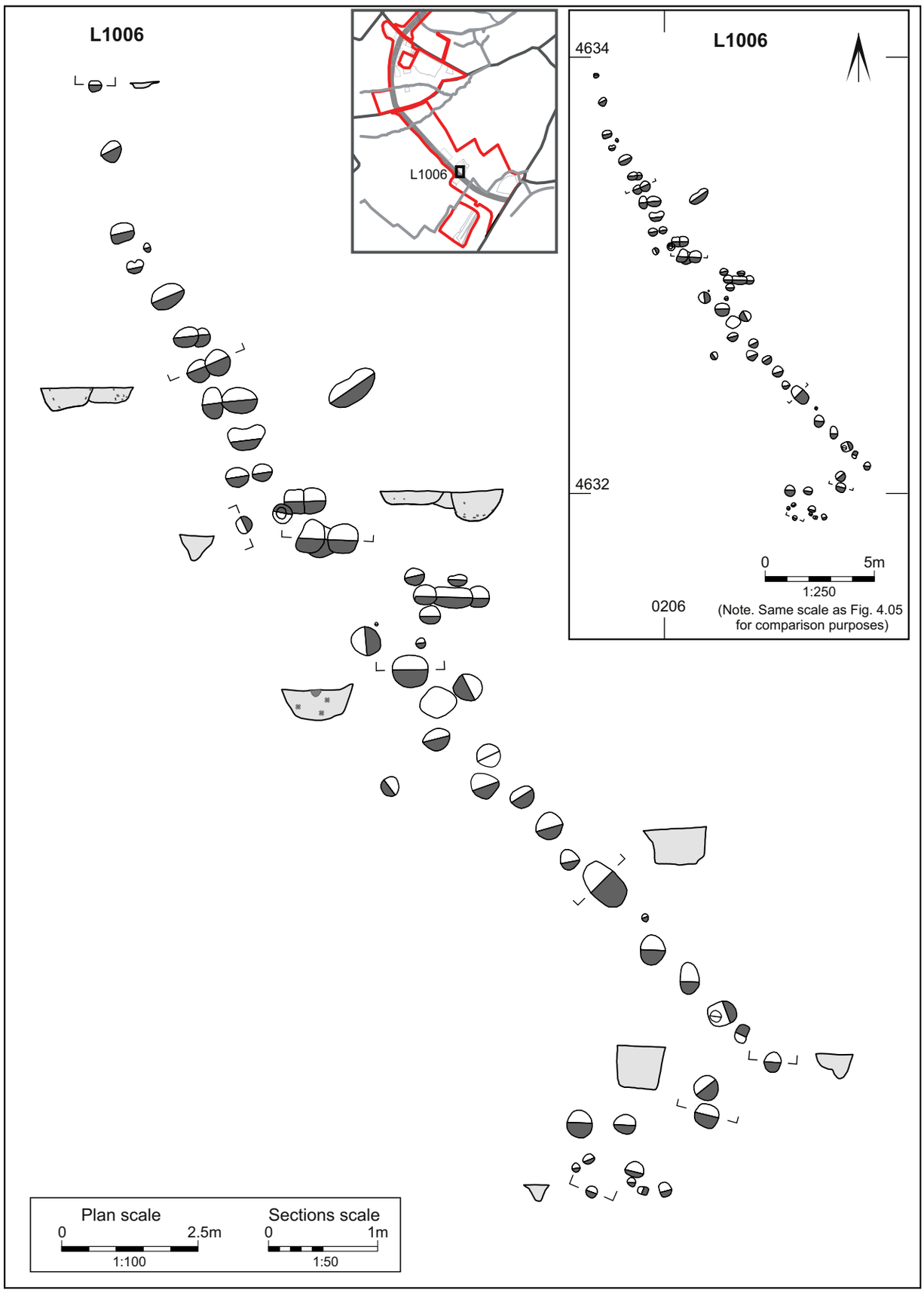


Fig. 4.6 Middle Bronze Age posthole alignment L1006 on land west of Kempston. Scale 1:250

Plate 4.6 Parallel, but not contemporary, middle Bronze Age ditches on the north-east side of field L2352 (SL13)

towards the centre of the Loop (SL12). It contained eight small pits and five cremation burials. More significantly, it incorporated elements of the pre-existing landscape in the form of early Neolithic monuments and the cluster of early Bronze Age shafts/large pits (Fig. 4.2), suggesting that these still had significance to the local population. Three of the five cremation burials were next to the early Neolithic monument.

In summary, the field systems appear to have been created by people whose ancestors had built, and in some cases were presumably buried in, the monuments. Although these were incorporated into the fields the possible processional ways were not. The creation of the fields is sometimes cited as resulting from an increase in population size, leading to more pressure on the land, although this does not explain the absence of fields over the north-west monument cluster. It is therefore possible that, with changes in farming practices and perhaps the establishment of more permanent settlements, divisions of land also needed to become more permanent too.

Dating of the fields

As is commonly the case with this type of feature, the field ditches produced a small and very mixed artefact assemblage. Most of the pottery from the Biddenham Loop field systems derives from cemetery L2103 (SL11). Field ditches from both systems produced a total of 137 sherds from sixty-five vessels (weighing 862g), including possible middle Bronze Age material, Peterborough Ware, Beaker, Collared Urn and fabrics of Iron Age, Roman and post-Roman date. Little can be said about the undiagnostic, possible middle Bronze Age pottery and the best dating evidence for the field systems, therefore, comes from the radiocarbon dating of four skeletons placed within or dug into infilled field ditches: 1500–1320 cal. BC (SUERC-25542: 3140±35BP) (sheep burial SG23817 within primary fill of field ditch); 1420–1210 cal. BC (SUERC-25538: 3055±35BP) (inhumation SG21392 dug into field ditch); 1270–1010 cal. BC (SUERC-25539: 2940±35BP) (inhumation SG21752 dug into field ditch); 1250–970 cal. BC (SUERC-25541: 2895±35BP) (inhumation SG23997 dug into recut of field ditch).

Bayesian modelling of the radiocarbon dates suggests that 'the field systems were in place by 1625–1380 cal. BC (95% probability)' and that 'the ditches were largely infilled by 1190–900 cal. BC (95% probability)' (CD Section 2; Hamilton). These dates are supported by a small number of stratigraphical relationships, specifically where the field ditches are truncated by pits of the main pit alignment. The latter is dated to the early Iron Age on the basis of its stratigraphical relationship with middle Iron Age storage pits and Bayesian modelling (CD Section 2; Hamilton). In southern England field systems are known to originate in the middle and late Bronze Age (Yates 2007, 110–12). Of course, the systems were not necessarily laid out in a single episode and were no doubt subject to modifications and hiatus in use. These dates correspond well with those from many field systems in southern England (Yates 2007, 112). At Perry Oaks, Heathrow, it was suggested that the field system originated 'sometime between 2000 and 1700 BC (Lewis *et al.* 2006, 95). However, others have suggested that a date around 1500 BC is more likely (Hey 2011b, 329).

It has been suggested that some 'middle Bronze Age field systems went out of use in the late Bronze Age' (Yates 2007, 112). At Biddenham Loop, as elsewhere, it is difficult to determine with any accuracy how long the fields rather than just their ditches remained in use. Although there is no direct evidence that they were maintained, or even used, in the late Bronze Age and early–middle Iron Age, circumstantial evidence suggests that at least parts continued to exist for a considerable length of time:

- **Middle Iron Age pottery** was found within the fills of the field ditches.
- **Cremation burial SG24424**, positioned in the vicinity of the main trackway through field system SL13, produced a radiocarbon date of 790–510 cal. BC (SUERC-26305: 2500±30BP).
- **Early Iron Age pit alignment L105/L2801/2802** truncated two field ditches and was on a different alignment to both systems. However, it ran, for the majority of its length, across the unenclosed zone between the two systems or on their periphery (see Fig. 4.3). It is, therefore, possible that the majority of the fields remained in use.
- **All the middle Iron Age and Romano-British farmsteads** were established around the edges of the field systems, further suggesting that the fields could have remained in use.
- **There is no direct evidence for any significant pre-Romano-British modification of the fields.** Lambrick has made a similar observation regarding field systems in the Thames valley (2009, 82). Of the two extensive Romano-British trackways on the Biddenham Loop, L2306 followed the alignment of the field systems and, although it cuts across the grain

of the southern system, it mainly passed through the corners of fields, suggesting that, at the very least, the fields were still visible.

In summary, there is sufficient evidence to postulate that some and quite possibly the majority of fields continued to be used into the Roman period. The fields on the Biddenham Loop may have remained largely unaltered until the establishment of open fields in the late Saxon period (see p. 365).

Nature of the field boundaries

The majority of the detected field boundaries on the Biddenham Loop comprised small ditches (that would presumably have been associated with hedges) (Plate 4.2), although a small number of narrow steep-sided trenches (which may have held timbers) were also present. A number of post-alignments were identified, but their positions within the fields suggest that they represent subdivisions or stock control features (see below).

As is often the case with middle–late Bronze Age fields, such as those at Broom, Beds. (Cooper and Edmonds 2007, 89), many of the boundaries within the Biddenham Loop were discontinuous (Plate 4.9). While in some cases the apparent segmentation might be the result of later plough truncation, the identification of definite ditch terminals demonstrates that this is not always the case. One of the explanations put forward for segmentation is 'that most episodes of working saw labour organised in relatively small groups and/or in short periods' (Cooper and Edmonds 2007, 90). Another is that the boundary line *was* continued but in a way that left no sub-surface trace. For example, the most likely explanation for the dog-leg in the southern boundary of field L2349 (Plate 4.3) is that the boundary between fields L2346 and L2348 extended this far, perhaps in the form of hurdles, the use of which Lambrick believed 'was probably very common, certainly much more so than is usually evident archaeologically' (2009, 62).

Banks, hedges, fences and pre-existing scrub/woodland were all likely to have formed elements of the field boundaries, although their remains are only rarely detected. Any boundary would, over time, have been colonised by vegetation, in some cases deliberately planted. Regardless of their origin, managed hedgerows would have developed, providing both effective stock barriers and a source of food (both plant and animal) and other resources. Ditches may not even have even been the most enduring element of field boundaries. For example, 'the occurrence of sherds from the same vessel in the primary and secondary fills of one of the ditches defining field L2169 (SL11) may suggest rapid infilling of this feature' (CD Section 2; Wells, Pottery).

The fills of the ditches had a characteristic pale coloured fill (Plate 4.4) and produced only tiny quantities of pottery, flint and animal bone when the volume of soil excavated is considered. The pottery and animal bone from the ditches was eroded and generally in quite poor condition (CD Section 2; Maltby; CD Section 2; Wells, Pottery). Two ditch lengths were exceptional in that they contained burnt mound-type deposits (see below). The general absence of finds (noted during fieldwork) led to a change in strategy. Rather than leaving unexcavated ditch lengths, all the fills were machined out under archaeological supervision in an attempt to find material that would assist in dating (Plate 4.5). This approach succeeded in that it located a sheep burial and a human burial, which, in addition to their intrinsic interest, provided single-event deposits that were ideal for radiocarbon dating.

Development of the fields

In the absence of stratigraphic relationships and dating evidence it is difficult to write a detailed history of the development of the fields. As noted above, the northern field system appears more disjointed than its southern counterpart, suggesting that it was not created in a single phase. However, both are likely to have had quite complex development histories.

In only a small number of cases has it been possible to establish development sequences for individual fields, using the evidence of ditch intersections and recuts — which obviously fails to take into account any of the possible above-ground boundary elements mentioned above. Furthermore, where ditches were recut it was often only in short stretches, rather than along their entire length (Figs 4.2 and 4.3). Fields L2349 and L2352, to the north-west of the southern field system, appear to have been redefined more frequently and over longer lengths than others (Fig. 4.3). It may be significant that these are the fields located nearest to the area of late Bronze Age/early Iron Age settlement identified in the Bovis investigations.

Post-alignments

(Fig. 4.5 and 4.6)

Post-alignments were another feature of the landscape at this time, the majority being found within the fields on the Biddenham Loop (Fig. 4.5). Typically, they were no more than 30m long and consisted of post-holes which were usually less than *c.*0.4m in diameter and depth. As such, they are clearly very different in form to the pit alignments (see p. 131). It should be stressed that none of the seven alignments on the Biddenham Loop produced datable finds or material suitable for radiocarbon dating. They were assigned to the middle Bronze Age because most were perpendicular or parallel to field ditches. Post-alignments are notoriously difficult to date because they comprise small features which produce few datable artefacts; even when material suitable for radiocarbon dating is present, there is a risk that it is residual. A much shorter but more complex and better-dated alignment, L1006, was found within Land west of Kempston (Fig. 4.6). It was not associated with fields but is discussed in this section because of its similarities with those on the Biddenham Loop. It appears to have been the focus for later activity, evidenced by the nearby middle Iron Age ditched boundary L1000 and area of dispersed activity SL140.

The Biddenham Loop alignments can be summarised as follows:

- **L2478** was *c.*21m long within field L2169 (field system SL11) and was perpendicular to the field ditches. The posts were spaced at *c.*1.2–2.6m intervals.
- **L2175** comprised two alignments up to 7m long within field L2100 (field system SL11). Neither was parallel or perpendicular to the field boundaries. The posts in the western alignment were spaced at *c.*0.6–0.9m intervals, and in the eastern alignment at *c.*1.8–3m intervals.

- **L2177** comprised two alignments up to 25m long within field L2169 towards the north of field system SL11. One was perpendicular to the field ditches, with the posts spaced at *c.*0.75–1.3m intervals. The other was roughly parallel, with posts spaced at *c.*1.3–1.9m intervals. Wider gaps between some of the post-holes may indicate the location of entranceways.
- **L2405** ran for 32m, mainly within field L2349 in the northern part of field system SL13. Although perpendicular it appeared to cross a double-ditched field boundary. The posts were spaced at *c.*1–2m intervals.
- **L2476** ran for 9m within field L2475 in the southern part of field system SL13. Like field subdivision ditch L2402/2477, it was not parallel or perpendicular to the field boundaries. The posts were spaced at *c.*1.3m intervals.

A comparable but much more complex post-alignment, *not* associated with fields, was found on Land west of Kempston:

- **L1006** (SL117) was 20m long with posts at *c.*0.7m intervals. A number of the posts had been replaced, especially those near the possible central entrance, which was indicated by a more complex arrangement of larger post-holes. No datable artefacts were recovered, but charcoal produced a radiocarbon date of 1200–930 cal. BC (SUERC-25513: 2880±35BP).

The nearest published example of a post-alignment is at Plantation Quarry, Willington, to the east of Bedford, within the area of the Neolithic/early Bronze Age monument complex (Dawson 1996, 33, figs 17 and 19). However, the 'post-holes' are large and this feature is perhaps better described as a pit alignment. Post-alignments similar to those within the study area were found in association with fields at Broom, Beds. (Cooper and Edmonds 2007, 85), and at Barleycroft/Over, Cambs. (Evans and Knight 2001). They are also known on a variety of sites in the Thames valley, such as Yarnton, Eton Rowing Course, where, in contrast to Biddenham Loop, most were parallel to ditches or associated with water features (Lambrick 2009, 61). At Hartshill Copse, Berks., three late Bronze Age post-alignments were identified (Collard *et al.* 2006, 372–3). Two were extensive, like those at Barleycroft/Over, Cambs., but one *c.*11m example is more comparable to those at Land west of Bedford. It was suggested that the posts at Barleycroft/Over, Cambs., were set in turf (Evans and Knight 2001, 88) and those at Hartshill Copse, Berks., within an earthen bank (Collard *et al.* 2006, 399). However, the post-alignments within the study area produced no such evidence.

At all sites the spacing of the posts seems to have varied. It is possible that the wider-spaced alignments may represent post and rail fences, while the closer-spaced alignments, such as L1006, may represent palisades or screens. Some on the Biddenham Loop may have served a practical function, such as temporary stock control. For example, alignment L2405 is located in the vicinity of the arrangement of double ditches between fields L2349 and L2352 that may have been associated with stock handling (see below and Fig. 4.7). The function of L1006 on Land west of Kempston is less certain. It is not associated with any known land divisions or any specific archaeologically visible activity. It appeared to have a central entrance and was important enough to have been repaired on a number of occasions. In this respect it has some similarities with the timberwork at Mucking, Essex, which screened from view a group of roundhouses (Parker Pearson 1993, 121 and fig. 114).

Plate 4.7 Fills being checked after machining in the middle Bronze Age animal control ditch system between fields L2352 and L2349 (SL13)

Stock control and management
(Fig. 4.7)
Indirect evidence for stock control and management within field systems comes in the form of trackways, field entrances, possible animal drafting systems and water pits.

In contrast to Perry Oaks, Heathrow (Lewis *et al.* 2006, 104–12), the evidence for trackways at Biddenham Loop is not conclusive (see above). It has been demonstrated that some parallel arrangements of ditches were not actually contemporary — such as those on north-east side of field L2352 (Plate 4.6) — or were too narrow to act as trackways. In fact, L2341/47, within the southern field system, is the only trackway that can be identified with confidence. Trackways were also absent from the field system at Barleycroft/Over, Cambs. (Evans and Knight 2000, 97).

Entrances into many of the fields were difficult to identify, owing to the recutting of boundaries or truncation. From the trackway there was one definite, centrally located, *c.*3.8m-wide entrance into field L2349 (Fig. 4.7); other, narrower entrances existed into field L2346 (Fig. 4.8). Unassociated with the trackway were several narrow gaps into field L2348. One of these was in its corner, with access probably controlled by a gate indicated by the presence of post-holes (Fig. 4.7).

Some of the narrowly spaced, gradually converging ditches may have been associated with livestock control and sorting. For example, the ditches on the north side of field L2349 were *c.*3m apart, narrowing to *c.*2.7m to the south-east, where they terminated; after a narrow gap their alignment was continued by another centrally positioned ditch (Fig. 4.7; Plate 4.7; *cf.* Pryor 1998, 105 and fig. 53; the illustration by Johnston in Yates 2007, plate 2). The animals, almost certainly sheep, were driven from the north-west down the droveway or 'race' (indicated by the two slightly converging ditches) which narrowed to create a 'crush', facilitating controlled inspection by people standing on either side of the 'race', after which the animals would have been sorted through two drafting gates indicated by the gaps. The proximity of post-alignment L2405 to the sorting area may indicate an association with collecting pens. It is probably significant that a sheep (SG23817), 'relatively tall for a British prehistoric' (CD Section 2; Maltby), was buried in the ditch adjacent to the sorting area, perhaps as an offering. No similar stock control features were identified elsewhere on the Biddenham Loop, although there were several other examples of gradually converging ditches. In addition to ditches, it is likely that portable fencing and hurdles would have been extensively used for *ad hoc* animal inspection and sorting.

Water pits
(Fig. 4.8)
Only large pit G23286 (L2391), within the southern system SL13, was considered to be contemporary with the fields. Rather more large pits, interpreted as water holes, have been found within several contemporary field systems, as at Barleycroft/Over, Cambs. (Evans and Knight 2000, 97), and Perry Oaks, Heathrow (Lewis *et al.* 2006, 133–50). Many of these were redug (Lewis *et al.* 2007, 147). However, the presence of only one water pit at Biddenham Loop can be compared to sites where none were found, such as Westhawk Farm, Kent (Booth *et al.* 2008, 25).

The Biddenham Loop water pit was located in the corner of field L2339, adjacent to trackway L2341. It was a partial recut of an early Bronze Age pond G23285 (L2390). Although it was smaller than the original pit, its base had probably reached the contemporary water table. The pit was 4.4m in diameter and 1m deep (Plate 4.8). Its uneven sides sloped down to an off-centre trough 2.5m × 1m in size; no obvious access ramp was identified. The north side of the pit was scorched (G23286.06) and was associated with frequent flecks and lumps of charcoal, bearing some similarities to the burnt mound-type deposit found in an adjacent field ditch (see below).

The primary fill of the water pit produced an unusual animal bone assemblage, markedly different to other middle Bronze Age assemblages from the study area. It included seven red deer bones from a neonate and a probable adult; an immature roe deer mandible; three articulated pig metacarpals, large enough to be from a wild boar; a scapula and a humerus from a neonatal pig (bones are insufficiently developed to determine whether they were from domestic or wild animals); a fused distal radius, an upper canine and a skull fragment of badger; and a complete humerus of an adult pine marten (CD Section 2; Maltby). These species are all typically associated with woodland or areas where ground cover is significant, although red deer, in particular, can adapt to fairly open landscapes. As Maltby says, 'none of the bones are complete, which is often indicative of secondary deposition', and this is clearly a possibility given that the pit is a recut. However, it is possible that this assemblage represents the continuation, in some way, of the Neolithic and early Bronze Age practices of burying parts of wild animals (see above). One of the bones was radiocarbon dated 1260–1000 cal. BC (SUERC-25548: 2910±35BP).

Burnt mound-type deposits
The term 'burnt mound' is usually used for large deposits of burnt stones and charcoal surviving as heaps or layers on pre-Iron Age sites. No such mounds were found within the study area. However, there were three occurrences of dark deposits with abundant burnt stones and charcoal within two ditch lengths *c.*300m apart and within a water pit (Fig. 4.3). The latter was within 100m of possible settlement SL93.

The main fill of two segments of ditch G23203 (near the south-west corner of field L2348) contained frequent charcoal flecks and 23kg of burnt stone (Plates 4.9 and 4.10). The deposits were *c.*0.2m thick and occurred within both segments of the ditch over a *c.*8m length. The charcoal produced a radiocarbon date of 1430–1260 cal. BC (SUERC-26340: 3075±30BP).

The upper fill of ditch G23231 (separating field L2339 and L2342) contained a moderate quantity of charcoal flecks and burnt stone. The deposit was 0.4m thick and extended for *c.*10m along the ditch. The charcoal produced a radiocarbon date of 1410–1210 cal. BC (SUERC-26339: 3035±30BP).

The deposit was similar to that found in water pit G23286, located *c.*5m to the west (Fig. 4.8), although the radiocarbon date from the latter is some 200 years later (see above). The secondary fill of the water pit, slumped against its sides and base, was 0.1–0.4m thick. It contained a moderate quantity of stones, some of which

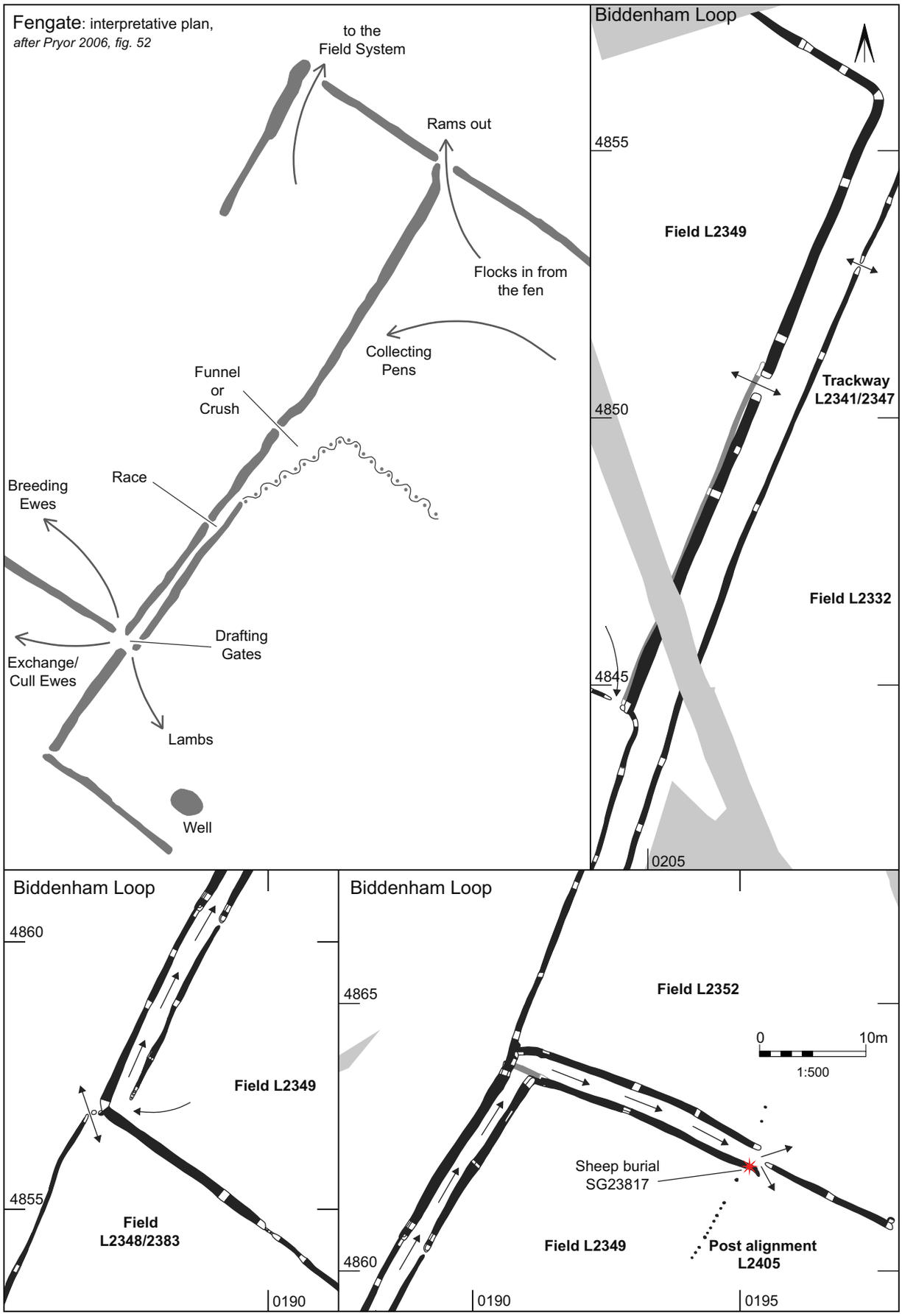


Fig. 4.7 Detail of stock control system and field entrances within the middle Bronze Age fields on Biddenham Loop. Scale 1:500

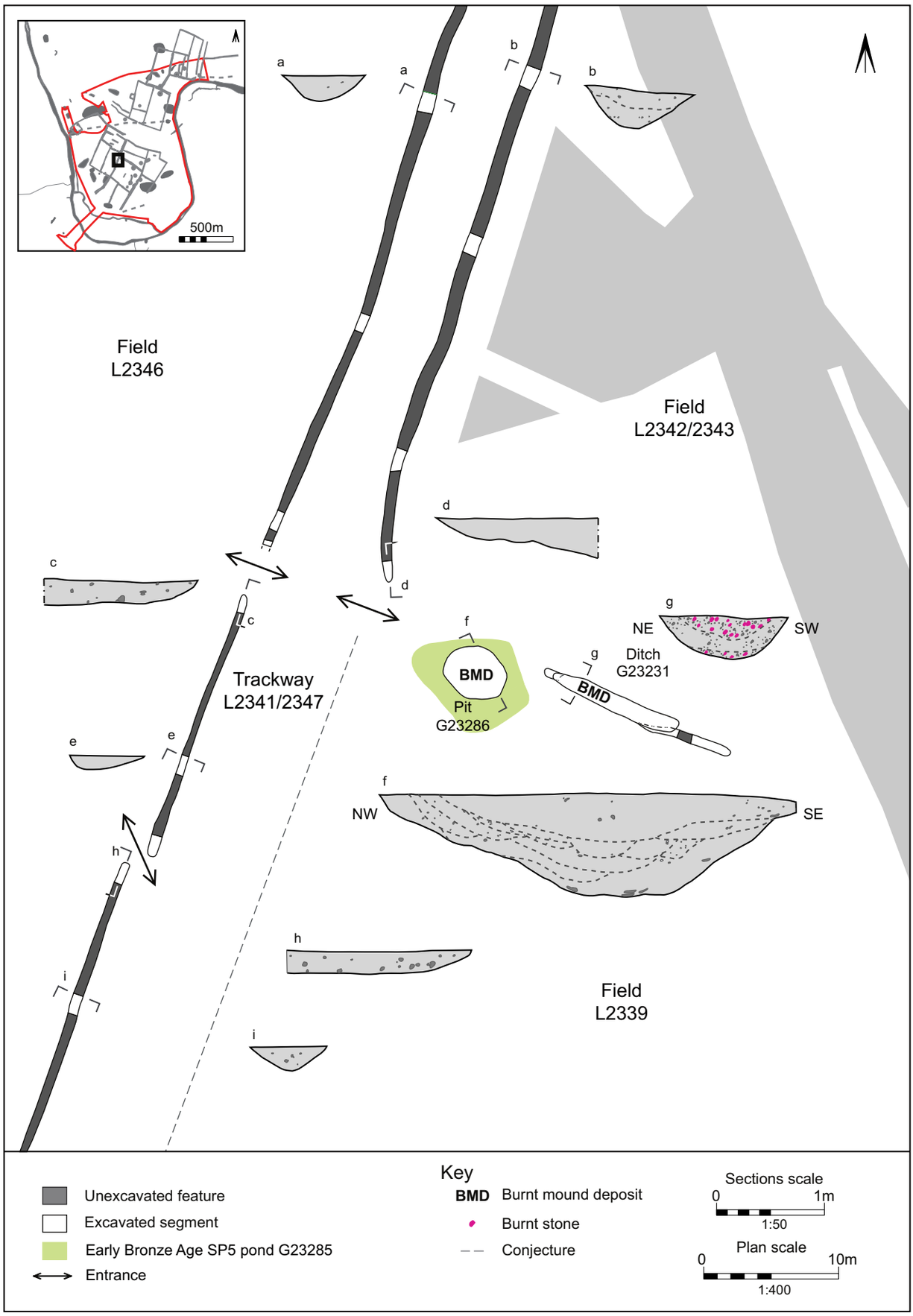


Fig. 4.8 Detail of water pit G23286 and burnt mound-type deposits in adjacent field ditch within the middle Bronze Age fields on Biddenham Loop. Scale 1:400

Plate 4.8 Water pit G23286 (L2339) under investigation

were burnt, occasional large fragments of limestone and charcoal flecks. A lens of charcoal 0.1m thick was present on the south-west side of the pit towards its base. Of the eleven sherds, all but one are undiagnostic, but they are likely to be middle Bronze Age in date.

The Biddenham Loop evidence cannot contribute significantly to the debate on the interpretation of 'burnt mound' deposits. However, the proximity of the deposits in ditch G23231 to water pit G23286 supports the overall interpretation that they derive from activities associated with the heating of water. Lambrick summarises the four possible explanations as: cooking places, baths or saunas, areas for fulling and dyeing, and an association in some way with funerary pyres (2009, 179).

Possible settlements within the fields
(Figs 4.2 and 4.3)
There were very few contemporary features within the fields. Where present, they typically comprised isolated small pits, post-holes and burials which tended to occur towards the edges of the fields. Their small numbers and the tiny quantities of domestic debris within them suggest that they do not represent settlement. A similar low-density spread of features was found within some of the field systems in the Thames valley, as at Ashford (Lambrick 2009, 75). In contrast, three concentrations of pits and post-holes at Biddenham Loop have been interpreted as possible settlements (SL91, SL92 and SL93) and are described separately (see p. 144–5).

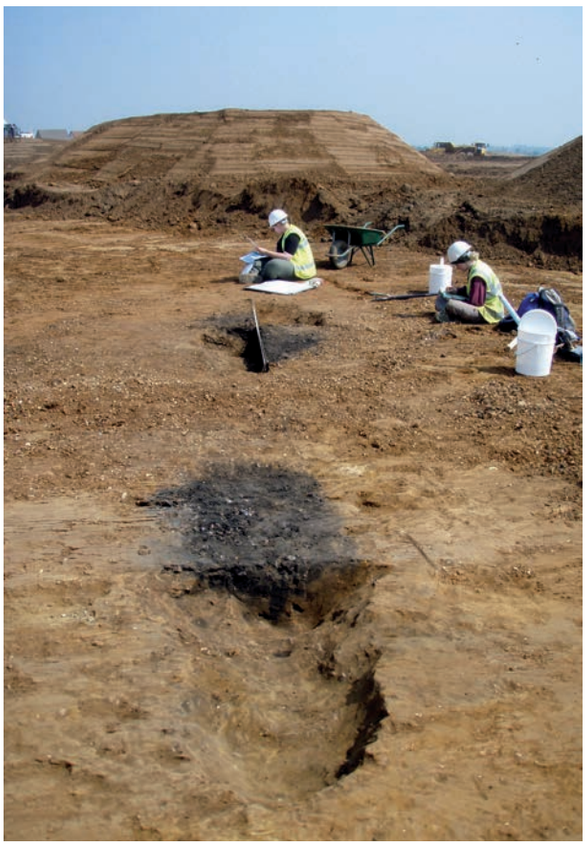


Plate 4.9 Partly excavated middle Bronze Age burnt mound deposits within ditch lengths near the south-west corner of field L2348 (SL13), from the south-west

V. Major land divisions

Any discussion of major land divisions needs to acknowledge from the outset 'the possible existence of well-understood boundaries recognisable by reference to lines between visible landmarks (trees, earlier prehistoric monuments, confluences and bends in streams and rivers, or other readily recognisable features)' (Lambrick 2009, 56). On the Biddenham Loop it is easy to appreciate that the large meander of the river, any slight changes in its course and the early prehistoric monuments would have been significant landscape 'markers'. However, it is less easy to understand the influence of isolated trees and woodland because no firm evidence for their existence survives.

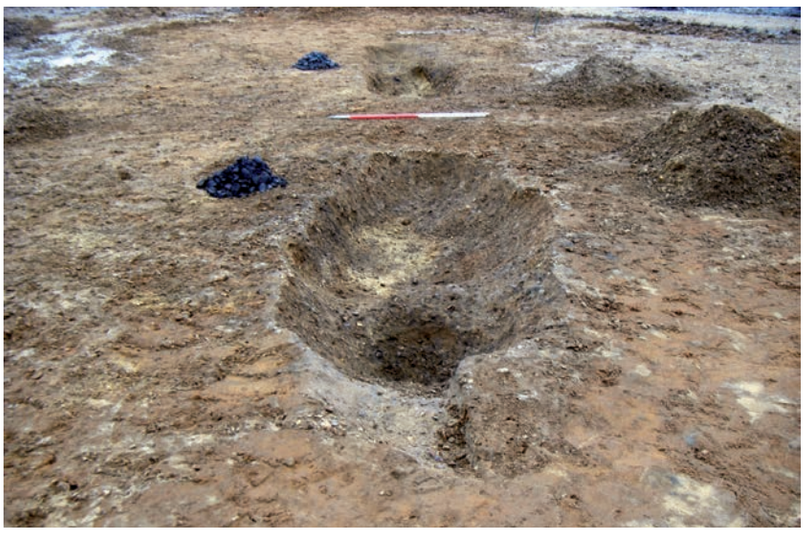


Plate 4.10 Ditch lengths G23203 after the removal of middle Bronze Age burnt mound deposits within ditch lengths near the south-west corner of field L2348 (SL13), with piles of burnt stones adjacent, from the north-east (1m scale)

In addition to the field systems on the Biddenham Loop, which are in effect major land divisions, the investigation area also contained a small number of extensive ditches and pit alignments. The latter are a distinct form of boundary, found quite commonly in England, comprising rows of holes dug into the ground at regular intervals. While the dating evidence for some of these land divisions, such as the main pit alignment within the Biddenham Loop and the extensive ditched boundary on Land west of Kempston, is very good, it is almost non-existent for others. The creation of these land divisions would have required both a significant level of organisation within the communities concerned and large workforces. While it could be argued that the ditched boundaries were created as land divisions the nature of the pit alignments suggests that the situation was more complex.

Pit alignments
(Figs 4.9 and 4.10, Tables 4.2–4.4)

Introduction
Five pit alignments were identified within the recent investigations — three on the Biddenham Loop (SL18) (one known only from non-intrusive evidence) and two on Land west of Kempston (SL124). Pit alignments are relatively common in the Midlands (Knight 1984, 259 and map 20), but less so in the Thames valley (Lambrick 2009, 60). Several have been investigated along the river Great Ouse, such as those at Great Barford, Beds. (Abrams *et al.* forthcoming), Fenny Lock, Milton Keynes (Ford and Taylor 2001), and St Ives, Cambs. (Pollard 1996, 109).

All the pit alignments comprised evenly spaced pits with no significant gaps. The majority of the pits were oval to sub-square in plan, with steep sides and concave bases. Broadly speaking, those on the Biddenham Loop comprised large pits 3m in diameter (Plates 4.11–4.13) and 1m deep, with only occasional smaller pits 1.7m in diameter and 0.7m deep. The pits on Land west of Kempston were all smaller, at around 1.6m in diameter and 0.3m deep (Plate 4.14). It is likely that the latter had suffered considerable truncation, as they were found during a watching brief on earthmoving operations.

The fills of the pits derived from weathering of their sides and the adjacent topsoil; they were largely sterile. The quantity of finds from the main pit alignment on the Biddenham Loop, although not large, was exceptional in comparison with the tiny or non-existent assemblages from the other pit alignments. Most of this material including pottery derived from the pits in the vicinity of the late Bronze Age/early Iron Age settlement within the Bovis investigations (Luke 2008, 125). None of the pits within any of the alignments exhibited evidence for deliberate backfilling or for posts, as suggested at Ewart 1, Northumberland (Miket 1981, 145). Equally, there appears to have been no attempt to recut the pits. Once the sides had stabilised, the pits remained open. This is evidenced within the Bovis investigations by the presence of amphibian and small mammal pit-fall victims, along with the establishment of a snail fauna (Luke 2008, 33), and within the recent investigations by a short-tailed vole, 'presumably a victim of a fall when the pit lay open' (CD Section 2; Maltby).

The nature of the pit fills provided no clear evidence for an adjacent bank. However, stone densities in the overlying ploughsoil calculated within the Bovis investigations suggested banks may have existed 6m distant to both the north and south of the alignment (Luke 2008, 126). Parallel segmented banks survive as earthworks on the North York Moors (Lofthouse 1993). The presence of hedges has been suggested for the alignments at Heslerton, N. Yorks., on the basis of an adjacent band of buried soil (Powlesland 1986, 133) and at Meadow Lane, St Ives, as a result of the discovery of hedge clippings in the pits (Pollard 1996, 100).

Alignments on the Biddenham Loop
(Fig. 4.9, Plates 4.11–4.13, 4.15–4.17)
The most extensive pit alignment L105/2801/2802 ran

L no.	*L148*	*105*	*2801*	*2802*
Length (m)	296	58	402	9
No. of pits	80	20	108	3
No. of pits 50% excavated	22	8	43	2
No. of pits 100% excavated	30	10	24	0
Largest gap between pits (m)	2	1	1.5	2
Shape	Oval/sub-circular/sub-square/rectangular	Oval/circular/square	Oval/circular/square	Circular
Lengths of large pits	2	2	2	1
Lengths of medium pits	—	2	8	—
Lengths of small pits	—	2	5	—
Lengths of square pits	3	1	3	—
Dimensions				
Diameter (min:max)	1.6:3.5	2:3.5	1.9:4.5	2.3:2.5
Depth (min:max)	0.9:1.1	1:2	0.7:1.4	0.8:1
Pottery sherd:weight (kg):vessel				
Primary	*See Wells 2008, Chapter 7	—	1:0.01:1 lBA–eIA (F01C) 7:0.07:2 e–mIA (F17) (F18) (F28)	—
Secondary	*See Wells 2008, Chapter 7	1:3g:1 LIA–ERB (F03)	10:0.01:3 undated 10:0.05:3 lBA–eIA (F01C) (F16A) 4:0.02:3 generic IA (F03) (F22) 3:0.02:2 e–mIA (F17) (F18)	6:0.02:1 Generic RB (R13)
Tertiary/sole	—	7:0.02:6 generic IA (F03) 27:0.1:21 E/MIA (F16) (F17) (F18) (F27) (F29) (F37)	6:0.02:5 undated 7:0.04:4 lBA–eIA (F01B) (F01C) (F16A) 22:0.2:8 generic IA (F03) (F22) 26:0.2:5: e–mIA (F16) (F18) (F19) (F27) (F28) (F30)	—
Other finds		—	—	—
Primary	7 fragments of animal bone 1 flint shatter 13 flint flakes 2 flint spalls 2 flint chips	0.08kg animal bone	1.4 animal bone 0.2 flat roof tile, brick 3 clay pipe fragments 9 shell fragments	—

L no.	*L148*	*105*	*2801*	*2802*
Secondary	492 fragments of animal bone Millstone grit saddle quern (1907) 2g briquetage fragments 5 flint shatter 48 flint flakes 7 flint spalls 5 flint chips 1 flint flake core 2 flint core fragments 2 flint core trimming flakes 7 flint blade fragments 5 flint scrapers 1 flint knife 1 flint denticulate 2 flint retouched flakes 1 utilised flint blade 2 utilised flint flakes	1.7kg animal bone 1 Mesolithic/E Neo flint pick (RAb 1044) 3 flint spalls (RAb 1032) 2 flint blades (RAb 1003) 1 flint piercer	1.4 animal bone 0.4 flat roof tile, brick eNeo flint fabricator 1 flint flake 1 blade-like flint flake 1 flint core/tool (RAl 8005)	—
Tertiary/sole	—	1 nail 1.5kg animal bone 0.3kg Fired clay 1.3kg human bone 8 flint blades (RAb1009, 1027–28, 1061) 12 flint blade-like flakes 7 flint flakes 1 flint core trimming flake 2 single platform flint blade cores (RAb 1017) 1 flint shatter LNeo/EBA flint thumbnail scraper (RAb 1005) 1 flint piercer (RAb 1006) 1 flint knife (RAb 1004) 1 flint end scraper (RAb 1011) 1 flint awl 4 utilised flint blades (RAb 1018; 1056–57) 1 utilised flint flake (RAb 1019)	2.1 animal bone 0.2 pantile, flat roof tile 0.1 fired clay lNeo–eBA barbed and tanged flint arrowhead (RAl 8001) 2 flint blades (RAl 8000) 3 flint blade-like flakes 1 flint denticulate 2 flint flakes 1 flint core fragment	—
RCD	—	370–110 cal BC (SUERC-25511; 2170±35BP)	520–380 cal BC (SUERC-25549-2355±35BP)	—

RAb = BWB1124 registered artefact number; RAl = LWB1289 registered artefact number; eNeo = early Neolithic; lNeo–eBA = late Neolithic–early Bronze Age; lBA–eIA = late Bronze Age–early Iron Age; IA= Iron Age; e–mIA = early–middle Iron Age; RB = Romano-British; BWB1124 = Bedford Western Bypass; LWB1124 = David Wilson Homes; BWM1376 = Bedford Watermain. All weights rounded-up to the nearest 0.01g
Note: for information on finds from Bovis Pit Alignment see Wells 2008, Chapter 7, pp. 146–8. Pottery fabric codes (***e.g.*** F01B) are found in the 'Pottery Type Series' (CD Section 2: Wells, Appendix 1)

Table 4.2 Details of pit alignment L105, L2801/02 on the Biddenham Loop

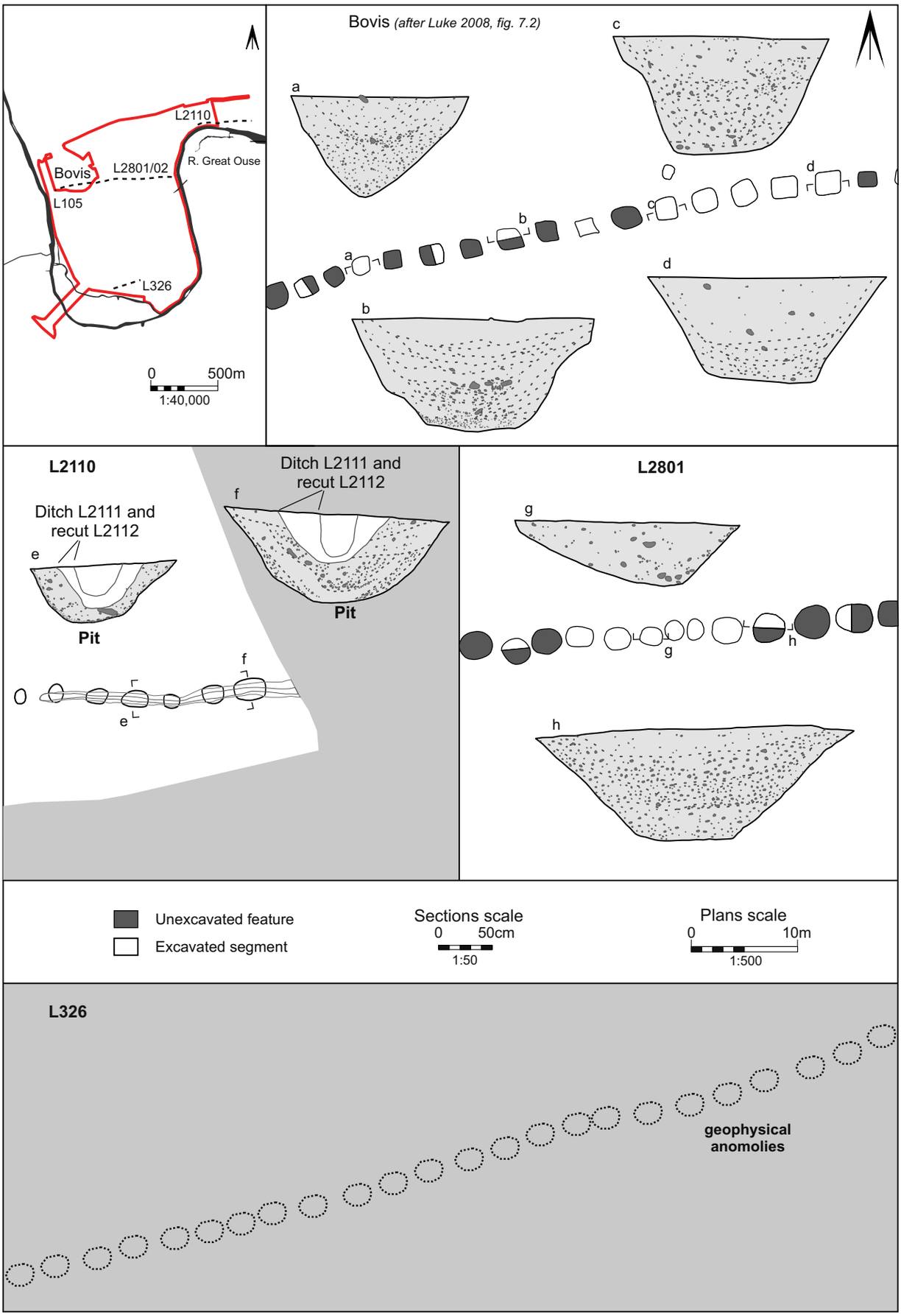


Fig. 4.9 Pit alignments on the Biddenham Loop. Scale 1:500

Land west of Kempston	
L no.	L1300
Length (m)	56
No. of pits	18
No. of pits 50% excavated	11
No. of pits 100% excavated	0
Largest gap between pits (m)	2.8
Average shape of pits	Circular/oval
G13010	Circular, 2
G13012	Oval/rectangular, 5
G13013	Circular, 4
G13014	Circular, 5
G13015	Circular, 1
G13016	Oval, 1
Dimensions	
Diameter (min:max)	0.8:1.9
Depth (min:max)	0.3:0.4
Contemporary pottery sherd:weight (kg):vessel	
Primary	
Secondary	
Tertiary/sole	1:0.01:1 undated 16:0.05:1 generic IA (F03) 4:0.01:1 lIA–eRB (F09)
Other finds	
Primary	—
Secondary	—
Tertiary/sole	—
RCD	—

IA = Iron Age; lIA–eRB = late Iron Age–early Romano-British. Pottery fabric codes (*e.g.* F03) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1). All weights rounded up to the nearest 0.01g

Table 4.3 Details of pit alignment L1300 on land west of Kempston

for *c.*1km from river to river, giving the impression of 'cutting off' the Loop (see Fig. 4.1; Plate 4.15) in a similar way to the ditches termed 'meander cut-offs' in the Thames valley (Lambrick 2009, 64 and fig. 3.7). The pit alignment on the Biddenham Loop was investigated within the Bovis, Bypass, David Wilson Homes and Bedford Water Main investigations. At the time of the Bovis investigations it was believed that it represented the first physical land division within the Biddenham Loop (Luke 2008, 32), although this is now known to be incorrect. Towards the centre of the Loop it was only *c.*20m from the early Neolithic central monument L2312. The alignment kinked where it crossed the postulated route of the early Bronze Age ceremonial way.

On the basis of its stratigraphical position between middle Bronze Age field ditches and middle Iron Age storage pits, pit alignment L105/2801/2802 can be broadly dated to the late Bronze Age/early Iron Age. With regard to L105 and L2801 within the recent investigations, 'the small quantity and generally poor condition of pottery deriving from the pits compares well with than recovered from the pit alignments within the Bovis investigations

Land west of Kempston	
L no.	L1302
Length (m)	240
No. of pits	77
No. of pits 50% excavated	32
No. of pits 100% excavated	0
Largest gap between pits (m)	1
Average shape of pits	Circular/oval/sub-rectangular
Dimensions	
Diameter (min:max)	1.3:2.3
Depth (min:max)	0.3:0.4
Pottery sherd:weight (kg):vessel	
Primary	5:0.01:1 lIA–eRB (F05)
Secondary	1:0.01:1 lIA–eRB (F05) 1:0.01:1 undated
Tertiary/sole	1:0.01:1 undated
Other finds	
Primary	0.01 animal bone 1 multi-platform flint flake
Secondary	1 tested flint nodule
Tertiary/sole	1 flint flake
RCD	Failed

lIA–eRB = late Iron Age–early Romano-British. Pottery fabric codes (*e.g.* F05) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1). All weights rounded up to the nearest 0.01g

Table 4.4 Details of pit alignment L1302 on land west of Kempston

Plate 4.11 Western end of early Iron Age pit alignment L2801 during initial hand excavation, from the west

Plate 4.12 Starting the hand excavation of the second half of one of the pits in alignment L2801

Plate 4.13 One of the fully excavated pits in alignment L2801

(Wells 2008, 147). Like the latter, the majority of the pottery is of early Iron Age date, suggesting that the pit alignment originated during this period' (CD Section 2; Wells, Pottery). A radiocarbon date of 520–380 cal. BC (SUERC-25549: 2355±35BP), albeit from an isolated cow bone in one of the L2801 pits, supports a similar construction date and would be consistent with the dating of other pit alignments, such as Meadow Lane, St Ives (Pollard 1996, 110). That the pit alignment had been largely infilled by the middle Iron Age is indicated by its stratigraphical position (*i.e.* it was dug into by storage pits) and by a radiocarbon date of 415–170 cal. BC (Beta-139483; 2270±70BP) for an inhumation placed in a largely infilled pit within the Bovis investigations (Luke 2008, 173).

The Bovis pits contained snail species and short-tailed voles, suggesting that they were dug in the vicinity of open grassland. Soil signature tests on the primary fills of three widely spaced Bovis pits suggest that scrub clearance took place prior to construction (Luke 2008, 33). The remains of a probable marker ditch L128 were visible in gaps between some of the westernmost pits of this pit alignment. The ditch, at its maximum, extended over *c.*40m, was 0.6m wide and 0.4m deep.

Although pit alignment L105/L2801/L2802 truncated some of the middle Bronze Age field ditches and was on a different alignment to the field systems, it is likely that the latter remained in use. The pit alignment truncated only the northern corner of field system SL13 (Plate 4.16) and was mainly situated in the unenclosed zone SL12 between the two field systems. It is clear that by the middle Iron Age several of the pits had become sufficiently infilled to allow storage pits to be dug into them. Although the pits may have been lost their original significance, their associated bank/hedge probably survived as a long-term boundary throughout the Iron Age and into the Romano-British period. For example, middle Iron Age farmsteads SL27 and SL31 were set up at either end of the pit align-

ment and an extensive Romano-British ditched boundary ran parallel to it.

No firm dating evidence was recovered from the other pit alignments and they have been assigned to this period because of their similarity to L105/2801/2802. Pit alignment L2110, to the north-east of the Loop, was replaced by ditches L2111 and L2112, although, other than its being pre-Roman, the timespan involved is unknown (see p. 139).

The positioning of the two other known pit alignments on the Biddenham Loop appears to have been designed to reinforce the natural 'boundary' of the river and/or its flood plain. Cropmarks suggest that L2110, located to the north-east of the Loop, continued for at least 110m beyond the investigation area. Despite full excavation its fills were completely sterile. It was the only alignment within the development area to have been replaced by ditches (Plate 4.17). The third pit alignment, L326, in the southern part of the Loop within the present-day flood plain, is broadly parallel to the river. It was originally traced for only 40m by geophysical survey in 1995 (Luke 2008, 32), but further survey undertaken in 2011 has demonstrated that it extends for at least 130m.

Despite the extensive investigations within the Loop the full extent and arrangement of the pit alignments is still not fully understood. It is likely that alluvial clays within the flood plain have prevented the detection of the full extent of alignments L326 and L2110 by aerial photography or geophysical survey. The pit alignment at Meadow Lane, St Ives, which was orientated parallel to a contemporary river channel, was located only after the removal of alluvial clays (Pollard 1996, 98, fig. 3).

Plate 4.14 Possible early Iron Age pit alignment L1302 (west of Kempston), from the south

Alignments on Land west of Kempston
(Fig. 4.10, Plate 4.14)
The two pit alignments SL124 on Land west of Kempston were *c.*70m apart. They were aligned broadly north–south (but were not parallel) and were close to the edge of the present-day flood plain. Both were heavily truncated and initially difficult to identify. Their full extent to the south is unknown, as they were not located to the north-east within the Bypass corridor or to the south within the A421 improvement scheme (Simmonds and Welsh 2013) (Fig. 4.10). Pit alignment L1300 featured an unusual slight kink in its alignment, occupied by a sausage-shaped pit, next to which were two similar pits (G13017) and four post-holes (G13018) (Fig. 4.10). It is possible that this arrangement of features represents a significant point in the alignment, such as an entranceway or the junction of different gangs' work. The small finds assemblage and the absence of material suitable for radiocarbon dating make precise dating impossible. 'The largest component of the tiny pottery assemblage recovered from pit alignment L1300 can be only broadly dated to the Iron Age' (CD Section 2; Wells, Pottery).

Function
By their very nature, pit alignments clearly served a boundary function. However, their interrupted nature suggests that the pits alone would not have provided an effective physical barrier. A ditch would seem to us today to be a more logical boundary and probably would not have taken that much longer to dig. Even if the pit alignments were associated with a bank (as at Biddenham Loop) or a hedge (as at Meadow Lane, St Ives), they appear not to be designed to stop movement. Powlesland suggested that the Heslerton alignment actually served as a focus of occupation (1986, 156), but at Biddenham Loop extensive open area excavations suggested that the largest contemporary settlement was *c.*180m away from the main pit alignment.

It is possible that the very act of construction represented a pit alignment's primary significance. The regularity of the constituent pits and their spacing indicate deliberate intent and, presumably, meaning to the people involved in their construction or commissioning. Some pit alignments appear to reinforce existing physical boundaries, such as rivers, as at Biddenham Loop and Meadow Lane, St Ives (Pollard 1996, 113). They would have been distinctive and durable markers, but may have been principally intended as a symbolic, rather than a physical, boundary. Pollard has suggested that the use of pits would have had a commonly understood meaning to contemporary peoples, related to the character of the boundary or area being defined (1996, 110). Suggestions for the function of such a boundary include the demarcation of land ownership (Ford and Taylor 2001, 114) and political influence (Powlesland 1986, 156), a response to inter-community landscape disputes (Pryor 1993, 142), the marking of common rather than individual holdings, or the division of different zones of resource (Pollard 1996, 110).

Boundary ditches
(Fig. 4.11 and 4.12)
Two extensive boundary ditches were identified within the recent investigations: one in the north-east part of the Biddenham Loop and one on Land west of Kempston.

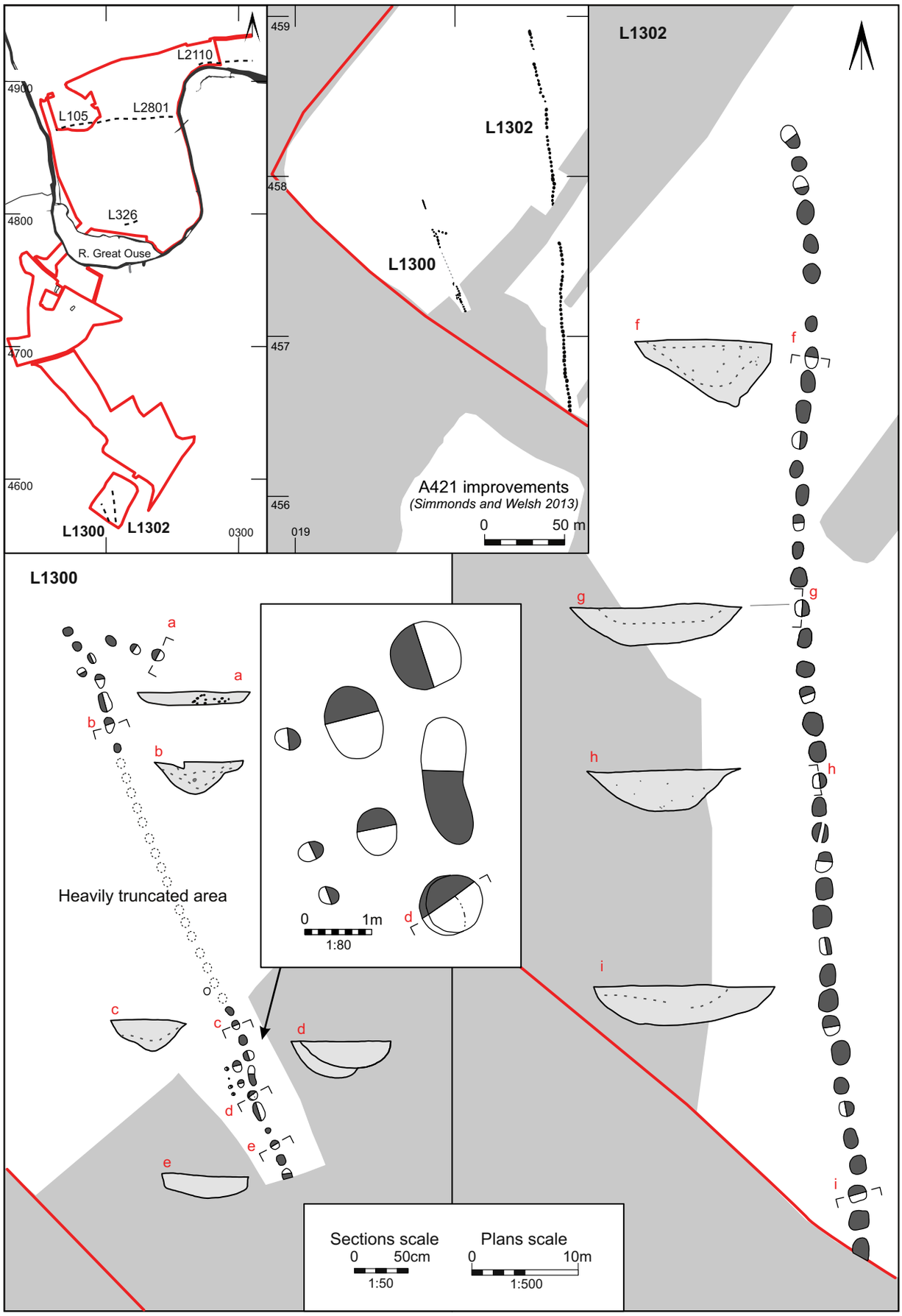


Fig. 4.10 Pit alignments on land west of Kempston. Scale 1:500

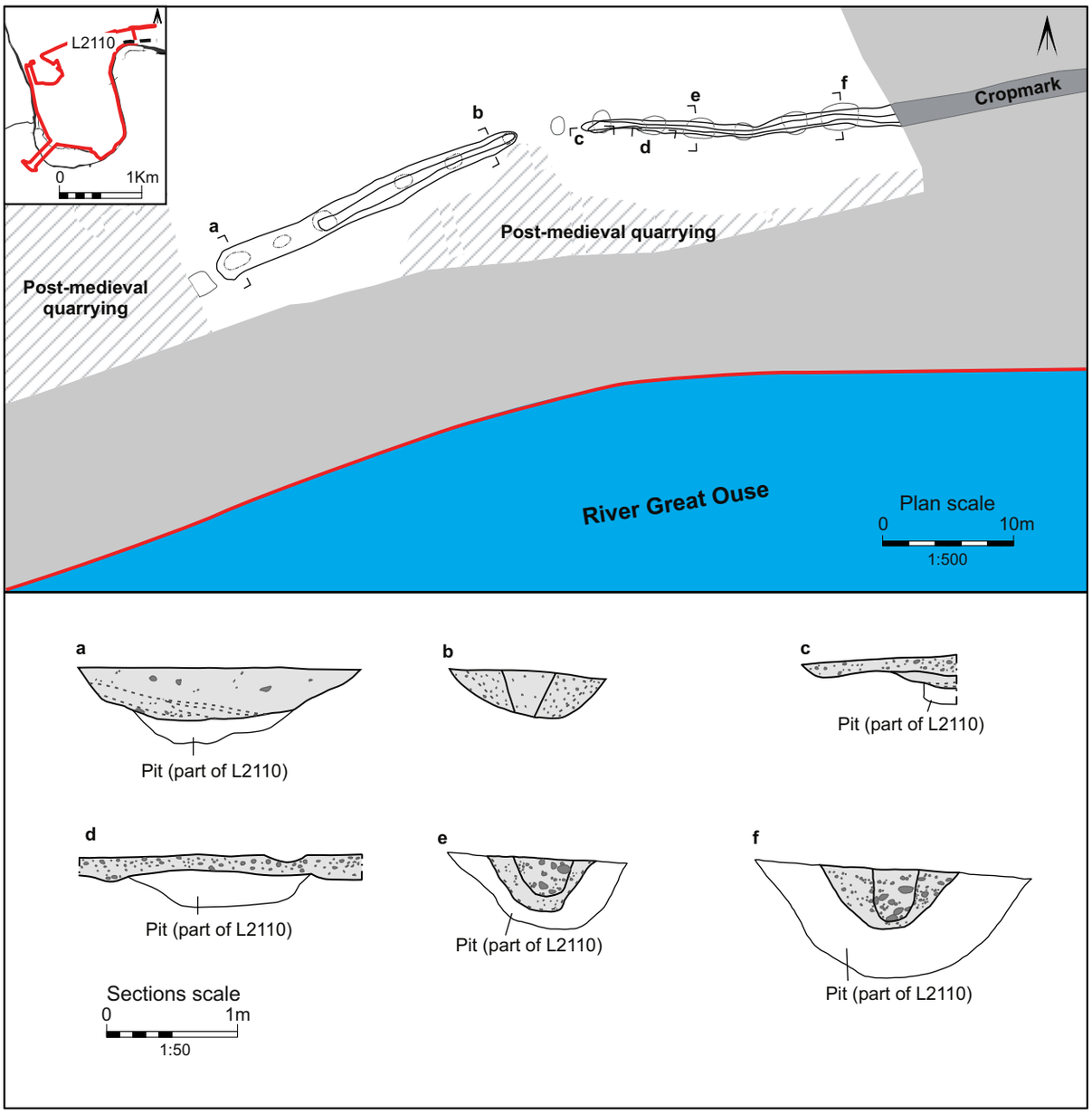


Fig. 4.11 Boundary ditches L2111 (and its recut L2112) on Biddenham Loop. Scale 1:500

Ditch L2111 and its recut L2112 truncated the upper fills of pit alignment L2110 and followed the same course (Fig. 4.11). The boundary was at least 50m long within the excavation area but can be traced for 110m to the east as cropmarks on aerial photographs. Its extent to the south-west is unclear because of the presence of a post-medieval quarry. Within the excavation area it comprised two ditch lengths separated by a 5m-wide gap. A layer of possible trample in the gap may indicate animal movement down to the adjacent flood plain. Only the 25m-long western length/segment G21045 was complete. The ditches in both lengths had a concave profile; G21045 was 2.5m wide by 0.7m deep while G21047 was 1.7m wide by 1m deep. The ditches' fills appeared to be derived from the weathering of their sides. The recut L2112 was dug centrally within the original ditch and was much smaller (<1m wide and 0.7m deep), while the ditches in both lengths had near vertical sides and concave bases. Terminals indicate that it, too, was segmented and the original 5m-wide gap was retained. Its western ditch length (G21046) was also shorter than the original G21045 (L2111). No diagnostic finds or material suitable for radiocarbon dating evidence were recovered from either ditch, so their assignment to this period is uncertain. However, the absence of Romano-British pottery, in contrast to other ditches in this area, suggests a pre-Roman date.

On Land west of Kempston a major boundary (SL137) was located in the vicinity of the middle Bronze Age post-alignment L1006, *c.*230m north of pit alignments SL124. Ditch L1000/L5201 was continuous, at least 200m long and was identified within both the Bypass and David Wilson Homes developments (Fig. 4.12, Plate 4.18). The size and profile of the ditch varied along its length. It was 2.3–4.8m wide and 0.8–1.2m deep; its profile varied from V-shaped to concave. Although its fills were largely

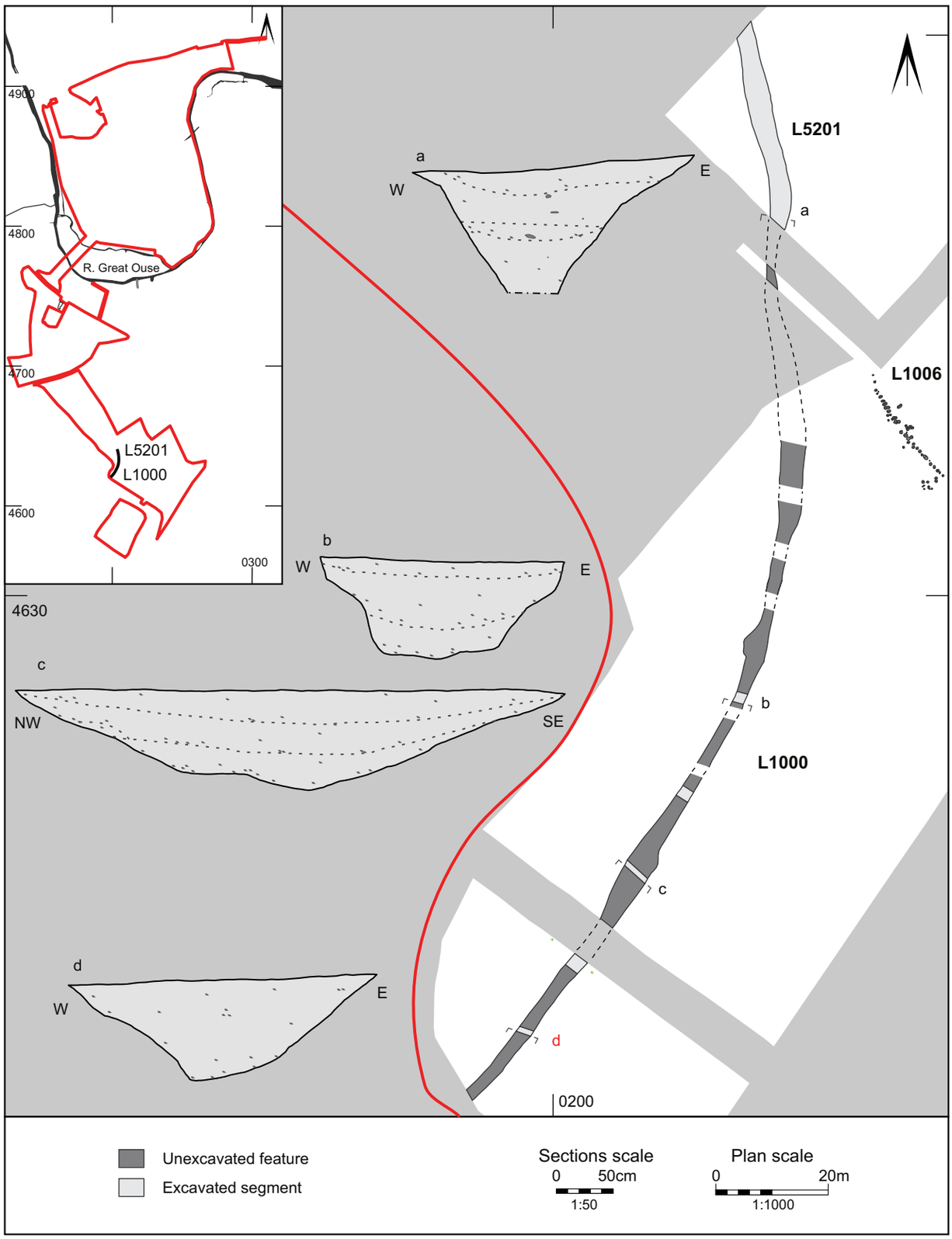


Fig. 4.12 Middle Iron Age boundary ditch L1000/L5201 on land west of Kempston. Scale 1:1000

sterile, one produced a sizeable pottery assemblage dominated by quartz-rich fabric types F03 and F28 and missing typically middle Iron Age fabric types F14 and F15. 'It can, perhaps, be tentatively suggested that SL137 … may pre-date the farmsteads and other activity areas assigned to [the middle Iron Age]' (CD Section 2; Wells, Pottery). Similar extensive ditched boundaries have been identified in the Thames valley (Lambrick 2009, 66–7), and one at Bicester Slade Farm, Oxon, extended over 470m (Ellis *et al.* 2000).

Plate 4.15 Aerial view of early Iron Age pit alignment L2801 from the east end of the excavation looking west, with the Bovis development in the background

Plate 4.16 Aerial view of early Iron Age pit alignment L2801, from the west, where it cuts across the corner of a middle Bronze Age field, after the completion of hand excavation

It has been suggested by Wigley (2007, 125) and others that many pit alignments in Britain were recut as linear ditches. However, within the study area only one of the four pit alignments was replaced by a ditch and there is no evidence that major ditch L1000/L5201 recut a pit alignment. The only other example in Bedfordshire of an extensive ditch replacing a pit alignment is at Eastcotts, Bedford, where pits were identified under a ditch that was part of an extensive triple-ditched boundary (Albion 2010c, 2). It was therefore believed that the pit alignment represented the earliest manifestation of this boundary. A multiple ditched boundary at Great Barford was established adjacent to, and on the same alignment as, a pit alignment, although none of the ditches followed

Plate 4.17 Possible early Iron Age pit alignment L2110, from the east, partly obscured by later ditch L2111

the same actual course (Abrams *et al.* forthcoming). Elsewhere it is not always clear, when ditches are found overlying pit alignments, whether they are reinforcing an existing boundary, as at Biddenham Loop, Eastcotts and Great Barford, or incorporating it into a completely new landscape feature, as at Eynesbury, Cambs. (Ellis 2004, 44), and Earl Shilton, Leics. (Jarvis 2011, 45). Generally speaking it seems likely that further pit alignments will be found underlying extensive ditches. However, the identification of the earlier pits might be a problem if the ditches were large (thus completely truncating the earlier pits) and/or if insufficient was excavated during the archaeological investigations.

VI. Settlements

(Figs 4.13–4.15, Tables 4.5–4.7)

Introduction

All the settlements within the investigation area during this period can be classed as 'open' — that is, the settlement area was not surrounded by a ditch — even during the middle Iron Age, when the settlements featured small internal enclosures. As for the Neolithic/early Bronze Age, the evidence that might assist in differentiating settlements (where people lived) from activity areas (where short-term occupation, farming or storage took place) was not always clear-cut. This was particularly the case for the middle Bronze Age owing to the dispersed distribution of features such as post-holes and small pits, the absence of obvious buildings or structures, and the sporadic nature of finds assemblages (present in some features, but absent from the majority). Possible middle Bronze Age settlements have, therefore, been identified on the basis of the presence of loose clusters of pits and post-holes (relative to the surrounding area) and the presence of some domestic debris within some features. Although the evidence was again quite dispersed, the identification of late Bronze Age/early Iron Age settlements was easier because of the larger number of features represented, including buildings and structures, and the

Plate 4.18 Boundary ditch L1000 to right (note: crossed by furrows, not segmented), with post-hole alignment L1006 to left, from the north-west

greater quantity of finds. By the middle Iron Age settlements were concentrated in smaller areas and produced greater quantities of domestic debris. The typical settlement by that time comprised at least one storage pit cluster and often a roundhouse and a small ditched enclosure.

Excluding four-post structures, the only buildings positively identified from the middle Bronze Age to the

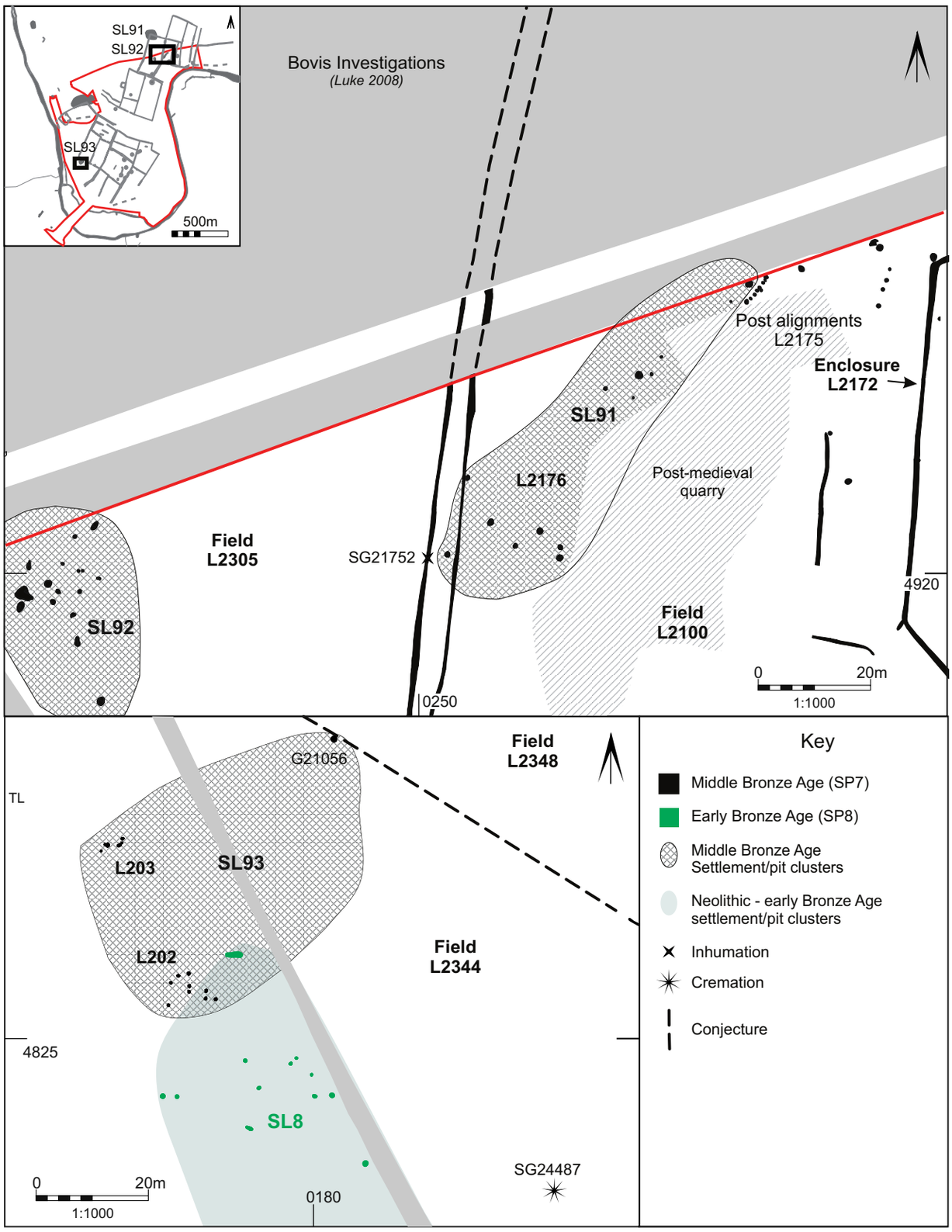


Fig. 4.13 Possible middle Bronze Age settlements SL91, SL92 and SL93 within field systems on Biddenham Loop. Scale 1:100

end of the middle Iron Age were roundhouses. However, they were present in small numbers only. The surviving evidence comprised a post-ring (in the late Bronze Age/early Iron Age settlement within the Bovis investigations), wall trenches (one example in a middle Iron Age farmstead within the Bovis investigations) and drainage gullies (four examples in the middle Iron Age farmsteads). The numbers are quite low and may not fully reflect the number of roundhouses originally present. Definite doorways were identified in only two cases and, overall, preservation was poor, with only one roundhouse containing an internal feature. The relatively poor level of survival of the Biddenham Loop roundhouses means that they cannot contribute additional information to existing discussions (see Cunliffe 1991, 242–6). What little can be said about methods of construction and layout is incorporated into the discussion of settlements (see below).

In common with the Thames valley (Lambrick 2009, 271) two- and four-post structures were present within only the late Bronze Age/early Iron Age settlement found in the Bovis investigations (Luke 2008, 36); they were absent from the middle Iron Age farmsteads. Although there is no direct evidence for their use, such structures are often interpreted as granaries (Bersu 1940, 97; Wainwright 1968, 112–16; Gent 1983, 246–52). However, it seems likely that other products (*e.g.* fodder, beans, cheese, dried meats, wool *etc.*) were stored, making the term 'storehouse' perhaps less misleading and more appropriate than 'granary' (Cunliffe and Poole 1991, 115). It has also been suggested that some isolated two- and four-post structures could represent entrances/porches into roundhouses for which no other evidence survives (Guilbert 1975, 217).

Dispersed possible settlements within fields (middle Bronze Age)

(Fig. 4.13, Table 4.5)

Three areas of possible settlement — SL91 and SL92 within field system SL11; and SL93 within field system SL13 — were identified on the Biddenham Loop. The evidence comprised loose clusters of pits and post-holes (relative to elsewhere within the fields) and the presence of small quantities of domestic debris. Based on this evidence it seems likely that these areas represent short-term occupation rather than permanent settlement.

SL91 and SL92 were located *c.*80m apart within the central block of fields assigned to SL11. The eastern settlement, SL91, was located within field L2100 and comprised three discrete clusters of pits, L2176, although its full extent is unknown owing to post-medieval quarrying. Adjacent to the settlement were two post-alignments, L2175 (see p. 125 above). The western settlement, SL92, was concentrated in the centre of field L2305 (Fig. 4.2). It comprised small pits, which produced a small quantity of middle Bronze Age pottery including sherds from a Bucket Urn, and possible tree clearance holes, which produced no artefacts but were filled with similar material to the pits. Settlement SL93 was located within field L2344 on the south-west periphery of field system SL13 (Fig. 4.3). It comprised two small pits, thirteen post-holes (Plate 4.19) and a cremation burial (SG24487). The latter, which comprised a middle Bronze Age urn, was located *c.*60m to the south-east (Fig. 4.13). The recovered artefact assemblage from the pits and post-holes was tiny.

One of the larger pottery assemblages from the settlements comprised thirty-two grog-tempered sherds from three bucket urns from three separate pits in SL92 (CD Section 2; Wells, Fig. 5, P39–41). This vessel type is often found in funerary contexts, but is also known from domestic sites (Carol Allen pers. comm.) (CD Section

Period	*SL*	*Location*	*Small pits*	*Post-holes*	*Other features*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds (kg)*	*RCD*
mBA	91	Within field L2100	18 (L2176)	7 (L2176)	2 fencelines (L2175) to north-east	8:0.1:1 non-specific early prehistoric ware	0.04 animal bone	-
mBA	92	Within field L2305	4 (L2138)	—	12 tree clearance holes	32:0.1:3 bucket urns (P39, 40, 41)	0.2 animal bone	-
mBA	93	Within field L2344	2 (L203)	13 (L202, L203)	Urned cremation burial (SG24487)	118:0.6:1 urn e/mBA (X12A) 1:0.01:1 non-specific early prehistoric	0.5 human bone 0.01 animal bone	1210–940 cal BC (SUERC-25509, 2890 ± 35BP) 1270–1000 cal BC (SUERC-25552, 2920 ± 35BP) 1260–1010 cal BC (SUERC-26287, 2925 ± 30BP)
lBA–eIA	125	North-east of The Bury	4	—	—	14:44 e–mIA F16	0.01 animal bone 1.0 fired clay	—

e/mBA = early/middle Bronze Age; mBA = middle Bronze Age; lBA = late Bronze Age; e–mIA = early–middle Iron Age; P = Pottery illustration number. All weights rounded up to the nearest 0.01g

Note: pottery fabric codes (*e.g.* X12A) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1)

Table 4.5 Details of the evidence for middle Bronze Age and late Bronze Age/early Iron Age possible settlements

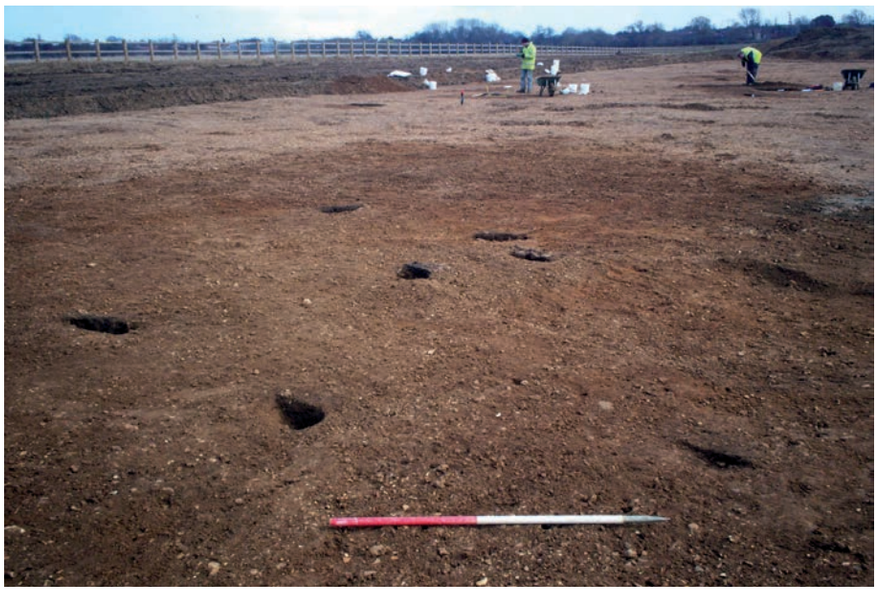


Plate 4.19 Post-hole cluster L202 within possible settlement SL93, from the north-west (1m scale)

2; Wells, Pottery). Charred material from three separate pits in SL93 was radiocarbon dated 1260–1010 cal. BC (SUERC-26287: 2925±30BP) (unid. charred grain from small pit); 1270–1000 cal. BC (SUERC-25552: 2920±35BP) (oak charcoal from small pit); 1210–940 cal. BC (SUERC-25509: 2890±35BP) (unid. charred grain from small pit).

The animal bone assemblages from the settlements were tiny — the largest, from SL92, included 'forty-two heavily eroded animal bone fragments … from L2138 … Two cattle teeth were the only elements identified' (CD Section 2; Maltby).

The location of SL93 adjacent to early Bronze Age settlement SL8 suggests some degree of continuity from the earlier period of occupation. This is significant because it emphasises the point that, although the physical appearance of the landscape had changed dramatically, the same areas continued to be occupied. The discovery of possible dispersed settlements within fields at this time is quite common (*e.g.* Perry Oaks, Heathrow) (Lewis *et al.* 2006, 114–32). Here the identification was based on the presence of pottery and other artefacts within field ditches and waterholes. Lambrick believes that 'it is doubtful if any of these rather amorphous areas of occupation represent permanent year-round settlement' (2009, 74); this interpretation also holds for the settlements within the Biddenham Loop. By the late Bronze Age all the possible settlements within the fields had been abandoned and larger settlements were developed outside the field systems (see below).

Dispersed settlements (late Bronze Age/early Iron Age)

(Fig. 4.14)

Two dispersed late Bronze Age/early Iron Age settlements were identified on the Biddenham Loop and one within Land west of Kempston. The former were *c.*820m apart and were discovered during the Bovis and Medical Centre investigations (Luke 2008, 32–8). They are now known to be situated on the north-western periphery of two separate field systems which originated in the middle Bronze Age (see above).

Western settlement within Biddenham Loop

The western settlement, adjacent to field system SL13, was fully excavated within the adjacent investigations (Luke 2008, 127–43 and fig. 7.1). No clear settlement boundaries were identified but the drop-off in features indicates that its limit had been reached; it therefore covers an area of 1.3ha. Its assignment to the late Bronze Age/early Iron Age is largely based on the pottery assemblage (typically post-Deverel-Rimbury types in shell or quartz fabrics), supported by three radiocarbon dates (Luke 2008, 301): 975–830 cal. BC (Beta-139479; 2730±30BP) (barley grain within two-post structure); 920–805 cal. BC (Beta-139478; 2650±40BP) (emmer grain within small pit); 905–795 cal. BC (Beta-139480; 2660±40BP) (barley grain within small pit).

Given its location to the north-west of the field system and the problems with dating pottery of this period (see p. 108–09), it is conceivable that the settlement actually originated in the middle Bronze Age. If so, then its proximity to the L-shaped ditch defining field/area L2382 — integral to but on a different alignment to the main field systems (Fig. 4.1) — is curious (see p. 120). Similar arrangements have been noted in the Thames valley (Lambrick 2009, 70–73 and fig. 3.11). The most likely practical function for the L-shaped ditch would be the corralling of animals and, as Lambrick says, 'it would not be surprising if some became a focus for domestic activity' (2009, 73).

The settlement evidence comprised a single roundhouse, two- and four-post structures, numerous small pits, water pits, hearths/ovens and a possible fence. Similar components were identified within the Gypsy Lane Broom settlement (Cooper and Edmonds 2007, 125–32 and fig. 4.31), the full extent of which was not determined. The Biddenham Loop roundhouse (Bovis G640, L140) had a projected diameter of 10m. In common with many other examples of this period, such as Broom (Cooper

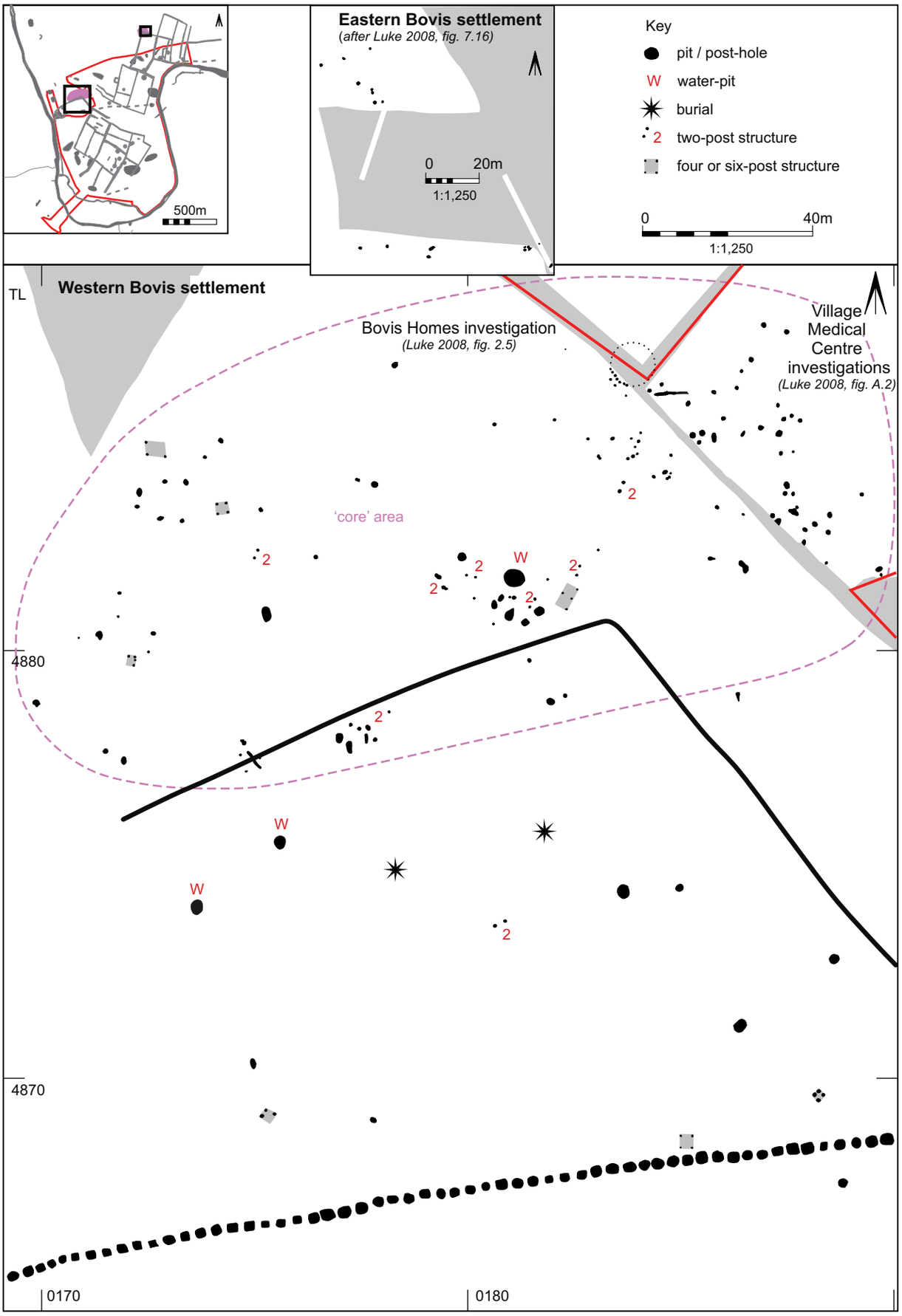


Fig. 4.14 Late Bronze Age/early Iron Age settlements within the Bovis investigations on the Biddenham Loop. Scale 1:1250

and Edmonds 2007, fig. 4.41), the evidence comprised a ring of post-holes rather than the circular drainage gulley more commonly seen in the middle Iron Age (Allen *et al.* 1984, 100; Bryant 1995, 17). The post-holes were closely spaced and a four-post arrangement to the south-west is interpreted as an entrance porch or vestibule (Luke 2008, 131 and fig. 7.5). Two- and four-post structures are frequent occurrences on late Bronze Age and Iron Age sites — see, for example, Puddlehill, Beds. (Matthews 1976). At Biddenham Loop the spacings between the post-holes of the nine two-post structures varied from 2m to 3.8m (centre to centre); those of the four four-post structures ranged from 1.3m to 4.6m. The possibility that these structures may represent doorways or porches in roundhouses for which no other evidence survives has been mentioned above.

The spatial clustering of two- and four-post structures with pits (mostly small but with the occasional water pit) suggests that this combination may represent a genuine unit of settlement. Comparable 'ordered settlements' have been observed elsewhere (*e.g.* Gypsy Lane, Broom, Beds. (Cooper and Edmonds 2007, 127 and fig. 4.33), Aldermaston Wharf and Knight's Farm, Berks. (Bradley *et al.* 1980, 288), and Cassington West (Lambrick 2009, 99–101 and fig. 4.8)). It is unclear whether such 'ordering' represents family units within a larger multi-family settlement or single family units that changed location over time (see below).

Eastern settlement within Biddenham Loop

On the basis of a small number of features, which were undated but comparable to those within the western settlement, a second possible late Bronze Age/early Iron Age settlement was tentatively identified within a limited watching brief undertaken as part of the Bovis development (Luke 2008, 34 and fig. 7.16). Like the western settlement, it is now known to be located on the northern periphery of a field system (in this case SL11) which originated in the middle Bronze Age. It comprised two clusters of features, including possible two- and four-post structures, separated by 60m of unexcavated land. Apart from charcoal flecks and one rubbing stone (RA3135), no other occupation debris was present (Luke 2008, 143–5).

Possible settlement on Land west of Kempston

On Land west of Kempston one possible settlement, SL125, was identified near The Bury in the same location as early Bronze Age pits SL194. It comprised a concentration of four small pits with a fifth *c.*20m to the north-west (Fig. 4.21). Some of the pits were steep-sided and may have been for storage. Remains of at least six loomweights — two of certain cylindrical form (CD Section 2; Duncan, Fig. 2, OA12 and OA13) and three of triangular form (*e.g.* CD Section 2; Duncan, Fig. 2, OA15) — were found within the secondary fills of a single pit, G45088 (L4502, SL125), which also contained possible hearth waste.

> The weights of cylindrical form were deposited in the north-west half of the pit, the triangular forms in the south-east. Cylindrical loomweights are considered later Bronze Age in date, while the triangular form is assigned to the Iron Age and is thought to have been widely in use in south-eastern Britain after *c.*500BC (Elsdon and Barford 1996a, 330). The recovery of both forms from the same pit fills in SL125 would appear to indicate a transitional date between the late Bronze Age and the early Iron Age for the deposition. Other instances of triangular loomweights found in 'transitional' contexts are known from Buncefield Lane, Hemel Hempstead, Herts., where a triangular loomweight was found in association with pottery thought to date to the late Bronze Age (Harrison 2003, 54), and at Winnal Down where a triangular loomweight was found in a late Bronze Age post-hole (Bates and Winham 1985, 90) (CD Section 2; Duncan).

Although only a single flax seed was identified, its presence may be significant because it was found in a pit adjacent to the one containing the loomweights. 'Flax seeds may have been used as food and the fibres of the plant extracted for textiles' (CD Section 2; Giorgi).

> Two samples taken from pit G45088 (L4502) contained cereal grains, a chaff fragment and most of the weed seeds, much of the hazelnut shell and a sloe/blackthorn fruit stone. This material may represent the residues from the final stages of crop-processing with accidentally burnt grain, and weed seeds extracted from earlier stages of cereal cleaning and probably used as tinder (CD Section 2; Giorgi).

> The composition of the assemblage from pit G45088 suggests a 'special deposit', the juxtaposition of the two forms of loomweights perhaps representing the 'life span' of the weaving activity, the deposit as a whole perhaps an 'abandonment' deposit to mark the end of this activity or occupation in this area (CD Section 2; Duncan).

Discussion

Only a small number of middle–late Bronze Age settlements are known in Bedfordshire, the nearest at Gold Lane, Biddenham, only *c.*1.5km to the north. It comprised ditched enclosures and post-hole scatters. There was no firm evidence for buildings and, in contrast to the settlements on the Biddenham Loop, few pits (Dawson 2004, 9–12). Several unenclosed settlements have been identified at Broom, Beds, some originating in the middle Bronze Age and others in the late Bronze Age (Cooper and Edmonds 2007, 98–9). They featured roundhouses, four- and six-post structures, adjacent scatters of pits and post-holes and a far greater quantity of domestic debris than seen on Land west of Bedford (Cooper and Edmonds 2007, 98–142, figs 4.14, 4.19, 4.24, 4.25 and 4.31).

Given that the majority of the settlement evidence from Biddenham Loop comprises small pits, a better comparison may be provided by sites beyond the region, such as Aldermaston Wharf and Knight's Farm, Berks (Bradley *et al.* 1980), Heslerton, N. Yorks (Powlesland 1986), Reading Business Park (Moore and Jennings 1992) and Shorncote/Cotswold Community (Hearne and Adam 1999, 69–72). These types of settlement have been variously interpreted as seasonally occupied (Bradley *et al.* 1980, 286), mobile pastoralism (Hearne and Adam 1999, 69–72), transitory (Powlesland 1986, 158–9) and permanent (Moore and Jennings 1992, 120–21). The last-mentioned authors based their conclusions largely on the apparently planned and organised nature of the settlement at Reading Business Park. The configuration of the post-built structures and pits within the main settlement on the Biddenham Loop is also suggestive of an organised layout. However, the limited number and range of artefacts and other remains could indicate that the settlement was non-permanent and perhaps occupied only on a seasonal basis. Prior to the recent discovery of extensive field systems, Bradley's suggestion of a mobile population whose occupation left few below-ground traces (1986, 39–40) did seem to fit the Biddenham Loop evidence better (Luke 2008, 32). Now, however, it

Plate 4.20 Aerial view of middle Iron Age farmstead SL31, from the south, with earlier pit alignment L105 visible running across the road corridor and river Great Ouse to left

appears more likely that the settlements within the Bovis investigations were permanent in nature.

Concentrated settlements with pit clusters (middle Iron Age)
(Figs 4.15–4.20, Tables 4.6 and 4.7)

Introduction
In contrast to the dispersed settlements of the late Bronze Age/early Iron Age, the middle Iron Age sees the emergence of concentrated settlement in the form of discrete, unenclosed farmsteads measuring 0.6–1ha in extent. The farmsteads are characterised by clusters of large, non-intercutting pits; some feature roundhouses and small ditched enclosures. Similar farmsteads have been identified at Broom, Beds. (Cooper and Edmonds 2007, 149–83) and Pennyland, Milton Keynes (Williams 1993, 9–47).

The recent investigations located six farmsteads: SL27, SL30, SL31 (the continuation of farmstead 3 within the Bovis investigations), SL34, SL35 and SL36. A further two (farmsteads 1 and 2) were identified solely within the Bovis investigations to the north-west of the Loop (Luke 2008, 159–71). All are situated adjacent to the present river Great Ouse (Plate 4.20) or its flood plain. The layout of the Biddenham Loop farmsteads

Plate 4.21 Aerial view of middle Iron Age storage pit cluster L3206 (farmstead SL34), from the south

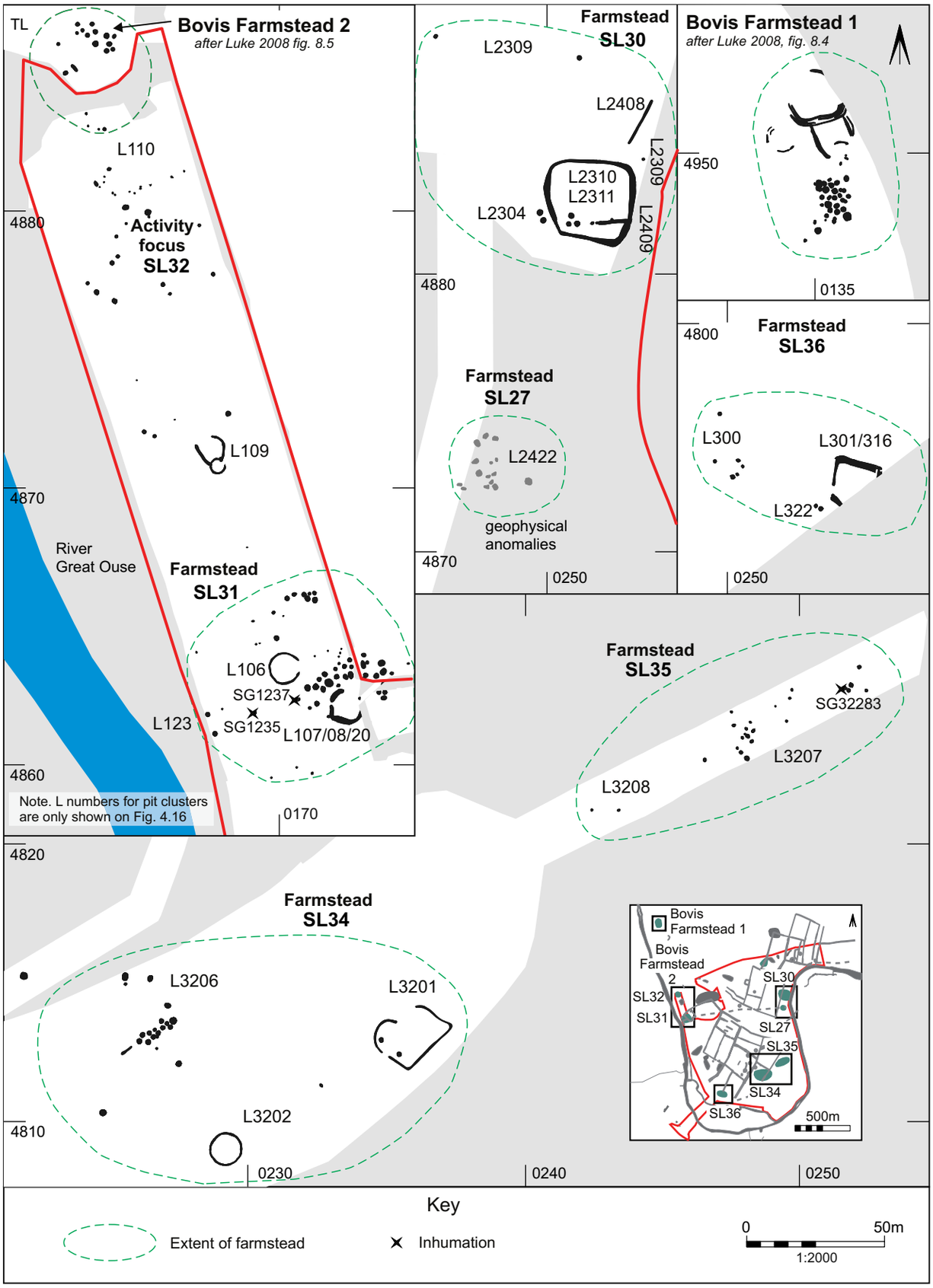


Fig. 4.15 Middle Iron Age farmsteads on the Biddenham Loop. Scale 1:2000

	Biddenham Loop							
SL	*Area (sq m)*	*No. of roundhouses*	*No. of enclosures*	*No. of storage pits*	*Associated activity*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds(kg)*	*RCD*
SL27 (Farmstead)	567	0	0	15 (clustered, identified as geophysical anomalies only)	0	—	—	—
SL30 (Farmstead)	6000	0	1	2 (dispersed) 5 (clustered)	2 ditches 3 small internal pits 1 small dispersed pit	80:1.4:10	2.0 animal bone 0.1 flat roof tile Flint blade-like flake (RAl 3802) Flint blade (RAl 3801) Utilised flint flake (RAl 3800) 2 nails 1 red deer off-cut (OA19) 1 CA strap mount(RAl 3803)	—
SL31 (including Bovis Farmstead 3)	9880	2	2	42 (in 5 clusters)	3 inhumations 4 small pits 13 post-holes	316:0.7:23 (also see Wells 2008 Chapter 8)	15.8 animal bone 19 animal bone fragments (BL402) 1.1 tegula, flat roof tile, brick 4.1 fired clay 12 fragments of shell Saddle quern (OA21) Fe fragment (RAb 1042) 5 flint blade-like flakes 10 flint flakes (RAb 1022, 1023, 1021, 1027) 1 flint scraper 1 Meso/ e Neo flint piercer 5 flint blades (RAb 1099) 3 flint spalls (RAb 2511, 1045) 1 flint utilised blade 1 double end Flint 1 flint denticulate 2 utilised flint flakes (RAb 1357) 1 retouched flint flake (RAb 1029) 1 flint awl 1 Mesolithic flint crested blade 1 truncated flint blade (RAb 1058)	380–110 cal BC (SUERC-25517, 2180±35BP) 360–50 cal BC (SUERC-26290, 2135±30BP) 380–120 cal BC (SUERC-25502, 2185±35BP) 350–40 cal BC (SUERC-25503, 2125±35BP)
SL34 (Farmstead)	10800	1	1	21 (clustered) 2 (in enclosure)	1 small pit	58:1.9:3	0.9 animal bone 1 FE spearhead (OA23) 1 flint blade 1 flint blade-like flake (RAl 12008)	—
SL35 (Farmstead)	3672	0	0	23 (in 3 clusters)	1 inhumation	98:6.3:12	1.2 animal bone 0.5 burnt clay 0.6 fired clay 1 flint blade	—

suggests that they were subject to a degree of planning. For example, storage pits were concentrated in groups, with only small numbers elsewhere. This may indicate that archaeologically invisible boundaries, such as hedges or insubstantial fences, were originally present. A comparable degree of organisation was noted at the larger settlements of Fairfield Park and Salford, Beds., where the roundhouses, four-post structures and pits all occupy spatially discrete locations, possibly around open spaces (Webley *et al.* 2007, 143; Dawson 2005, 165).

Another farmstead, SL197, has been tentatively identified on Land west of Kempston. It was investigated only within a narrow pipe trench, so its full extent and nature are unknown. It comprised at least one storage pit, a number of small pits and two ditches possibly associated with a small enclosure but clearly not enclosing the farmstead. Its topographical position in relation to the present-day river is similar to that of the farmsteads on the Biddenham Loop.

The vast majority of the pottery assemblage (by weight) occurred in storage pits and, '[w]here multiple fills occur, most sherds were found in the secondary and tertiary deposits' (CD Section 2; Wells, Pottery). Sherds from pits weighed nearly three times as much as those from other features, suggesting they are part of 'deliberate disposal/dumping from adjacent occupation activity' (CD Section 2; Wells, Pottery).

> The range of fabric types and, where identifiable, vessel forms across all farmsteads in the study area are comparable, with SL31 yielding the widest range of wares …. This suggests that there are no functional variations between the farmsteads, and that they are likely to be [broadly] contemporary (CD Section 2; Wells, Pottery).

A range of identifiable crops was seen in samples from the farmsteads, 'with hulled wheat, both emmer and spelt, and (hulled) barley being the main cereals, with traces of free-threshing wheat and oats' (CD Section 2; Giorgi).

Origins

The farmsteads were dated to this period on the basis of the presence of middle Iron Age pottery. In addition to the inhumations within the farmsteads (see p. 189), two other radiocarbon dates were obtained: 380–110 cal. BC (SUERC-25517: 2180±35BP) (articulated animal bones within storage pit G1017) (L121, farmstead SL31) and 350–50 cal. BC (SUERC-26290: 2135±30BP) (articulated animal bones within storage pit G1018) (L121, farmstead SL31).

The farmsteads within the recent investigations were located within or adjacent to fields which originated in the middle Bronze Age. It is probably significant that the most extensive evidence for 'dispersed' activity in this period lay between Bovis farmstead 2 and SL31, to the west of the late Bronze Age/early Iron Age settlement from which they may have developed. This is supported by the presence of early Iron Age pottery (see below). If so, it is possible that settlement could have shifted westwards from the late Bronze Age/early Iron Age focus, ultimately coalescing as two new farmsteads. Given the similar topographical locations of all farmsteads, it is likely that the move/shift towards the edge of the flood plain was a conscious decision to ensure maximum exploitation of the resources available. Interestingly, two of the farmsteads, SL30 and SL31, were positioned at

Table 4.6 Details of middle Iron Age farmsteads on Biddenham Loop

	Biddenham Loop							
SL	*Area (sq m)*	*No. of roundhouses*	*No. of enclosures*	*No. of storage pits*	*Associated activity*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds(kg)*	*RCD*
SL36 (Farmstead	2356	0	1	8 (in 2 clusters)	—	37:1.3:10	0.7 animal bone 0.1 fired clay	—
Bovis Farmstead 1 (adjacent investigation, Luke 2008)	21862	2	2	34 (in 2 clusters)	—	See Wells 2008, Chapter 8	532 animal bone fragments Fe bladed implement (RAbl 23) Leatherworker's palm (RAbl 55)	—
Bovis Farmstead 2 (adjacent investigation, Luke 2008)	702	0	0	12 (clustered) 2 (dispersed)	—	See Wells 2008, Chapter 8	467 animal bone fragments Fragments of briquetage	—

OA = Other artefact number; RAI = LWB1289 registered artefact number; RAb = BWB1124 registered artefact number; RAbl = Bovis (Luke 2008) registered artefact number; BL = Biddenham Loop; LWB1289 = David Wilson Homes; BWB1124 = Bedford Western Bypass; CA = Copper alloy; FE = Iron. All weights rounded up to the nearest 0.01g
Note: for information on finds from Bovis middle Iron Age farmsteads see Wells 2008, Chapter 8, pp. 181–6

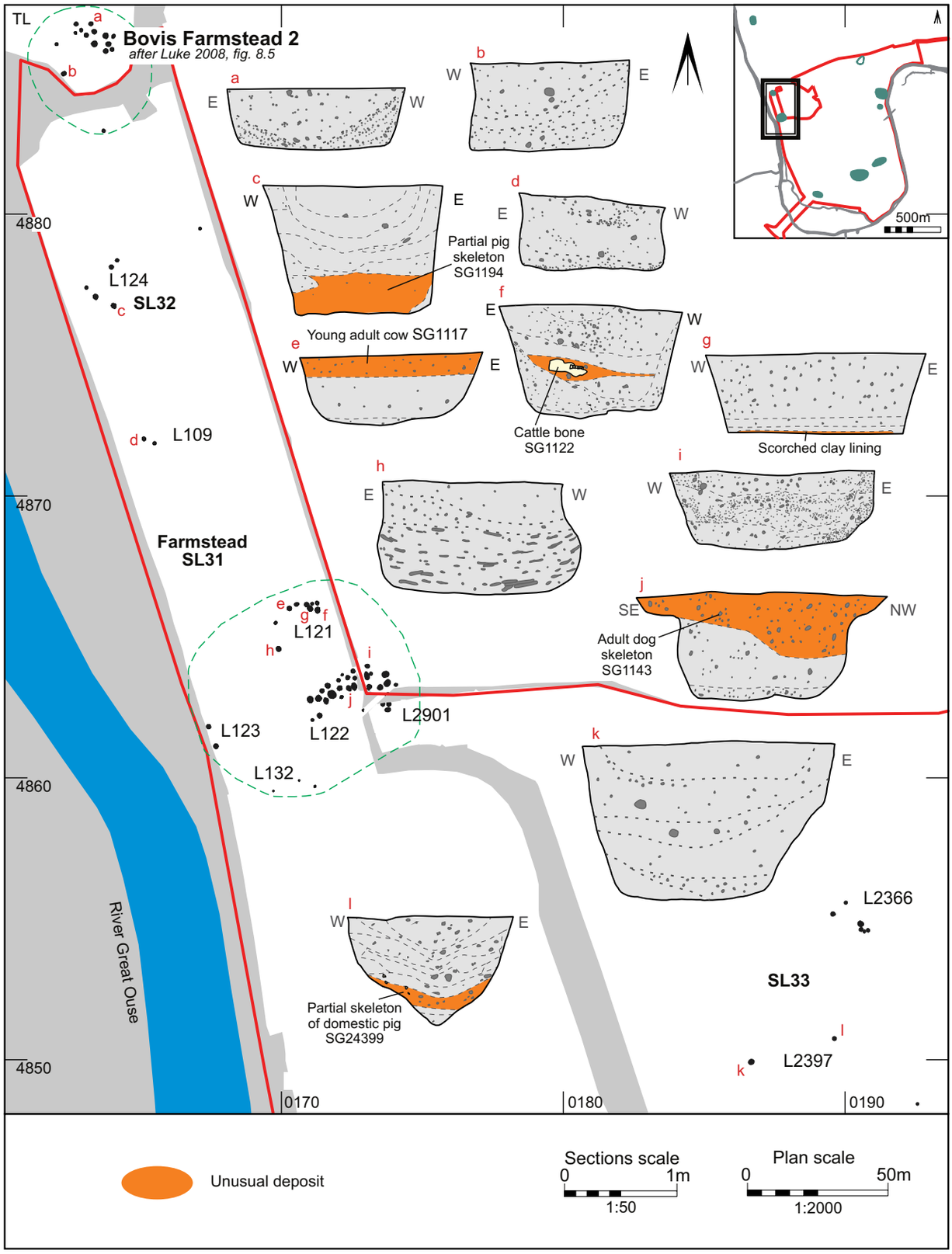


Fig. 4.16 Middle Iron Age storage pits to the north-west of the Biddenham Loop, with sections and unusual deposits highlighted. Scale 1:2000

Land west of Kempston						
Area (sq m)	*Roundhouses*	*Enclosures*	*Storage pits*	*Associated activity*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds (kg)*
>328	0	1	1	5 pits (dispersed)	35:3.2:6 (F14, 15, 16, 37)	1.0 animal bone

All weights rounded up to the nearest 0.01g
Note: pottery fabric codes (***e.g.*** F15) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1)

Table 4.7 Details of middle Iron Age farmstead SL197 on land west of Kempston

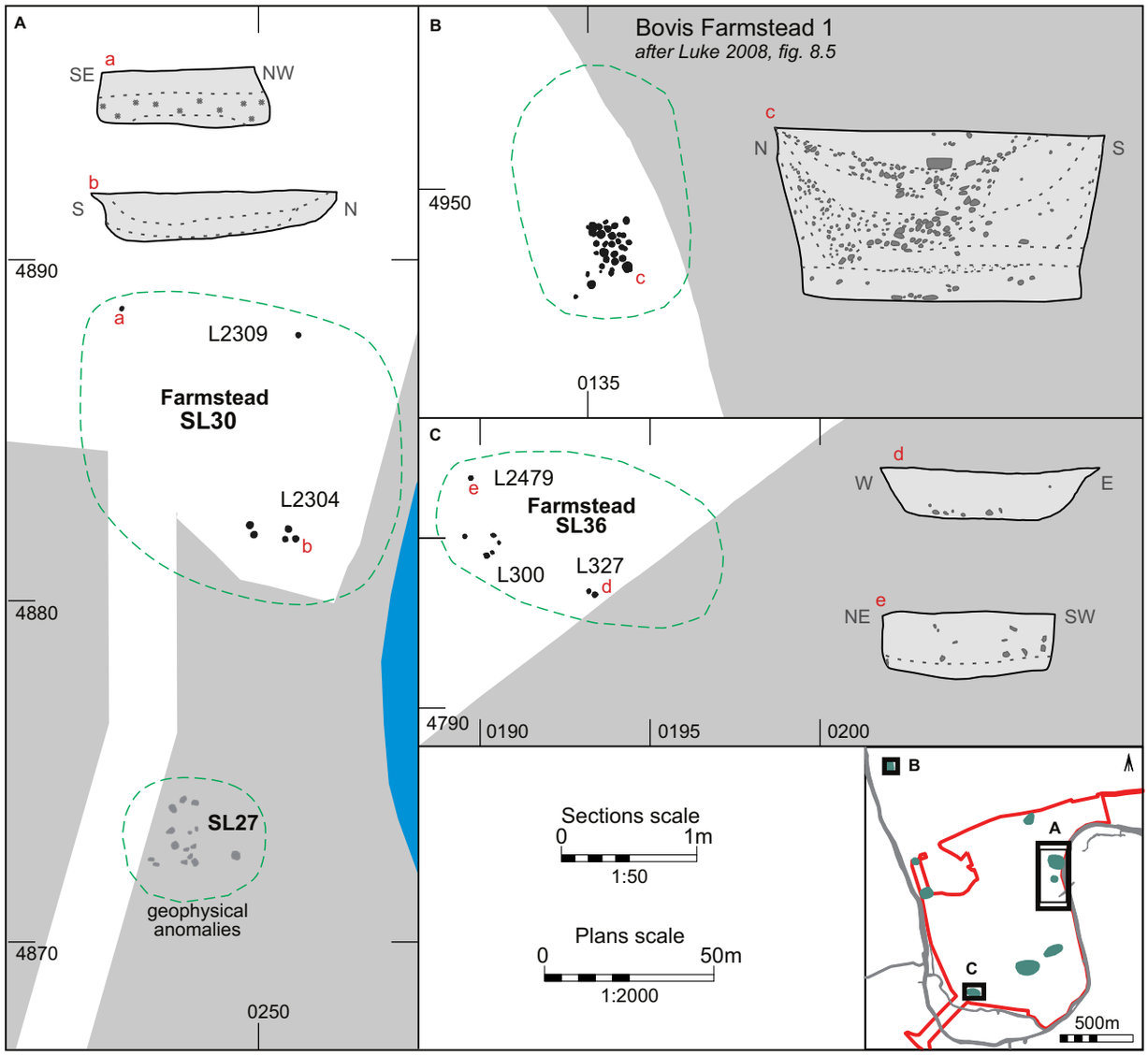


Fig. 4.17 Middle Iron Age storage pits elsewhere on the Biddenham Loop, with sections and unusual deposits highlighted. Scale 1:2000

either end of the early Iron Age pit alignment L105/2801/L2802, suggesting that the boundary may have continued to have some significance/visibility.

As is so often the case, the available dating evidence is too imprecise to determine with any certainty whether or not all the farmsteads were in use at the same time. The pottery and small number of other artefacts can be only broadly dated to 400–100 BC and there are too few radiocarbon dates to address this issue. However, given their similarities in terms of setting, layout and artefactual/ecofactual assemblages, it is possible that they are all contemporary. Although pure speculation, it is also possible that the 'pairs' of farmsteads within 250m of each other might not be contemporary (*e.g.* SL27 and SL30, SL31 and SL32, SL34 and SL35 (Fig. 4.1)).

Although the number of pits and the redigging of ditches indicates more than a single episode of activity, it is impossible to establish individual chronologies within or even between the farmsteads. Based on the absence of 'Belgic' Iron Age pottery, it is believed that

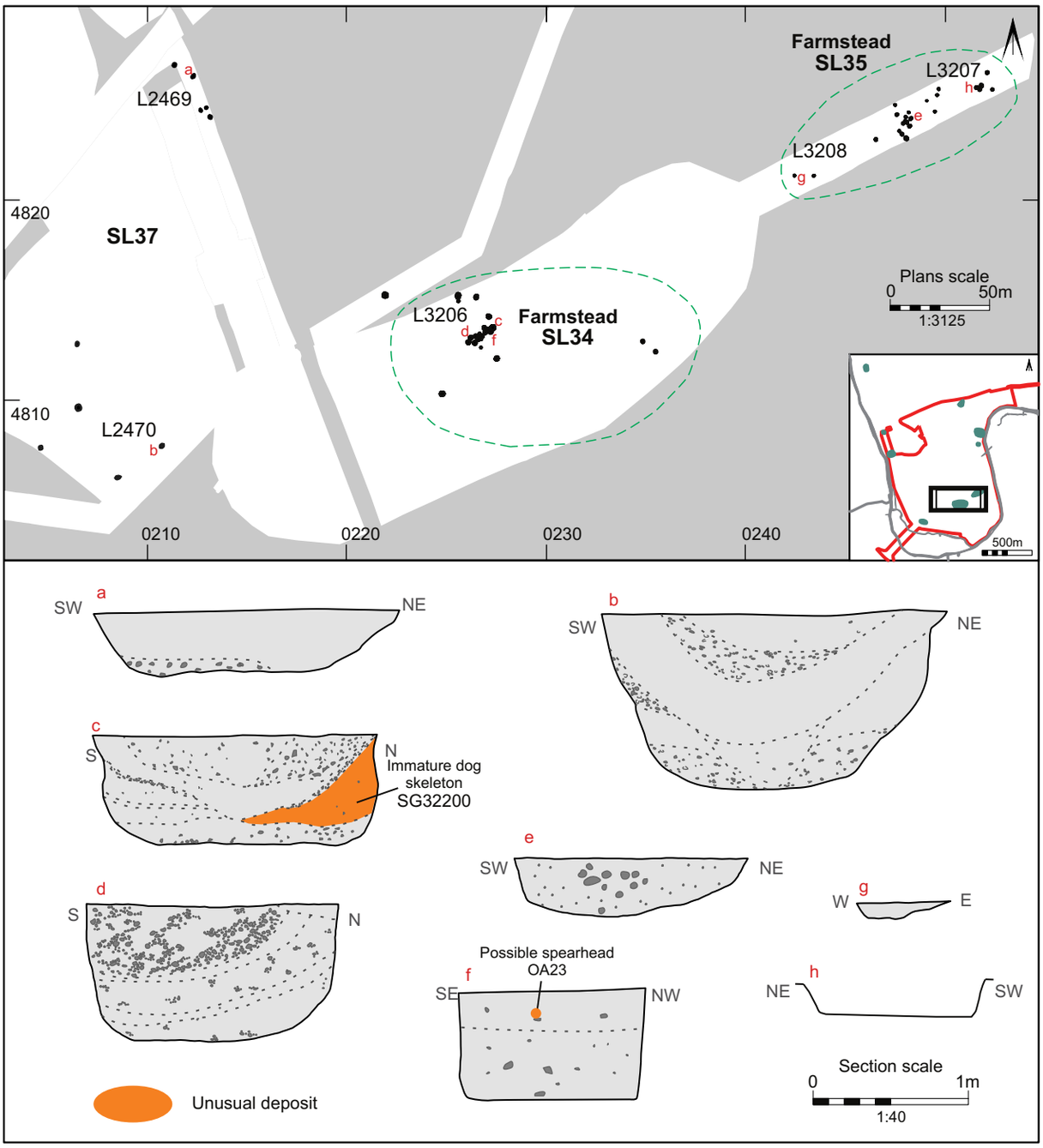


Fig. 4.18 Middle Iron Age storage pits elsewhere on the Biddenham Loop, with sections and unusual deposits highlighted. Scale 1:2000

occupation of the farmsteads had ceased by around 100 BC.

Storage pits

(Figs 4.16–4.18, Table 4.8)

One of the characteristics of the farmsteads was the dense clusters of large, non-intercutting pits (Plate 4.22). Athough similar pits were found in smaller numbers elsewhere on the Loop, they were usually more dispersed and did not contain domestic debris (see p. 170). Approximately 170 storage pits were found in farmsteads.

Most of the pits were circular or sub-circular, with steep sides and a flat base (Plates 4.22 and 4.23). Although generally large, they were quite variable in diameter (0.8–3m) and depth (0.4–1.1m). Similar pits were found within the Bovis investigations (Luke 2008, 42). The form and spatial arrangement of the pits clearly distinguish them from the pits of the preceding periods. The Biddenham Loop pits are perhaps most comparable to those investigated at Broom, Beds. (Cooper and Edmonds 2007, 159–66 and 170–73), Fairfield Park, Stotfold, Beds. (Webley *et al.* 2007, 32–8), and Pennyland, Milton Keynes (Williams 1993, 31–5). Similar contemporary large pits occur extensively in the Ouse and Nene Valleys

	L	*G*	*No. Pits*	*Shape*	*Dimensions diameter: depth (m)*	*Sides*	*Base*	*Contemporary pottery sherd: weight:vessel (kg)*	*Finds (kg)*	*Significant finds*	*RCD*
SL27 (Farmstead)	2422	23342	15	Circular	0.9–2.2	—	—	—	—	—	—
SL30 (Farmstead)	2304	23043	2	Circular	2:0.5	Concave	Concave	5:0.07:1	1 flint blade-like flake (RAl 3802)		—
		23045	3	Circular	1.8:0.5	Concave	Concave	4:0.03:3	0.3 animal bone		—
	2309	23036	2	Circular	1.5:0.4	Vertical	Flat	50:1.1:3	1.0 animal bone 1 red deer antler off-cut (OA19) 2 nail shanks	Partial remains of sheep	—
SL31 (including Bovis Farmstead 3 adjacent investigation, Luke 2008)	106	1100	1	Circular	1.7:1	Vertical	Flat	13:0.7:4	0.6 animal bone		—
	109	1005	2	Circular	1.3:0.6	Vertical	Flat	8:0.2:3	0.8 animal bone		—
	121	1017	6	Circular	1.7:0.7	Vertical	Flat	20:0.6:8	1.7 animal bone 0.1 tegula 0.1 fired clay	Articulated animal bones	380–110 cal BC (SUERC-25517, 2180 ± 35BP)
		1018	1	Oval	1.9:1	Vertical	Flat	7:0.4:16	4.3 animal bone 0.1 fired clay	Articulated animal bones (3881g)	350–50cal BC (SUERC-26290, 2135± 30BP)
		1019	1	Circular	2:0.8	Vertical	Flat	8:2.4:9	0.4 animal bone 2.4 fired clay 1 FE fragment	Scorched clay layer at the base of the pit	—
	122	1020	10	Circular	2.5:1	Vertical	Flat	51:1.9:28	2.2 animal bone 1.4 fired clay 1 utilised flint blade 2 flint blades 2 flint blade-like flakes 5 flint flakes 1 flint denticulate 1 utilised flint flake 1 retouched flint flake (RAb 1029) 1 double end flint	Partial skeleton of an adult dog	—
		1021	4	Circular	1.5:0.6	Vertical	Flat	28:0.4:4	0.3 animal bone 0.1 flat roof tile Saddle quern (OA 21) 1 utilised flint flake (RAb 1357)	—	—
		1022	1	Circular	3:1	Vertical	Flat	15:0.6:8	1.0 animal bone 1 flint blade	—	—

	L	*G*	*No. Pits*	*Shape*	*Dimensions diameter: depth (m)*	*Sides*	*Base*	*Contemporary pottery sherd: weight:vessel (kg)*	*Finds (kg)*	*Significant finds*	*RCD*
SL31 cont.	122 cont.	1023	2	Circular	1:0.2	Vertical	Flat	—	—	—	—
	123	1044	1	Circular	2:0.7	Steep	Flat	—	0.2 animal bone 1 flint blade (RAb 1099) 1 flint awl 1 Mesolithic crested flint blade 2 flint spalls (RAb 1045) 1 truncated flint blade (RAb 1058)	—	—
	2901	29004	4	Circular	1.4:0.9	Vertical	Flat	14:0.3:4	1.0 animal bone 3.5 burnt stone 0.2 burnt flint	—	—
		29007	5	Circular	0.8:0.6	Concave	Concave	—	—	—	—
	75 (Bovis farmstead 3)	316	4	Circular	2.5:0.8	Steep	Flat	5 sherds	—	—	—
		320	3	Circular	1.1:0.4	Concave	Concave		—	—	—
		322	1	Circular	1.1:0.7	Asymm.	Concave		—	—	—
		325	1	Oval	1.7x1.5:0.7	Steep	Flat		—	—	—
SL32 (Activity focus)	110	1052	1	Circular	1.2:0.5	Vertical	Flat	4:0.07:2	0.1 animal bone	—	—
	124	1025	2	Circular	1.5:0.5	Vertical	Flat	8:0.08:2	1 flint blade	—	400–200 cal BC (SUERC-26291, 2245 ± 30BP)
		1026	3	Circular	1.8:1	Vertical	Flat	3:0.06:2	0.3 animal bone 1 flint blade (RAb 1016) 1 flint piercer (RAb 1015)	Poorly preserved skeleton of a perinatal pig	—
		1064	1	Circular	1.0:0.7	Steep	Flat	—	—	—	—
SL33 (Activity focus)	2397	23248	2	Circular	2.2:1.3	Concave	Flat	—	0.6 animal bone	Partial skeleton of a 2–4-year-old domestic pig	—
		23262	1	Circular	1:0.7	Vertical	Flat	12:0.02:5	0.01 animal bone 0.02 fired clay	—	—
	2366	23247	5	Circular	1.7:0.7	Steep	Flat	3:0.01:1	1 retouched flint blade	—	—
		23259	1	Circular	2.1:0.6	Concave	Flat	—	—	—	—

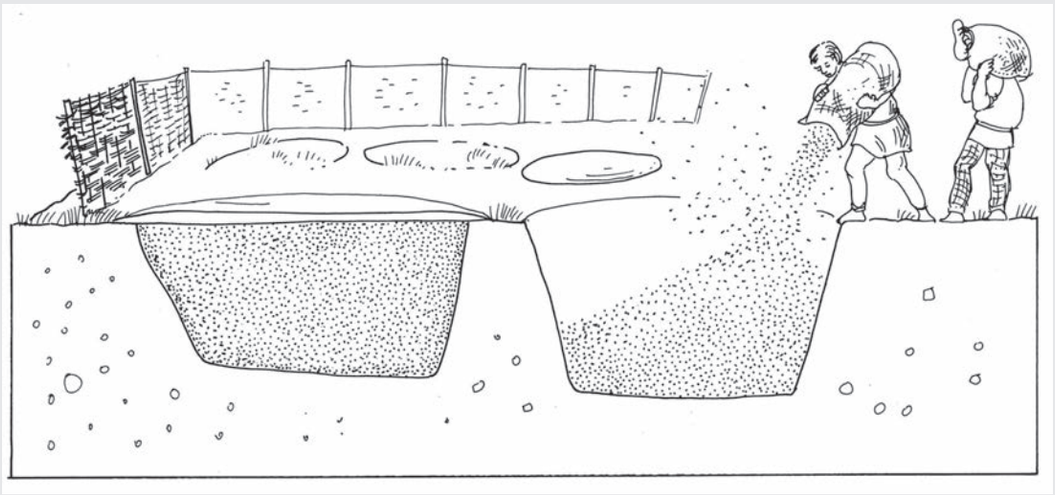
	L	*G*	*No. Pits*	*Shape*	*Dimensions diameter: depth (m)*	*Sides*	*Base*	*Contemporary pottery sherd: weight:vessel (kg)*	*Finds (kg)*	*Significant finds*	*RCD*
SL34 (Farmstead)	3206	32017	12	Circular	1.7:0.8	Vertical	Flat	38:1.2:5	0.2 animal bone Slag 1 flint blade	FE spearhead (OA23)	—
		32018	1	Circular	2.3:0.9	Steep	Flat	6:0.2:3	0.6 animal bone	Skeleton of an immature dog	—
		32019	2	Circular	2:1.4	Steep	Flat	—	—	—	—
		32020	5	Circular/ oval	2:1	Steep	Flat	—	0.01 animal bone Slag	—	—
		32031	1	Circular	1:0.5	Steep	Flat	—	—	—	—
	3201	32003	2	Oval	1.7:0.4	Concave	Flat	1:0.01:1	0.01 animal bone	—	—
SL35 (Farmstead)	3207	32021	5	Circular	1.3:0.3	Steep	Flat	2:0.01:1	0.07 animal bone	One pit contained inhumation SG32283	—
		32022	4	Circular	1:0.2	Steep	Concave	—	—	—	—
		32023	9	Circular	1.2:0.4	Steep	Concave	85:5.8:15	0.8 animal bone 0.02 fired clay 0.06 burnt clay	Small hearth bottom (OA18)	—
		32024	3	Circular	2:0.6	Steep	Flat	6:0.2:6	0.4 animal bone 0.04 fired clay 1 blade Slag	—	—
	3208	32025	2	Circular	1.2:0.3	Steep	Flat	—	—	—	—
SL36 (Farmstead)	300	3000	4	Circular	1.7:0.2	Concave	Flat	3:0.2:2	0.01 animal bone	—	—
		3046	1	Circular	1.3:0.6	Vertical	Flat	13:0.8:5	0.1 animal bone	—	—
		3049	1	Circular	1:0.4	Vertical	Flat	3:0.2:3	—	—	—
	322	3002	2	Circular	1.6:0.6	Steep	Flat	3:0.1:2	0.1 fired clay	—	—
SL37 (Activity focus)	2469	23507	2	Circular	2.1:0.5	Moderate	Concave /flat	—	—	—	—
		23508	3	Circular	2:0.5	Moderate	Concave	—	—	—	—
	2470	23530	1	Circular	1.9:0.7	Steep	Flat	1:0.03:1	—	—	—
		23531	1	Circular	2.7:1.2	Steep	Concave	—	—	—	—
		23532	1	Oval	2.3:1.7:1	Steep	Flat	—	—	—	—
		23533	1	Circular	2.2:1.1	Steep	Concave	—	—	—	—
		23540	1	Oval	2.2:1.6:0.8	Steep	Concave	—	—	—	—

	L	*G*	*No. Pits*	*Shape*	*Dimensions diameter: depth (m)*	*Sides*	*Base*	*Contemporary pottery sherd: weight:vessel (kg)*	*Finds (kg)*	*Significant finds*	*RCD*
Bovis farmstead 1 (adjacent investigation, Luke 2008)	3	266	3	Circular	2.2:0.3	Near vertical	Sloping	See Wells 2008, Chapter 8*	220 animal bone fragments	—	—
		269	23	Circular/ oval	1.7:0.6	Near vertical	Flat	See Wells 2008, Chapter 8	104 animal bone fragments Fuel ash 1 nail	—	—
		276	1	Circular	2.4:1.1	Steep	Flat	See Wells 2008, Chapter 8	—	—	—
		280	1	Sub-circular	2.6:1.1	Near vertical	Concave	See Wells 2008, Chapter 8	—	—	—
		282	1	Sub-circular	2.4:1.3	Near vertical	Flat	See Wells 2008, Chapter 8	Red deer antler complete cattle atlas Fuel ash	—	—
	5	273	4	Circular	1.3:0.5	Vertical	Flat	See Wells 2008, Chapter 8	—	—	—
		275	1	Oval	1.8x1.4:0.3	Asymm.	sloping	See Wells 2008, Chapter 8	—	—	—
Bovis farmstead 2 (adjacent investigation, Luke 2008)	68	288	10	Circular	1.6:0.6	Vertical	Flat	See Wells 2008, Chapter 8*		—	—
		293	1	Circular	1.7:1.1	Near vertical	Flat	See Wells 2008, Chapter 8		—	—
		296	1	Circular	2:1.1	Near vertical	Near flat	See Wells 2008, Chapter 8	467 animal bone fragments	—	—
		299	1	Sub-rectangular	1.7:0.8	Vertical	Flat	See Wells 2008, Chapter 8		—	—
		314	1	Circular	1.1:0.2	Steep	Flat	See Wells 2008, Chapter 8		—	—
SL197 (possible farmstead)	5303	53016	1	Circular	1.7:1.1	Vertical	Flat	19:2.5:2	1.5 animal bone	Cattle mandibles	—

OA = Other artefact number; RAl = LWB1289 registered artefact number; RAb = BWB1124 registered artefact number; FE = Iron. All weights rounded up to the nearest 0.01g
Note: For information on finds from Bovis mIA storage pits see Wells 2008, Chapter 8, pp. 181–7

Table 4.8 Details of middle Iron Age storage pits within the study area

BOX 14: Middle Iron Age storage pits



This reconstruction by Cecily Marshall aims to give an impression of what the middle Iron Age storage pits on the Biddenham Loop might have looked like.

Nearly 200 large pits were found, most within tight clusters on the farmsteads of this period. Most were circular or near-circular, with steep sides and a flat base. Although generally large, they varied in diameter from 0.8m to 3m and were 0.4–1.1m deep. Similar pits are widely distributed throughout the Great Ouse, Nene and Thames valleys, although they are less common in East Anglia. A scorched layer of clay on the base of one of the pits retained finger or thumb marks, perhaps indicating that some of the pits were lined with clay or daub.

Archaeologists have long recognised that this type of pit was used to store grain. Experiments at places such as Butser Farm have shown it to be a surprisingly effective technique so long as the pit's layer of sealing clay keeps it airtight. Under these conditions, as soon as the seal is in place, the grain in contact with the sides of the pit begins to rot. This process uses up the available oxygen and produces carbon dioxide, which eventually reaches a sufficient concentration to kill off the bacteria and fungi which might otherwise have spoilt all the grain. In effect, the pit has become self-sterilising. Once this point is reached the contents are quite safe until the airtight seal is broken. It would not have been possible to open and reseal a pit on a regular basis. It is, therefore, assumed that they were used to store grain that would be used on a single occasion, such as that stored over winter. They are the equivalent of today's grain silos. Grain for everyday use would have been kept in above-ground structures or storage pots.

The pits on the Biddenham Loop were often found in clusters, although it is likely that only one or two were ever in use at the same time. An absence of intercutting suggests that it was undesirable to dig a new pit through a previously backfilled one. It is possible that the same pit could have been used for anything from one to twenty years.

NOTE. The reconstruction, produced at the time of the Bovis investigation, shows two pits in use, with others backfilled in the background. There is no firm evidence for the wattle fencing but the tight clustering of the pits suggests that some form of barrier must have existed.

(Knight 1984, 100–119 and fig. 26) and the Thames valley (Lambrick 2009, 105–9), but their absence from the eastern region is considered to be a 'regional trait' (Turner 1999, 230).

The base of pit G1019 (L121), within farmstead SL31, featured a 0.02m-thick scorched clay layer (Plates 4.24 and 4.25) with visible finger/thumb marks. None of the other Biddenham Loop storage pits had a similar layer. This may be a chance survival — due to the scorching — but could indicate that some pits were clay or daub-lined. Clay lining is occasionally reported on other sites, as in the case of three pits at Fairfield Park, Beds. (Webley *et al.* 2007, 34). At Danebury the possibility of the daub-lining of storage pits was dismissed, but there, too, one pit had a clay layer on its base (Cunliffe and Poole 1991, 159). The use of wicker linings was suggested by Reynolds (1974, 74); possible evidence for these was found within some of the pits within the Bovis investigations in the form of steeply inclined layers recorded in the sides of the pits (Luke 2008, figs 8.6a and c).

The steep sides of some of the Biddenham Loop pits suggest that at least the lower parts became infilled

Plate 4.22 Half-sectioned storage pit G1020 within cluster L122 (farmstead SL31) (1m scale)

Plate 4.23 Fully excavated storage pit G1018 within cluster L121 (farmstead SL31) (1m scale)

Plate 4.24 Fully excavated storage pit G1019 within cluster L121 (farmstead SL31), with baked clay visible at the base (0.4m scale)

relatively quickly (often with material derived from the digging of new pits), before weathering cones could develop. Amphibian bones from the secondary fills of storage pits G1017 (L121, SL31) could derive from trapped animals (CD Section 2; Maltby), suggesting that the pits were not completely infilled as soon as they went out of use.

The presence of grains, chaff and wild plant/weed seeds in most of the rich charred assemblages from these fills would suggest that the features were being used for the disposal of burnt crop-processing debris from a number of unconnected activities rather than reflecting what was stored in the pits (CD Section 2; Giorgi).

Plate 4.25 Cleaning the baked clay at the base of storage pit G1019 (L121, SL31)

In general, the fills also included non-burnt domestic waste, such as pottery and bone, interleaved with gravel possibly dug out from newer pits. A small number of pits contained 'unusual' animal bone assemblages (including complete and partial skeletons) and one contained an inhumation (see p. 189). There was no evidence to suggest that any of the material deposited in the pits was associated with their original use. It is assumed, therefore, that once they were no longer needed for storage they were incrementally backfilled, mainly with soil and domestic debris. As is often the case, the pits were nearly always dug into fresh ground, suggesting that their location was visible throughout this period, either as a hollow in the ground or marked in some way.

The association of certain forms of pit with grain storage has been well documented for over half a century (see Williams 1993, 40; Cunliffe 1991, 375; Knight 1984, 110; Bersu 1940). Experiments at Butser have proved them to be an effective means of storing grain (Reynolds 1974, 74–5). Due to the inefficiencies inherent in resealing pits, it is presumed that they were mainly used to store seed grain or emergency supplies — that is, material that would be used in one go — with two-poster structures and pottery vessels used for storing grain that would be accessed on a more frequent basis. Other uses are also possible — *e.g.* storage of meat, fodder *etc.* — but difficult to prove. Although the pits at Biddenham Loop, like those at other sites, rarely intercut, it is likely that very few, if any, were in use at the same time. The absence of intercutting may simply reflect a desire to avoid the less stable sides that would inevitably result if pits were dug through earlier features. Reynolds believed that pits could 'be used again and again without any apparent reason for their abandonment' (1974, 76). At Gravelly Guy, Oxon, some of the pits had more rounded bases. It was suggested that this might indicate repeated cleaning out, with the same pit reused for four or five years (Lambrick and Allen 2004, 109). By contrast, at Danebury, Hants, it was argued that each pit was used just once (Cunliffe and Poole 1991, 161).

The variability in the pits' volumes presumably reflects differences in particular harvests or the quanti-

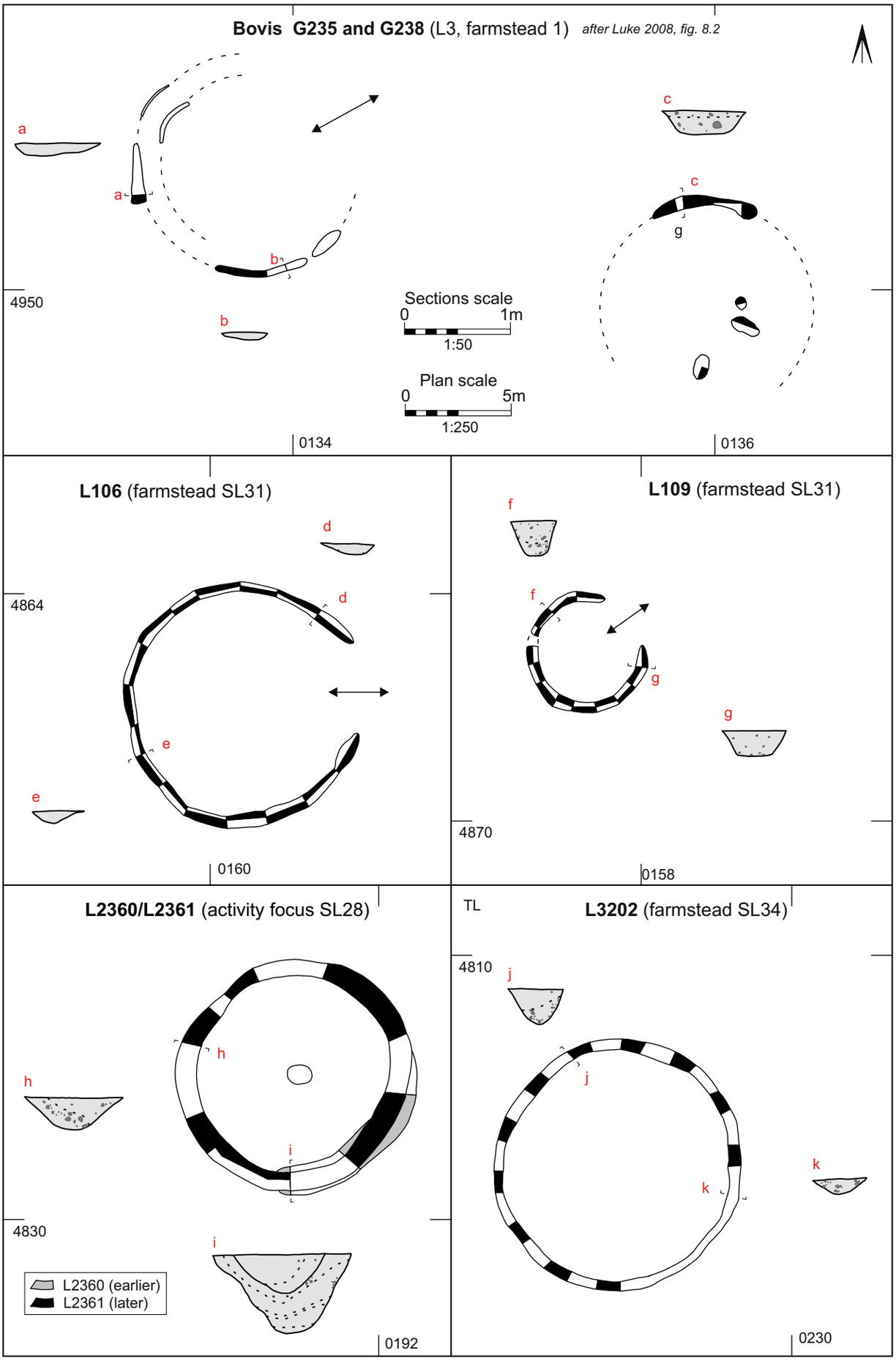


Fig. 4.19 Middle Iron Age roundhouses on the Biddenham Loop. Scale 1:250

	L	*G*	*Description*	*Entrance*	*Internal diameter (m)*	*Gulley dimensions width: depth (m)*	*Internal features*	*RCD*
SL28	2360	23263	Isolated and annular	—	9	1.3:0.7	1 pit	200–1 cal BC (SUERC-26335, 2085 ± 30BP)
	2361	23282	Redefinition of roundhouse gulley	Unclear	9	0.8:0.3	—	
SL31	106	1013	Penannular ditch, within a farmstead on the western side of Biddenham Loop	4.2m-wide gap to the east	10	0.6:0.1	—	—
	109	1014	Penannular ditch, 67m north of roundhouse L106	2.8m-wide gap to the east	5	0.6:0.3	—	—
SL34	3202	32004	Penannular ditch within a farmstead in the southern part of the Loop	2m-wide gap to the south-east	11	0.7:0.1	—	—
Bovis Farmstead 1 - adjacent investigation (Luke 2008)	3	235	Truncated double circular ditch, within farmstead north-west of the Loop	Unclear	10.3	0.6:0.2	2 small pits 1 post-hole	—
		238	Truncated circular ditch, 13m south-east of roundhouse G235	Unclear	—	0.6:0.2	—	—

Table 4.9 Details of middle Iron Age roundhouses on the Biddenham Loop

ties of grain that needed storing. As at Broom, Beds. (Cooper and Edmonds 2007, 153–4), and at sites in the Thames valley (Lambrick 2009, 276), a small number of 'exceptionally' large pits were identified in the clusters associated with the Biddenham Loop farmsteads (also see Luke 2008, 42); these may be associated with particularly good harvests. Various authors have attempted to estimate the storage capacity and life expectancy of pits and these themes are not repeated here (Reynolds 1974; 1979; Whittle 1984, 132 and 137; Williams 1993, 41).

The efficiency of underground storage has been questioned and it has been suggested that the digging of pits may have served a more complex function than grain storage alone, one possibly linked to embedded beliefs within a community (Cunliffe and Poole 1991, 162). This topic is discussed further in relation to the 'unusual' deposits found within storage pits in the recent investigations (see p. 194–7).

Roundhouses

(Fig. 4.19, Table 4.9)

Roundhouses were positively identified only within farmsteads SL31 (L106, Plate 4.26; L109, Plate 4.27), SL34 (L3202, Plate 4.28) and Bovis farmstead 1 (G235 and

Plate 4.26 Roundhouse L106 (farmstead SL31), from the west (2m scale)

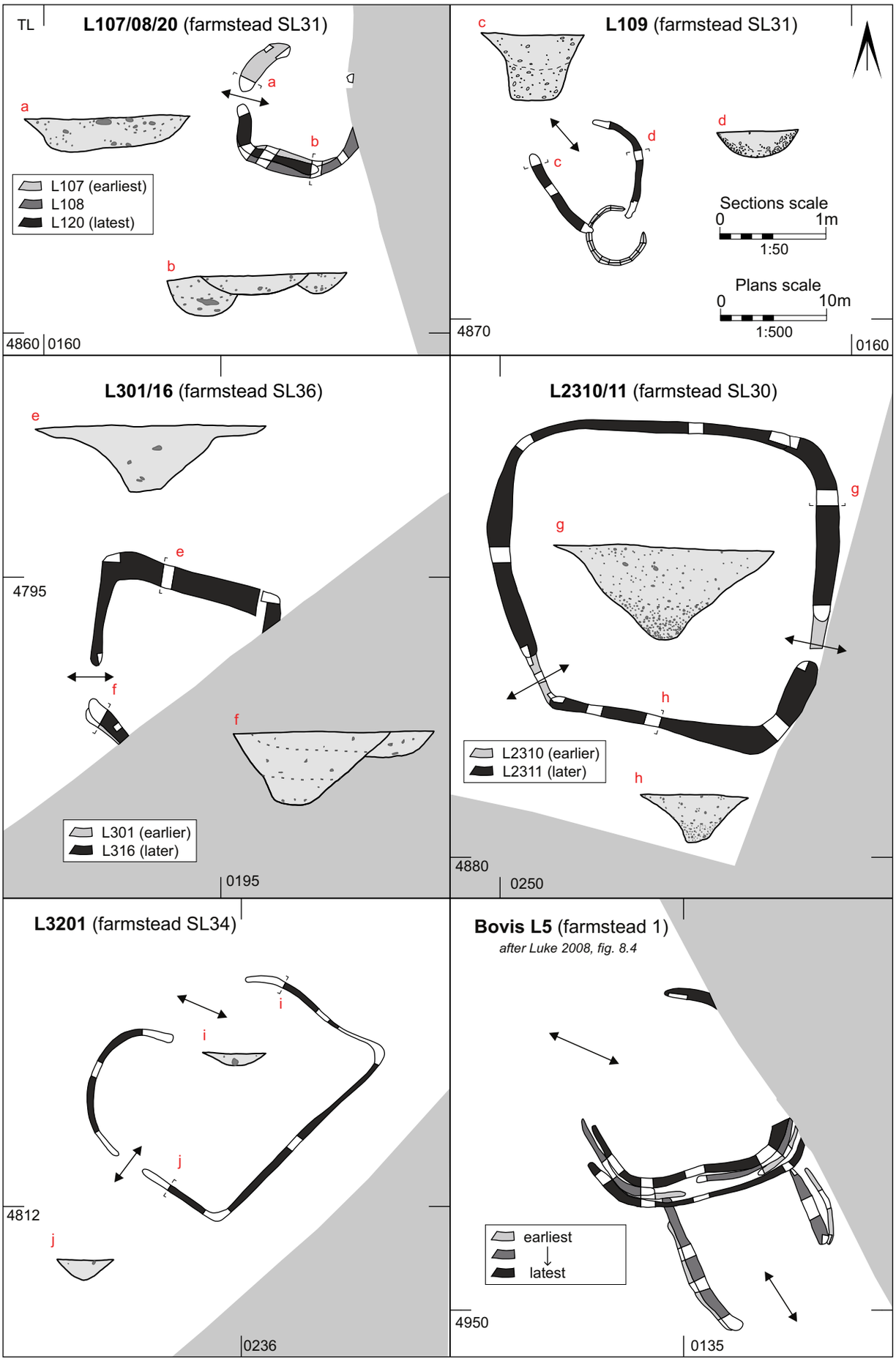


Fig. 4.20 Middle Iron Age enclosures on the Biddenham Loop. Scale 1:500

Plate 4.27 Roundhouse L109 (near farmstead SL31), from the west

Plate 4.28 Roundhouse L3202 (farmstead SL34), from the east (1m scale)

Plate 4.29 Enclosure L107/L108/L120 (farmstead SL31), from the west, with its entrance visible in foreground (2m scale)

Farmstead identifier	*L*	*G*	*Description*	*Entrance*	*Extent (sq m)*	*Enclosure gulley dimensions Width:depth (m)*	*Associated activity*
SL30	2310	23042 23051	Square enclosure on the eastern side of the Loop	South-west corner 4m-wide gap on E side	756	1.6:0.2	3 storage pits 3 small pits Short ditch
	2311	23038 23039 23041 2304 23047	Redefinition of enclosure ditch	South-west corner Central eastern side	756	2:0.8	—
SL31	107	1009 1012 1040	Sub-square enclosure on eastern side of the Loop	1.3m-wide gap on western side 6m-wide gap on north-east side	100	1:0.3	—
	108	1011	Redefinition of enclosure ditch	As above	—	0.8:0.4	—
	120	1010	2nd redefinition of enclosure ditch	As above	—	1.8:0.4	—
	109	1015 1016	Sub-circular enclosure on the northern side of a roundhouse	7m-wide gap on northern side	64	1:0.8	I small pit
SL32	110	1057 1058	Square enclosure defined by post-holes. 91m north of farmstead SL31	19m-wide gap on western side	960	—	1 storage pit 3 small pits 1 post-hole
SL34	3201	32002 32030	Sub-rectangular enclosure incorporating a possible roundhouse gulley, in southern part of the Loop	2.7m-wide gap on south-west side 8.8m-wide gap on north-west side	396	0.7:0.2	2 storage pits
SL36	301	3025 3052 3070 3071	Small square enclosure to the south-west of the Loop	4m-wide gap in south-west corner	225	2.2:0.6	—
	316	3053	Redefinition of enclosure ditch	4m-wide gap in south-west corner	225	1.5:0.7	—
Farmstead 1 – adjacent investigation (Luke 2008)	5	218	Double enclosure in the north-west part of the loop	On southern side north-west corner	> 256	0.5:0.3	—
	7	226	Redefinition of double enclosure	As above	—	—	—
	10	220	2nd redefinition of northernmost enclosure	north-west corner	—	—	—
	12	222	3rd redefinition of northernmost enclosure	north-west corner	—	—	—
	14	231	4th redefinition of northernmost enclosure	north-west corner		—	—

Table 4.10 Details of middle Iron Age enclosures on the Biddenham Loop

G238 (Luke 2008, 163)). Others may have been located within the ditched enclosures described below. Even with the latter, the total number of buildings appears to be particularly small, indicating the use of less archaeologically visible construction methods such as cob or turf, sill beams and small stakes (Williams 1993, 28; Knight 1984, 143).

The roundhouses are all represented by pennanular drainage gullies, with no trace of the buildings themselves and few internal features. Similar contemporary evidence for roundhouses is common within the region, as at Broom, Beds. (Cooper and Edmonds 2007, 154–5, fig. 5.8, 173 and fig. 5.26), Fairfield Park, Stotfold, Beds. (Webley *et al.* 2007, 25–9), Salford, Beds. (Dawson 2005, 165), and Bancroft, Milton Keynes (Williams and Zeepvat 1994, fig. 23). Even accepting that plough truncation has played a part, the absence of any evidence for earth-fast wall posts in middle Iron Age roundhouses — in contrast to their late Bronze Age/early Iron Age precursors (see above) — appears to reflect a change in construction technique in southern England.

With the exception of L109, which was only 5m in diameter (Plate 4.27), the roundhouses were 9–11m in diameter (Plates 4.26–4.28) and were thus comparable in size to others in the region (see Webley *et al.* 2007, fig. 6.3). Where evidence for an entranceway was identified it was to the east, as is the norm for late prehistoric roundhouses in the region (Knight 1984, 144–5; Oswald 1997).

The gulley associated with roundhouse G235 within Bovis farmstead 1 was narrow and polygonal in plan, suggesting that it might represent a foundation trench for timber or wattle walling (Luke 2008, 163). Comparable gullies were associated with structure 14 at Broom, Beds. (Cooper and Edmonds 2007, 173), building C18 at Little Waltham, Essex (Drury 1978, 122), building F3021 at Ivy Chimneys, Essex (Turner 1999, figs 7, and 12, 228), and building G1 at Salford, Beds. (Dawson 2005, 46). However, Turner (1999, 228) has suggested that such features could represent 'eaves-drip gullies for structures with polygonal roofs'.

Roundhouse L2360/1 (SL28) within the recent investigations was unusual in that it was located in isolation from contemporary activity and did not produce any finds indicative of domestic debris. The occurrence of isolated buildings within field systems is known from Barleycroft/Over, Cambs. (Evans and Knight 2000, 97 and fig. 9.5), and they may have served as temporary shelters. L2360/1 was defined by a continous ditch, which is unusual for roundhouses, although no gap was clearly identified in L3202 either. The ditch defining L2360/1 was *c.*9m in diameter, up to 1.3m wide and 0.7m deep. It had been redug at least once. It featured a central pit measuring 1.1m × 0.8m and 0.2m deep, with straight, steeply sloping sides and a flat base. The only find was an early Neolithic flint knife or burin (RA 14093). The diameter of the ditch is suggestive of a roundhouse rather than a Neolithic/early Bronze Age monument and this is confirmed by a radiocarbon date of 200–1 cal. BC (SUERC-26335: 2085±30BP) (charcoal within central pit).

Central features are not uncommon and in the Thames valley it has been suggested that they were not intended for posts to support the roof but 'to support partitions dividing the interior of the house (*e.g.* with radially placed hurdles) and/or floors to create loft spaces' (Lambrick 2009, 145).

Enclosures

(Fig. 4.20, Table 4.10)

Four farmsteads (SL30, SL31, SL34 and SL36) featured small, ditched, sub-rectangular enclosures, as did Bovis farmstead 1 (Luke 2008, 166–9). All the enclosures were less than 25m in length but they did vary significantly in size, form, entrance location and ditch dimensions. In most cases the ditch had been redug several times. There was no evidence from the fills, associated features or recuts for the presence of an associated bank, either inside or outside the ditch. Similar enclosures have been found at Gypsy Lane Broom, Beds. (Cooper and Edmonds 2007, 155–9, figs 5.39–5.13), Fairfield Park, Stotfold, Beds. (Webley *et al.* 2007, 18–25), Salford, Beds. (Dawson 2005, fig. 2.23, 165), and Pennyland, Milton Keynes (Williams 1993, 9–20).

No evidence for function was recovered from the Biddenham Loop enclosures; their variability suggests that they may have had several different uses. It has been speculated that such enclosures define work or storage areas, animal corrals or cultivated land (Williams 1993, 45; Knight 1984, 204). Some of the enclosures at Biddenham Loop shared some of the characteristics of the roundhouses (*e.g.* shallow ditches, curvilinear plans and redefinitions which preserved the original layout). It is possible, therefore, that some enclosures, such as, perhaps, L107 (SL31, Plate 4.29), represent drainage gullies around roundhouses, although they did not always have east-facing entrances. The curving western part of the ditch of enclosure L3201 (SL34) is also strongly indicative of the presence of a roundhouse. One exception is L109 (SL31), which comprised an enclosure attached to a small roundhouse in a layout that appeared similar to those at Farmoor (Lambrick and Robinson 1979, figs 4 and 14).

VII. Non-settlement 'activity foci'

(Figs 4.21 and 4.22, Tables 4.11 and 4.12)

Widely dispersed, loose clusters of post-holes and pits have for convenience been described as 'activity foci' within this publication. On the Biddenham Loop they included post-built structures and, within the Bovis investigations only, the reuse of Bronze Age ring-ditches (Luke 2008, 42). Similar evidence was found on Land west of Kempston. The features within these 'activity foci' produced limited quantities of domestic debris and were, therefore, often not dated with any certainty. As is often the case, even where clusters of post-holes were present it was not always possible to be certain whether they were parts of buildings or fences or had been dug for other reasons. Although some of the pits could have served a storage function, only those of middle Iron Age date had the 'classic' storage pit profile of steep sides and flat bases.

The 'activity foci' on the Biddenham Loop were found both on the periphery of farmsteads and in more isolated locations within the middle Bronze Age fields. Their relationship to the contemporary landscape on Land west of Kempston is less well understood owing to the smaller extent of the excavation areas. However, it may be significant that the majority occur in the vicinity of a middle Bronze Age post-alignment and a middle Iron Age boundary ditch.

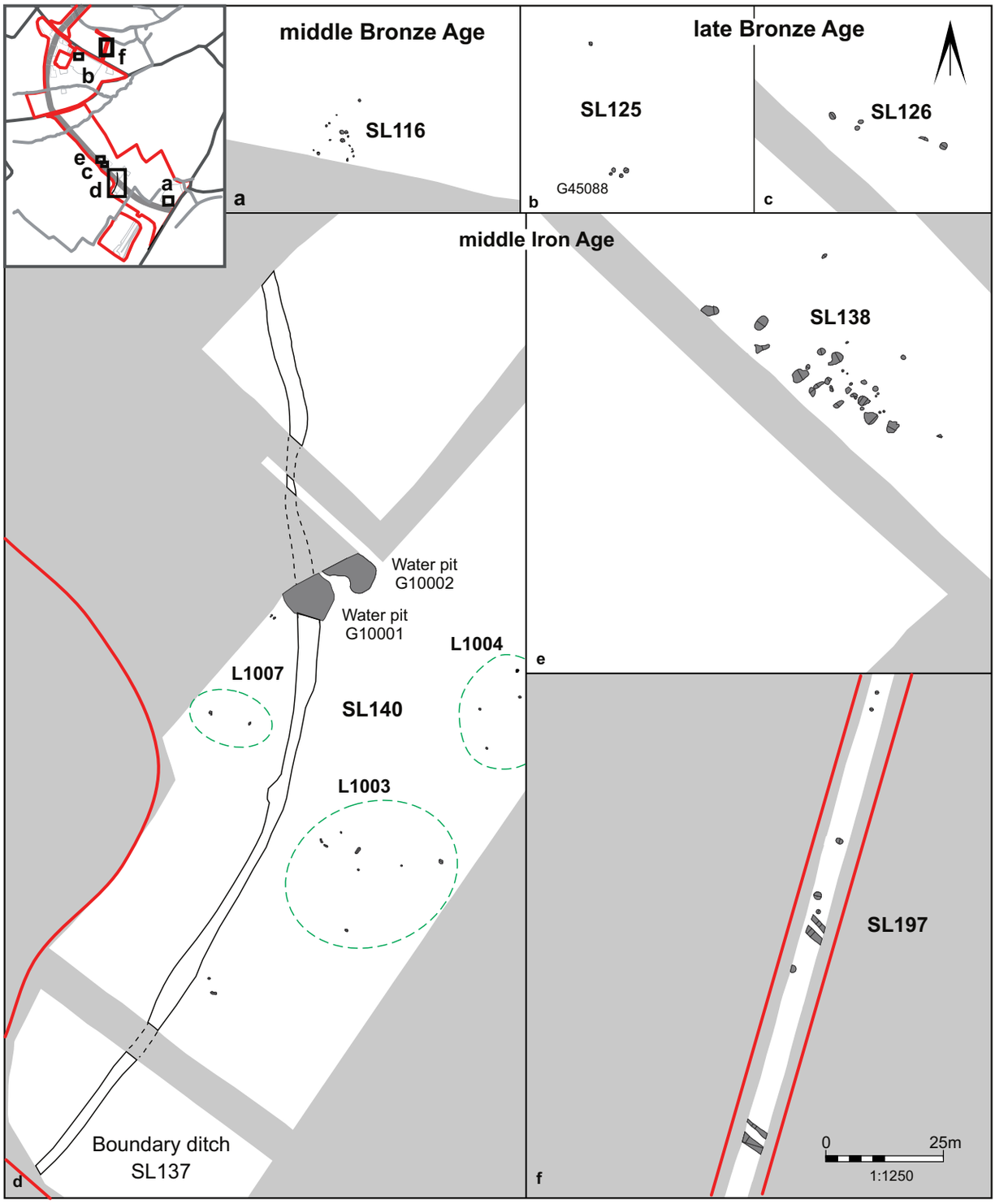


Fig. 4.21 Middle–late Bronze Age/early Iron Age and middle Iron Age settlements and 'activity foci' on land west of Kempston. Scale 1:1250

'Activity foci' are presumed to represent areas of short-term or seasonal activity such as crop processing, grain storage or stock corralling. They occurred throughout the second half of the 2nd millennium and much of the 1st millennium, although their dating is often imprecise. Such evidence is increasingly being recognised within more extensive excavations (Haselgrove *et al.* 2001, 11).

Middle Bronze Age

The distinction between possible settlements and 'activity foci' during this period is more uncertain than for later periods. SL91, SL92 and SL93 have all been interpreted as possible settlements and have therefore been described above (p. 144, Fig. 4.13).

Other clusters of post-holes and pits occur within the Biddenham Loop field systems:

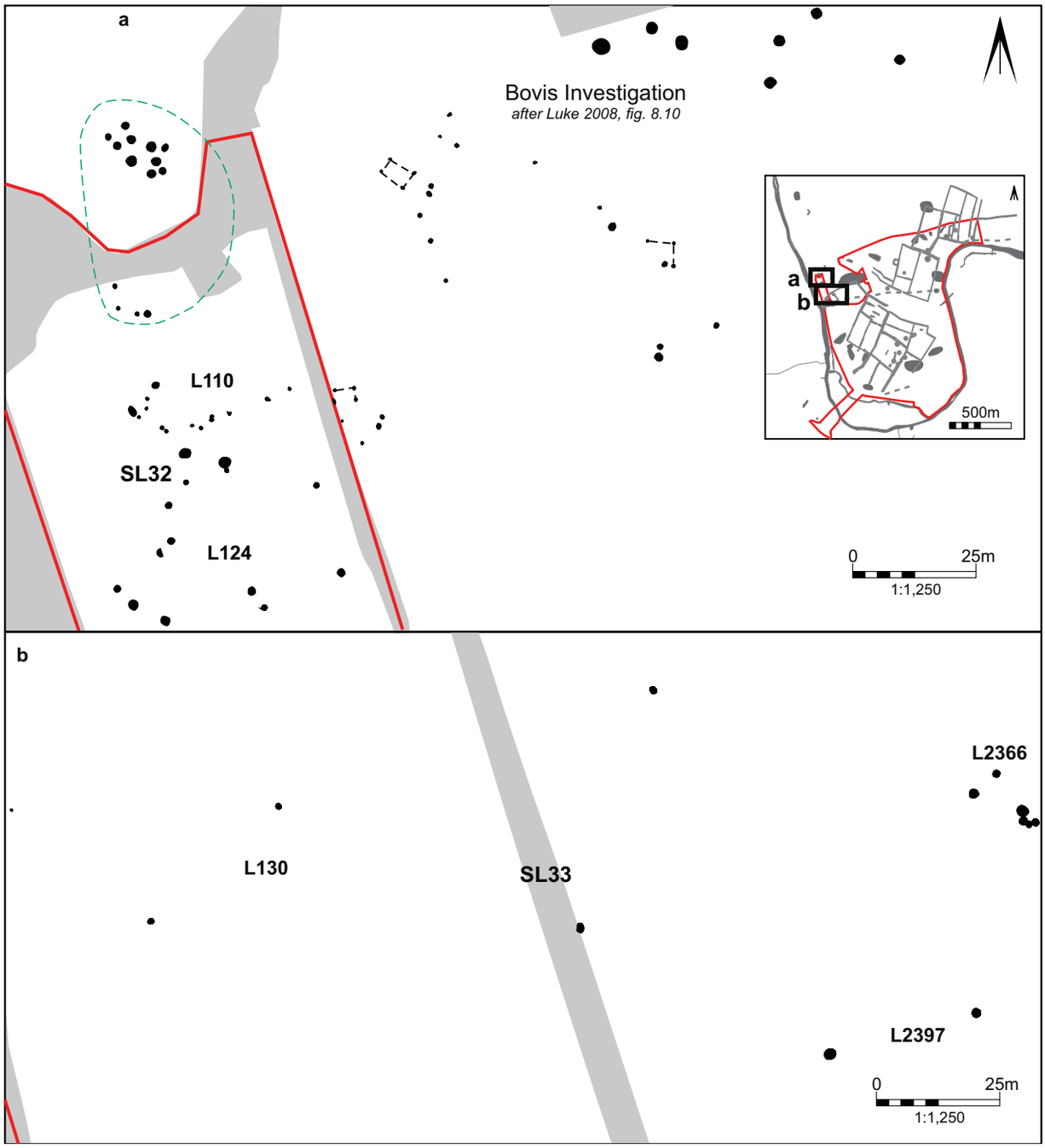


Fig. 4.22 Middle Iron Age 'activity foci' on the Biddenham Loop. Scale 1:1250

- **SL11:** post-hole cluster (field L2169) and pits (fields L2171 and L2319)
- **SL13:** post-hole cluster (field L2404)

One 'activity focus', SL116, was found on Land west of Kempston; it comprised a cluster of two small pits and twelve post-holes. No discernible pattern could be seen in the layout of the post-holes but they were located within an area of 15m^2 on the edge of the excavation. Their fills were relatively charcoal-rich and one produced a radiocarbon date of 1420–1210 cal. BC (SUERC-25519: 3055±35BP). Approximately 450m distant was post-alignment SL117, which also produced a radiocarbon date on charcoal of 1200–930 cal. BC (SUERC-25513: 2880±35BP). It is described in more detail above (see p. 126).

Late Bronze Age/early Iron Age

Possible evidence for activity within the Biddenham Loop fields, which originated in the middle Bronze Age, comprised a handful of widely dispersed small pits SL20 (within the northern field system) and SL22 (within the southern field system). The pits produced a tiny assemblage of late Bronze Age/early Iron Age pottery (too small to be tabulated) and were assigned to this period because they were dug into the infilled middle Bronze Age field ditches. An inhumation and a cremation burial, radiocarbon dated to this period, were also located within the fields (see below, p. 188).

Biddenham Loop											
Period	*SL*	*L*	*Area (sq m)*	*Roundhouses*	*Enclosures*	*Storage pits*	*Pits/post-holes*	*Associated activity*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds(kg)*	*RCD*
mBA	11	2403	1612	—	—	—	3 pits	Within field L2319	—	—	—
		2159	6860	—	—	—	3 pits	Within field L2171	—	0.01 animal bone 1 × flint flake	—
		2178	374	—	—	—	12 post-holes	Within field L2169	—	—	—
		2180	—	—	—	—	2 post-holes	Within field L2169	—	—	—
	13	2404	9380	—	—	—	6 pits 1 post-hole	Within field L2349	—	—	—
mIA	SL21	2320	3250	—	—	—	—	7 small pits	5:45:2 (F19)	0.02 animal bone	—
	SL28	2360 2361	—	1	—	—	—	1 internal small pit	—	eMeso blade (RAl 14093)	200–1 cal BC (SUERC-26335, 2085 ± 30BP)
	SL32	110 124	3552	—	1	7 (dispersed)	—	11 small pits 2 post-holes 1 post-pipe	70:0.7:5 (F03, F14–F18, F27, F29, F30)	0.6 animal bone 5 × flint blades (RAb 1016, 1025, 1026) 1x flint flake 1 × flint piercer (RAb 1015) 1 × flint blade-like flake (RAb 1040) 1 × flint scraper (RAb 1453)	—
	SL33	130 2366 2397	21150	—	—	6 (clustered) 3 (dispersed)	—	4 small pits 1 post-hole	8:0.3:1 (F16–F17)	0.6 animal bone 0.06 flat roof tile 0.02 fired clay 1 × retouched flint flake (RAb 1031) 1 × retouched flint blade	—

RAl = LWB1289 registered artefact number; RAb = BWB1124 registered artefact number; eMeso = early Mesolithic; mBA = middle Bronze Age; mIA = middle Iron Age. All weights rounded up to the nearest 0.01g
Note: pottery fabric codes (*e.g.* F14) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1)

Table 4.11 Details of middle Bronze Age and middle Iron Age 'activity foci' on Biddenham Loop

Land west of Kempston									
Period	*SL*	*Area (sq m)*	*Roundhouses*	*Enclosures*	*Storage pits*	*Pits/postholes*	*Associated activity*	*Contemporary pottery sherd:weight:vessel (kg)*	*Other finds (kg)*	*RCD*
mBA	116	—	—	2	12		—	—	0.01 fired clay 0.03 slag	1420–1210 cal BC (SUERC-25519, 3055 ± 35BP)
lBA/eIA	126	—	—	—	—	5 pits (fenceline)	—	9:0.03:4 (F01C, F03, F28)	—	—
mIA	138	2000	—	—	—		21 small/medium pits 8 post-holes 4 tree-throw holes	38:0.1:5 (F03, F16, F28, F29)	0.09 animal bone 1 × flint blade 3 × flint flakes 1 × flint piercer Whetstone (OA20)	—
	140	6624	—	—	—		11 small pits 6 post-holes 2 stake-holes 2 water pits	—	0.2 animal bone	—

OA = other artefact number; mBA = middle Bronze Age; lBA = late Bronze Age; eIA = early Iron Age; mIA = middle Iron Age. All weights rounded up to the nearest 0.01g
Note: pottery fabric codes (*e.g.* F28) are found in the Pottery Type Series (CD Section 2: Wells, Appendix 1)

Table 4.12 Details of middle Bronze Age, late Bronze Age–early Iron Age and middle Iron Age 'activity foci' on land west of Kempston

Post-holes/small pits SL126 on Land west of Kempston formed a loose alignment for *c.*25m but were unconvincing as a post-alignment, although they were *c.*160m north of middle Bronze Age post-alignment L1006 (SL117). The features within SL126 produced a small quantity of contemporary pottery. In the middle Iron Age further pit digging (SL138) took place in this area (see below).

Middle Iron Age

Loose clusters of dispersed pits and post-holes occurred within the Biddenham Loop and Land west of Kempston. Both small and large pits were present, including around sixteen with the 'classic' storage pit profile. The latter were very similar to those found within the farmsteads (see p. 154) except that they contained very little domestic debris. The features produced small quantities of middle Iron Age pottery and one was radiocarbon dated to this period. Similar evidence for dispersed activity was located at King's Hill and Moat Field Broom, Beds. (Cooper and Edmonds 2007, 175–7 and fig. 5.28).

Biddenham Loop

The majority of the dispersed clusters of pits and post-holes on the Biddenham Loop were located near farmstead SL31 ('activity focus' SL33) and Bovis farmstead 2 (Luke 2008, fig. 8.5) ('activity focus' SL32). These were situated to the north-west of the southern field system, which originated in the middle Bronze Age. Pit clusters L2469 and L2470 were located to the west of farmstead SL34, which lay to the south of the same field system. The southern field system also contained a single isolated roundhouse, SL28 (discussed above). 'Activity focus' SL21 straddled one of the field ditches within the northern field system and more dispersed pits and post-holes were dug adjacent to other field boundaries. Evidence for dispersed activity was also found within the Bovis investigations to the north of the Biddenham Loop (Luke 2008, 42–4).

'Activity focus' SL32 was located to the south and east of Bovis farmstead 2 (Fig. 4.22). It comprised pits, some for storage, and post-holes, including some which appeared to form fencelines. Within the adjacent Bovis investigations a similar range of contemporary features was identified (Luke 2008, 177–8, figs 8.10 and 8.11). The evidence for dispersed activity covered an area of more than 1.2ha. Within the Bovis investigations the seven storage pits were loosely clustered to the east, with smaller pits and post-holes to the west (Luke 2008, 177). Also within the Bovis investigations three possible post-built structures were proposed on the basis of the arrangement of the post-holes — a two-post structure and two four-post structures, which were rectangular, rather than square, in plan (Luke 2008, 177–8). Within the recent investigations an unworked, but heavily burnt, piece of locally sourced calcareous sandstone found towards the base of an oval pit may represent the remains of a hearthstone (CD Section 2; Duncan). Two radiocarbon dates were obtained from SL32: 400–200 cal. BC (SUERC-26291: 2245±30BP) (Maloideae charcoal from storage pit) and 410–210 cal. BC (SUERC-25518: 2285±35BP) (charred seeds from post-hole).

To the south-east of farmstead SL31 was 'activity focus' SL33; it comprised dispersed pits including a cluster of six storage pits, L2366 (see Fig. 4.16, Plate

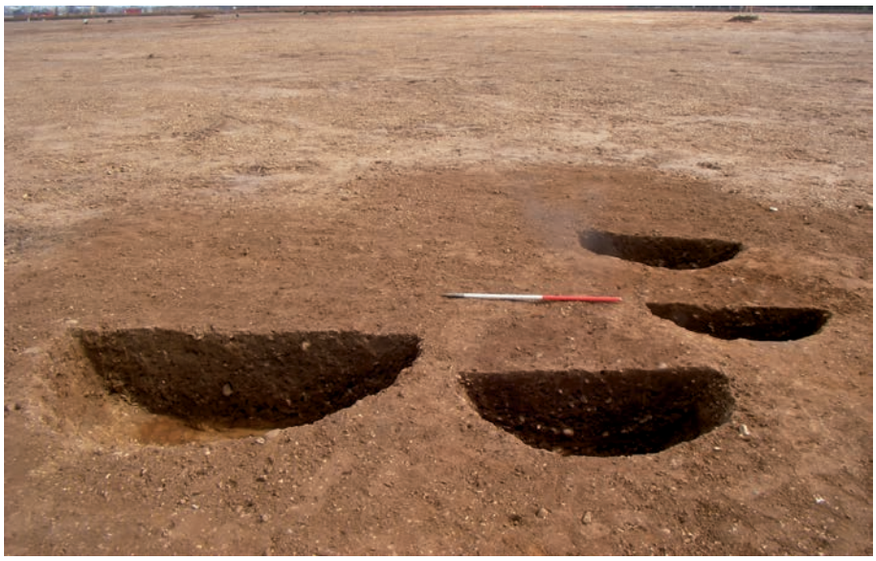


Plate 4.30 Storage pit cluster L2366 (SL33), from the west (1m scale) — one of only a small number of such clusters isolated from the nearest farmstead

4.30). SL21 and SL39 were loose clusters of pits that occurred adjacent to boundaries within the northern field system. SL21 comprised seven small to medium-sized pits within a 50m × 50m area. SL39 was another cluster of small pits.

Two of the storage pits within SL32 and SL33 contained unusual animal bone deposits in the form of partial pig skeletons (discussed in more detail below). Interestingly, the only partial pig skeletons of this period discovered during the investigations were found in pits in dispersed 'activity foci'.

Land west of Kempston

Two 'activity foci' were located on Land west of Kempston: SL138, in the same location as late Bronze Age/early Iron Age 'activity focus' SL126; and SL140, which comprised three clusters of features in the vicinity of the contemporary major boundary SL137 (see above, p. 139).

The features (and their fills) within SL138 were similar to those of SL126, although they were more numerous. The small pottery assemblage did not contain any of the more typically middle Iron Age fabrics and therefore this activity may be slightly earlier in date than the farmsteads (CD Section 2; Wells, Pottery). Approximately 200m to the south, 'activity focus' SL140 covered an area of *c.*0.5ha adjacent to the major ditched boundary SL137. It included three loose clusters of post-holes, small pits L1003, L1004 and L1007 and two water pits, G10001 and G10002, 1m apart. One of the water pits appeared to truncate the ditched boundary. Both were at least 10m in diameter but continued beyond the limit of excavation. G10001 was more irregular in shape and much shallower than G10002, which was 0.5m deep with steep sides, except on its eastern edge, which was much shallower and featured a layer of stones to facilitate access to the pit. None of these features produced datable artefacts or material suitable for radiocarbon dating and they have been assigned to this period on the basis of their proximity to the well-dated boundary. Dispersed activity, in the form of animal pens and other evidence of pastoral management, was found on either side of a major early–middle Iron Age ditched boundary at Bicester Slade Farm, Oxon (Ellis *et al.* 2000).

VIII. Human and animal burials

(Tables 4.13 and 4.14)

Introduction

From the beginning of the middle Bronze Age the formal burial and ceremonial monuments seen in the Neolithic and early Bronze Age were no longer being built — with the single possible exception of segmented ditch L101. This presumably reflects a change not just in religious tradition but also in social organisation. However, some pre-existing monuments remained a focus for burial, suggesting that, although a tradition had developed of burial within the wider landscape, the former practice of burial within monuments did not die out completely. Many of the burials within the Biddenham Loop were dispersed across the field systems established in the middle Bronze Age. Relatively large numbers of middle Bronze Age burials were present, and the numbers dated to the late Bronze Age/early–middle Iron Age were, by comparison, tiny. The inhumation graves did produce the occasional piece of pottery or flint but very few burials were accompanied by actual grave goods. Likewise, the cremation burials contained an urn but no grave goods. Animal burials occurred in the middle Bronze Age and in the middle Iron Age. No burials of any kind were found on Land west of Kempston.

Middle Bronze Age

The recent investigations on the Loop revealed thirty-five human and four animal burials of middle Bronze Age date; the majority were assigned to this period on the basis of radiocarbon dating. While cremation remained the main burial rite, as it had been in the early Bronze Age — there were twenty-five cremation burials — the presence of ten inhumations demonstrates that an alter-

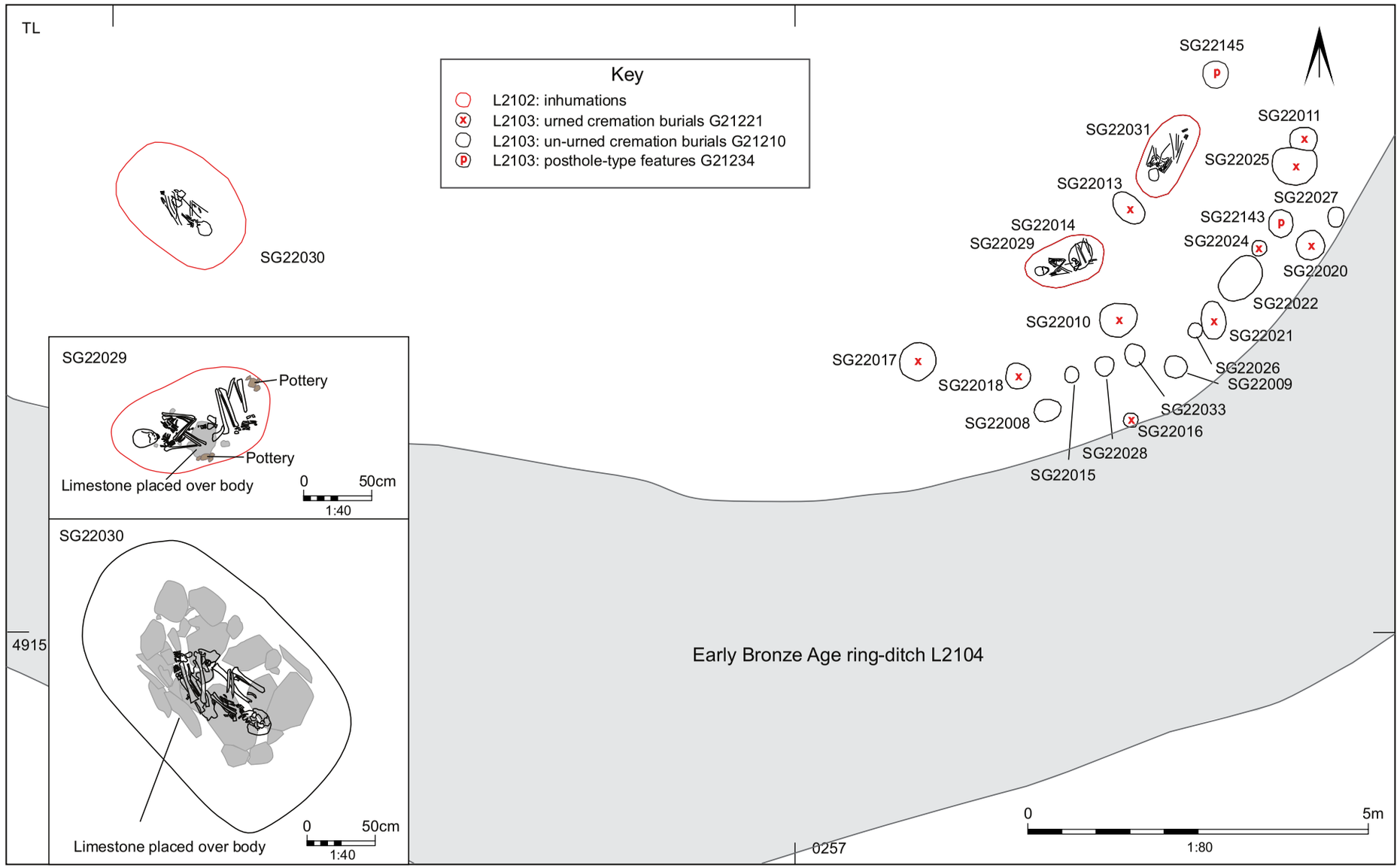


Fig. 4.23 Middle Bronze Age cemetery L2102/2103 on the Biddenham Loop. Scale 1:80

SP	*SL*	*L*	*Description*	*G*	*SG*	*Cremated human bone (g)*	*Age*	*Sex*	*Grave goods sherd:weight:vessel (kg)*	*RCD*
6	11	2102	Inhumation within interior of early Bronze Age circular burial monument L2104 SL5	21213	22029	—	18–25 years	Female	41:0.2:1 Deverel-Rimbury bucket urn (P42)	1500–1310 cal BC (SUERC-25532, 3135 ± 35BP)
				21214	22030	—	12–17 years	Prob. female	—	1400–1130 cal BC (SUERC-25533, 3025 ± 35BP)
				21215	22031	—	18–25 years	Prob. female	—	1270–1010 cal BC (SUERC-25537, 2935 ± 35BP)
		2103	Unurned cremation burials within a cemetery in the interior of early Bronze Age circular burial monument L2104 SL5	21210	22014	1075.7	Adult	Undet.	—	1390–1120 cal BC (SUERC-26325,3005 ± 30BP)
					22015	0.1	Undet.	Undet.	—	—
					22022	419.8	Adult	Undet.	—	—
					22008	78.6	?Adult	Undet.	—	—
					22009	185.9	?Adult	Undet.	—	—
					22033	16.3	Subadult	Undet.	—	1430–1260 cal BC (SUERC-26327, 3085 ± 30BP)
					22026	3.6	Undet.	Undet.	—	—
					22027	4.2	Undet.	Undet.	—	—
					22028	2.4	Undet.	Undet.	—	—
			Urned cremation burials within a cemetery in the interior of early Bronze Age circular burial monument L2104 SL5	21221	22010	452.5	?Adult	Undet.	—	—
					22018	317.0	Adult	Undet.	—	—
					22013	6.8	?Adult	Undet.	—	1520–1410 cal BC (SUERC-26316, 3190 ± 30BP)
					22016	28.4	6–11 years	Undet.	—	1400–1210 cal BC (SUERC-26317, 3030 ± 30BP)
					22017	458.3	Adult	Undet.	—	—
					22024	115.0	1–5 years	Undet.	—	—
					22025	268.7	>20 years	Undet.	—	1390–1120 cal BC (SUERC-26318, 3005 ± 30BP)
					22011	595.0	Adult	Male	—	1400–1210 cal BC (SUERC-26315, 3035 ± 30BP)
					22020	506.9	Adult	Undet.	—	1400–1130 cal BC (SUERC-26326, 3025 ± 30BP)
					22021	242.0	Undet.	Undet.	—	—
		2136	Isolated inhumation adjacent to western boundary of SL11 field L2100	21152	21752	—	Adult	Undet.	—	1270–1010 cal BC (SUERC-25539, 2940 ± 35BP)
		2158	Isolated inhumation adjacent to eastern boundary of SL11 field L2170	21067	21392	—	12–17 years	Poss. male	CA earring (OA9) CA finger ring (OA8) CA wire fragment (RAl 1048) CA fragment (RAl 1037) Fragments of 5 amber beads (OA6) 1 glass bead (OA7)	1420–1210 cal BC (SUERC-25538, 3055 ± 35BP)

SP	*SL*	*L*	*Description*	*G*	*SG*	*Cremated human bone (g)*	*Age*	*Sex*	*Grave goods sherd:weight:vessel (kg)*	*RCD*
6 cont.	12	2365	Two urned cremation burials within cluster adjacent to SL1 central hengiform monument L2312	23289	24587	20.4	Undet.	Undet.	—	1520–1410 cal BC (SUERC-26320, 3185 ± 30BP)
					24589	55.1	Adult	Undet.	—	1500–1390 cal BC (SUERC-26319, 3165 ± 30BP)
			Unurned cremation burial within cluster adjacent to SL1 central hengiform monument L2312	23336	24588	23.5	?Adult	Undet.	—	1530–1420 cal BC (SUERC-26321, 3210 ± 30BP)
		2392	Isolated unurned cremation burial within SL12 central zone	23250	24423	5.0	Undet.	Undet.	—	1260–1000 cal BC (SUERC-26301, 2915 ± 30BP)
			Isolated unurned cremation burial within SL12 central zone	23310	23966	64.1	Undet.	Undet.	—	1260–1010 cal BC (SUERC-26306, 2920 ± 30BP)
	13	2375	Isolated inhumation adjacent to eastern boundary of SL13 field L2348	23289	23997	—	26–35 years	Male	—	1250–970 cal BC (SUERC-25541, 2895 ± 35BP)
	15	101	Four inhumation burials within segmented ditched enclosure	1032	1227	—	>46 years	Male	—	1390–1120 cal BC (SUERC-25499, 3005 ± 35BP)
					1229	—	18–25 years	Prob. male	—	1210–1000 cal BC (SUERC-26285, 2900 ± 30BP)
					1231	—	26–35 years	Prob. male	—	1300–1040 cal BC (SUERC-25498, 2950 ± 35BP)
					1233	—	12–17 years	Undet.	Amber bead (OA10)	1270–1010 cal BC (SUERC-25497, 2930 ± 35BP)
	93	2384	Isolated urned cremation burial within SL13 field L2344	23270	24487	517.2	Adult	Prob. female	—	—
7	20	2340	Isolated inhumation burial to the north of MBA field system SL11	23112	23573	—	26–35 years	Prob. female	—	740–390 cal BC (SUERC-25543, 2395 ± 35BP)
	22	2426	Isolated unurned cremation burial within MBA field system SL13	23251	24424	2.7	Undet.	Undet.	—	790–510 cal BC (SUERC-26305, 2500 ± 30BP)
8	31	102	Two inhumation burials to the west of domestic focus L206	1034	1235	—	18–25 years	Prob. male	—	380–120 cal BC (SUERC-25502, 2185 ± 35BP)
		102		1034	1237	—	>46 years	Female	—	350–40 cal BC(SUERC-25503, 2125 ± 35BP)
	35	3207	Inhumation within storage pit G32021 within farmstead SL35	32209	32283	—	12–17 years	Poss. male	—	—
			Disarticulated bone within storage pit G32021 within farmstead SL35		32285	—	Subadult	Undet	—	—

CA = Copper alloy; OA = other artefact number; RA1 = LWB1289 registered artefact number; P = Pottery illustration number; Undet. = Unidentified. All weights rounded up to the nearest 0.01g

Table 4.13 Details of middle Bronze Age and middle Iron Age human burials on the Biddenham Loop

SL	*L*	*Description*	*G*	*SG*	*RCD*
13	2349	Sheep burial located at the base of field boundary ditch G23161 within stock enclosure system L2349	23161	23817	1500–1320 cal BC (SUERC-25542, 3140 ± 35BP)
14	100	Cattle burial adjacent to western boundary of SL14 field L100/2900	1036	1239	1320–1050 cal BC (SUERC-25507, 2965 ± 35BP)
15	101	Cow burial within southern part of segmented ditched enclosure	1031	1225	1260–980 cal BC (SUERC-25501, 2900 ± 35BP)
	104	Cattle burial to the north of segmented ditch enclosure L101	1037	1241	1420–1220 cal BC (SUERC-25508, 3065 ± 35BP)
31	121	Partial skeleton of a young adult cow laid on bed of deliberately placed stones within storage pit G1017	1017	1117	380–110 cal BC (SUERC-25517, 2180 ± 35BP
	122	Partial skeleton of adult dog within storage pit G1020	1020	1143	—
32	124	Poorly preserved skeleton of a perinatal pig within storage pit G1026	1026	1194	—
33	2397	Partial skeleton of a 2–4-year-old domestic pig within storage pit G23248	23248	24399	—
34	3206	Skeleton of an immature dog within storage pit G32018	32018	32200	—

Table 4.14 Details of middle Bronze Age and middle Iron Age animal burials on the Biddenham Loop

native burial rite was available. Over the last ten years the belief that, 'with the advent of the middle Bronze Age, cremation was universal' (Parker Pearson 1999, 90) has been superseded. The locations of the burials within the landscape are shown on Figs 4.2 and 4.3 and can be summarised as follows:

- **In cemetery L2102/3** within early Bronze Age ring-ditch L2104 (nineteen cremation burials and three inhumations)
- **Within or adjacent to ditches of field systems SL11 and SL13** (three inhumations and a sheep burial)
- **Adjacent to the boundaries of the unenclosed zone SL12** between the two field systems (five cremation burials, three of which (L2365) were clustered to the north of early Neolithic monument L2312)
- **Within segmented ditch L101** (four inhumations and one cow burial) assigned to SL15
- **Within largely open space SL14** (four cattle burials, including one within the Bovis investigations)
- **Isolated** but *c.*60m from possible settlement SL93 (one cremation burial)

A few general points can be made about the burials in order to avoid repetition below. Although the remains of fifteen urns were recovered they were in all cases heavily truncated. Insofar as it was possible to tell, most urns appeared to have been placed upright in the centre of the grave. 'Most of the cremation deposits produced a few onion couch tuber fragments, probably residues of spent fuel' (CD Section 2; Giorgi). In terms of charcoal, '[t]he results are similar to the early Bronze Age cremations, with *Quercus* sp. (oak) predominant' (CD Section 2; Challinor).

Cemetery L2102/03
(Fig. 4.23 and 4.24)
Mixed inhumation and cremation cemetery L2102/L2103 was located within the south-east quadrant of early Bronze Age ring-ditch L2104 (Fig. 3.19), which itself had been incorporated into the southern boundary of field L2100 (Fig. 4.2). It comprised nineteen cremation burials (L2103) and three inhumations (L2102). The layout of the burials suggests that they were located between the central mound and ditch of the monument rather than being aligned with the field boundary. There is no evidence that the monument was remodelled in any way.

The cremation burials were clustered in a 6.5m × 2.5m area just inside the edge of the ditch (Fig. 4.23). Nine were unurned (G21210) (Plate 4.33) and ten were urned (G21221) (Plates 4.31 and 4.32). Nine of the cremation burials were radiocarbon dated, giving a date range of 1515–1120 cal. BC. The date range for the three dated inhumations was 1500–1020 cal. BC, suggesting that inhumation and cremation took place at the same time (CD Section 2; Hamilton). The use of earlier monuments during this period is known from elsewhere (Fig. 4.24); perhaps the most comparable example is Shorncote Quarry, Glos. (Barclay and Glass 1995), where sixteen possible cremation burials and two inhumations of middle Bronze Age date were present both inside and outside the ring-ditch (Lambrick 2009, 294–5 and fig. 8.4; Barclay and Glass 1995, 34). Similarly, thirty-five cremation burials, ten urned, were recovered from the southern sector of the Butcher's Hill ring-ditch near Barleycroft/Over, Cambs. (Evans and Knight 2000, 101 and fig. 9.7). A contemporary cemetery at Broom was located *c.*22m to the north-east of an earlier monument with twenty-nine unurned and thirteen urned cremation burials clustered in a 6m × 7m area (Cooper and Edmonds 2007, 95–8, table 4.2 and figs 4.12 and 4.13).

All the Biddenham Loop urns were shell-tempered, fine-walled and very fragile (CD Section 2; Wells, Pottery). Given their fragmentary condition, it is only with the radiocarbon dating of the bone that they can be confidently identified as middle Bronze Age. Most urns appeared to have been placed upright, but in two graves (SG22020 and SG22024) they were clearly inverted.

Many of the graves containing cremated remains were less than 0.3m deep and no complete urns survived. Nevertheless, analysis has provided information about the burial rite and the demographic composition of the group. The quantity of cremated bone was variable but

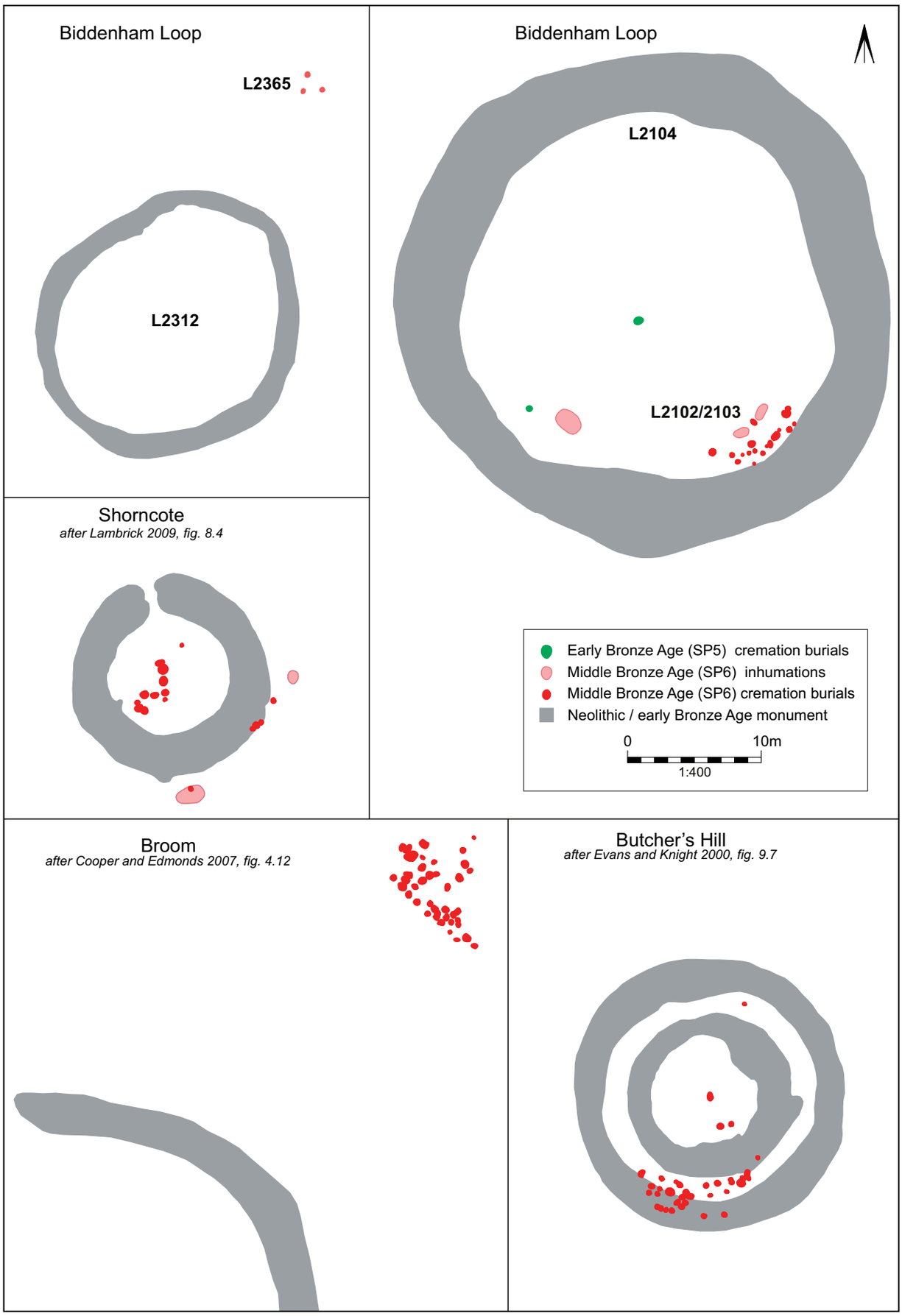


Fig. 4.24 Comparative plans of middle Bronze Age cemeteries from Biddenham Loop, Shorncote, Butcher's Hill and Broom. Scale 1:400

Plate 4.31 Middle Bronze Age urn within cremation burial SG2218 (L2103) being carefully exposed

Plate 4.32 Middle Bronze Age urn within cremation burial SG2218 (L2103), fully exposed (0.4m scale)

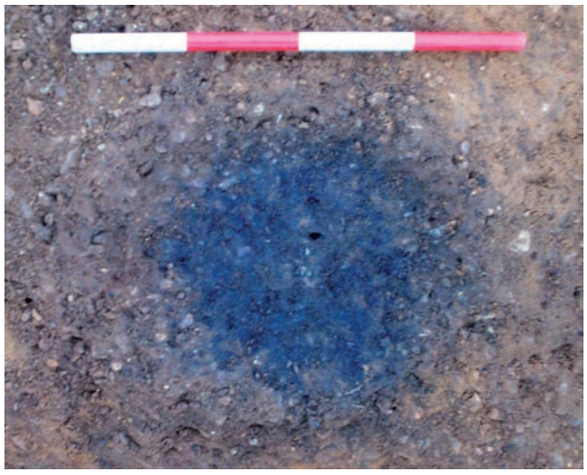


Plate 4.33 Middle Bronze Age un-urned cremation burial SG22009 (L2103), before excavation (0.4m scale)

Plate 4.34 Middle Bronze Age inhumation SG22030 (L2102) as stones are removed, from the north-west

generally small: <1g, one grave; >1<30g, six graves; >30g<1kg, eleven graves; >1kg, one grave. Inevitably, the quantity of identifiable bone was also small.

> The majority of the burials were those of adults, though two subadults were identified from dental development data. … Examination of the distribution pattern in all burials with more than 60g of identifiable bone showed that there was considerable variation in the proportions of bone present from each of the four body areas, but the skull was over-represented in all instances and SG22011 showed a high proportion of lower limb fragments … Collection and deposition patterns were noted only in SG22011, a large and robust male. The basal fill of the burial urn contained elements from the left side of the body only, indicating that these were deposited in the vessel first, whilst the fills above contained elements from both sides (CD Section 2; Powers).

Two additional features (G21234) within the cemetery area contained tiny quantities of bone, including an unburnt partial skull of a probable female from SG22145, but are interpreted as 'token' burials or marker post-holes. The cemetery at Shorncote Quarry, Glos., also included 'token' burials (Lambrick 2009, 295).

The three inhumations, all probable females under 25 years old, were interred in a crouched position; two adjacent ones, SG22029 (Plates 4.36 and 4.37) and SG22031 (Plate 4.38), had their heads to the south-west, while the head of the other one, SG22030 (Plate 4.34) was to the south-east (Fig. 4.23). Bayesian modelling of the radiocarbon dates suggests that the inhumations were contemporary with the cremation burials: SG22029: 1500–1310 cal. BC (SUERC-25532: 3135±35BP); SG22030: 1400–1130 cal. BC (SUERC-25533: 3025±35BP); SG22031: 1270–1010 cal. BC (SUERC-25537: 2935±35BP).

Their skeletal remains suggest they led a laborious life during which they suffered hyperflexion injuries and fractures. These 'are consistent with the age of the individual as they develop in adolescence or young adult-

Plate 4.35 Middle Bronze Age inhumation SG22030 (L2102) as stones are first exposed, from the north-east

hood, resulting in lower back and leg pain', though some healing had occurred (CD Section 2; Powers). SG22030 had posterior ring fractures which 'are relatively rare and result from hyperextension, particularly if associated with heavy loading of the spine; for example, the injury has been reported in modern teenage weightlifters (Barros Puertas *et al.* 2002)' (CD Section 2; Powers).

Plate 4.36 Middle Bronze Age inhumation SG22029 (L2102) being exposed after removal of large stone, from the south

'Wear resulting in an arc-shaped biting surface was seen in SG22030 and may relate to the use of the teeth as a tool' (CD Section 2; Powers).

In the two deepest graves (SG22029 and SG22030) limestone blocks had been placed over the bodies (Fig. 4.23 and Plate 4.35), as was the case with one of the early Neolithic inhumations (see p. 49). It may be relevant that both had conditions which would have resulted in pain or disability: the 18–25 year old female in SG22029 had spina bifida occulta, and the adolescent possible female in SG22030 had injuries that would have resulted in lower back and leg pain. SG22029 was also unusual in that it contained a shell-tempered Deverel-Rimbury vessel with 'a bevelled rim and finger nail decoration on the shoulder' (CD Section 2; Wells, Pottery). It appeared to have been deliberately broken and the pieces placed in two clusters — one next to the legs and one by the arms (Fig. 4.23).

The same grave was truncated by cremation burial SG22014, which produced the largest quantity of bone from the cemetery. Its middle Bronze Age date was confirmed by its radiocarbon date of 1390–1120 cal. BC (SUERC-26325: 3005±30BP) (CD Section 2; Hamilton). A similar occurrence of a cremation burial placed in the backfill of a grave containing an inhumation was noted at Shorncote Quarry, Glos. (Barclay and Glass 1995, fig. 10). It should be noted that the other radiocarbon dates from the Biddenham Loop burials do not support a simple transition from inhumation to cremation burial during the middle Bronze Age.

Bayesian modelling of the radiocarbon dates from the cemetery suggests 'that burial in this area began in 1565–1390 cal. BC (95% probability)' and that 'burials took place for 135–445 years (95% probability)'. 'The results indicate that not only did both burial rites occur at the same general time, but there is also no appreciable differentiation between the urned and unurned cremation burials' (CD Section 2; Hamilton).

Plate 4.37 Middle Bronze Age inhumation SG22029 (L2102) fully exposed, from the north

Plate 4.38 Middle Bronze Age inhumation SG22031 (L2102), from the north-west (1m scale)

Plate 4.39 Middle Bronze Age inhumation SG21392 (within ditch of field L2170) under excavation, from the north-west

Plate 4.40 Middle Bronze Age inhumation SG23997 (L2349, SL13) found at dog-leg in field ditch, from the north-west (0.4m scale)

Plate 4.41 Recording of middle Bronze Age sheep burial SG23817 (L2349, SL13) found during machining out of unexcavated ditch fills, from the north-west

Burials associated with field systems

Three inhumations and a sheep burial were found in ditches associated with field systems SL11 (Fig. 4.2) and SL13 (Fig. 4.3). They comprise:

- **Inhumation SG21392** (Fig. 4.25 and Plate 4.39) was on the same alignment as the ditch defining field L2170 (SL11). The skeleton was of an unsexed 12–17 year old sub-adult (CD Section 2; Powers) interred in a crouched position and accompanied by what appeared to be worn grave goods.

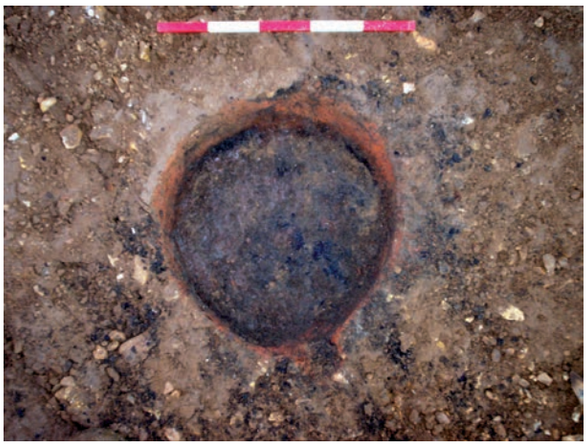


Plate 4.42 Middle Bronze Age urned cremation burial SG24587 (L2365) (0.5m scale)

> Fragments of up to five amber beads (OA6, Pl. 1b) and a blue-green glass bead (OA7) were found in the region of the head and upper neck of the inhumation. A finger ring (OA8, Pl. 1b) was worn on the right hand, which was positioned near the waist and a second curving fragment of wire, which may be part of the same ring, was found in the torso area … A small curving fragment of wire was also found in the region of the ear and may represent an earring (OA9). The ring, beads and other fragments of copper alloy all survived in a poor and fragmentary condition; only one of the five amber beads was able to be assigned a form and this was disc-shaped. Finger rings of both coiled and simple penannular wire variety were found accompanying Beaker flat grave 919 from Barrow Hills (Needham 1999, 186 and fig. 4.14) … Beads and necklaces of jet, amber and faience are classically found in graves belonging to the Wessex II culture of the final early Bronze Age (1700–1500 BC) and are rarely found outside that region' (CD Section 2; Duncan).

The radiocarbon date of 1420–1210 cal. BC (SUERC-25538: 3055±35BP) from skeleton in SG21392 would suggest that this tradition continued into the middle Bronze Age. This is supported by

> … an inhumation burial (3058) from Easton Lane, Winchester, accompanied by a necklace of amber, jet and shale beads [which] had a radiocarbon date of 2740 ± 70bp (calibrated 1090–800 BC), although this was considered far too late in the context of the quantities of amber (Fasham *et al.* 1989, 28; Shennan 1989, 112) (CD Section 2; Duncan).

- **Inhumation SG21752** (Fig. 4.25) was adjacent to the ditch defining field L2100 (SL11). The skeleton was of an unsexed adult (CD Section 2; Powers) interred in a crouched position. It produced a radiocarbon date of 1270–1010 cal. BC (SUERC-25539: 2940±35BP).
- **Inhumation SG23997** (Fig. 4.25 and Plate 4.40) was within the dog-leg ditch defining field L2349 (SL13). The skeleton was of a 26–35-year-old male (CD Section 2; Powers) interred in a crouched position. It produced a radiocarbon date of 1250–970 cal. BC (SUERC-25541: 2895±35BP)
- **Sheep burial SG23817** (Fig 4.27 and Plate 4.41) was within the ditch defining field L2352 (SL13). It was poorly preserved, with the skull and vertebrae missing. Sex could not be determined.

> There is no evidence of butchery or gnawing damage but many of the bones have surface erosion, which could partially account for its incomplete state. … Metrical data indicate that the sheep stood about 60cm at the withers — relatively tall for a British prehistoric sheep (CD Section 2; Maltby).

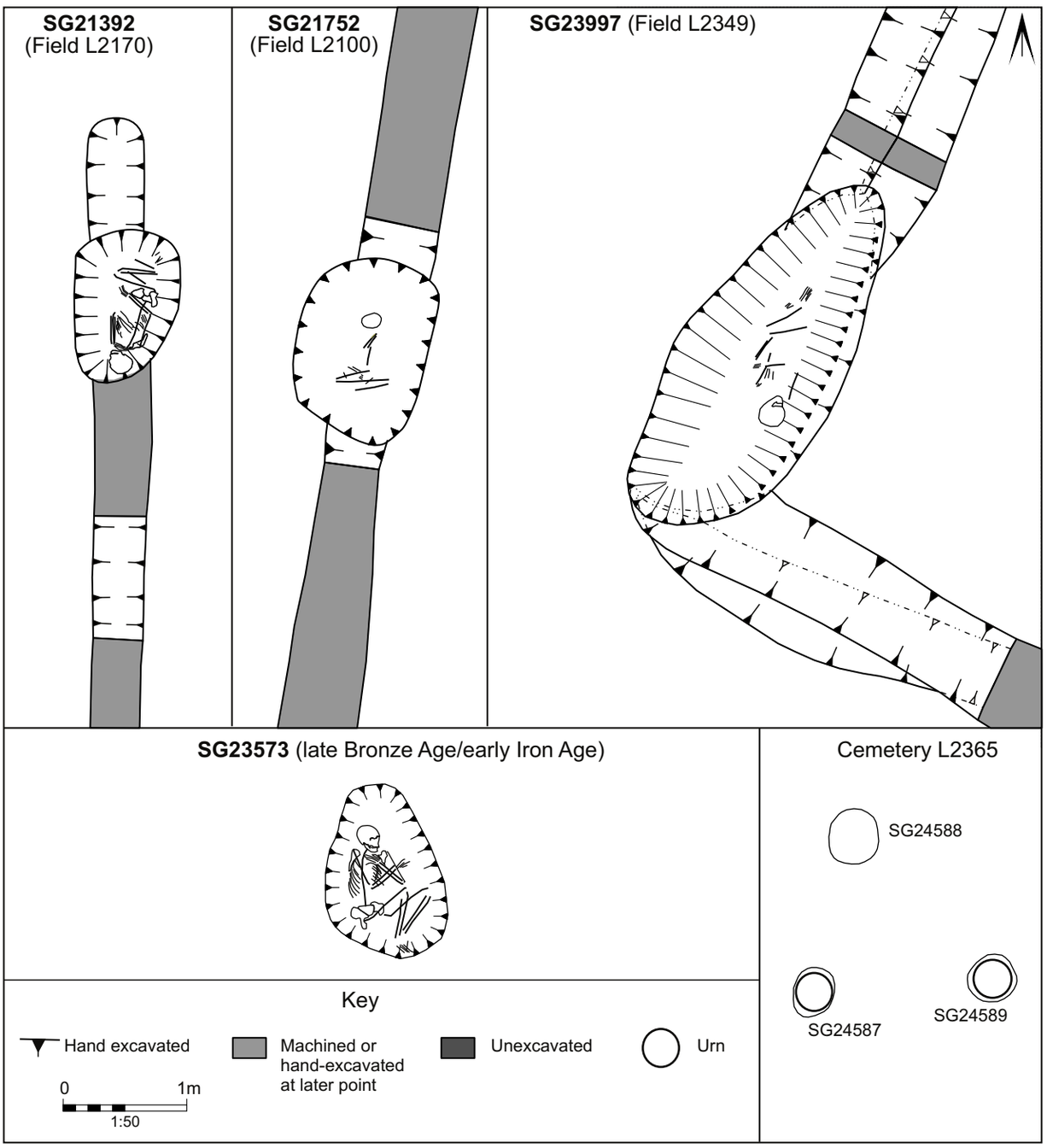


Fig. 4.25 Dispersed middle Bronze Age inhumations within field ditches, middle Bronze Age cemetery L2365 and a late Bronze Age/early Iron Age inhumation on the Biddenham Loop. Scale 1:50

As there is no evidence for carcass processing this may be an example of a sacrificed animal. If so, its location adjacent to the animal control system is likely to be deliberate. It produced a radiocarbon date of 1500–1320 cal. BC (SUERC-25542: 3140±35BP). Sheep were buried within the tertiary fill of a ditch at a key intersection of middle Bronze Age enclosures at Corporation Farm, Abingdon, Oxon (Shand *et al.* 2003, 39 and fig. 3.8).

Plate 4.43 Middle Bronze Age urned cremation burial SG24589 (L2365) sealed by capping stones (0.5m scale)

Cremation burials associated with the unenclosed zone between field systems

Five cremation burials were found adjacent to the boundaries of the largely unenclosed zone between the two field systems (Fig. 4.2). Three, L2365, were located *c.*9m north-east of early Neolithic monument L2312 (Fig. 3.10), suggesting that it still held significance for the community (Fig. 4.25). The burials comprised:

- **Urned cremation burial SG24587** (L2365) near L2312. Undetermined age or sex. Radiocarbon date of 1520–1410 cal. BC (SUERC-26320: 3185 ± 30BP) (Fig. 4.25 and Plate 4.42)
- **Unurned cremation burial SG24588** (L2365) near L2312. Possible adult but of undetermined sex. Radiocarbon date of 1530–1410 cal. BC (SUERC-26321: 3210 ± 35BP) (Fig. 4.25)
- **Urned cremation burial SG24589** (L2365) near L2312 with capping stones. Possible adult but of undetermined sex. Radiocarbon date of 1500–1390 cal. BC (SUERC-26319: 3165 ± 30BP) (Fig. 4.25 and Plate 4.43)
- **Isolated unurned cremation burial SG23966** Undetermined age or sex. Radiocarbon date of 1260–1010 cal. BC (SUERC-26306: 2920 ± 30BP) (not illustrated)
- **Isolated unurned cremation burial SG24423** Undetermined age or sex. Radiocarbon date of 1260–1000 cal. BC (SUERC-26301: 2915 ± 30BP) (not illustrated)

Bayesian modelling of the radiocarbon dates from the three burials in L2365 suggests 'that the activity began in 1665–1425 cal. BC (95% probability …) and prob-

Plate 4.44 Middle Bronze Age segmented ditch L101 and middle Iron Age storage pit in foreground after completion of excavation, from the north (1m scale)

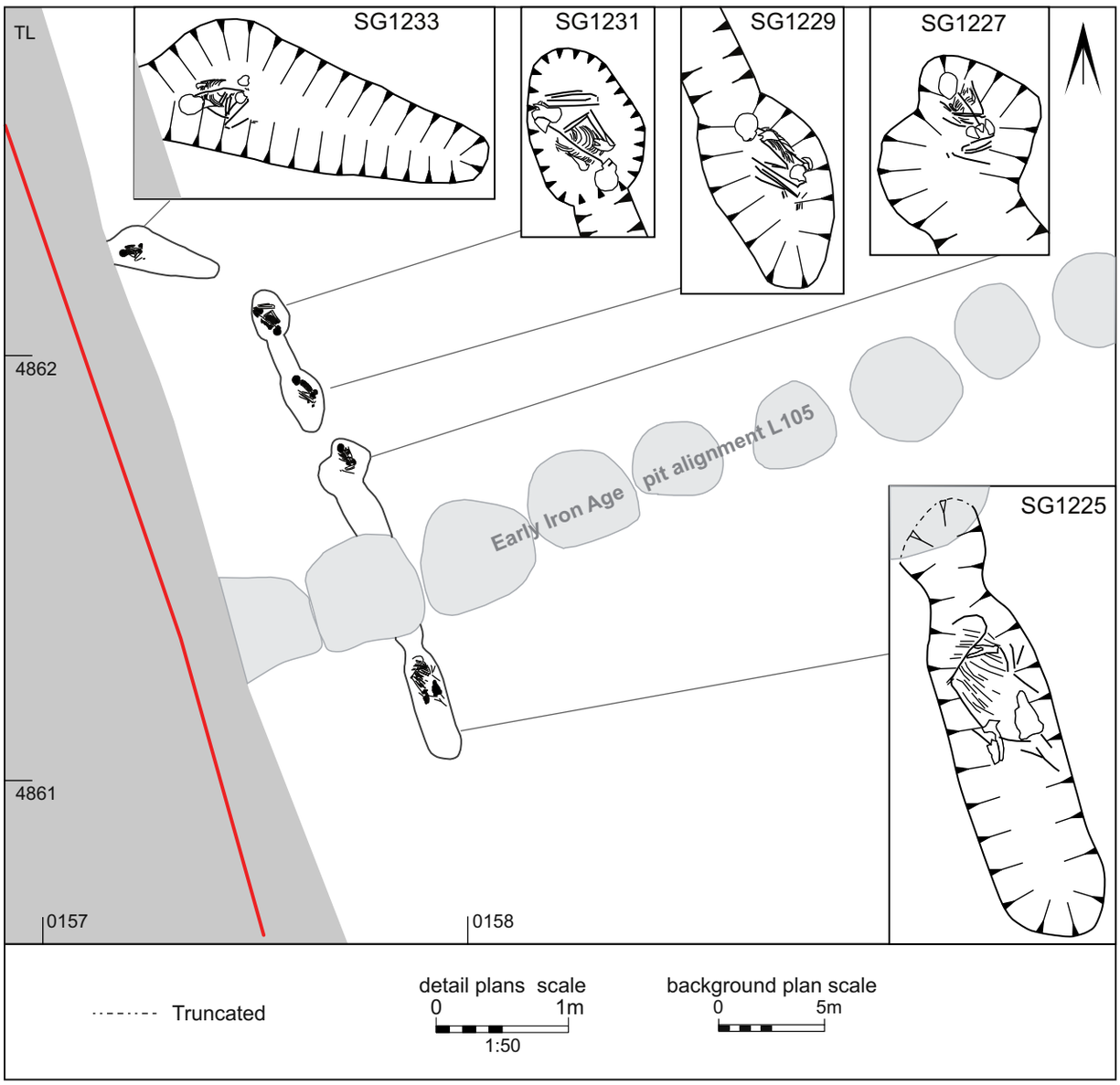


Fig. 4.26 Middle Bronze Age burials (human and cow) within segmented ditch L101 (SL15) on the Biddenham Loop. Scale 1:250, with detailed insets scale 1:50

Plate 4.45 Inhumation SG1229 (L101), from the south-west (1m scale)

Plate 4.46 Inhumation SG1231 (L101) being exposed, from the north-west

Plate 4.48 Inhumation SG1233 (L101), from the east (0.4m scale)

Plate 4.47 Inhumation SG1231 (L101), from the north-east (1m scale)

ably in 1520–1445 cal. BC (68% probability). The burials occurred over a period of as many as 370 years (95% probability …)' (CD Section 2; Hamilton).

Burials in segmented ditch L101
(Fig. 4.26, Plates 4.44–4.50)
Four inhumations and one cow were buried within a short length of segmented ditch L101 (Plate 4.44), *c.*20m from the present course of the river Great Ouse and to the west of open space SL14 (Fig. 4.3). The bodies had been interred in crouched positions at the base of the ditch and were spaced at least *c.*1m apart. Two were in the same ditch segment, while the other two were in separate segments. The cow (SG1225) had been buried in the ditch segment to the south (described below, with other cattle burials). The gap of *c.*4.5m between the southernmost inhumation and the cow burial may have contained another burial, but this area was destroyed by the later pit alignment. Inhumation SG1227, an elderly male, had been buried with the left femur, tibia and fibula from a small adult or subadult.

Plate 4.49 Middle Bronze Age cattle burial SG1225 within segmented ditch L101 (SL15) showing stones, from the east (1m scale)

Plate 4.50 Middle Bronze Age cattle burial SG1225 within segmented ditch L101 (SL15) after stones have been removed, from the east (1m scale)

Plate 4.51 Middle Bronze Age cattle burial SG1239 (L100, SL14), from the north-east (1m scale)

Where identifiable, these individuals were probable males ranging in age from 12–17 to >46 years. The group displayed evidence for a number of unusual pathologies, together with dental disease and minor congenital anomalies (CD Section 2; Powers). For example, elderly male SG1227 had experienced a number of traumatic injuries, including well-healed fractures of the ribs, probable dislocation and fracture of the left elbow and dental trauma (CD Section 2; Powers).

A single amber disc bead (CD Section 2; Duncan Fig. 1, OA10) was found within the skull case of the youngest individual (SG1233). 'Amber beads of this form on their own are not closely datable, occurring in all periods from the Neolithic to the late Iron Age (Shennan 1989, 112)' (CD Section 2; Duncan).

Radiocarbon dates for the burials are SG1227: 1390–1120 cal. BC (SUERC-25499: 3005±35BP); SG1231: 1300–1040 cal. BC (SUERC-25498: 2950±35BP) (Plate 4.46 and 4.47); SG1233: 1270–1010 cal. BC (SUERC-25497: 2930±35BP) (Plate 4.48); SG1225: 1260–980 cal. BC (SUERC-25501: 2900±35BP) (Plate 4.49); SG1229: 1210–1000 cal. BC (SUERC-26285: 2900±30BP) (Plate 4.45). Bayesian modelling of the dates suggests that the burials in this area, including the isolated animal ones, 'began in 1480–1140 cal. BC (95% probability …)' and 'spanned as many as 510 years (95% probability …)' (CD Section 2; Hamilton).

While it is possible that these burials are part of the same 'tradition' as burial within the field ditches, this is by no means certain, as they display a number of unusual characteristics. Although it was only partially visible within the excavation area, the segmented form of the ditch is unusual and hints at its being part of a monument. The burials were placed at the base of the ditch and there was no clear evidence for a grave cut. The number and proximity of the burials are unusual, as is the presence of a cow which had been decapitated. In summary, it is possible that the segmented ditch is part of a monument and in this context it may be significant that this area was cut through by the later pit alignment L105.

Cremation burial near possible settlement SL93
(not illustrated)
Little can be said about cremation burial SG24487, *c.*60m to the south-east of possible settlement SL93 within field system SL13 (Fig. 4.3). It comprised the remains of an adult probable female (CD Section 2; Powers) placed in an undiagnostic and fragmentary pottery vessel (CD Section 2: Wells, Pottery).

Cattle burials
(Fig. 4.26, Plates 4.49–4.52)
Four cattle burials occurred to the north-west of field system SL13 (Fig. 4.3). Two (SG1239 and SG1241) were within 50m of each other; a third (SG1225) was found in the same area but within segmented ditch L101; a fourth lay 150m further east within the Bovis investigations (Luke 2008, 111; Maltby 2008, 118–19). Although the burials are few in number, this was the only area within the Biddenham Loop where such interments took place and the burial of a cow in the segmented ditch used for human burial is particularly intriguing. Burials SG1239 (Plate 4.51) and SG1241 (Plate 4.52) were placed in their own grave pits, just like Bovis G769.

All four cattle burials have been radiocarbon dated, with the following results: SG1241: 1420–1220 cal. BC (SUERC-25508: 3065±35BP); SG1239: 1320–1050 cal. BC (SUERC-25507: 2965±35BP); SG1225: 1260–980 cal. BC (SUERC-25501: 2900±35BP); G769: 1695–1405 cal. BC (Beta-139484: 3260±70BP) (Luke 2008, 301).

Cattle burial SG1225, within segmented ditch L101, had been laid on its left side. It was complete, although its head had been placed near its hind legs. The burial was also unusual in that limestone blocks had been placed around and over the body. Cow burial SG1241 (L104) was located *c.*30m to the north; the animal had been laid on its right side with the legs slightly flexed. The third animal (SG1239) (L100) had also been laid on its right side with the skull folded back onto the body; the front and hind legs had been folded in so that they were touching. 'All three were probably female and all died prior to old age. … No evidence of skinning or butchery for meat was found on any of the burials' (CD Section 2; Maltby).

Plate 4.52 Middle Bronze Age cattle burial SG1241 (L104, SL15), from the north-west (1m scale)

Discussion

With the possible exception of segmented ditch L101 no new burial monuments were built during the middle Bronze Age, although some of the pre-existing monuments continued to be a focal point — as was the case at Broom, Beds. (Cooper and Edmonds 2007, 95–8), and Shorncote Quarry, Glos. (Barclay and Glass 1995) (Fig. 4.24). At Biddenham Loop the majority of the human burials, both cremation and inhumation, were placed in or adjacent to boundaries. They were assigned to this period on the basis of radiocarbon dates and they effectively date the establishment of the field systems. The occurrence of widely dispersed burials across field systems is quite common, especially in the Thames valley (Lambrick 2009, 306) although few were found at Perry Oaks. For the latter it was commented that 'the scarcity of cremations or inhumations … either in cemeteries or singly is striking' (Lewis *et al.* 2006, 151), although, as Lambrick says, 'this may not be a reliable indication since much of the area was truncated by a sewage works' (2009, 307).

While it is open to debate whether the buried animals were natural mortalities or not, they seem to have been buried in significant locations — the cattle in and near the segmented ditch which also contained human burials, and the sheep burial near the stock management system. As Maltby notes: 'the deliberate slaughter of the animals as sacrifices remains a possibility. No evidence of skinning or butchery for meat was found on any of the burials, although one of the skeletons appears to have been beheaded' (CD Section 2). In terms of the cattle burials on the Biddenham Loop, Maltby comments:

> … if these were healthy animals that were deliberately killed and buried, they represent a significant sacrifice of consumable meat. The slaughter of cows also represents the sacrifice of potential calves and milk products (CD Section 2; Maltby).

The burial of sacrificed animals in significant locations is also known from other contemporary sites. For example, cattle and sheep were placed within ditches at an intersection of middle Bronze Age enclosures at Corporation Farm, Abingdon, Oxon (Shand *et al.* 2003, 39 and fig. 3.8), and at entrances to the Rams Hill and Blewbury enclosures (Lambrick 2009, 360). Therefore, the placement of a 'relatively tall' sheep in a ditch adjacent to the stock management system on the Biddenham Loop was probably a votive act to ensure successful animal husbandry. As already noted, the cattle burials occurred in a largely unenclosed area containing inhumations within a segmented ditch to the north-west of the field system. This was clearly a significant area and it is probably no coincidence that it was later cut through by a pit alignment.

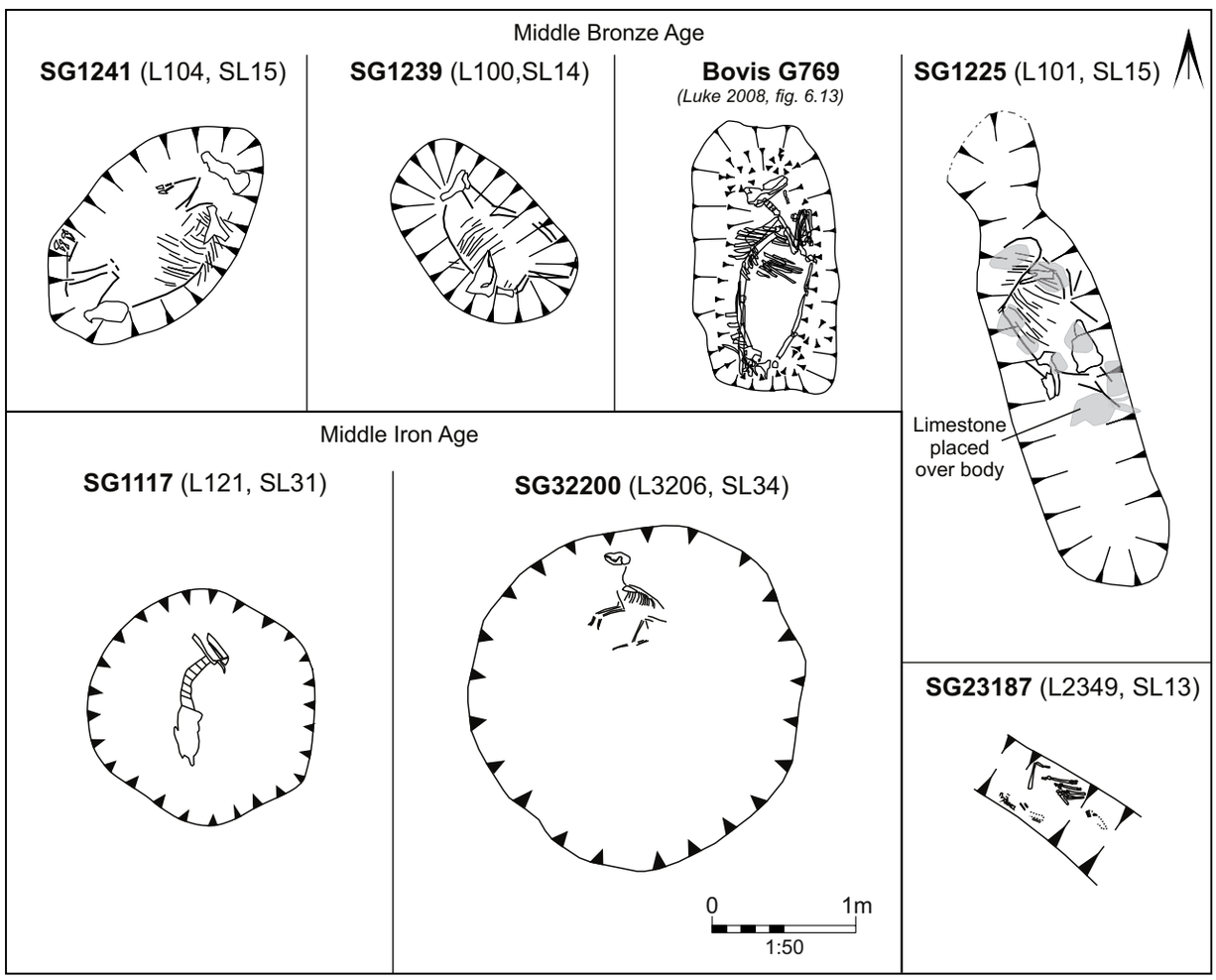


Fig. 4.27 Middle Bronze Age and middle Iron Age animal burials on the Biddenham Loop. Scale 1:50

Plate 4.53 Exposing an isolated late Bronze Age/early Iron Age inhumation SG23573, from the south-east

Late Bronze Age/early Iron Age

The only burials of this period from the recent investigations were inhumation SG23573 (SL20) (Fig. 4.25) and cremation burial SG24424 (SL22), both situated on the Biddenham Loop. They produced early Iron Age radiocarbon dates.

- **Isolated inhumation SG23573** was located to the north-west of field system SL11. The skeleton was of a 26–35-year-old probable female interred in a crouched position with no grave goods (Plate 4.53). The radiocarbon date was 740–390 cal. BC (SUERC-25543: 2395 ± 35BP).
- **Isolated cremation burial SG24424** was located *c.*20m south-east of the trackway associated with middle Bronze Age field system SL13. It comprised 2.7g of bone; age and sex were undetermined. The radiocarbon date was 790–510 cal. BC (SUERC-26305: 2500 ± 30BP). The charred wood was dominated by ash, with a reasonable amount of field maple and a few fragments of oak. 'The assemblage contrasts with the earlier Bronze Age cremations, with three plausible explanations: specific selection relating to the age/sex of the individual; changes in cremation rites; or changes in local vegetation' (CD Section 2; Challinor).

Nationally, the evidence for archaeologically visible late Bronze Age mortuary practices has been notoriously elusive (Burgess 1980, 158–9; Bruck 1995, 245). The Bovis investigations produced some evidence (Luke 2008, 33–4) in the form of two definite graves and eight pits containing tiny quantities of calcined, but unidentifiable, bone (Holst 2008, 154). The two graves contained *c.*500g and 15g of cremated bone, to which a third feature with *c.*2.7g of bone could be added. The location of these, admittedly only three, graves may be significant. They occur in a 'line' parallel to, but 85m north of, the main pit alignment and to the south of the main settlement area. Their peripheral location in relation to the settlement would correspond with Bruck's category B burials (1995, 247–9). Small numbers of similar burials (unurned cremation burials with small quantities of bone and no grave goods) were found near a large enclosure at Fairfield Park, Stotfold, Beds. (Webley *et al.* 2007, 139), and on the periphery of the settlement at Reading Business Park (Moore and Jennings 1992, 11). Within the Bovis investigations eight non-funerary features, all basin-type pits and water pits, contained possible 'token' burials comprising 0.06–4.31g of unidentifiable calcined bone (Luke 2008, 34). Interestingly, six of these pits were placed in locations similar to those of the cremation burials described above (*i.e.* peripheral to the settlement). Bruck considered 'that although the precise significance of a complete cremation burial and a token deposit may have been different, both seem to have been a means of focusing attention on certain places, concepts or people' (1995, 249).

Middle Iron Age

Four middle Iron age inhumations were found, including one (S1522) from the Bovis investigations; all were associated with farmsteads. Five possible animal burials were found in both farmsteads and dispersed 'activity foci'.

Inhumations

(Fig. 4.28, Plates 4.54–4.56)

The inhumations were dated to this period by radiocarbon dating or diagnostic pottery.

- **Inhumation SG1235** (farmstead SL31) was a 18–25-year-old probable male interred in a crouched position within a grave dug into the pit alignment (Plate 4.54). The radiocarbon date was 360–160 cal. BC (SUERC-25505: 2185 ± 35BP).
- **Inhumation SG1237** (farmstead SL31) was a >45-year-old female interred in a supine, extended position within a grave partly dug into the pit alignment (Plate 5.55). The radiocarbon date was 350–40 cal. BC (SUERC-25503: 2125 ± 35BP).

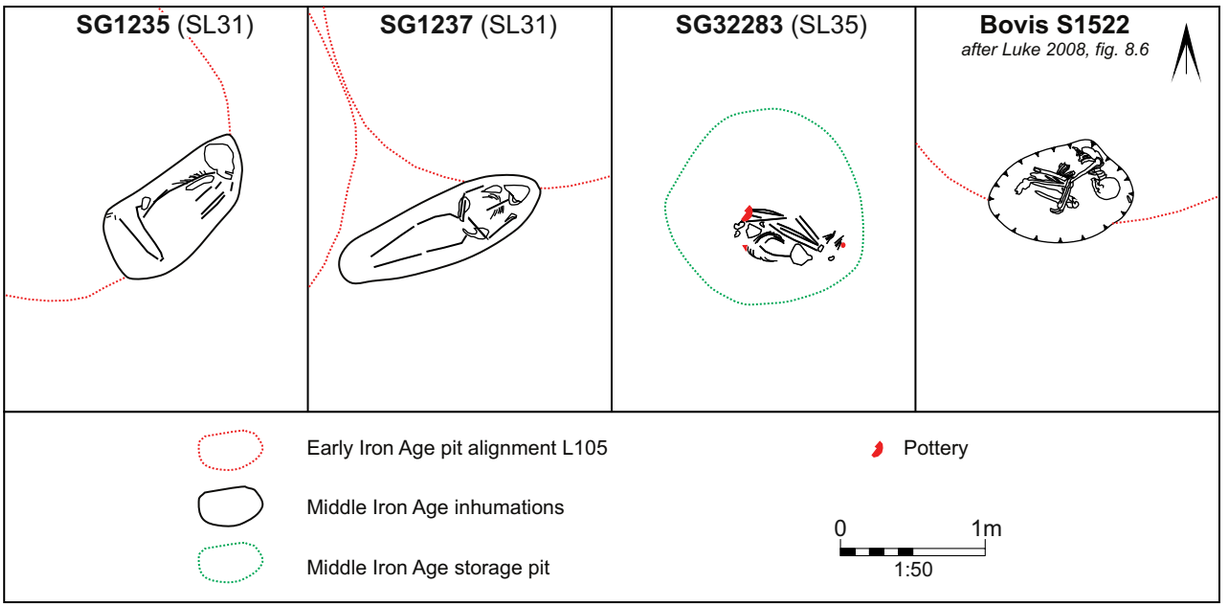


Fig. 4.28 Middle Iron Age inhumations on the Biddenham Loop. Scale 1:50

- **Inhumation SG32283** (farmstead SL35) was a 12–17-year-old probable male interred in a tightly crouched position on the base of a storage pit (Plate 4.56). Several large sherds of middle Iron Age pottery appeared to have been deliberately placed beneath the wrists, shoulder and feet.
- **Inhumation S1522** (Bovis farmstead 3) was an adult male interred in a tightly crouched position within a partially infilled pit of early Iron Age pit alignment L105. The radiocarbon date was 415–170 cal. BC (Beta-139483, 2270 ± 70 BP) (Luke 2008, 44 and 301).

Two inhumations, SG1235 and SG1237 (L102), were located *c.*10m apart in individual shallow graves within farmstead SL31. Although they were *c.*15m from roundhouse L106, more significantly, like the inhumation found *c.*20m to the east within the Bovis investigations (Luke 2008, 173), they were in graves dug into the early Iron Age pit alignment L105, which presumably continued to survive in some form, perhaps as a hedged earthwork. Two were crouched and one was supine but all had their heads to the east. Comparable burials (moderate contraction in a grave about 1m in length) are known from Roughground Farm, Glos. (Allen *et al.* 1993, 45), and Winnall Down, Winchester (Fasham 1985, 25–30). One of the inhumations at Roughground Farm was located in a boundary ditch; such locations are quite common in this period, especially in the Thames valley (Lambrick 2009, 309–10). Inhumation SG32283 was placed at the base of a storage pit in cluster L3207, within farmstead SL35. Burials within storage pits are also well known at this time, appearing at, for example, Fairfield Park, Stotfold,

Plate 4.54 Middle Iron Age inhumation SG1235 (farmstead SL31) buried in grave cutting early Iron Age pit alignment L105, from the north-east (1m scale)

Beds. (Webley *et al.* 2007, 99 and plate 2.5), and Gravelly Guy, Oxon (Lambrick and Allen 2004, 117). Other than the pottery sherds associated with SG32283, none of the burials had grave goods.

Inhumations SG32283 and Bovis S1522 were both tightly crouched. Such treatment is quite common during the late Bronze Age and early–middle Iron Age in the Thames valley and may indicate that individuals had been bound or bagged before burial (Lambrick 2009, 310–11). The small number of middle Iron Age inhumations clearly demonstrates that this burial rite is not that used for the majority of the population. While it is possible that it was reserved for the disadvantaged, social outcasts or criminals, there is no evidence from the skeletal remains to indicate that these individuals were deliberately killed. For the majority of the population it is assumed that excarnation (the exposure of the dead) or 'burial' in the river would have been the norm. The absence of isolated human bones within the farmsteads on the Biddenham Loop suggests that any excarnation must have been carried out some distance from the settlements.

Animal

All of the possible animal burials occurred in storage pits. In some cases, owing to partial remains, it was unclear whether the original burial comprised the complete animal. However, those included here exhibited no evidence for butchery or skinning and are therefore unlikely to represent the disposal of food waste. Perhaps most unusual was the burial of a young adult cow (SG1117) in which the body had been laid on a bed of deliberately placed large stones and the skull had been upturned. It is difficult

Plate 4.55 Recording middle Iron Age inhumation SG1237 (farmstead SL31), from the south

Plate 4.56 Vertical view of middle Iron Age inhumation SG32283 within partially filled storage pit in cluster L3207 (farmstead SL35) (0.4m scale)

Plate 4.57 Partial middle Iron Age cow skeleton SG1117 within upper fill of one of the storage pits within cluster L121 (farmstead SL31), from the west (0.4m scale)

to be certain whether the other burials were the result of ritual activity or natural death.

The burials comprised:

- **Partial skeleton of a young adult cow SG1117** (Plate 4.57) laid on a bed of deliberately placed large stones within storage pit G1017 (cluster L121, farmstead SL31). Radiocarbon dated to 380–110 cal. BC (SUERC-25517: 2180±35BP). 'The skull was upturned and pointing to the south with the vertebrae twisted round to the north-east. There is no evidence to suggest that the incompleteness of the skeleton is due to poor preservation. There is no evidence of butchery or gnawing' (CD Section 2; Maltby).
- **Poorly preserved skeleton of a perinatal pig** found in lower fill SG1194 within storage pit G1026 (cluster L124, 'activity focus' SL32).
- **Partial skeleton of a 2–4-year-old domestic pig** found in secondary fill SG24399 within storage pit G23248 (L2397, 'activity focus' SL33). 'There is no evidence of butchery or gnawing damage to explain the absence of the remainder of the skeleton' (CD Section 2; Maltby).
- **Partial skeleton of an adult dog** found in tertiary fill SG1143 within storage pit deposit G1020 (cluster

Plate 4.58 Exposing middle Iron Age dog skeleton SG32200 within storage pit in cluster L3206 (farmstead SL34), from the west

L122, farmstead SL31). Most of the bones of the right hindlimb were recovered, along with a few ribs and several bones from other areas of the body, so it is possible that this represents the remains of a complete burial subsequently disturbed. There is no evidence for butchery, weathering or gnawing.

- **Skeleton of an immature dog** found in the primary fill SG32200 within storage pit G32018 (cluster L3206, farmstead SL34) (Plate 4.58). 'There are no signs of skinning marks, so it seems likely that the dog was deposited as a complete carcase' (CD Section 2; Maltby).

IX. People and the activities they undertook

The investigations have produced a limited range of insights into the lives of the middle Bronze Age/Iron Age inhabitants of the area. This evidence mainly takes the form of their direct impact on the landscape through the creation of fields and settlements (described above), although their skeletal remains, artefacts and ecofacts also contribute to our understanding of the relative importance of the farming and craft activities that they undertook.

People

The remains of forty-one individuals were recovered (thirty-five middle Bronze Age, two late Bronze Age/early Iron Age and four middle Iron Age). These clearly represent only a tiny percentage of the total population during these periods. The reasoning behind the decision to bury particular individuals in the prehistoric past is rarely understood. Accordingly, it is important to remember that buried individuals may not be representative of the general population. When burial takes place the survival of skeletal remains is principally dependant on soil conditions, later land use and the nature of the burial rite. Human bone can provide much information on specific individuals and their lives, but it is inevitable that cremated remains will be much less informative than inhumations and excarnation, by its very nature, will seldom provide any information at all.

In general, it is possible to say that the majority of the buried population died before they were twenty and that very few lived beyond their early forties. The evidence for trauma and disease indicates that many people had bad teeth, suffered back and joint problems, and had a variety of painful ailments. Some of the conditions can be associated with particular activities, such as carrying a load, such as a heavy bucket, at a slight distance from the body, *e.g.* SG1231; throwing, *e.g.* SG21392; and using the teeth as a tool, *e.g.* SG22030. Other conditions are more specific, such as developmental anomalies in the lower spine, including spina bifida occulta in SG22029 and fractures of the elbow and ribs in SG1227. Further details of these are described in CD Section 2, Powers.

Personal adornment or jewellery was extremely scarce, being confined to two middle Bronze Age human burials and a stray find in a middle Iron Age farmstead within the Bovis investigations. The unsexed sub-adult SG21392 wore a probable necklace (five amber beads and one glass bead were found in the region of the head and upper neck), a copper alloy finger ring and a possible earring. Beads are rarely found on middle Bronze Age sites; an exception is inhumation 3058 from Easton Lane, Winchester (Fasham *et al.* 1989, 28). They are more common in the early Bronze Age, as at ring-ditch I at Radwell, Beds. (Hall and Woodward 1977, 3–4). In the case of the second burial with a grave good, sub-adult SG1233 in segmented ditch L101, a single amber bead was found within the skull case. The only instance of an item of personal adornment from this period was a middle Iron Age involute iron brooch from farmstead 2 within the Bovis investigations (Duncan 2008, 188, RA60).

Part of what has tentatively been identified as an iron spearhead was found.

> Finds of iron weaponry are fairly rare occurrences on middle Iron Age sites, especially in a domestic context … whatever use the spearhead [Fig. 3, OA23] may have been put to, its occurrence in the fills of storage pit G32017 would suggest that a person of above average means/social standing was present during the occupation of SL34 (CD Section 2; Duncan).

Farming

It is generally accepted that 'farming formed the basis of Iron Age societies' (Haselgrove *et al.* 2001, 10), and this is borne out by the evidence from the Biddenham Loop. The land was well suited for mixed farming. The inhabitants utilised the fertile soils overlying the gravel to grow cereals, and possibly pulses, and to graze livestock for both meat and dairy products. The individual settlements, especially during the middle Iron Age, would have been ideally positioned between the fields within the interior of the Loop and the pasture and meadows on the flood plain. Only limited investigations have been undertaken within the latter, as it was not significantly impacted by the developments.

From the middle Bronze Age:

> … cattle and sheep would have formed a significant part of the developing landscape organisation that was taking place in this area. As discussed in relation to the later prehistoric and Roman settlement evidence from the Bovis investigations (Maltby 2008), the areas around the river would have provided excellent pasture for cattle in particular (CD Section 2; Maltby).

At suitable times of the year the animals would have been herded over the flood plain; at other times they would have been corralled much closer to the settlements. Pigs were present from the middle Bronze Age but horses made their first appearance only in the late Bronze Age/early Iron Age. Domestic horses are generally believed to have been introduced into Britain during the early Bronze Age, becoming gradually more common during the Bronze Age (Bendrey 2010). 'A similar pattern was found in the middle Iron Age farmsteads from the Bovis investigations to the north, where most of the farmsteads produced more cattle than sheep/goat bones and pig were also relatively poorly represented (Maltby 2008, 189–91)' (CD Section 2; Maltby). Apart from the 'unusual' deposits, none of the farmstead and activity areas produced many animal bones. As Maltby (CD Section 2) says that:

> even in areas where houses were found, animal bones were not deposited in great numbers within most of the disused storage pits. It would appear that most 'normal'processing and consumption waste was discarded elsewhere and the bones did not survive.

At Mingies Ditch, Oxon, 'larger animals, such as cattle, seem to have been dismembered on the periphery of the settlement whereas smaller animals, such as lambs, were cut up in the vicinity of the houses and hearths'

(Lambrick 2009, 157). The relatively small quantities of animal bones recovered from Biddenham Loop is therefore unusual, especially in the case of farmstead SL31, where, along with disused storage pits, there were also enclosure ditches and the partially infilled pit alignment that would have been suitable places for disposal. It may be noted that the Bovis middle Iron Age bone assemblage:

> exhibits one of the lowest rates of slaughter of immature cattle during this period in Britain (Hambleton 1999, 78–86). It is likely that cattle were kept for purposes such as dairy or traction, functions which may have been more important than that of a source of meat (Luke 2008, 45).

They might also, like horses perhaps, have served as a symbolic indicator of wealth (Haselgrove *et al.* 2001, 10) from the middle Bronze Age. This may partly explain why the middle Bronze Age cattle burials took place in the same area as human burials, close to the river Great Ouse. In contrast to other sites, such as Gravelly Guy, Oxon (Lambrick and Allen 2004), there is no evidence that horses or dogs were butchered. Nor is there evidence that butchery techniques changed during this period.

For arable farming there is both direct evidence, in the form of charred crops, and indirect evidence, in the form of fields, storage pits and saddle querns. It is likely that 'after preliminary threshing and winnowing in the harvest fields grain was stored on the ear either in pits or granaries within settlements' (Lambrick 2009, 157). The effective storage of food would have been essential to avoid shortages and to allow for lower yields in bad years. The late Bronze Age/early Iron Age settlements within the Bovis investigations featured four-post structures, often interpreted as granaries (Luke 2008, 36), while in the middle Iron Age only storage pits were found on all the investigations on the Biddenham Loop. This chronological contrast is a common occurrence (Lambrick 2009, 271). Storage in granaries and pits is likely to have been for the longer term, often of grain seed, with storage in pottery vessels or sacks for shorter-term storage. The production of a surplus would probably have been desired to compensate for 'outbreaks of infection, poor harvests and other setbacks' (Lambrick 2009, 167).

The final stages of grain processing are likely to have taken place within the settlements, following removal from storage; however, the survival of evidence for it relies on accidental charring. Despite extensive sampling during the recent investigations charred cereal remains were rare and often poorly preserved. Therefore, although the middle Iron Age samples produced significantly larger amounts than earlier periods, this does not necessarily reflect increased yields. The recovered material comprised

> [a] similar range of cereals to the early Bronze Age, with emmer wheat (and possibly spelt wheat in the later period) (six-row hulled) barley and free-threshing wheat. … Hulled barley, emmer and emmer/spelt were also found in late Bronze Age/early Iron Age deposits within the Bovis investigations (Pelling 2008, 154) (CD Section 2; Giorgi).

Bovis farmstead 1 produced an exceptional deposit of ?black mustard seeds (Pelling 2008, 192).

> Large assemblages of black mustard seeds from Iron Age sites are relatively rare, but have been recovered from Balksbury Camp, Hampshire (de Moulins 1995), and Old Down Farm, Hampshire (Murphy 1977, plate 14 and 74–5). It seems likely that the remains represented a damaged stored crop, possibly intended for oil extraction (Luke 2008, 45).

Charred waste from cereal de-husking and final cleaning was more commonly found in middle Iron Age samples.

'Once cleaned and dried, grain would have been kept ready to use whole, or to be ground by hand into flour using quernstones' (Lambrick 2009, 158). Evidence for this from the Biddenham Loop is limited — saddle querns were found only in farmstead SL31 (CD Section 2; Duncan, Fig. 3, OA21) and in dispersed 'activity foci' adjacent to Bovis farmstead 2 (Duncan 2008, 187).

Craft activities

Evidence relating to craft activities is notoriously difficult to recognise on the type of settlements found within the study area. The limited number of iron objects indicates that few items were ever disposed of, presumably owing to constant recycling.

> The absence of items associated with household-based activities, such as … textile production, from some of the farmsteads could be due to a number of reasons: the length or nature of the occupation, differential disposal of objects, and perhaps zoned/controlled activities. The latter could perhaps apply to farmstead SL35, where the only evidence of ironworking was found. The evidence is limited but could suggest "restricted domestic production", which is household-based but carried out by part-time semi-specialists perhaps working seasonally (de Roche 1997, 20) (CD Section 2; Duncan).

Each household would have been geared to supplying its own needs (Cunliffe 1991, 444) and widespread use would also have been made of perishable organic items, which have not survived in the archaeological record.

Spinning and weaving are presumed to have been household-based activities in this period. Remains of loomweights, including cylindrical and triangular types, were found within the fills of a single pit in possible settlement SL125 on Land west of Kempston. There is a dearth of evidence for these activities from the middle Iron Age farmsteads — one loomweight, found in the fills of an early Bronze Age ring-ditch, may have originated from dispersed activity associated with farmstead 2 within the Bovis investigations (Duncan 2008, 187). Flax was found, admittedly in tiny quantities, in late Bronze Age/early Iron Age settlements: SL125 on Land west of Kempston, in a pit adjacent to the one containing the loomweights (CD Section 2; Giorgi); and in the main late Bronze Age/early Iron Age settlement on the Biddenham Loop within the Bovis investigations (Pelling 2008, 154). The seeds of flax may have been used as food, but the fibres were also used for textiles; interestingly, flax was found in the settlement where loomweights were recovered (SL125 on Land west of Kempston). A possible leatherworker's palm was found in Bovis farmstead 1 (Duncan 2008, 187).

That the middle Iron Age inhabitants of the study area

> … had access to iron is not only attested by finds of nails, a spearhead and a sheet fragment respectively from SL30, SL34 and SL31, but also by ferrous smithing by-products found in SL35. A small hearth bottom (OA18) and moderate quantities of flake hammerscale and spheroidal hammerslag were found in pits G32023 and G32024 (L3207) of farmstead SL35. The presence of spheroidal hammerslag could suggest either primary smithing, or that fire welding during secondary smithing was taking place (CD Section 2; Duncan).

The maintenance of metal tools is hinted at by the whetstone (OA20) from activity focus SL138 on Land west of Kempston.

The only other craft represented in the assemblage is antler working, as evidenced by the sawn tine from a red deer antler (OA19) from farmstead SL30 (CD Section 2; Duncan). Finally, the nature of the pottery and the availability of clay locally suggests manufacture in bonfire or clamp kilns, although no traces of these were identified.

Gathering and hunting

There is limited evidence for the exploitation of wild plant and animal species during this period. Where present, it comes in the form of charred plant remains, animal bone and two artefacts.

In terms of wild plants there was

> evidence for the continued collection of wild fruits, including hazelnuts, sloe/blackthorn and possibly haws, with hazelnut fragments being found in earlier excavations of late Bronze/early Iron Age deposits within the Biddenham Loop (Pelling 2008, 154). Occasional charred onion couch tuber fragments were found in middle Bronze Age cremation deposits (CD Section 2; Giorgi).

A curious faunal assemblage was recovered from pit G23286 within the middle Bronze Age field system SL13. It appeared to include bones of wild species deliberately selected for deposition and therefore may not represent animals hunted for practical purposes; it is described below (p. 195). Excluding this assemblage and pit-fall victims, usually amphibians, few bones of wild species were recovered from the late Bronze Age onwards — deer antler from both the recent and Bovis investigations, a butchered beaver ulna from the Bovis investigations (Maltby 2008, 191) and a large pike from one of the pits of the pit alignment within the Bovis investigations (Maltby 2008, 152). No evidence was found for the exploitation of fish despite the proximity of the river and extensive sieving during the investigations. This is a phenomenon noted elsewhere (Cunliffe 1991, 382), and may reflect cultural beliefs. The small quantities of wild species from the study area (CD Section 2; Maltby) is mirrored at Fairfield Park, Stotfold (Holmes 2007b, 109), and Hill Lane, Broom (Swaysland 2007, 299), both in Bedfordshire.

A relatively short socket and the start of the blade of what has been tentatively identified as a spearhead (CD Section 2; Duncan, Fig. 3, OA23) was found in middle Iron Age farmstead SL34.

> It has several traits in common with 1st century AD spears from Hod Hill, Manning's Type 1A spearhead (Manning 1985, 162–3) … Finds of iron weaponry are fairly rare occurrences on middle Iron Age sites, especially in a domestic context. A parallel occurred at Pennylands, Milton Keynes, where a sword was found in the secondary ditch fills of a middle Iron Age roundhouse (Jope 1993, 99–100). There it was noted that 'it is important to remember that such implements could serve not only as personal weapons, but general purpose knives for cutting meat at meals, as well as in the hunting field' (Jope 1993, 100) (CD Section 2; Duncan).

Two biconical clay slingshots have been recovered from early to middle Iron Age deposits within the study area. One was found in a pit of the pit alignment within the Bovis investigations on the Biddenham Loop (Duncan 2008, 187–8 and fig. 8.15); the other was from major boundary ditch SL137 on Land west of Kempston (CD Section 2; Duncan, Fig. 3, OA22). Both of these slingshots compare well with those from the much larger assemblage from Dragonby, Lincs. (Elsdon and Barford 1996b, 338).

> Although the sling was evidently an important element in warfare (Waddington and May 1996, 340), its use in hunting should not be ignored, nor the ethnographic evidence for their use in driving off animals preying upon flocks (Cunliffe 1983, 80). It is perhaps of interest that both examples from the Biddenham/Kempston areas were recovered from boundary features, but with such a limited assemblage it is unwise to draw any conclusions (CD Section 2; Duncan).

'Special' deposits

Data from the study area can be added to the large body of evidence for the view that certain deposits on Iron Age sites should not be seen as random dumps of 'rubbish', but rather as important aspects of spiritual/ritual behaviour (Cunliffe 1992; Hill 1995). Similar deposits were identified in the Neolithic/early Bronze Age; Lambrick believes that 'the sacred and profane were deeply intertwined throughout prehistory, but this relationship seems to have become especially evident in a great variety of "special" deposits in late prehistoric domestic contexts that cannot adequately be explained in terms of ordinary rubbish disposal' (2009, 283).

Hill (1995) and Bruck (1995) have tried to explain the meaning of such deposits. For example, 'rubbish' was probably associated with regeneration and fertility, and human remains might have been used to further emphasise this concept (Bruck 1999). This helps explain the 'special' deposits within the middle Iron Age storage pits at Biddenham Loop and at other sites, both in the county — *e.g.* Broom (Cooper and Edmonds 2007, 171) and Fairfield Park, Stotfold (Webley *et al.* 2007, 147–8) — and outside the region — *e.g.* Danebury, Hants (Whittle 1984, 145–6).

For convenience, the following section is subdivided on the basis of the principal component of 'special' deposits. It is accepted that this is not ideal because it is often the combination of different components that characterises such deposits.

Human

Of the four middle Iron Age inhumations (including one from the Bovis investigations), three were buried next to the pit alignment and one in a storage pit. As discussed above, human burials in storage pits are not unusual (*e.g.* Fairfield Park, Stotfold, Beds. (Webley *et al.* 2007, 99)). In some ways burial SG32283 typifies the problem with interpretation. It was placed on the base of a storage pit and, therefore, could be interpreted as a sacrifice associated with crop production/failure (as suggested by Wait 1985, 120). But how likely is that, given that it is the only such occurrence within nearly 200 storage pits excavated on the Biddenham Loop? Is it not more likely that the storage pit represented a suitable hole in the ground, one that no longer served its original purpose? That burial was chosen for this individual and that it took place within a settlement may of course still be significant in its own right. Formal human burials are discussed in more detail above (see pp. 188–90).

Perhaps more significant is that although three middle Iron Age deposits in farmsteads 2 and 3 within the Bovis investigations contained unburnt human skull fragments (one in a pit within a roundhouse (Luke 2008, 44)), none was found during the recent investigations. Human bone and in particular skull fragments occur in varying quantities on most Iron Age sites, as, for example, in deposits associated with a roundhouse at Bancroft, Milton Keynes (Williams and Zeepvat 1994, 55), and in

BOX 15: Middle Iron Age spearhead and slingshot

By Holly Duncan. Photograph by Adam Williams

Although few wild animal bones were found in early–middle Iron Age deposits, three objects may suggest that some hunting was carried out. Part of the socket and start of the blade (OA274) from an iron spearhead (photo left) was found in the fill of a middle Iron Age storage pit within farmstead SL34. Iron Age spearheads tend to be small, with no two examples showing a marked degree of similarity. These variations may reflect the variety of uses to which such weapons were put — javelins, lances, throwing spears and possibly hunting spears. Finds of iron weaponry are fairly rare occurrences on middle Iron Age sites, especially in a domestic context. Whatever the function of this spearhead, its presence in the fills of a storage pit would suggest that a person of above average means/social standing lived on the farmstead.

The sling was an important element in warfare but it could also be used in hunting or for driving off wild animals preying upon livestock. Two clay slingshots were found during the excavations: one (OA22) from a large ditch L1000 on Land west of Kempston (photo right) and one from the early Iron Age pit alignment across the Biddenham Loop (Bovis investigations). Both these findspots represent parts of boundary features but, with such a small assemblage of slingshots, it would be unwise to draw any conclusions about their use in these particular instances.

For further information and figures see CD Section 2; Duncan.

an enclosure ditch at Site 2 on the Great Barford Bypass, Beds. (Webley 2007a, 14). Cunliffe commented that 'it must be assumed that skulls were selected for some kind of special treatment, which eventually resulted in token pieces being retained by individuals, perhaps as good-luck charms' (1991, 507).

Animal

There was no evidence for the butchery or skinning of the middle Bronze Age cattle burials within SL15. However, SG1225 exhibited clear evidence of ritual activity: its head had been removed and placed near its hind legs, and it was partially covered by stones. This and the other cattle burials took place near human burials (in the case of SG1225 within the same segmented ditch) and in a significant landscape location. A similar ritual interpretation is likely for the sheep burial SG23817, placed within a middle Bronze Age ditch adjacent to the stock enclosure system. These burials are discussed in more detail above (see p. 182).

The primary fill of water pit G23286 (L2391) within middle Bronze Age field system SL13 contained a most unusual animal bone assemblage.

> The presence of bones from adult and neonatal red deer, a pine marten, a badger and an adult and possibly juvenile wild boar is an extremely unusual combination, particularly when located in an area where wild species would have been generally excluded or discouraged when the landscape was formally transformed into field systems associated with arable and pasture … The motivations behind such depositions are of course difficult to interpret. They could have involved belief systems that were closely linked to the human community's perceptions of wild animals. The placements may conceivably have been used to symbolize a conceptual boundary or dichotomy between nature and the domesticated landscape (CD Section 2; Maltby).

Therefore, it is possible that this assemblage represents the continuation in some way of the Neolithic and early Bronze Age practice of the burial of parts of the

bodies of wild species, especially the shaft deposits (see p. 78).

Several complete and semi-complete animal skeletons were found in middle Iron Age storage pits. Although these have been interpreted as burials where they showed no evidence for butchery, it is possible that some were sacrificed rather than dying of natural causes. The former is perhaps more likely in the case of SG1117, which was placed on a bed of stones (this and the other remains interpreted as burials have been discussed above). Other animal bone assemblages within the storage pits exhibited evidence for skinning and butchery (*e.g.* sheep bones from SG23176 within storage pits G23036 (L2309, farmstead SL30) and cattle bones from SG1122 (cluster L121, farmstead SL31)). In terms of the SG23176 assemblage:

> … at least one of the sheep was skinned, butchered and possibly roasted on a spit … Although it could be argued that these groups simply represent well preserved butchery waste, the concentration of finds is unusual and, in the case of the cattle, it provides evidence for the processing of at least three animals, possibly in a single episode, which would have provided a substantial amount of beef. If the meat was destined for immediate consumption, this could represent the residue from a significant feasting or redistribution event (CD Section 2; Maltby).

At Hill Lane, Broom, Beds., eleven of the fifty-four storage pits 'contained unusual deposits of animal bone at their base, including four near-complete skeletons, two skulls and eight articulated limbs' (Cooper and Edmonds 2007, 171). The skeletons comprised a sheep/goat, a foetal piglet, a raven and a hedgehog, although the latter could have been a pit fall victim. 'With one exception (the cattle limb) all the complete skulls and limbs were from horses' (Cooper and Edmonds 2007, 171). In contrast, the Biddenham Loop deposits occurred more infrequently and did not include horse.

Artefacts

Throughout this period a few deposits with unusual quantities or types of artefacts were encountered. Such deposits are striking and do seem to represent more than just casual disposal of household waste. However, in the majority of cases we can only speculate about the meaning they held for the late Bronze Age and Iron Age inhabitants of the area.

On Land west of Kempston an assemblage of late Bronze Age/early Iron Age loomweights was recovered from pit G45088 within possible farmstead SL125. As Duncan says: 'the juxtaposition of the two forms of loomweights perhaps [represents] the "life span" of the weaving activity, the deposit as a whole perhaps an "abandonment" deposit to mark the end of this activity or occupation in this area' (CD Section 2; Duncan).

While most individual pottery assemblages weighed less than 500g there were some exceptions. These were typically recovered from storage pits on the Biddenham Loop but one was found within ditch G10000 (SL137) on Land west of Kempston (CD Section 2: Wells, Pottery, Table 11). None of these were obviously 'structured' in nature and they were not associated with other unusual artefacts or ecofacts. Several 'special' deposits were identified within the Bovis investigations. Three occurred within *c.*10m of each other on farmstead 1. The fill of a small pit, which may have been contemporary with a roundhouse, contained a human skull fragment, 9kg of pottery, an iron knife, a copper alloy strip and 2368 burnt ?black mustard seeds. Two terminal fills of a ditched enclosure associated with the farmstead produced over 1kg of pottery and three animal jaws from a horse, a cow and a dog respectively (Luke 2008, 44).

5. 'Britons', 'Romans' and 'Saxons' (100 BC–AD 650)

I. Introduction

(Fig. 5.1)

By *c.*100 BC new settlements had been established on previously unoccupied land, albeit often in the vicinity of middle Iron Age farmsteads. For the next five centuries settlement location and form, artefact types and farming practices remained essentially unchanged. As for the Thames valley, 'in archaeological terms many aspects of the late Iron Age and early Roman periods are indistinguishable' (Booth *et al.* 2007, 33). Within the study area there is also no evidence in the archaeological record for events associated with the Roman conquest of AD 43. Equally, there is no evidence for an abupt 'end of Roman Britain', although there is evidence for a change in settlement and artefact types between the early 4th century and the early 5th century. Some of the apparent changes at the beginning of the 5th century may have been exaggerated, as is often the case in the archaeological record, because the use of coinage and mass pottery production ceased. What is clear, however, is that only a minority of farmsteads within the study area and only parts of the Roman roadside settlement remained in use through the 5th and 6th centuries.

The creation of new settlements on previously unoccupied land in the late Iron Age probably reflects increasing population pressure, but it was made possible only by agricultural innovations, such as iron-tipped ploughs, rotary querns and cereal crops suited to heavier soils (Williams 1993, 213; Haselgrove *et al.* 2001, 29). Others have suggested that the 'impetus to agricultural expansion may have come from changes in social organisation' (see Haselgrove *et al.* 2001, 29). It is now apparent that there were four discrete Romano-British farmsteads within the Biddenham Loop (including two within the Bovis investigations) and three within Land west of Kempston (including two within the adjacent Marsh Leys investigations). In the centre of the study area is the large roadside settlement at Kempston Church End, which presumably had a major influence on the landscape and communities in its environs.

Away from the settlements, the main new landscape features created during the Romano-British period were a number of trackways defined by parallel ditches. Some of these are likely to have been pre-existing routeways which became formalised — perhaps owing to a need to define arable fields more clearly or to changes in land ownership. Some of the trackways clearly linked settlements, although their routes were not always archaeologically visible over their entire length. One trackway on the Biddenham Loop appeared to lead to the ritual complex created in the late Iron Age, suggesting that it continued in use into the Romano-British period. Although systems of small enclosures were established near the farmsteads on the Biddenham Loop, no new fields were created within the interior. This presumably indicates that some of the existing fields, dating back to the middle Bronze Age, remained in use. In contrast, a new system of fields was created on previously unoccupied land in one part of Land west of Kempston. In addition, a number of discrete blocks of bedding trenches, possibly associated with fruit hedges or vines, were established in several areas on Land west of Kempston, but, curiously, always away from known settlements. The identification of land ownership boundaries is always difficult, but a small number of extensive ditches in both parts of the study area provide good candidates. The one on the Biddenham Loop is parallel to the early Iron Age pit alignment, again suggesting a degree of landscape continuity.

The late Iron Age/early Roman ritual complex on the Biddenham Loop clearly remained a significant feature in the landscape, although our understanding of it is hampered by the lack of associated burials or distinctive artefacts. As is the case nationally, cremation burial was the main funerary rite in the late Iron Age and early Roman period, after which inhumation predominated until the end of the Roman period. Throughout this period the majority of burials were found in small numbers within or adjacent to settlements. However, an inhumation cemetery was found to the south of the Biddeham Loop within the study area and a cremation cemetery was found near one of the farmsteads investigated within the Bovis investigations (Luke 2008, 51–3). Two large inhumation cemeteries are known within the Kempston Church End roadside settlement (outside the study area). An exception to these was a *bustum* burial which took place in the centre of the Loop, away from any settlement. The cremated individual was accompanied by a dog, both of which lay on a decorated wooden couch. The person was clearly of considerable status, perhaps the major landowner at this time.

A decade ago Wade noted that, for the eastern region, 'it is still far from clear what happened in the 5th century' (2000, 23). Significant social, political, economic and religious changes undoubtedly took place. However, no consensus has been reached as to the causes and, in particular, what role immigration from the continent played in the process. With the addition of new techniques such as DNA and isotope analysis to the already disputed fields of archaeology, linguistics and history, it seems unlikely that a commonly accepted answer will emerge in the near future.

A recent review of the Chilterns and Essex region (including southern Bedfordshire) during this period stressed the value of local inter-disciplinary studies (Baker 2006, 255). These allow detailed analysis of local variation that can easily be lost in more wide-ranging regional and national studies. Albeit on a relatively small scale, the data from the recent investigations can be combined with other strands of evidence to elucidate the dramatic changes that took place in the Kempston area during the 5th century. Evidence from the study area certainly illustrates the spread of Germanic culture through the Great Ouse valley and the wider region from the 5th century. Developments include new building forms, new pottery types and other artefacts styles, an

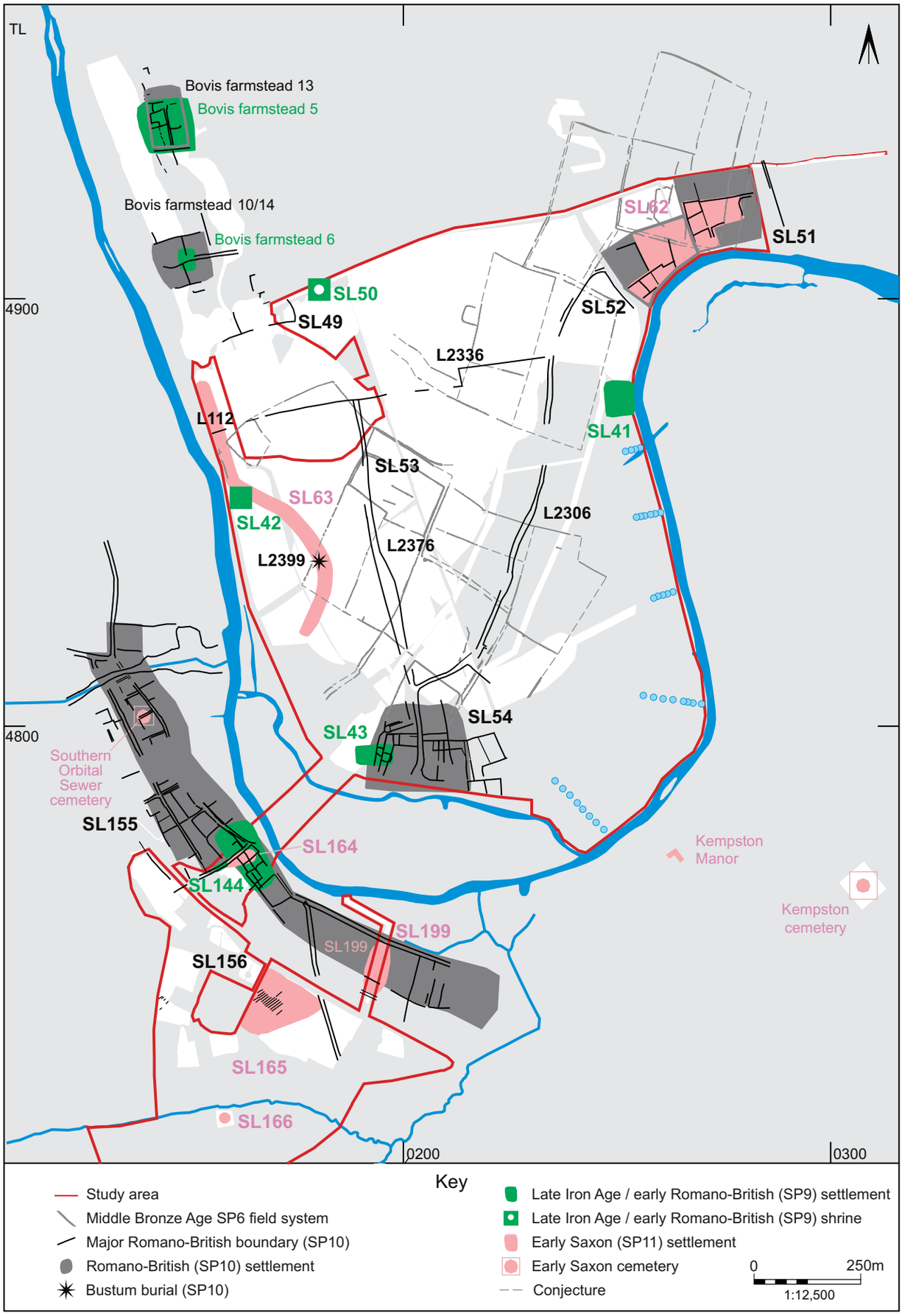


Fig. 5.1 Evolution of the landscape from the late Iron Age to the early Saxon period on the Biddenham Loop. Scale 1:12,500

BOX 16: Romano-British Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Biddenham Loop might have looked like in the Roman period. It is one of a series in this publication showing different chronological periods from the same viewpoint, which in this case has been widened out to include the Kempston Church End settlement, laid out along a road running parallel to the river. This roadside settlement would have had a major influence on the landscape and communities in its environs (Box 20).

The Loop contained four farmsteads — two were found within the Bovis investigations to the north — and all, bar one, originated in the late Iron Age. They were connected by trackways which led to a ford linking them to the settlement on the opposite side of the river. Some of the trackways probably followed pre-existing routes and the eastern one was parallel to a boundary which originated in the middle Bronze Age. The western trackway led to a ritual complex which, though created in the late Iron Age, was seemingly still in use during the early Roman period. Small enclosures were established near the farmsteads but no new fields were laid out within the interior of the Loop. At least some of the existing fields, also dating back to the middle Bronze Age, must have remained in use. An extensive boundary appeared to 'cut off' the southern part of the Loop. It was parallel to, but at least 80m north of, an early Iron Age pit alignment, again suggesting a degree of landscape continuity. A rare bustum burial took place in open ground between this boundary and the southern farmstead (Box 23).

A number of strands of evidence combine to suggest that the southern farmstead was of a higher status than the others. It was the largest and it alone had a cemetery (containing thirty-three inhumations). In contrast, only a small number of scattered burials were found within the other farmsteads. It was centrally located within the Loop and was closest to the Kempston Church End settlement. It also produced much more roof tile and flue tile than the other farmsteads. To date, only its periphery has been investigated and its precise form and status remain uncertain.

NOTE. As with previous reconstructions, there is no firm evidence for the position of woodland within the Loop at this time or for the nature of the flood plain and river channels.

absence of new ditched boundaries, and possible changes in attitudes to wild animals. However, there is insufficient evidence to contribute to the debate on ethnicity and in particular to the question of whether the cultural transition was brought about principally by migration from the continent or by the adoption of new customs and usages by the post-Roman British population. The term 'early Saxon' is, therefore, used in this chapter as a chronological label for the period *c.*450–650 and does not denote any particular ethnic origin.

II. Dating evidence

Dating evidence for this period takes the form of stratigraphical relationships between features, pottery (in

Box 17: Early Saxon Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Biddenham Loop might have looked like in the early Saxon period. It is one of a series in this publication showing different chronological periods from the same viewpoint, which in this case has been widened out to include the Kempston Church End settlement.

From the mid-4th century there may have been a steep decline in population, which continued into the early Saxon period. It is important not to exaggerate changes at this time because the end of Roman administration also saw an end to the use of coinage and mass pottery production (both key strands of evidence for archaeologists). However, there were five farmsteads within the Biddenham Loop during the Roman period and by the start of the 5th century, only the one to the north-east of the Loop was definitely still occupied. The area of Saxon settlement lay on the periphery of the Roman farmstead and its full extent was revealed by the investigations (see Box 21). The southern farmstead may also have remained in use, but without more extensive excavation this cannot be proven.

The investigations also produced sufficient evidence to suggest that some parts of the Kempston Church End Roman roadside settlement were still occupied. Here, the derivation of the place-name seems to lend support to the archaeological evidence. The name Kempston, which appears as Camestone in Domesday Book, may contain a pre-English element, camm, meaning 'crooked', which was combined with the Old English, tūn, to give: 'the farmstead at the bend': that is, on or adjacent to the loop in the river. This could suggest that Welsh- and Old English-speaking populations co-existed long enough for the pre-English name to be adopted by the Old English speakers.

No new boundaries were constructed during this period and it is presumed that the Roman hedges, trackways and fields remained in use, although some would no doubt have become overgrown.

NOTE. As with the previous reconstruction there is no firm evidence for the nature of the flood plain and river channels at this time. It is also uncertain to what extent the Roman landscape of hedges and trackways survived.

greater quantities than in previous periods; Plate 5.1), other artefacts (in greater quantities than in previous periods; Plate 5.2) and a small number of scientific dates. The best evidence is provided by changes in pottery styles and fabrics, which in some cases, such as samian, can be refined to just a few decades. Some 'other' artefacts can also be quite closely dated, especially coins, which appear for the first time in the late Iron Age. However, 'as with any area of land in use over a period of time, there has been some mixing of artefacts, with typologically early

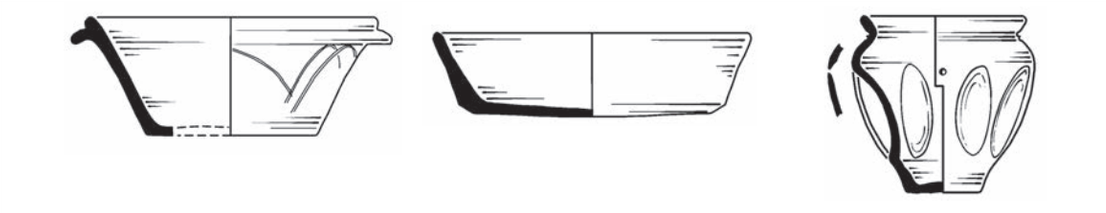
BOX 18: Roman pottery

by Jackie Wells

Jars

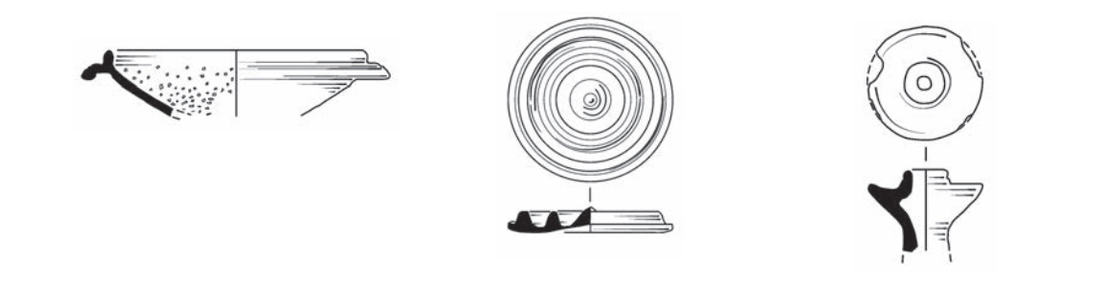
Jars dominate the diagnostic Roman pottery assemblage, in keeping with the established trend for rural sites. The latter show a consistently higher proportion of jars than urban sites, where dishes and bowls predominate. The most common jar forms are wide-mouthed (left and centre) and narrow-necked (right), which would have served a range of functions associated with the storage, preparation and consumption of food and drink.

Bowls and beakers



Bowls and beakers total 11% of the diagnostic assemblage; the former represent both kitchen and table wares, the latter fine table wares. Bowls display a diverse range of shapes; the most common are a simple straight-walled form (above centre) and flanged bowls (above left). Beakers are dominated by folded (above right) and poppyhead forms. Also present are scale beakers and single examples of a hunt cup and a carinated beaker, the latter a possible copy of a continental import.

Specialised forms



Specialised forms were poorly represented within the study area. The most common are flanged and spouted mortaria (above left), used in the preparation of food, although they total only 2% of the overall assemblage. They derive from a range of sources, including Verulamium (St Albans), the Nene Valley, Oxfordshire and Mancetter-Hartshill, on the Warwickshire/Leicestershire border. Single examples of a chicken feeder (above centre) and a candlestick (above right) were also found.

For details of the pottery assemblage and more figures see CD Section 2; Wells, Pottery.

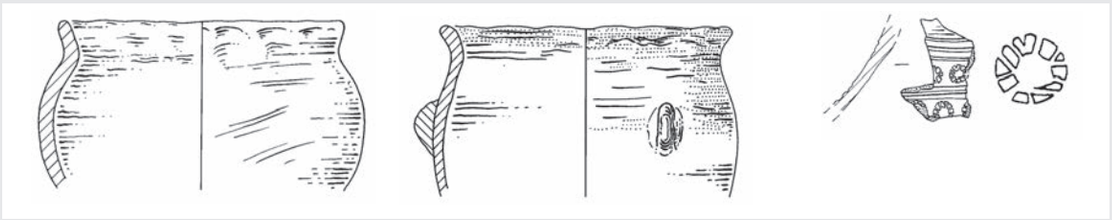
finds redeposited in later phases of activity' (CD Section 2; Duncan), and this has inevitably hindered the establishment of a detailed chronology across the whole study area. The main strands of dating evidence comprise:

- **A vertical stratigraphic framework**, which is provided by a sequence of layers and features in one part of the Kempston Church End roadside settlement. Over most of the settlement and the rest of the

BOX 19: Early Saxon pottery

by Jackie Wells

The early Saxon pottery assemblage (44kg) is, to date, one of the largest recovered from Bedfordshire. It is significant because its presence demonstrates continuity from the Roman period, which is often absent from multi-period sites in the county. The pottery comprises a range of plain, decorated and stamped wares in predominantly sand-tempered fabric types. The most commonly occurring vessel forms are globular (above left) and biconical/carinated jars and bowls (top right), with simple everted or upright rims. Less common forms include a miniature vessel (middle right), and a shallow dish (bottom right), the latter perhaps representing an attempt to copy a Roman vessel of this form.



A small proportion of the assemblage displays decorative elements. These include fingertip impressions (above left), combing, incised horizontal/diagonal linear motifs, applied bosses/lugs (above centre), pinched rustication and stamps. Of the latter, rosette and segmented circle motifs are the most common (above right). The majority of the Saxon assemblage derived from the fills of sunken-featured buildings.

For details of the pottery assemblage and more figures see CD Section 2; Wells, Pottery.

study area ploughing had removed any such positive features. However, horizontal stratigraphic relationships between some features did exist, especially within the settlement.

- **Pottery**, which provides the principal dating evidence.

> In contrast with the diverse middle Iron Age assemblage, pottery of late Iron Age date occurs in a fairly restricted range of fabric types. Fifty per cent of the late Iron Age assemblage comprises grog-tempered vessels (F06B, F06C) characteristic of the period. … Diagnostic forms are in the 'Belgic' tradition, the appearance of which in the south-east Midlands is conventionally dated to *c.*50 BC, although the adoption of the tradition may not have become widespread until *c.*40–50 years later (Hill 2002) (CD Section 2; Wells, Pottery).
>
> With the exception of lid-seated jars, thought to have been introduced to the region *c.* AD20 (Friendship-Taylor 1999, 25; fig. 6), most of the classifiable jar and bowl forms within the assemblage are more generic types, current from the later 1st century BC onwards (CD Section 2; Wells, Pottery).

The longevity of late Iron Age pottery forms and fabrics into the early Roman period makes precise dating impossible, as is the case on many other settlements in the area, such as Marsh Leys (Wells 2011, 105) and Wilshamstead (Wells 2010b, 183), both Bedfordshire. Change came in the later 1st century, with the introduction of shelly wares and greywares. Many of the shelly wares:

> … are recognisable products of the Harrold kilns [in north Bedfordshire] (Brown 1994), and it is likely that this production centre supplied the site from the later 1st to the 4th centuries … Greywares are known to have been produced during the early Roman period at a series of sites to the south-east of Bedford, notably at Mile Road (Dring 1971), although other kilns have been identified at Cardington, Eastcotts (Simco 1984; BCAS 1995), and further afield at Great Barford (Stansbie 2007, 252) (CD Section 2; Wells, Pottery).

The assemblage spans the entire Roman period, although most of the material dates to the 2nd and early 3rd centuries. Later Roman pottery constitutes

Plate 5.1 Large quantities of pottery were common in the Roman features within the study area — here within one of the pits in cluster G5030 (L510, Phase 503) within roadside settlement SL155

Plate 5.2 Non-ceramic artefacts, especially made from iron, were much more common in the Roman period — here an unidentified iron strip (RA5201) is being lifted within roadside settlement SL155

Plate 5.3 Samples being taken for archaeomagnetic dating from pottery kiln G3038 (farmstead SL54)

8% of the total assemblage and comprises regional imports of mid-3rd-/4th-century date, including vessels from the Nene Valley, Oxfordshire, Hadham and Mancetter-Hartshill industries (CD Section 2; Wells, Pottery). In terms of the early Saxon pottery assemblage:

> …with the exception of fabric A25, which originates from Charnwood, Leicestershire, all other fabrics are likely to have been locally manufactured using available clay sources, with the addition of comparatively simple tempering. The dominance of sand-tempered fabrics, in particular types A16 and A18, coupled with the low quantities of organic wares, suggests a 5th-/6th century-date for the assemblage. This is further indicated by the absence from the site of characteristic middle Saxon types such as Maxey or Ipswich wares. … Despite being a sizeable assemblage, few vessels could be reconstructed to a full profile (CD Section 2; Wells, Pottery).

Decorative elements include stamps, pinched rustication, finger tip impressions, combing, incised horizontal/diagonal linear motifs and applied bosses and lugs (CD Section 2; Wells, Pottery).

- **Some 'other artefacts'** that can be closely dated on typological grounds; but, as with the coins, there is evidence for retention over long periods of time, which hinders their use in terms of dating deposits.
- **A small number of radiocarbon dates**, which were obtained for this period mainly from isolated burials without diagnostic grave goods. Archaeomagnetic dating was carried out on the pottery kiln found on the periphery of one of the farmsteads on the Biddenham Loop (Plate 5.3).

III. Environment, plants and animals

Data is available from the palaeo-environmental study and from charred plant remains, including charcoal. The palaeochannel in the flood plain provides valuable information on the palaeo-environment during this period. However, the attribution of the environmental sequences for this period is made on the basis of extrapolation from the radiocarbon-dated horizons, the rate of sediment build-up and the character of the environmental results.

> [There is] a short period of [oak and hazel woodland] clearance, probably in the late Iron Age. An expansion of the *Plantago lanceolata* curve … and Lactucoideae … suggests expanding pasture land, particularly in the late Iron Age, while cereal cultivation, including rye, continues and a flax seed … suggests the continued cultivation of flax … The flood plain aquatic and wetland character appears to continue as before [see p. 112] … The mollusca … remain consistent throughout the Iron Age and the Roman-British period, indicating a fairly dry flood plain grassland with limited flooding (CD Section 2; Rackham *et al.*).
>
> The late Iron Age and early Romano-British samples produced only small amounts of charred plant remains, from both the Biddenham Loop and Land West of Kempston … with a similar range of cereals to the earlier periods, with hulled wheat, both emmer and spelt, and barley again being the main grains; there were also traces of possible free-threshing wheat and tentative

evidence for flax. Spelt, emmer and barley were also found in earlier investigations of late Iron Age/early Roman deposits within the Biddenham Loop … while spelt, six-row hulled barley and flax were identified at Marsh Leys, Kempston (Robinson 2011, 129). The few identifiable weed seeds, also found in the contemporary farmsteads within the Bovis investigations on the Biddenham Loop (Pelling 2008, 242) and at Marsh Leys on Land West of Kempston (Robinson 2011, 242), tentatively suggest the continued use of well drained sandy gravels and alluvial deposits for cultivation and possible evidence for the spring sowing of cereals and harvesting by uprooting (CD Section 2; Giorgi).

The charcoal assemblage from the shrine complex SL50 comprised *Quercus* sp. (oak), which was predominant, with *Prunus spinosa* (blackthorn), Maloideae (hawthorn group) and *Fraxinus excelsior* (ash) present in small quantities. Although the charcoal from the settlements comprised a similar range of taxa, *Acer campestre* (field maple) was also present and they were more mixed assemblages (CD Section 2; Challinor).

In terms of the evidence from the modern flood plain for the Romano-British period:

> … only minor changes are apparent in the local woodland, while there is a strong pasture and cereal element indicating a well managed agricultural landscape throughout [the period]. Charred brome seed and a relative concentration of charcoal fragments are associated with the deposits at this level, while the pollen continues to show the cultivation of rye. Three significant settlements have been identified from the excavations. Two of these, SL54, which lies across the flood plain on the south-facing slope and slightly upstream of the cores in Transect D, and SL155, which lies on the other side of the river upstream of Transect D, could be the origin of both charcoal and charred brome … The trackways and field systems SL53 excavated within the Loop of this phase are consistent with the strong pastoral and arable elements in the pollen data. The terrestrial elements in the plant macrofossil assemblages are stronger at this level with more frequent disturbed ground and grassland species, but there is no evidence for any change to the flood plain. This seems to be the picture for the mollusca … if the association of this [period] … is correct. The flood plain remains relatively dry grassland. Throughout this period and the preceding Iron Age the flood plain is likely to have been useful for both pasture and meadowland, and cattle could have been grazed here, probably at any time of the year (CD Section 2; Rackham *et al.*).

The Romano-British period provided the largest dataset for charcoal analysis from excavated features, with a plethora of good assemblages.

> Six taxa were positively identified: *Quercus* sp. (oak), *Corylus avellana* (hazel), *Prunus spinosa* (blackthorn), Maloideae (hawthorn group), *Acer campestre* (field maple) and *Fraxinus excelsior* (ash). Most of the samples were quite mixed, with an average of three taxa present. Ubiquity analysis shows that scrub/hedgerow taxa such as *Prunus* and Maloideae are strongly represented, but oak is still important (CD Section 2; Challinor).
>
> There was a significant increase in the quantity of charred plant remains in the Romano-British period …, suggesting extensive activity for the first time in Land West of Kempston as well as within the Biddenham Loop. … The samples from Land West of Kempston contained the bulk of the Romano-British charred plant remains, although both areas produced some large individual assemblages, with most of the charred plant remains from the Biddenham Loop being from a pottery kiln. There was no significant difference in the range of cereals or weed seeds between the two areas or between the early and late Roman periods (CD Section 2; Giorgi).
>
> Spelt wheat appears to have been the main cereal cultivated and increasingly so towards the later Roman period, with less evidence for emmer, free-threshing wheat and (six-row hulled) barley. A small number of oats and the few rye grains may simply be weeds. This range of cereals is similar to that found on other Romano-British sites in southern England, with hulled wheat, particularly spelt, and hulled barley being the main grains during this period, together with some emmer and free-threshing wheat (Greig 1991, 309). Earlier Romano-British excavations within the Biddenham Loop (Pelling 2008, 285) and at Land West of Kempston (Robinson 2011, 129; Scaife 2004, 271–2) produced similar cereal remains, a pattern repeated in charred plant assemblages from other sites in Bedfordshire. The cereals may have had many uses as human food (baking, porridge and gruel, including *puls* or *polmentus*), while barley may have also been used for horse fodder (Renfrew 1985, 22; Cool 2006, 70 and 75). Other potential cultivated foodstuffs were represented by a single *Pisum sativum* (pea) and possibly some of the large numbers of poorly preserved legume (*Vicia*/*Lathyrus* seeds) and a small number of tentatively identified flax seeds (also found in the palaeo-environmental study within the flood plain (CD Section 2; Rackham *et al.*)); flax has been found on other Romano-British sites (Greig 1991, 309), including waterlogged remains (seeds and capsules) from previous investigations at Marsh Leys in Kempston (Robinson 2011, 129). Small amounts of hazelnut shell fragments (also identified in other Romano-British excavations around Kempston (Robinson 2011, 129; Scaife 2004, 272)) and a few *Sambucus* sp. (elder) seeds may indicate the continued gathering and consumption of wild foods, with these remains together with occasional haws, Rosaceae fruit stones and thorn fragments suggesting the presence of shrubby/hedgerow vegetation close by (CD Section 2; Giorgi).
>
> There was a notable increase in the number of potential arable weeds compared to earlier periods with similar but also new species, which largely suggest the continued cultivation throughout the Romano-British period of light well drained sandy loam soils on the river terrace gravels and alluvial deposits nearer the river. Similar weed seed assemblages were also found in earlier Romano-British excavations within the Biddenham Loop (Pelling 2008, 285) and in the vicinity of Kempston (Robinson 2011, 129; Scaife 2004, 271). The weed seed assemblages do not suggest arable expansion onto the heavy clay or wetter soils during the Roman period as appears to be the case on some other Bedfordshire sites beginning in the Iron Age, for example at Fairfield Park, Stotfold, Beds. (Pelling 2007, 119). A substantial increase in leguminous seeds especially *Medicago*/*Trifolium* sp. and *Vicia*/*Lathyrus* sp, may, however, suggest however low or decreasing soil fertility in some areas from over-cropping, and could suggest rotation as a means of restoring nitrogen to the soil, a large number of *Vicia*/*Lathyrus* species also being noted in late Iron Age and Romano-British excavations at Marsh Leys, Kempston (Robinson 2011, 129). A few of the weed seeds also suggest spring and winter sowing of crops, and the harvesting of cereals by being reaped low on the straw and by uprooting. There is some evidence to suggest that grasslands may have been managed for hay and/or animal bedding on the basis of a number of the wild plants, particularly wild grasses, the latter also well represented in other excavations from the Roman period within the Biddenham Loop (Pelling 2008, 287) and in Kempston (Scaife 2004, 271). These grassland plants may have been gathered from meadows and pastures, possibly from along the banks and flood plain of the river, the grasslands possibly being managed for hay production. It is also possible that some of these plants may have simply been collected for fuel (CD Section 2; Giorgi).

In terms of the charcoal assemblage, the early Saxon picture 'is remarkably similar to earlier periods, indicating oak woodland with hedgerows and some open areas' (CD Section 2; Challinor). Oak is still the most frequently recovered taxon in the assemblages from excavated features, with hazel and poplar/willow also present, although there is a strong hedgerow-type component of Maloideae and blackthorn. Based on the assemblages 'there seems to be little exploitation of riverine-type species even though the settlements are located adjacent to the modern trajectory of the River Ouse' (CD Section 2; Challinor).

The early Saxon samples produced a much smaller amount of charred plant remains compared to the Romano-British period, consisting mostly of cereal grains and mainly from the Biddenham Loop, with only limited evidence from Land West of Kempston.

> There was a significant change from the Roman period in the range of cereals being cultivated, with free-threshing wheat, hulled barley and oats [being the main grains], and only traces of

> hulled wheat, which are probably residual finds or cereal weeds from previous harvests. … This concurs with archaeobotanical evidence from southern England, which suggests a change from the Romano-British to early Saxon period in the range of cereals being grown, with hulled barley continuing to be cultivated but with the increased presence of free-threshing wheat and oats, while finds of emmer and spelt become rare (Greig 1991, 315). Cereals during the Saxon period may have been eaten as a gruel or porridge (pottage) or used for bread, with a preference for white leavened bread (Hagan 1994, 60 and 125). Both barley and oats may have also been used for fodder. Flax was again tentatively identified; its seeds may have been added to cereal-based pottage and the plant fibres used in the production of cloth. The flax seeds were found in the same area of the Biddenham Loop as spindle whorls and loomweights. The few potential arable weeds, all of which were found in the Romano-British period, suggest the continued use of sands and gravels and alluvial deposits for growing crops with no evidence for arable expansion onto clay soils; there was very tentative evidence again for spring sowing and autumn sowing of cereals and harvesting by uprooting. Legumes (particularly *Vicia*/*Lathyrus* spp.) and grasses were relatively well represented and may be the residues of material harvested for fodder and/or animal bedding or simply fuel, although the legumes may also indicate low soil fertility at the time (CD Section 2; Giorgi).

The Romano-British animal bone assemblage is dominated by cattle, sheep/goat with low incidence of horse and pig, which is fairly typical for rural sites (King 1999). 'A consistent feature of the faunal assemblages from both late prehistoric and Roman sites in Bedfordshire is the poor representation of pigs' (CD Section 2; Maltby).

> Another consistent feature of the assemblages is the paucity of wild mammal bones … Red deer, roe deer, hare, badger and fox (plus wild boar) have been recorded on some sites but in very small numbers. Only at farmstead SL54 do wild mammals provide over 1% of the identified mammal assemblage, which, of recent investigations in Bedfordshire, is matched only at Ampthill Road, Shefford (Maltby 2010, 320), a settlement that contained a substantial aisled building. This might indicate a slightly greater diversity of diet on these two settlements, perhaps reflecting higher status, but the differences are slight and the assemblage from the villa at Newnham does not mirror this variation (CD Section 2; Maltby).

Similarly, the bird bone assemblages are limited in number and fish bones are even rarer, despite the proximity of the river Great Ouse and the substantial amounts of sieving that have taken place. The main changes in the early Saxon assemblages are that 'sheep/goat tend to be less well represented than in Roman samples' and 'generally pigs are significantly better represented' (CD Section 2; Maltby).

IV. Settlements

In 1997 Going commented that 'little is known of villages, farmsteads, hamlets and other kinds of rural settlement' in the eastern region (38). However, the body of evidence collected over the last twenty years, to which that from the study area can be added, now appears to be quite substantial. Dawson identified four main types of Romano-British rural settlement in Bedfordshire: planned villages, linear row settlements, focused possibly nucleated farmsteads and substantial farms or villas (2007, 73). The settlements within the study area can perhaps be categorised as focused/nucleated farmsteads (*e.g.* the farmsteads on the Biddenham Loop) and planned settlements (*e.g.* the roadside settlement at Kempston Church End).

One of the most obvious differences between settlements of middle Iron Age and late Iron Age/Roman date is the absence of storage pits. The reason for this is uncertain. There is no evidence for a decline in the importance of arable cultivation, so presumably an alternative means of storing grain was developed — one which left no traces in the archaeological record. Major differences were also evident between late Iron Age and 2nd-century AD settlements in terms of the creation of enclosure systems and an overall increase in settlement size. The decline in use of the roundhouse was once considered to occur in the late Iron Age/early Roman period, although this was not apparent within the study area, where a number are known. With the exception of the roadside settlement there is only ephemeral evidence for rectangular buildings in the Roman period. Another apparent change in the Roman period was the creation of trackways defined by ditches, although some of these tracks might have existed in the Iron Age, but without the archaeologically visible flanking ditches. While a number of trackways converged on the Kempston Church End settlement, there is no firm evidence that the road it had developed alongside was itself part of a major routeway.

Origins and development over time

All the late Iron Age settlements, including those in the Bovis investigation (Luke 2008, 46), were established on previously unoccupied land, fitting the local pattern whereby surprisingly few late Iron Age/early Roman settlements have early–middle Iron Age antecedents (see Luke 2008, 46; Luke 2011, 139). At the least this represents a major episode of settlement shift. Contemporary settlement shift and/or landscape reorganisation has been observed in the Great Ouse valley (Williams 1993, 213; Dawson 2000c, 122) and, further afield, within the Thames valley (Hingley and Miles 1984, 65). Within Bedfordshire, examples are known not just in the Great Ouse valley (*e.g.* Stagsden bypass (Dawson 2000b, fig. 17) and Oakley Road, Clapham (Edmondson *et al.* forthcoming)) but also away from it, as at Hinksley Road, Flitwick (Luke 1999, 83), and Haynes Park (Luke and Shotliff 2004, 118). The restricted nature of most excavations will always mean that a small settlement shift is a possibility. However, the evidence from Bedfordshire should also be seen as part of a wider phenomenon in Britain whereby 'the closing centuries of the first millennium BC saw settlement expansion into many previously sparsely settled areas' (Haselgrove *et al.* 2001, 29). The expansion of settlements and intensification in land use have been discussed on a regional basis by Bryant (1997, 27–8) and for the upper Thames valley by Hingley and Miles (1984, 65). The changes are considered to be 'almost certainly linked to a significant rise in population' (Haselgrove *et al.* 2001). Therefore, the reduction in the number of late Iron Age/early Roman farmsteads within the Loop — a reduction that is certainly genuine, given the extensive nature of the excavations — when compared with the preceding period needs explaining. The new settlements were larger in extent, so may have been occupied by more people. It is also likely that people were moving into the Kempston Church End settlement, which was growing at this time.

The appearance of ditched enclosures in the late Iron Age has been identified as a general development during this period (Luke 2011, 139; Bryant 1997, 28; Williams

et al. 1996, 24). Comparable enclosures in the vicinity are known at Marsh Leys (Luke 2011, fig. 9.2) and Ruxox, Beds. (Dawson 2004, 20, fig. 3.5); there is also a slightly earlier example at Wavendon Gate, Milton Keynes (Williams *et al.* 1996, fig. 5). As at these other farmsteads, the new enclosure systems often utilised some of the earlier boundary alignments, suggesting a degree of continuity with the previous phases of occupation.

The evidence suggests, at it did at Marsh Leys, to the south (Luke 2011, 139), that most late Iron Age farmsteads continued with no disruption or major alterations into the early Roman period. This suggests that any changes in land ownership or administration linked to the Roman conquest were minimal at this time. Although the evidence for multiple late Iron Age farmsteads on the site of, or in the vicinity of, the Roman roadside settlement at Kempston Church End is inconclusive, it is possible that several existed and that they were amalgamated into a single settlement. The excavated evidence from the farmsteads indicates that extensive rectilinear systems of ditched enclosures had replaced single enclosures by the end of the 1st century AD.

Such a change to more extensive enclosure systems is commonly seen on Bedfordshire farmsteads in the early part of the Romano-British period (*e.g.* Great Barford Bypass Site 8 (Poole 2007b, 150–51), Haynes Park (Luke and Shotliff 2004, 119), Hinksley Road, Flitwick (Luke 1999, 83), and Luton Road, Wilstead (Luke and Preece 2010, 152)). It is also known further afield (*e.g.* Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 83), and Haddon, Cambs. (Hinman 2003, 19)). At all these settlements large enclosed areas were created during the second half of the 1st century AD, fitting a pattern that was common in lowland Britain at this time (Williams *et al.* 1996, 83). The exact reasons behind the creation of extensive enclosure systems and their occurrence at later dates on some sites are uncertain. It is possible that it was linked to the finalisation of land ownership following the conquest, a process which did not necessarily occur immediately (Mattingly 2006, 354), or the rationalisation of estates among the native elite. It is, therefore, of interest that the changes at two nearby farmsteads, Marsh Leys (Luke 2011, 141–2) and Stagsden bypass (Dawson 2000b, 127), and the creation of farmstead SL51/52 on the Biddenham Loop occurred at least half a century later. While it could be argued that the Marsh Leys and East Stagsden bypass farmsteads were situated on low-lying land, on or near heavy clays, this was not the case for farmstead SL51/52 or, for that matter, the farmsteads at Great Barford Bypass (Poole 2007b, 150–51) and Luton Road, Wilstead (Luke and Preece 2010, 119). Of course, it may simply be that the inhabitants of Marsh Leys and Stagsden bypass did not want, or were unable, to replicate the changes that others in the area were making in the 1st century AD.

Minor alterations to the enclosures occurred throughout the Roman period but these mirrored the alignments of the earlier boundaries, suggesting no significant break in occupation. More fundamental layout changes in the late 3rd and early 4th centuries are hinted at within farmstead SL54, Bovis farmstead 14 (Luke 2008, 263–4) and roadside settlement SL155. The changes within the farmsteads on the Biddenham Loop generally comprised the creation of a wide boundary ditch around the focus, but at Marsh Leys new boundaries were created on completely different alignments (Luke and Preece 2011, 142). The latter clearly represent major changes in settlement layout possibly associated with a break in occupation. Comparable major changes to enclosure systems, tentatively dated to the late 3rd or early 4th century, have also been identified in Bedfordshire at Luton Road, Wilstead (Luke and Preece 2010, 152), and Ampthill Road, Shefford (Luke *et al.* 2010, 323). A similar phenomenon was observed in rural settlements in the Thames valley (Booth *et al.* 2007, 75).

There is no evidence for further major changes in settlement layout for the remainder of the 4th century. However, it is unclear how long individual settlements remained in use. The presence of later Roman regional imported pottery from farmstead 54, Bovis farmstead 14 (Wells 2008, 275) and the Kempston Church End roadside settlement SL155, complemented by some late Roman 'other' artefacts, suggests that these at least were occupied into the late 4th century. The absence of 4th-century pottery (CD Section 2; Wells, Pottery) and coins (CD Section 2; Guest) seems to indicate that farmstead SL51/52 and Bovis farmstead 13, in contrast, were abandoned early in the 4th century. This corresponds to the 'end' dates for the farmsteads at Marsh Leys (Luke 2011, 142), Luton Road, Wilstead (Luke and Preece 2010, 152), and Wavendon Gate (Williams *et al.* 1996, 85). Perhaps significantly, it has also been suggested that the initial contraction of the settlement at Kempston Church End took place in the early 4th century (Dawson 2004, 48, 52 and 61).

The problems of dating once coin supply ceases and large-scale pottery production ends are well known, with the result that many settlements may seem to have been abandoned at the start of the 5th century AD. As such, there is no direct evidence for settlement continuity into the Saxon period. However, it is also clear that the number and nature of settlements within the study area was very different at the beginning of the 6th century AD to that in the 4th century AD. The traditional explanation has been that settlements were abandoned by the Romano-British population and the land taken over by the incoming Anglo-Saxons. Of the four farmsteads within the Biddenham Loop only SL51/52 contained firm evidence for early Saxon occupation but, interestingly, very little evidence for occupation in the 4th century AD. There is also evidence for continued settlement in the early Saxon period within the Kempston Church End settlement, although there is also evidence for a shift onto slightly higher ground to the south-west near The Bury (discussed below as SL165).

The early Saxon settlements are characterised by the distinctive new building type, probably based on those on the continent, known as sunken-featured buildings (or SFBs). There was no evidence for the post-built hall-type buildings, just as there was no evidence for rectangular timber buildings of Romano-British date within the farmsteads. The new settlements contained no evidence that existing boundaries or trackways were maintained. Possibly more telling is that those early Saxon settlements established on previously unoccupied land (*e.g.* SL63 and SL165) were not enclosed. This may suggest that defining boundaries was simply not important, possibly because there was a smaller population and therefore less pressure on the land. Equally, there is no sign of any particular organisation of space within the

settlements, such as division into individual plots. This is a theme seen elsewhere in England at this time, as in, for example, the Thames valley (Booth *et al.* 2007, 83).

The evidence for continued occupation into the middle Saxon period is generally considered to be less visible owing to the reduction in the amount of diagnostic pottery being produced and the small numbers of other datable artefacts. Because of the absence of clearly dated settlements of this period it used to be the view that a major dislocation in the landscape occurred in the early 7th century AD, known by some as the 'middle Saxon shuffle'. However, as in the immediate post-Roman period, the situation is probably more complex. 'The reliance on dating sites from decorated pottery, building types, and an absence of obviously later finds, may be misleading' (Booth *et al.* 2007, 104). Evidence from Yarnton, Oxon, and Mucking, Essex, suggests that settlements were large and the domestic core could therefore

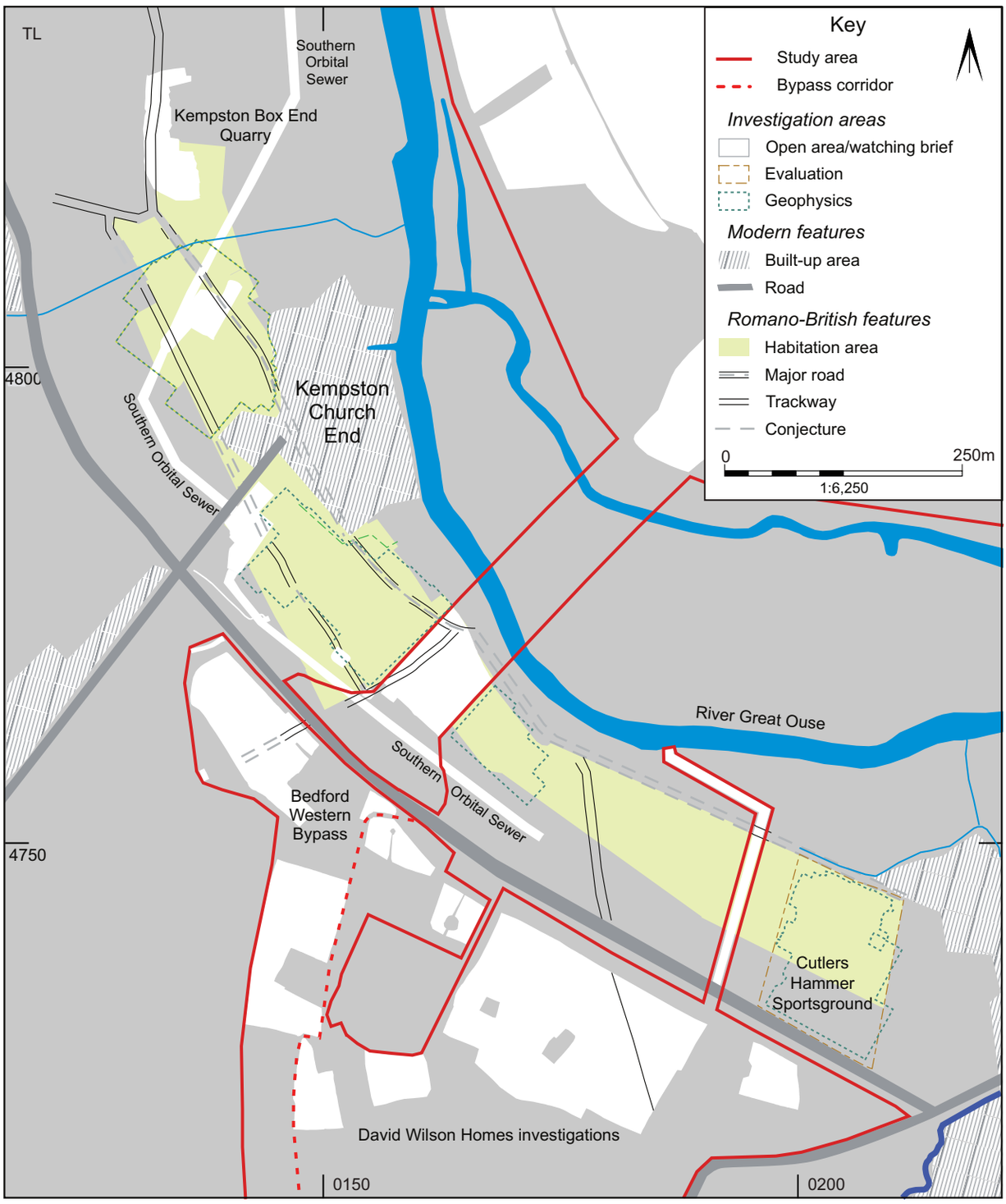


Fig. 5.2 Overall plan of the Kempston Church End Roman roadside settlement, showing the location of different investigations. Scale 1:6250

shift location over 750m or so. Therefore, areas occupied in the 5th century were subsequently used for agriculture before being reoccupied by buildings. Add to this the usual limitation of excavation extent and it is easy to see why people envisaged a 'middle Saxon shuffle'. It is therefore considered likely that the pattern of shifting, dispersed settlements continued throughout the 7th and 8th century, ultimately resulting in the appearance of much more defined settlements in the late Saxon period (these are described and discussed in the next chapter).

The roadside settlement at Kempston Church End
(Figs 5.2–5.22)

Introduction
An extensive Romano-British settlement was situated within Land west of Kempston, to the south-west of the Biddenham Loop. It was located adjacent to the river Great Ouse and centred on the modern hamlet of Kempston Church End. The recent and previous investigations have revealed that the settlement covered an area of more than 17ha. It comprised a gridded system of enclosures adjacent to a road and is known to have contained two large cemeteries (Luke and Preece forthcoming). It is impossible to discuss the results of the recent investigations within the Bypass corridor without putting them into the context of the larger settlement. Therefore, the results of the previous investigations are incorporated into the following discussion. The settlement is central within the West of Bedford development area (Fig. 5.1) and its influence on other settlements in the vicinity would have been significant.

Discovery and investigation
(Fig. 5.2)
The presence of a Roman site has been known since the mid-19th century owing to the recovery of mainly metal artefacts from the area (HER 162; Simco 1984, 108). It was initially interpreted as a villa (Wood 1984, 24). The construction of the Southern Orbital Sewer during 1991–92 provided the first opportunity for archaeological investigation (Dawson 2004, 38–66, 152–266). This took place prior to the full implementation of PPG16, when developer-funded archaeology by utility companies was rare. However, despite topsoil stripping of entire fields rather than just a working corridor, only two tiny areas adjacent to the (later) Bypass route and two larger, but still relatively small, other areas were archaeologically excavated. The latter were located *c.*200m and 400m to the north of the Bypass excavation (Fig. 5.2), and the two tiny areas are shown on Figs 5.5–5.14. A simplified feature plan of the northern area is shown on Fig. 5.4 to facilitate comparison with those of the Bypass investigations (Figs 5.5–5.14). Only an intermittent watching brief was maintained when the sewer pipe trench was dug near the northern area. In 1999 an evaluation was undertaken at Cutler Hammer Sports Ground, *c.*400m to the south of the Bypass excavation, as part of a planning application for residential development. This discovered Romano-British ditched enclosures containing evidence of habitation, which were interpreted as part of the settlement (BCAS 1999a, 35). Salvage investigation was undertaken in 2004 on the northern periphery of the settlement within Box End Quarry, revealing further settlement remains and an inhumation cemetery (Luke and Preece forthcoming).

Plate 5.4 Aerial view of the bypass excavation area within roadside settlement SL155, from the north

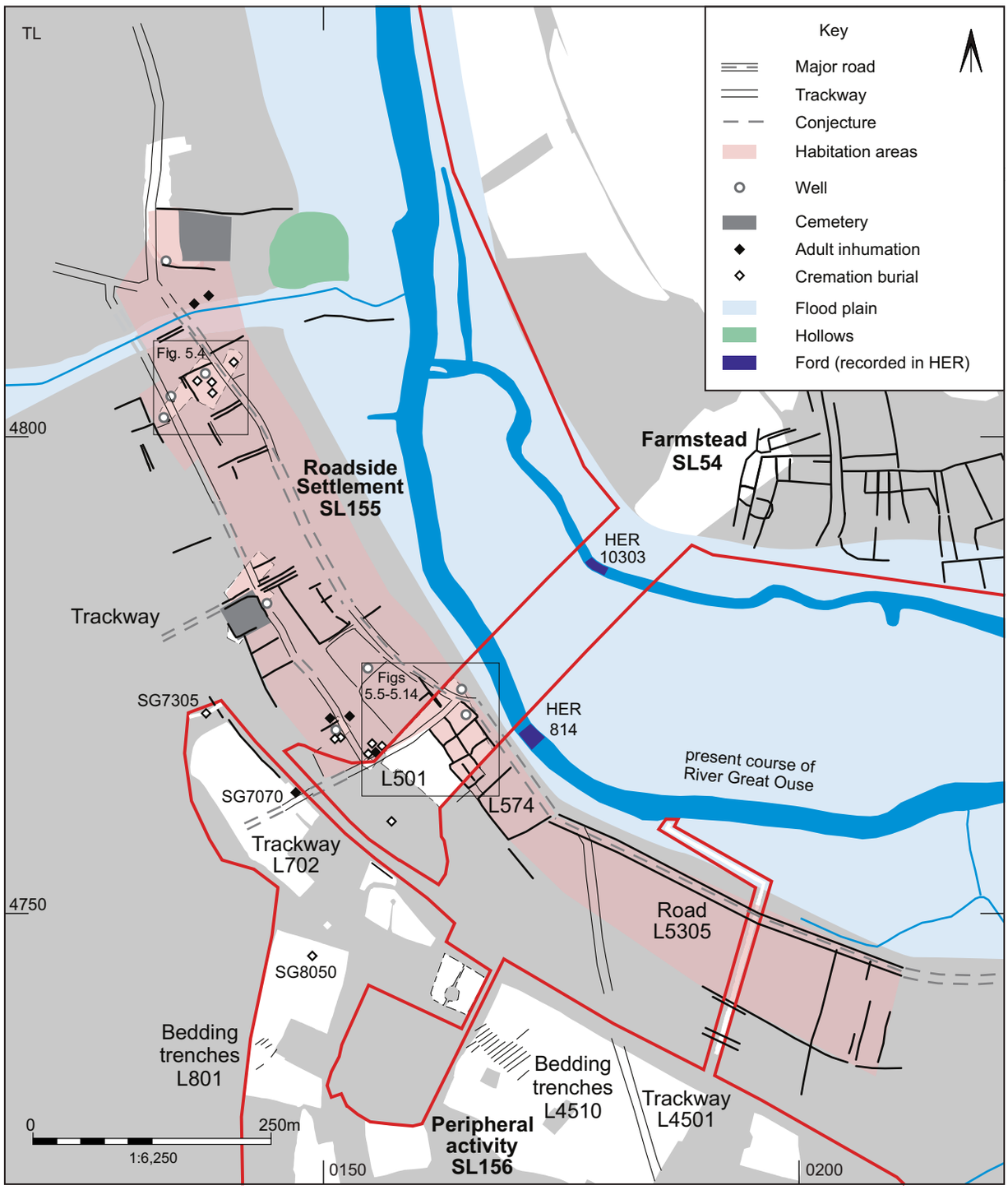


Fig. 5.3 Layout of the Kempston Church End Roman roadside settlement and its immediate environs. Scale 1:6250

The excavations undertaken as part of the West of Bedford project were the first within the settlement that had been planned and programmed in advance of construction works, using a methodology and strategy determined by detailed evaluation. They have provided information on the origins, layout and development of this part of the settlement. The excavations comprised a *c.*1ha area within the Bypass corridor (Plate 5.4), a 4m-wide pipe trench *c.*360m to the south-east adjacent to Cutler Hammer Sportsfield (Plate 5.5) and limited work associated with the Bedford Water Main, which was directionally drilled under the settlement. In addition, as part of the analysis stage of this project, geophysical survey was undertaken over *c.*2.6ha of the settlement to the north and south of the Bypass corridor to assist in understanding its layout (ArchaeoPhysica 2011).

Preservation of remains was much better in the field to the north of Church Lane, within the sewer investigations, probably because the land had not been subject to modern ploughing — ridge and furrow earthworks were

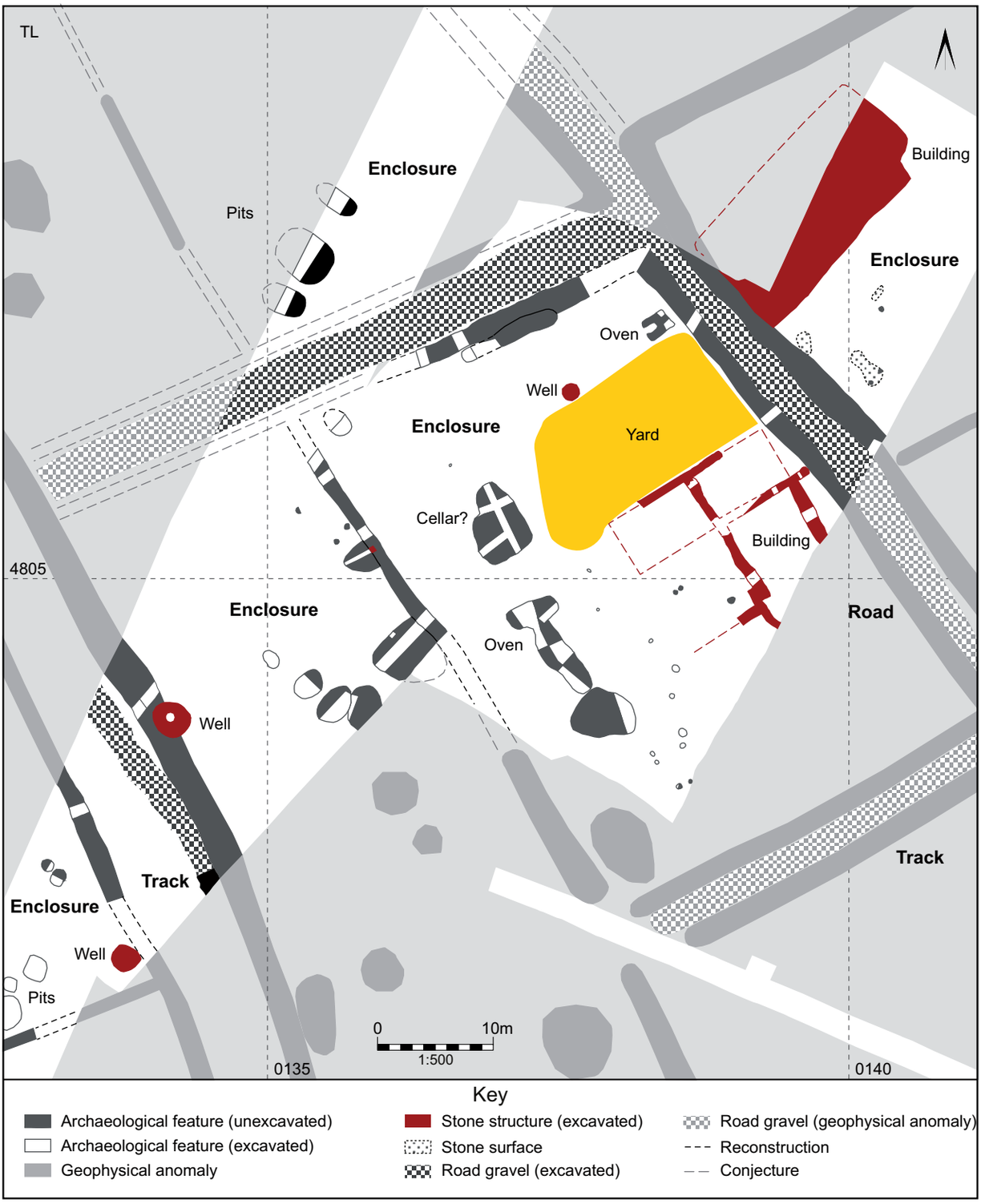
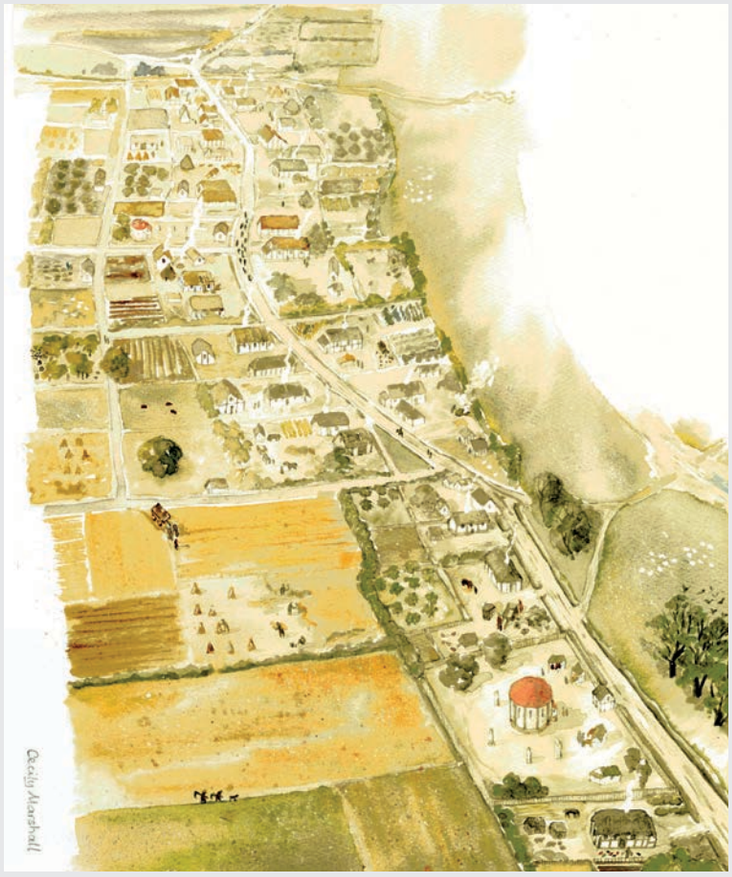


Fig. 5.4 Detailed plan of part of the Roman roadside settlement within the sewer investigations (after Dawson 2004, figs 5.76, 5.91 and 5.94). Scale 1:500

visible in this field prior to the sewer construction, whereas all the other fields were flat. The excavation methodologies for the recent investigations are described above (p. 15). However, it is worth noting that, although the remains were heavily truncated over most of the excavation area, the north-east corner preserved up to 1m of stratified layers/deposits, including gravel surfaces. They survived in this area because they were on the slope down from the river terrace and were sealed by alluvial clays. Road construction in this area would have only a partial impact, so only the upper deposits and features were fully investigated before being buried under sand and a geotextile. The lower part of the sequence was therefore observed only within limited, hand-excavated box trenches and is as a result not fully understood.

BOX 20: Romano-British roadside settlement at Kempston Church End



This reconstruction by Cecily Marshall aims to give an impression of what the Roman roadside settlement centred on the modern hamlet of Kempston Church End might have looked like.

The existence of a Roman site in this location has been known since the mid-19th century. In more recent times parts of it were lost to a major sewer and quarrying in circumstances that were far from ideal for archaeological recording. The Bedford Western Bypass has provided the first opportunity for a planned investigation, programmed in advance of construction works and guided by a strategy based on detailed evaluation. The resultant data, combined with that from previous investigations, have now given us a far greater understanding of the origins, layout and development of the whole settlement.

It is clear that the settlement originated in the late Iron Age, when it was probably a small farmstead similar to those on the Biddenham Loop. Within a few decades of the Roman Conquest a pre-existing trackway was rebuilt as a cambered, metalled road with side ditches. Enclosures laid out alongside the road contained buildings, yards, ovens and large pits into which household waste, including cess, was dumped. The owners or tenants of the enclosures were primarily farmers. However, a number had clearly diversified into non-agricultural activities, such as iron working, pottery repair and commerce. In the later Roman period the inhabitants buried their dead in one of two large cemeteries on the edge of the settlement. They were probably also served by at least one temple. It is now known that at its peak the settlement covered an area of more than seventeen hectares, making it the largest for miles around.

NOTE. The layout of the settlement is known from both archaeological excavation and more extensive geophysical surveys. However, the details of its internal layout are still part conjecture.

Origins

Contra to Dawson (2004, 41), it is now evident that the origins of the Roman settlement at Kempston Church End did lie in the late Iron Age. The late Iron Age settlement within the Bypass excavation comprised a trackway possibly leading to a river crossing with adjacent enclosures (assigned to SL144, Phase 501). It is possible, but unproven, that a perpendicular south-east–north-west-aligned trackway, which became the Roman road, existed at this time just above the flood plain. However, in the

Plate 5.5 Archaeological investigations within the pipe trench service corridor adjacent to Cutler Hammer Sportsfield within roadside settlement SL155, from the south-west

two locations where the road has been examined in detail it clearly overlay earlier activity in the form of occupation layers within the sewer investigations (Dawson 2004, 41) and quarry pits within the pipe trench excavation. Three late Iron Age coins have been found within the settlement. The recent investigation yielded a single coin of 'Dubnovellaunos, produced in the region north of the Thames believed to be centred on the tribal territory of the Trinovantes' (CD Section 2; Guest). Of the two coins from the sewer investigations, 'interestingly, one of these was another example of the same type of bronze unit of Dubnovellaunos' (CD Section 2; Guest).

Based on all the different investigations a date in the late 1st century AD is likely for the establishment of the roads, tracks and enclosures (Dawson 2004, 41; Luke and Preece forthcoming). Dawson has suggested that, with its 'metalled trackways, gridded layout and Roman-style structures', Kempston Church End may have been a 'planned settlement' (2004, 74; 2007, 73), and this is supported by the results from the recent investigations. The complex origins of settlements has been discussed by many authors, such as Hingley (1989, 25–9), Black (1995, 30–31) and, specifically for roadside settlements, Smith (1987, 3–19). With regard to the last, although as yet unproven, it is likely that the Kempston Church End settlement was established on a through road to the towns of Irchester and Sandy (see p. 286). Large settlements, such as Kempston Church End, would have been economic centres providing market and craft services. However, such settlements are also known to have contained temples and shrines, indicating that they also served a religious function. Based on the presence of temple-like buildings, this is likely to be the case at Kempston Church End. With reference to roadside settlements in general, Black does not believe that economic conditions alone would actually lead to their creation (1995, 15). Rather, he argues that, from the late 1st century AD, some were deliberately established and settlers encouraged because such settlements often served the interests of the Roman government or relevant *civitas* authority. This seems a strong possibility for Kempston Church End because it was located centrally between Watling Street, *c.*15km to the west, and the branch of Ermine Street that passes through Sandy, *c.*16km to the east. Although there is no evidence yet within the settlement for governmental buildings such a *mansio*, their presence is not impossible. There are, however, hints from some of the 'other' artefacts to suggest the presence of people with military connections, ex-soldiers, 'literate inhabitants, or at least someone keeping accounts' (CD Section 2; Duncan; see below for broader discussion).

Development
(Fig. 5.5)
The stratigraphic and dating evidence from the excavated part of the settlement within the study area has allowed the establishment of a developmental sequence:

- **Phase 501:** late Iron Age–early Roman (Fig. 5.6); south-west–north-east-aligned trackway leading towards a presumed crossing of the river Great Ouse and two adjacent enclosures (assigned to SL144). It is possible that a perpendicular south-east–north-west-aligned trackway, which later became the road, existed at this time just above the flood plain.
- **Phase 502:** late 1st–early 2nd century (Fig. 5.7); redefinition of the existing trackway and enclosures; establishment of south-east–north-west-aligned road with activity on both sides.
- **Phase 503:** late 2nd–early 3rd century (Figs 5.8 and 5.9); resurfacing of the road and redefinition of enclosures, with the south-east–north-west -aligned trackway going out of use.
- **Phase 504:** late 3rd–early 4th century (Figs 5.10 and 5.11); resurfacing of the road and redefinition of adjacent enclosures.
- **Phase 505:** mid-4th century (Figs 5.12 and 5.13); continued use of road and enclosures, but no redefinition or resurfacing.
- **Phase 506:** late 4th to early 5th century (Fig. 5.14); ephemeral traces of activity; the road may have gone out of use and/or changed position.
- **Phase 507:** 5th century?; accumulation of post-settlement layers, including alluvial clays.

It is clear that the alignment of the trackway and enclosures established in the late Iron Age continued throughout

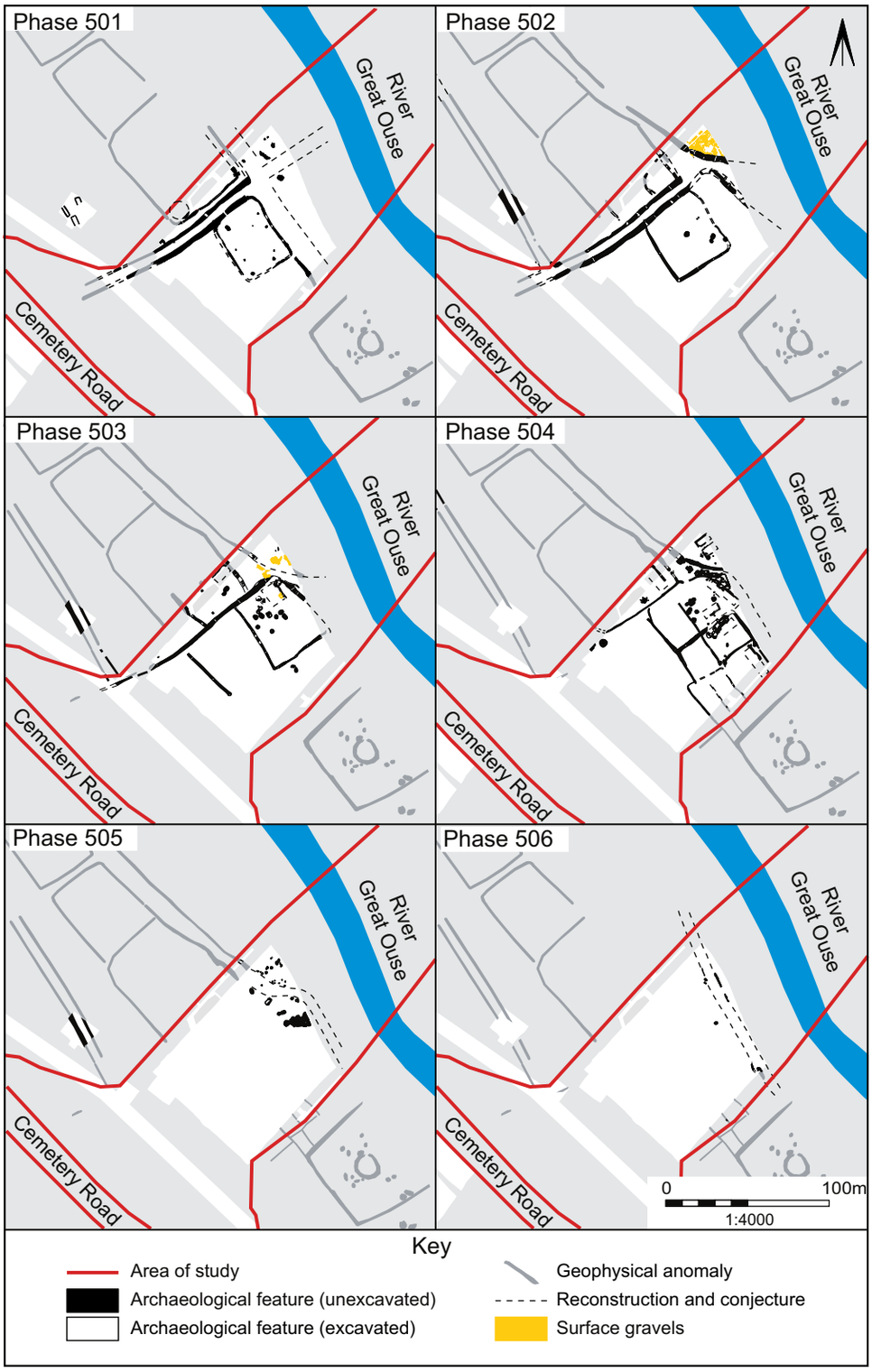


Fig. 5.5 Phased development plans of the Roman roadside settlement SL155 within the Bypass investigations. Scale 1:4000

the Roman period. The absence of road resurfacing and enclosure redefinition from the early 4th century fits in with the evidence from the sewer investigations for initial settlement contraction in the early 4th century, followed by a sharp decline from the mid-4th century (Dawson 2004, 48, 52 and 61). It was also suggested that only certain enclosures continued to be occupied in the 4th century (Dawson 2004, 48 and fig. 3.23). The recent excavation produced 'negligible ceramic evidence for later 4th-century activity' (CD Section 2; Wells, Pottery). However, coins from the later 4th century are 'relatively well represented in the assemblage (indicating that occupation continued up to the end of the Roman period and, probably, beyond)' (CD Section 2; Guest). Post-settle-

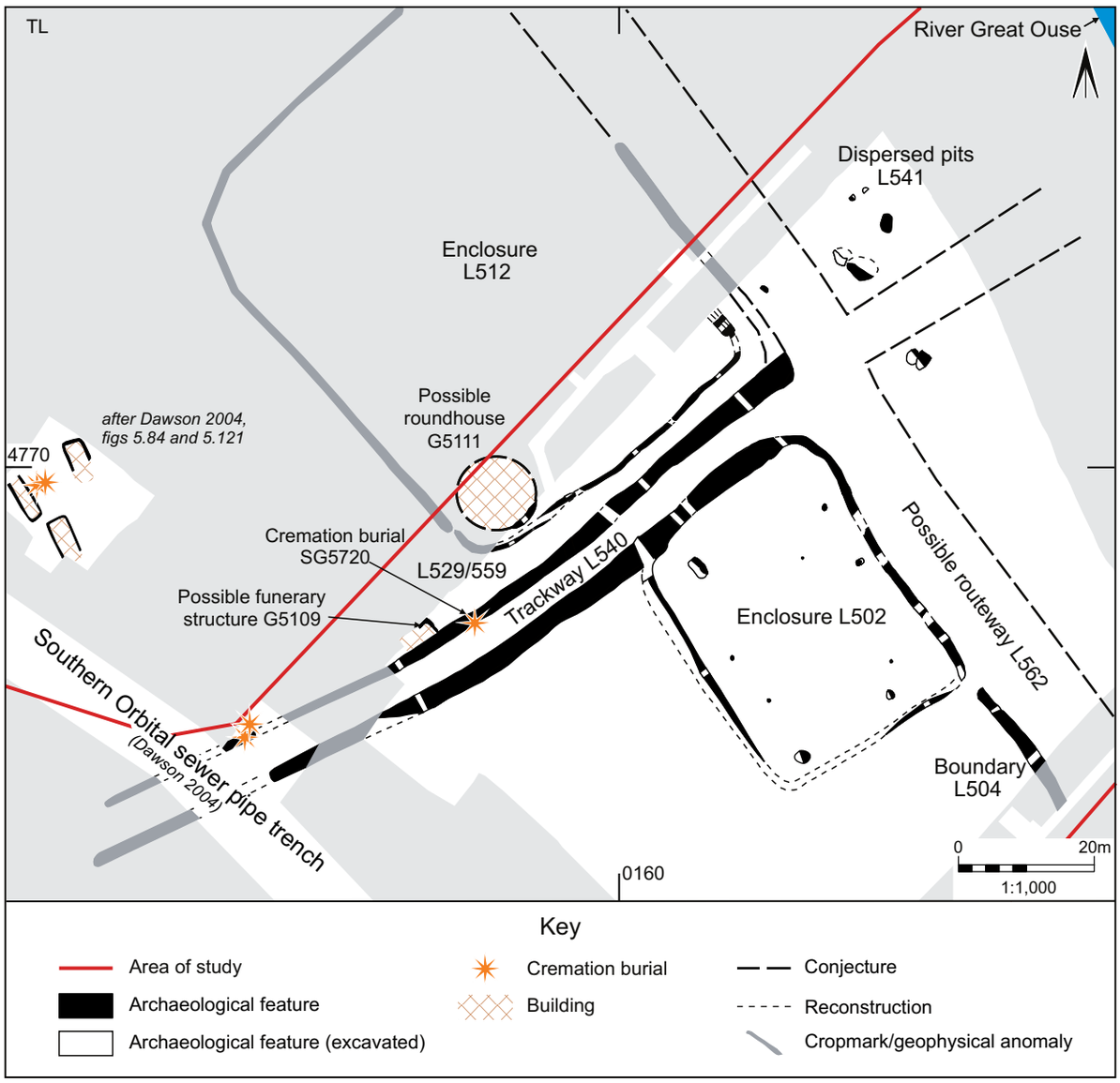


Fig. 5.6 Overall plan of Roman roadside settlement SL155, Phase 501. Scale 1:1000

ment layers (Phase 507) survived only off the river terrace to the east of the excavation and may, therefore, not be representative of the entire settlement. Although these contained domestic debris, including nineteen assorted Roman coins (but mainly post-AD 350) from layer L531 (see CD Section 2; Guest), they contained no artefacts of post-Roman date, suggesting an end in occupation of this part of the settlement within the Roman period. The deposits included alluvial clays suggestive of flooding, perhaps not surprising given the proximity of the modern, and presumably Roman, river or flood plain.

The ephemeral activity assigned to Phase 506 could not be dated with any confidence but it is believed to be late 4th–early 5th century in date. The recent excavations did identify firmer evidence, comprising deposits containing early Saxon pottery, for continued activity within at least parts of the settlement in the early Saxon period. This occurred both within the Bypass excavation (assigned to SL164) and the pipe trench (assigned to SL199) *c.*360m to the south. This can be added to the evidence for early–middle Saxon activity found in the sewer investigations (Dawson 2004, 61, fig. 3.30). However, apart from the small 7th-century cemetery (Dawson 2004, 61), located *c.*400m to the north of the Bypass excavation, the evidence is difficult to interpret.

Layout

(Fig. 5.3)

By the late 1st century AD the settlement 'was characterised by two roughly parallel trackways and a series of enclosures established in a grid-like pattern' (Dawson 2004, 41). The eastern trackway was substantial, comprising a metalled surface on an *agger* with side ditches, and is best described as a road. Less substantial trackways ran perpendicular to this road and a number led into the hinterland. The majority of the evidence for habitation — buildings, wells, yards, pits, post-holes and finds concentrations — was found in the zone between the road and the parallel trackway, although habitation clearly also occurred to the east of the road.

The Bypass excavation was located at a pivotal point in the settlement's layout, where a south-west–north-east

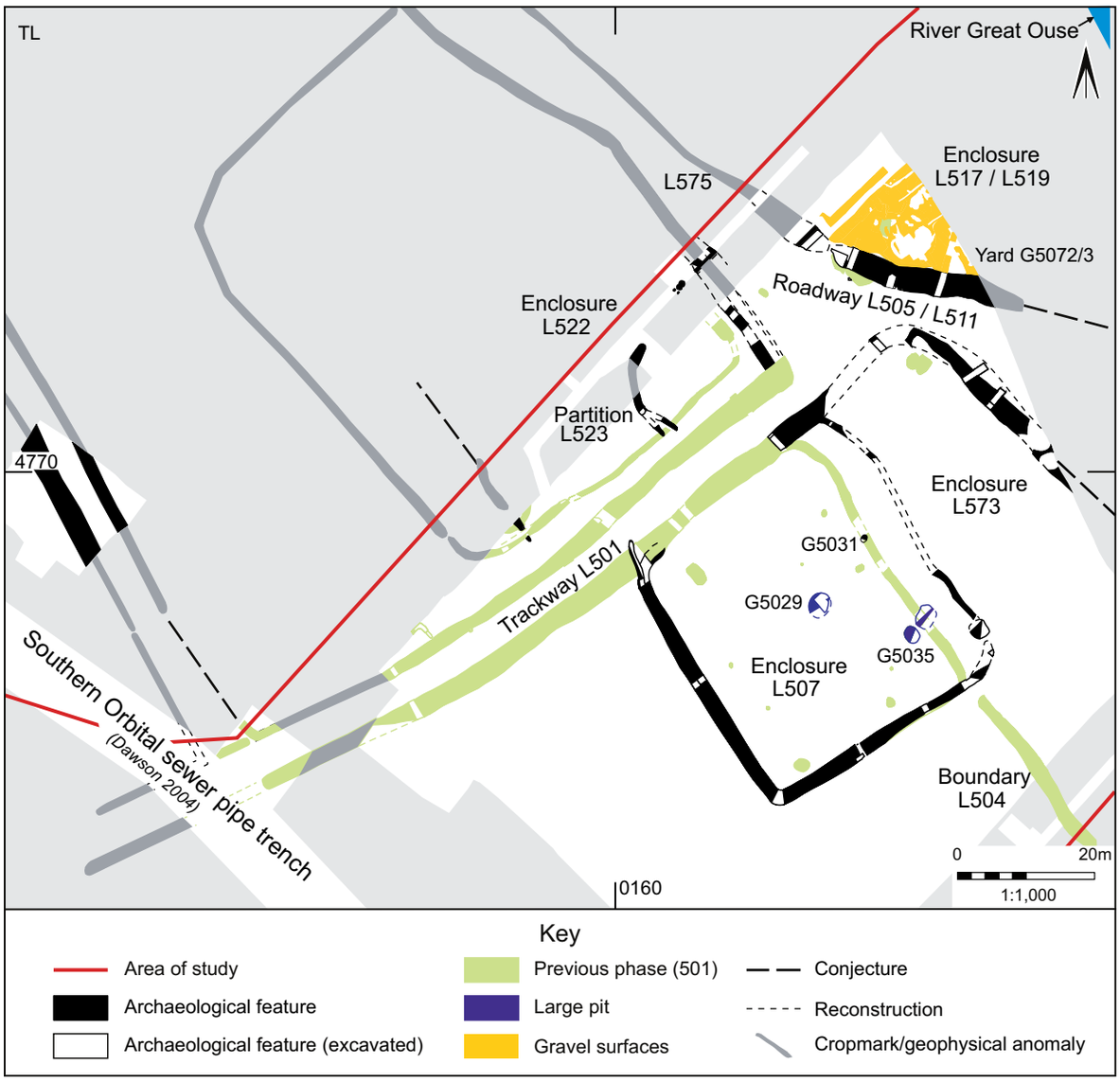


Fig. 5.7 Overall plan of Roman roadside settlement SL155, Phase 502. Scale 1:1000

Plate 5.6 Gravel surface of road L505/L543/L544 within Bypass excavation area separated by a ditch from yard surfaces (to left), from the north-west

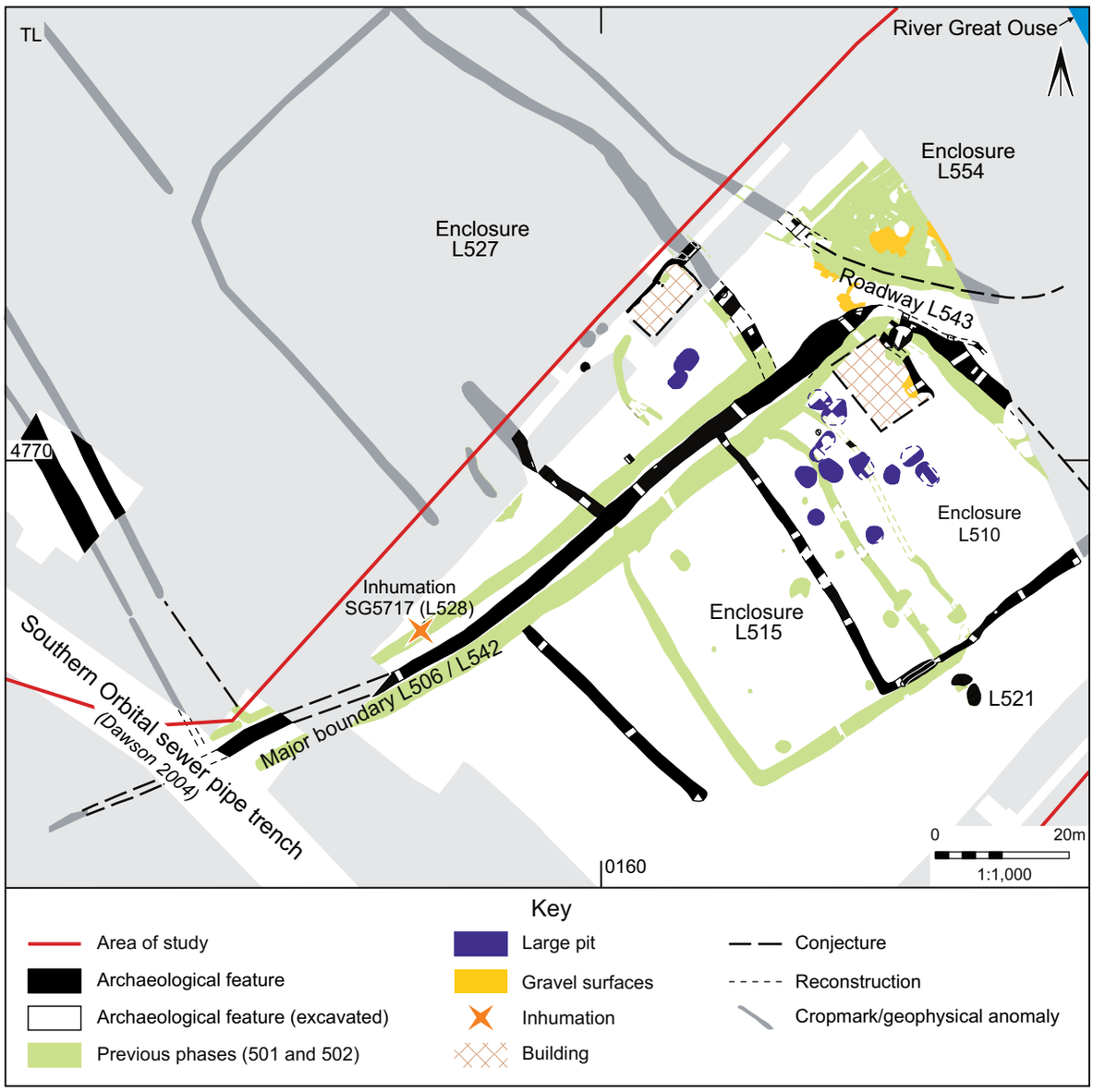


Fig. 5.8 Overall plan of Roman roadside settlement SL155, Phase 503. Scale 1:1000

Plate 5.7 Gravel surface of road L505/L543/L544 within Bypass excavation area, from the south-east

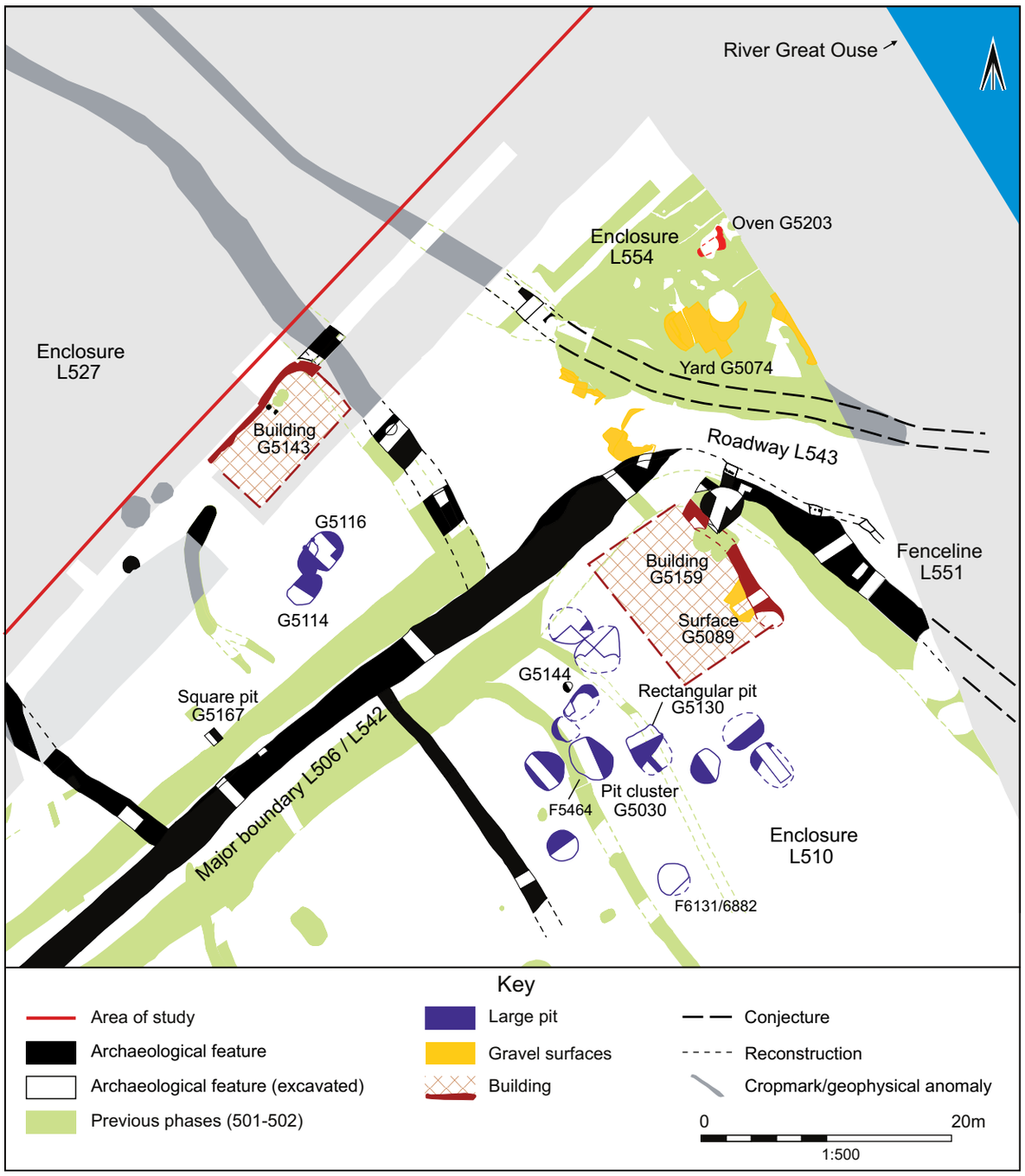


Fig. 5.9 Detailed plan of Roman roadside settlement SL155, Phase 503. Scale 1:500

trackway aligned south-west–north-east linked the road and parallel trackway. Although this trackway had gone out of use by the 3rd century, its alignment was perpetuated throughout the Romano-British period as a major boundary. To the north of it, the entire zone between the road and the parallel trackway was inhabited, while to the south habitation, although largely known from non-intrusive evidence, was confined to a narrower zone adjacent to the road.

Extent
(Figs 5.2 and 5.3)
The settlement was located adjacent to the river Great Ouse, largely between two tributary streams. From north to south, evidence for habitation was located within the Box End Quarry, the sewer easement, the Bypass, the pipe trench and the Cutler Hammer Sportsground.

At the north end, the Box End Quarry investigations proved that the settlement extended to the north of one of the tributary streams where cropmarks indicate that the road and trackway diverge. An east–west boundary ditch attached to the eastern trackway appeared to define the settlement edge — there was no evidence for any habita-

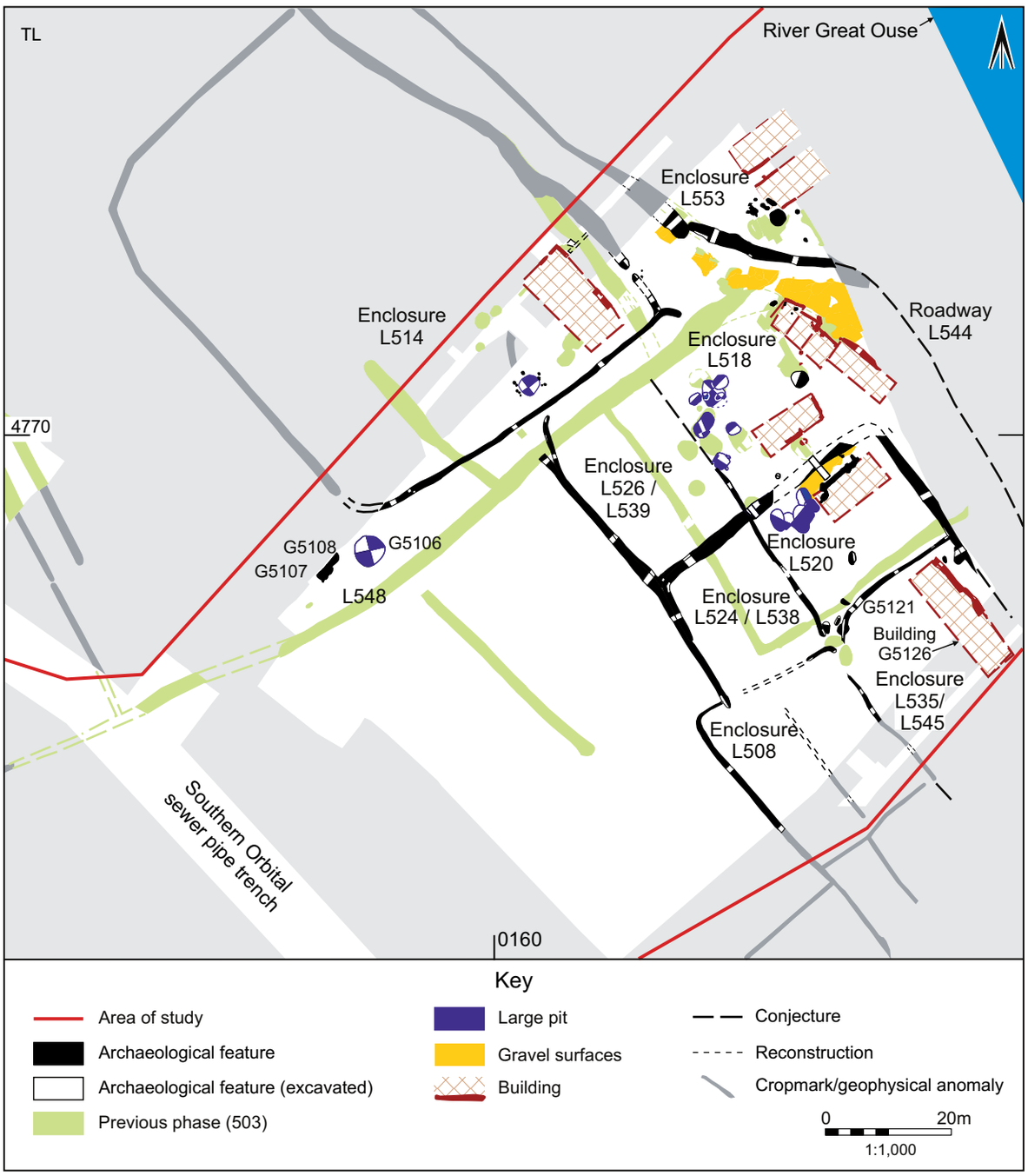


Fig. 5.10 Overall plan of Roman roadside settlement SL155, Phase 504. Scale 1:1000

tion to the north of it (Luke and Preece forthcoming). There is no comparable evidence for a settlement boundary to the south.

The limit of the settlement on its eastern side is presumed to be the edge of the Romano-British flood plain, which was tentatively identified during the Box End investigations (Luke and Preece forthcoming). The precise position of both the river and its flood plain within the rest of the settlement can only be surmised and may have changed slightly throughout this period. Although no definitive western settlement boundary has been identified, it can be inferred from the reduction in density of archaeological features within the sewer, Bypass, pipe trench and Cutler Hammer investigations. To the north of the Bypass excavation the habitation zone appears to extend *c.*100m to the west of the road, while to the south it extends for *c.*60m to the west of the road. This significant change within the morphology of the settlement is discussed below.

Roads and trackways
(Fig. 5.3)
As described above, the settlement comprised a grid-like system of enclosures with integral routeways. A number of the latter extended into the countryside around the settlement and one would have almost certainly led to a

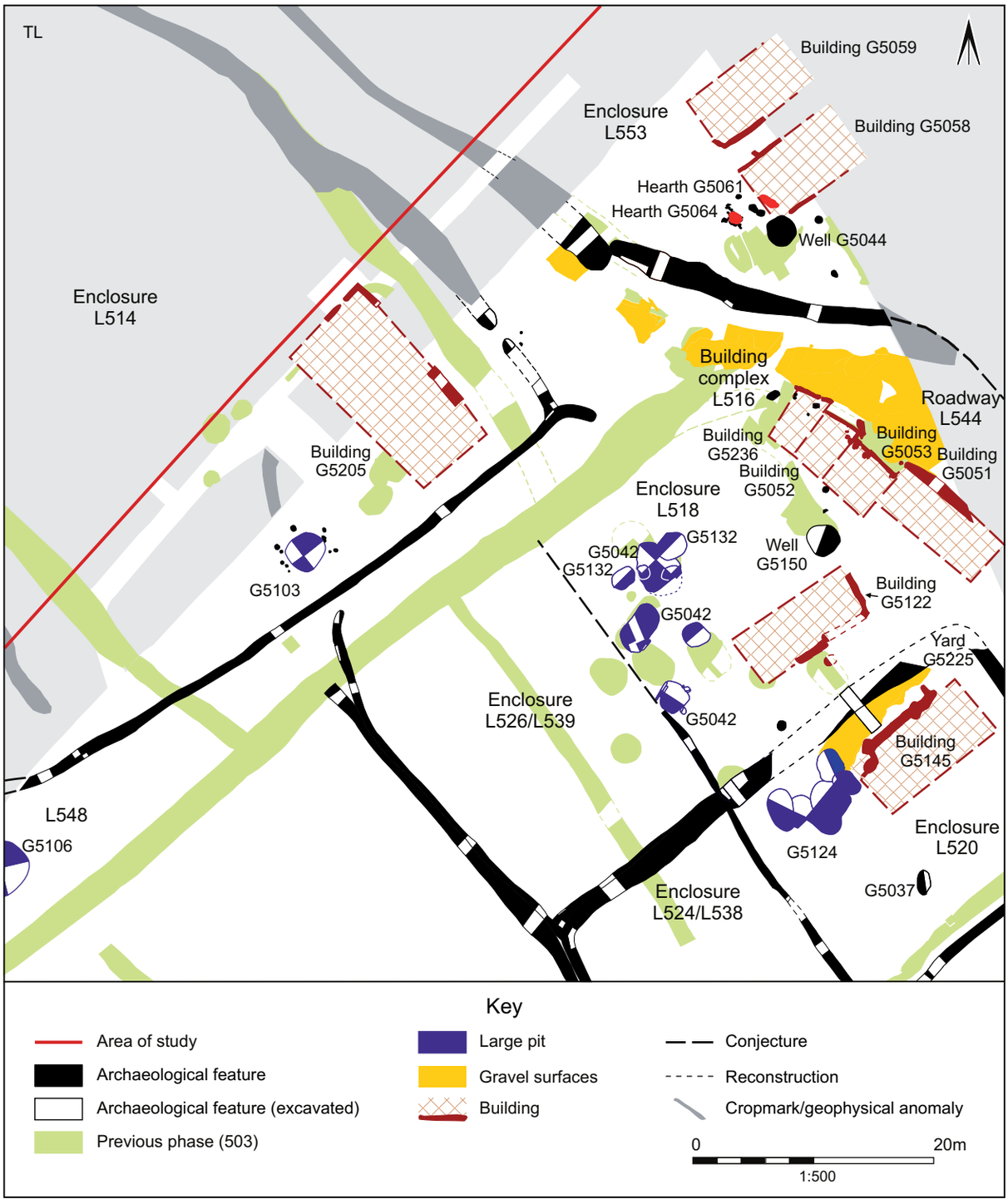


Fig. 5.11 Detailed plan of Roman roadside settlement SL155, Phase 504. Scale 1:500

river crossing and therefore have provided access to the Biddenham Loop. Within the settlement the routeways comprised the road, a parallel trackway and a series of trackways linking the two. As is often the case, the side ditches were redug on a number of occasions, sometimes narrowing the space between them. As a result, the width dimensions given below are very much approximate. In addition, although surfaces associated with the trackways were present in only a small number of locations, this does not necessarily mean that they never existed. As stated above, preservation of remains was much better in the field to the north of Church Lane, probably because this had not been subject to modern ploughing.

The road is known to extend for at least 550m through the settlement. It was examined in detail within the northern excavation area associated with the sewer investigations, where it comprised a *c.*4m-wide cambered metalled surface that had been resurfaced on a number of occasions (Dawson 2004, 160, 179, fig. 5.81). Although designated 'eastern track L20' within the publication of the

Plate 5.8 Excavating the road surfaces of L505/L543/L544, from the west

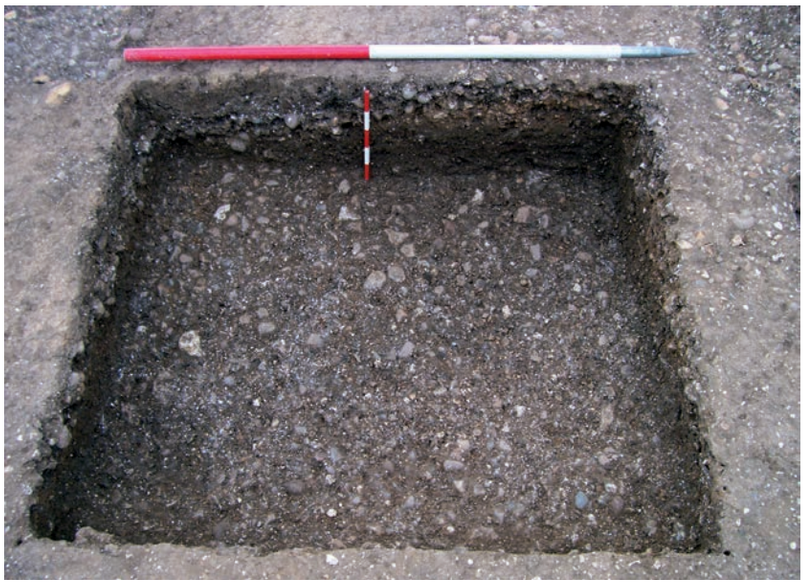


Plate 5.9 Different surfaces of road L505/L543/L544 (1m and 0.25m scales)

Plate 5.10 Road L5305 within pipe trench investigations, from the south-west

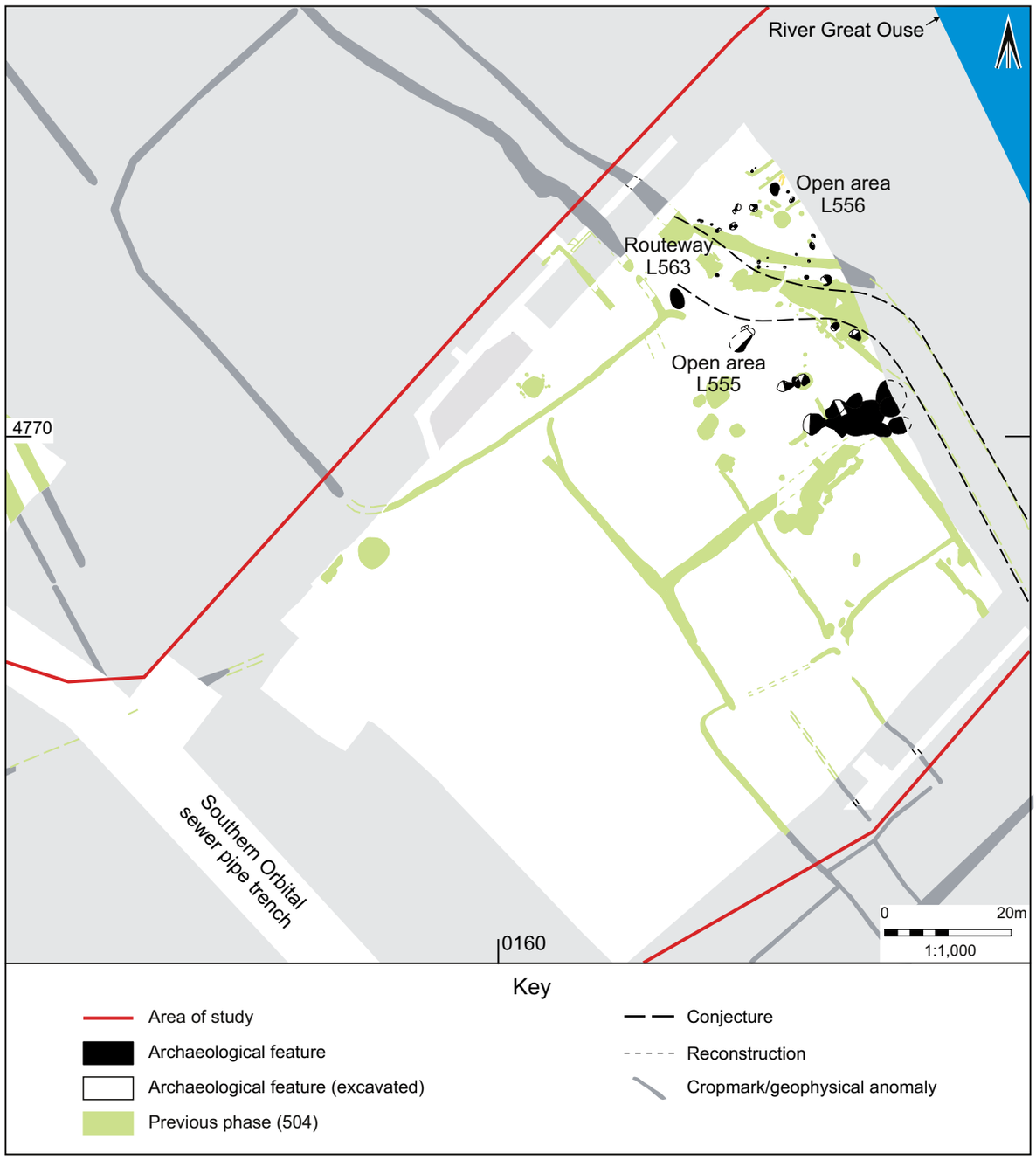


Fig. 5.12 Overall plan of Roman roadside settlement SL155, Phase 505. Scale 1:1000

sewer investigations (Dawson 2004, 160), it is described here as a road to differentiate it from the other routeways within the settlement. The road within the Bypass excavation appeared to curve towards the river and, therefore, a possible crossing point. However, the arrangements of enclosures to the south of the Bypass excavation suggest that the road continued alongside the river flood plain (Fig. 5.3). This was confirmed by the presence of road L5305 within the pipe trench, *c.*360m to the south-east. The wider connections of this road are discussed below (see p. 286).

The road within the Bypass excavation comprised an area of gravel with side ditches; it was not examined in detail as it was not impacted upon by the construction work (Plates 5.6–5.9). However, within the pipe trench to the south-east it comprised a *c.*6m-wide spread of cambered metalled surfaces (L5305) (Plate 5.10). With the exception of a narrow limestone core (Plate 5.11), it was comparable in form to the road within the sewer investigations. Within both investigations its surface had been renewed and the side ditches redug on a number of occasions. Where possible within the Bypass excavation, the different ditch recuts and associated metalling were assigned to different phases (*e.g.* L505/L511 (Phase 502), L543 (Phase 503), L544 (Phase 504)). The road within the Bypass excavation was in use until at least the mid-4th century (Phase 505). Within the sewer investigations the road was believed to have remained in use into the late 4th century (Dawson 2004, 52).

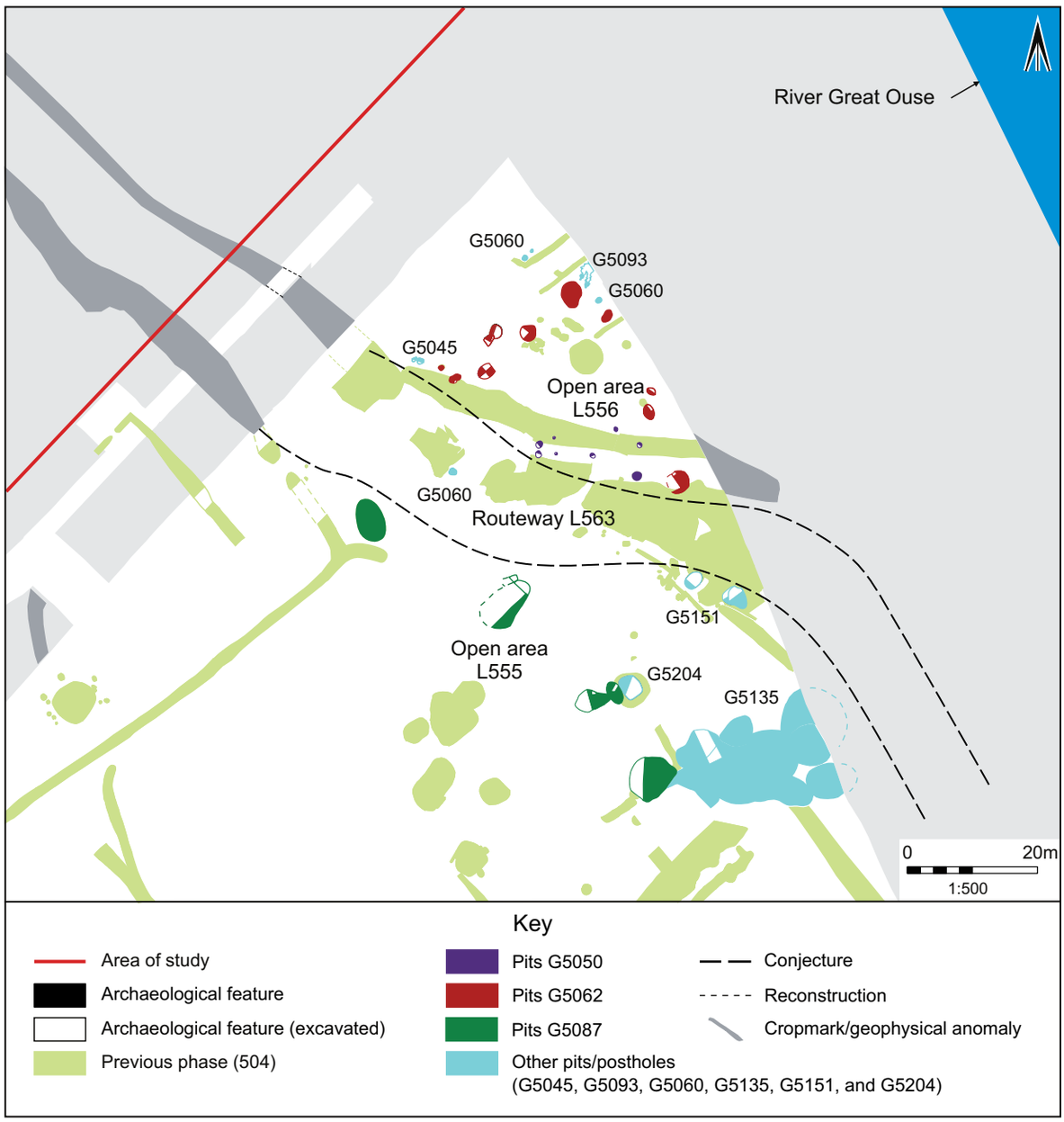


Fig. 5.13 Detailed plan of Roman roadside settlement SL155, Phase 505. Scale 1:500

Plate 5.11 Limestone core of road L5305, from the south-west

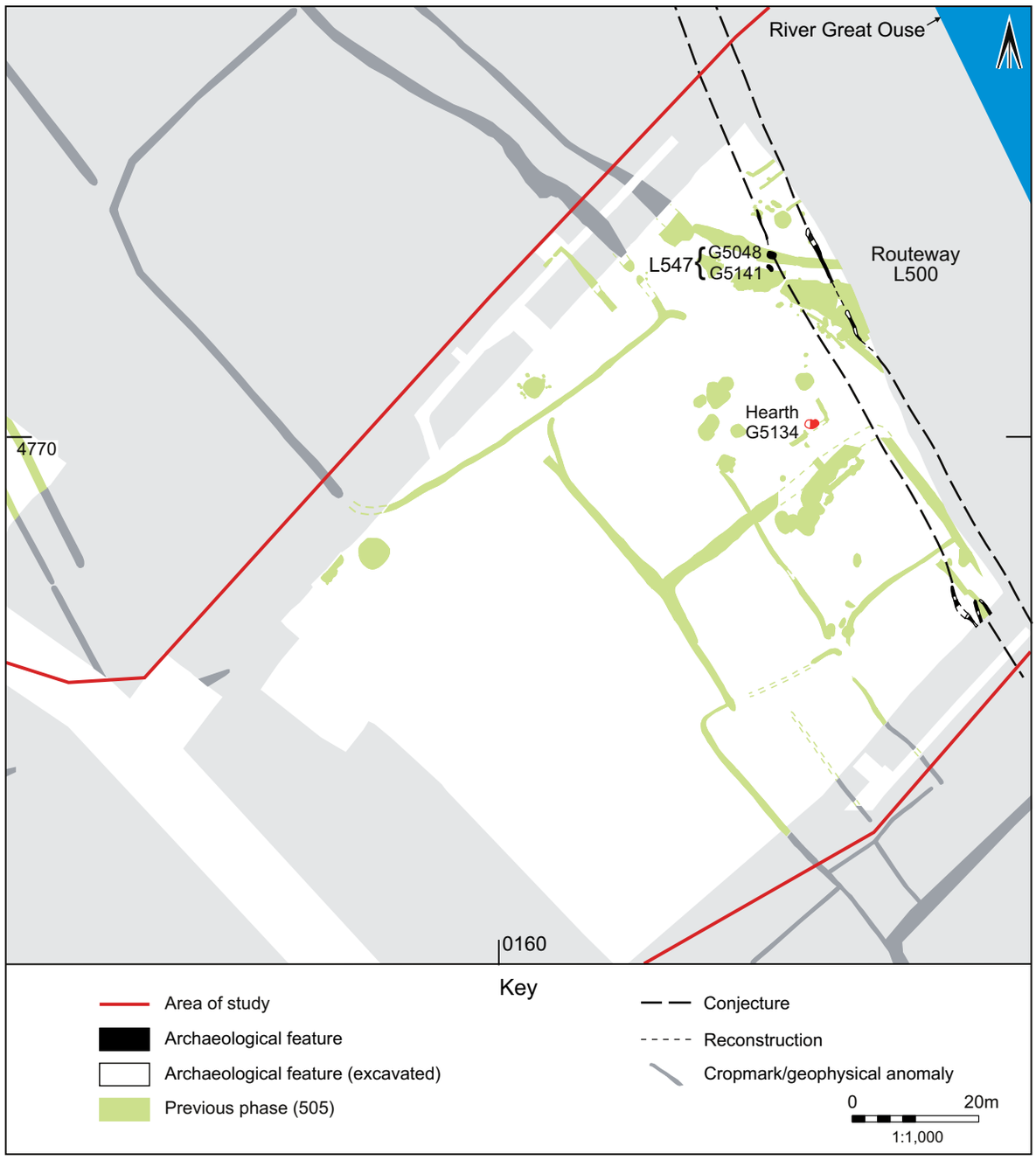


Fig. 5.14 Overall plan of Roman roadside settlement SL155, Phase 506. Scale 1:1000

The most extensive of the other trackways within the settlement is known only from the sewer investigation. It was *c.*550m long and parallel and *c.*70m to the west of the road, but stopped just outside the study area (Fig. 5.7). Within the sewer investigations it was *c.*8m wide, with side ditches, between which in one location there was a shallow gravel surface sealing wheel ruts (Dawson 2004, 159).

Other trackways appear to have provided access between the road and the parallel trackway. They were usually defined by *c.*4.5m-wide side ditches (visible on geophysical survey); where excavated, they were unsurfaced. One such trackway within the Bypass excavations was L501/540, which continued beyond the settlement as L702 (SL156) (Fig. 5.3). Within the settlement it was *c.*6m wide as defined by parallel ditches which originated in the late Iron Age (Phase 501). Its ditches were redefined as L501 in the late 1st/early 2nd century (Phase 502), but by the 2nd/3rd centuries (Phase 503) it no longer functioned as a trackway.

A number of trackways clearly converge on the settlement from its environs. Trackway L501/L702 is known to extend *c.*170m to the south-west, although it was not defined by ditches for its entire length. To the south a trackway aligned north–south (L4501), identified within the adjacent housing investigations and as cropmarks, appears to join the postulated line of the road *c.*260m north of Cutler Hammer Sportsground. In some ways the latter replicates the arrangement of the two trackways at the northern end of the settlement, adjacent to the Box End Quarry investigations (Luke and Preece forthcoming).

Sub-Phase	*Enclosure*	*Extent (sq m)*	*Evidence*	*Buildings*	*Other activity*	*Pottery sherd:weight:vessel (kg)*	*Other artefacts (kg)*	*Comments*
502	L507	1480	E	—	3 large pits Small pit	122:2.1:19 lIA–eRB 523:8.5:84 generic RB 2:0.04:1 1st/2nd century 59:0.6:6 2nd century 1:4g:1 2nd/3rd century 6:0.2:3 3rd/4th century	1.9 animal bone	—
	L517/519	>322	E	—	Metalled surface (yard G5072/3) Post-holes	9:0.3:7 lIA–eRB 32:0.5:34 generic RB 6:0.1:2 2nd century 11:0.2:4 3rd/4th century	0.5 animal bone 0.3 fired clay	—
	L522	>378	E	—	Semi-circular partition Post-holes	1:0.03:1 lIA–eRB	0.06 animal bone 0.1 tegula, flat roof tile	—
	L573	900	E	—	—	—	—	—
503	L510	1715	E	1 (G5159/5089)	11 large pits Small pit	244:5.2:41 lIA–eRB 1839:1.8:154 generic RB 8:0.1:2 1st/2nd century 199:6.5:8 2nd century 72:1.3:3 2nd/3rd century 103:2.6:15 3rd/4th century 3:0.02:1 4th century	19.8 animal bone 3.0 tegula, imbrex 3.1 fired clay 0.2 slag	Tertiary fills of cess pits contained a large assemblage of metal artefacts (G5030.09) Pit SG5384 contained repaired and reworked samian (G5030.06, G5030.08) Pit SG5421 contained finds similar to those found in hoards (G5030.01)
	L515	1295	E	—	—	—	—	—
	L527	1764	E/G/C	1 (G5143)	2 large pits 3 medium pits 1 square pit	57:0.6:4 lIA–eRB 456:0.5:43 generic RB 1:0.06:1 1st/2nd century 11:0.1:2 2nd century 4:0.5:1 2nd/3rd century 63:0.8:7 3rd/4th century 4:0.03:4 4th century	4.6 animal bone 5.5 tegula, flue tile, imbrex 1.6 fired clay	Tertiary fills of cess pits contained a large assemblage of other artefacts incl. agricultural artefacts, personal and household items, building fittings/fasteners and craft items. Craft items were restricted to pit G5114 (G5114.06) Personal items appeared only in pit G5116
	L554	>340	E	—	Oven (G5203) Metalled surface (yard G5074))	10:0.1:6 generic RB 4:0.03:1 2nd century	—	—
504	L508	704	E/G/C	—	—	29:0.6:14 generic RB 1:0.02:1 2nd century 3:0.1:1 3rd/4th century	1.9 animal bone 0.5 tegula, flat roof tile	Enclosure ditch contained a military phalera or horse junction (OA122)
	L514	1326	E/G/C	1 (G5205)	1 large pit Post-holes	110:3.0:20 lIA–eRB 77:1.3:12 generic RB 1:0.02:1 2nd century	0.3 animal bone 4g modern tile 0.3 fired clay	—

Sub-Phase	*Enclosure*	*Extent (sq m)*	*Evidence*	*Buildings*	*Other activity*	*Pottery sherd:weight:vessel (kg)*	*Other artefacts (kg)*	*Comments*
504 cont.	L518	837	E	1 (G5122) 4 (complex L516)	8 large pits 1 well (G5150) Post-holes	22:0.6:8 lIA–eRB 495:10.4:61 generic RB 13:0.1:2 1st/2nd century 35:0.4:3 2nd century 2:0.07:2 2nd/3rd century 20:0.3:3 3rd/4th century 1:0.02:1 4th century	4.4 animal bone 0.6 imbrex 0.3 fired clay	Enclosure pits and large pits contained 18 coins (RAb 5017–22, 5025, 5030, 5032, 5058–59, 5067, 5087–90, 5121, 5148)
	L520	480	E	1 (G5145)	6 large pits Metalled path/ yard (G5225) Small pits	124:1.9:38 lIA–eRB 1004:16.6:219 generic RB 11:0.3:2 1st/2nd century 68:0.9:8 2nd century 12:0.2:1 2nd/3rd century 25:0.3:9 3rd/4th century	5.1 animal bone 0.9 tegula, imbrex 0.8 fired clay	A range of building fasteners and fittings, craft and agricultural items were recovered from the cess pits
	L524/538	374	E	—	—	16:0.2:4 lIA–eRB 47:0.7:6 generic RB 3:0.02:1 2nd century 2:0.06:1 3rd/4th century	0.4 animal bone 0.1flat roof tile 0.1 fired clay 0.2 slag	—
	L526/539	589	E	—	—	5:57:3 lIA–eRB 144:1.4:51 generic RB 7:0.03:3 2nd century 1:0.01:1 2nd/3rd century 12:0.07:5 3rd/4th century 2:0.02:2 4th century	3.0 animal bone 0.3 imbrex	—
	L535/545	696	E/G/C	1 (G5126)	Small pits	32:592:6 lIA–eRB 385:5.7:85 generic RB 5:0.03:1 1st/2nd century 26:0.3:8 2nd century 1:0.01:1 2nd/3rd century 12:0.8:3 3rd/4th century 5:0.1:1 4th century	0.7 animal bone 0.1 fired clay 0.3 slag	Contained limited evidence of iron working
	L553	>400	E	2 (G5058 and G5059)	1 well (G5044) 2 hearths (G5061, G5164) Post-holes	5:128:2 lIA–eRB 145:2.5:9 generic RB 3:0.01:2 2nd century 11:0.1:1 3rd/4th century 1:0.01:1 4th century	0.3 animal bone 0.4 fired clay	—

E = excavation; G = geophysical anomalies; C = cropmark anomalies; OA = Other artefact number; RAb = BWB1124 registered artefact number; lIA = late Iron Age; RB = Romano-British; eRB = early Romano-British

Table 5.1 Details of the evidence from the main ditched enclosures within roadside settlement SL155

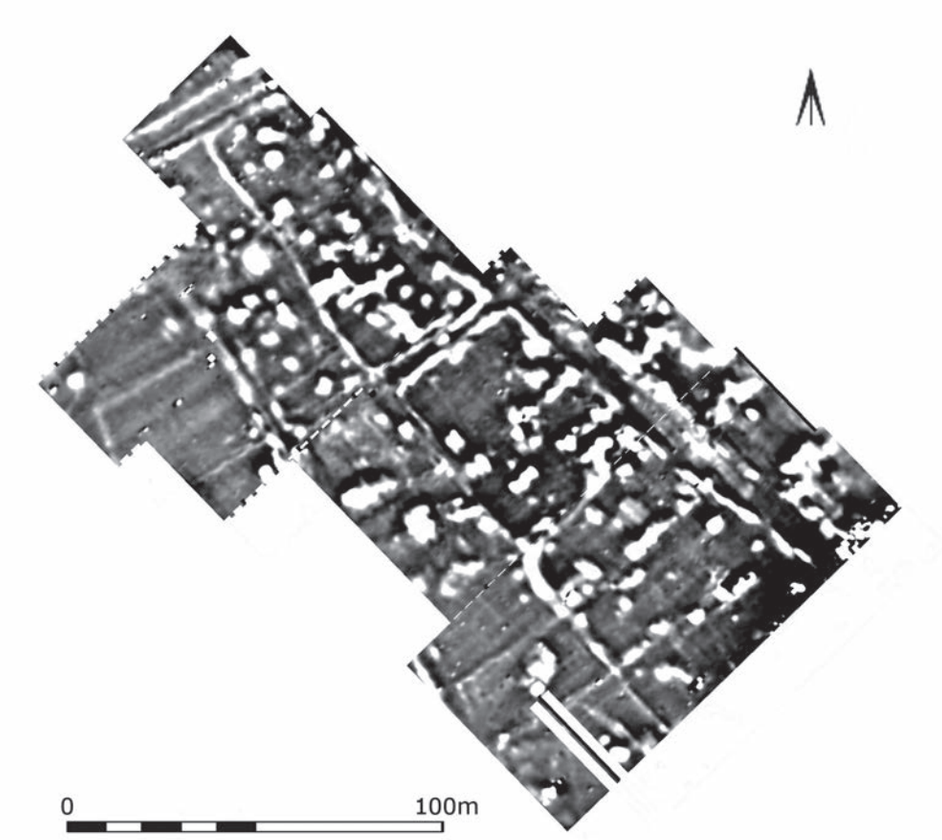


Plate 5.12 Results of geophysical survey undertaken to the north-west of the Bypass excavation area (copyright ArchaeoPhysica 2011). For location see Fig. 5.2

Plate 5.13 Aerial view of the bypass excavation area, from the north-west. The area contained several entire settlement enclosures with the ditches of trackway/major boundary L540/L501/L506/L542 in the foreground

P	*Enclosure*	*Buildings*	*Evidence*	*Adjacent features*	*Finds from adjacent features*
503	510	G5159	G5159 comprised a beam slot located adjacent to the roadside ditch. It is part of a NW–SE aligned building that was at least 11m long and of unknown width. The building had been at heavily truncated by later activity. The beam slot was 1.6m wide and 0.4m deep, with a steep-sided concave profile and slightly concave base	Large pits	Tertiary fills of large pits G5030 contained a large assemblage of metal artefacts Pit SG5384 contained repaired and reworked samian (G5030.06, G5030.08) Pit SG5421 contained finds similar to those found in hoards (G5030.01)
	527	G5143	G5143 comprised an L-shaped foundation trench located adjacent to the roadside ditch. It is part of a NE–SW aligned possible rectangular building that would have been at least 10m long. The building was observed only within an evaluation trench. The foundation trench was generally 0.5m wide and 0.3m deep with concave sides and flat bases. No obvious entranceways or internal activity were identified	Large pits	Tertiary fills of the large pits contained a large assemblage of other artefacts, incl. agricultural artefacts, personal and household items, building fittings/ fasteners and craft items Craft items were restricted to pit G5114 and personal items to pit G5116
504	514	G5205	G5205 comprised an L-shaped foundation trench located adjacent to the roadside ditch. It was part of a NW–SE aligned building that would have been *c.*12m long. The building was observed only within an evaluation trench. The foundation trench was 0.4m wide and 0.4m deep, with near vertical sides and flat bases. It became wider, deeper and more irregular towards the SSE end, which may be a product of robbing activity. A possible entranceway was indicated by a 0.5m-wide gap on the NW side. No internal activity was identified	Large pit Post-holes	—
	518	G5051	Part of building complex L516 fronting onto roadway L544. G5051 comprised limestone footings within a construction trench which relate to the east wall of a NE–SW aligned rectangular bu ilding. No structural elements were identified for the other walls, probably because of truncation. The building is at least 7m wide but continued beyond the eastern limit of excavation. No entranceways or internal activity were identified The construction trench was 0.9m wide and 0.26m deep. At the base was a mid-grey silty clay with occasional small limestone fragments and stones. The main fill was at least one course of roughly hewn unbonded medium and large fragments of limestone. The stone was had been laid in a rough fashion to create a solid base.	Well G5150	Enclosure ditch and large pits contained 18 coins (RAb 5017–22, 5025, 5030, 5032, 5058–59, 5067, 5087–90, 5121, 5148)
		G5052	Part of building complex L516 fronting onto roadway L544. G5052 comprised a beam slot and adjacent post-holes which relate to the east wall of a NE–SW aligned rectangular building. The beam slot was 0.3m wide with steep sides and an uneven base. It was filled with frequent medium-sized stones. No structural elements were identified for the other walls, probably because of truncation. The building is only 3.4m wide. No entranceways were identified Two possible post-holes or post-pads were located to the SE	As G5051 (above)	As G5051 (above)

P	*Enclosure*	*Buildings*	*Evidence*	*Adjacent features*	*Finds from adjacent features*
504 cont.	518 cont.	G5053	Part of building complex L516 fronting onto roadway L544. G5053 comprised a beam slot and adjacent post-holes which relate to the east wall of a NE–SW aligned rectangular building. It was set back slightly from adjacent buildings G5051 and G5052, although its beam slot linked to that of the latter. The beam slot was 0.3m wide with steep sides and an uneven base. It contained small and medium-sized stones. No structural elements were identified for the other walls, probably because of truncation. The building was 4.5m wide. A possible entranceway was indicated by the presence of a 1m length of narrow beam slot with adjacent post-holes at each end The two entranceway post-holes contained post-pipes 0.3m in diameter. Packing material comprising fragments of limestone was present	As G5051 (above)	As G5051 (above)
		G5236	Part of building complex L516 fronting onto roadway L544. G5236 comprised limestone footings and post-holes/pads which relate to the east wall of a NE–SW aligned rectangular building. The footings comprised seven rectangular limestone blocks that were evenly coursed. No structural elements were identified for the other walls, probably because of truncation. No entranceways were identified The post-holes and post-pads did not form a logical spatial pattern	As G5051 (above)	As G5051 (above)
		G5122	G5122 comprised possible beam slots adjacent to the SE boundary of the enclosure. They represent the SE and NE wall of a NE–SW aligned building, which was at least 7m long. The slots were generally 0.4m wide and deep. No structural elements were identified for the other walls owing to intense later activity	Well G5150 Large pits	Enclosure ditch and large pits contained 18 coins (RAb 5017–22, 5025, 5030, 5032, 5058–59, 5067, 5087–90, 5121, 5148)
	520	G5145	G5145 comprised a possible beam slot adjacent to the NW boundary of the enclosure. They represent the NW wall of a NE–SW aligned building, which was at least 9m long. The beam slot was irregular in plan and contained evidence for possible post-holes and post-pads. No structural elements were identified for the other walls owing to intense later activity	Metalled path G5225 Large pits	A range of building fasteners and fittings and craft and agricultural items was recovered from the large pits
	553	G5058	G5058 comprised two parallel beam slots situated away from the roadway L544. They represent the NW and SE walls of a NE–SW rectangular building which was 5m wide and over 4.5m long.	Well G5044 Hearths G5061 and G5164	—
	553	G5059	G5059 comprised a beam slot situated away from the roadway L544. It was parallel to and 1.8m NW of building G5058. The beam slot represents the SE wall of a NE–SW rectangular building, which was over 5m long	As G5058 (above)	—

RAb = BWB1124 registered artefact number

Table 5.2 Details of the evidence for possible buildings within roadside settlement SL155

Enclosures

Understanding of the overall layout of enclosures within the settlement (Fig. 5.3) has been assisted by the geophysical survey undertaken to the north (Plate 5.12) and south of the Bypass excavation (ArchaeoPhysica 2011). Although the precise layout of individual enclosures within the Bypass excavation (Plate 5.13) changed slightly over time, their position and alignment usually reflected the earlier layout (Fig. 5.5). This could suggest that the ownership of land plots was controlled and that, at least within the Bypass, they may have been owned by the same people throughout the Roman period. The enclosures within the Bypass excavations are shown on Figs 5.6–5.14 and detailed in Table 5.1.

The ditched enclosures adjacent to the road within the Bypass excavations contained buildings, stone-lined wells, large pits, other isolated pits and post-holes; they were clearly used for habitation (*e.g.* L510 and L527 in Phase 503 (Fig. 5.8), L518, L520 and L535 in Phase 504 (Fig. 5.10)). Some contained yard surfaces and ovens/hearths, and had been subdivided. The situation was the same within the sewer investigation to the north (Fig.

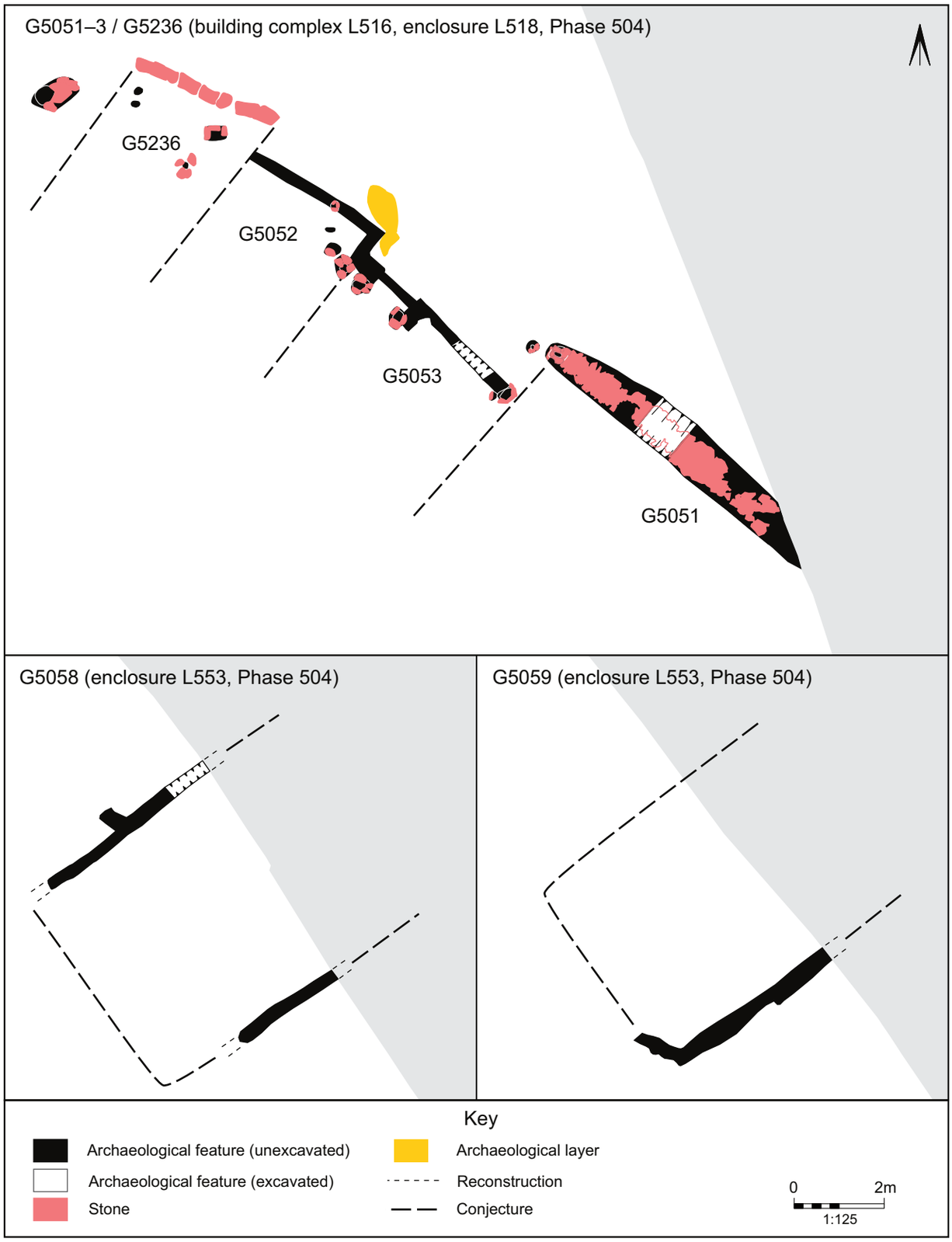


Fig. 5.15 Detailed plans of possible buildings G5051–3/G5236 (complex L516), G5058 and G5059 within roadside settlement SL155. Scale 1:125

5.4). At least two enclosures within the settlement, neither within the Bypass excavation, were sufficiently different for them to be put forward as the sites of temples/shrines; they are therefore discussed separately below.

The enclosures had a road frontage of 40–70m and were usually *c.*40m deep. Many had slightly smaller enclosures behind them, bounded by ditches which were continuations of those delineating the enclosures

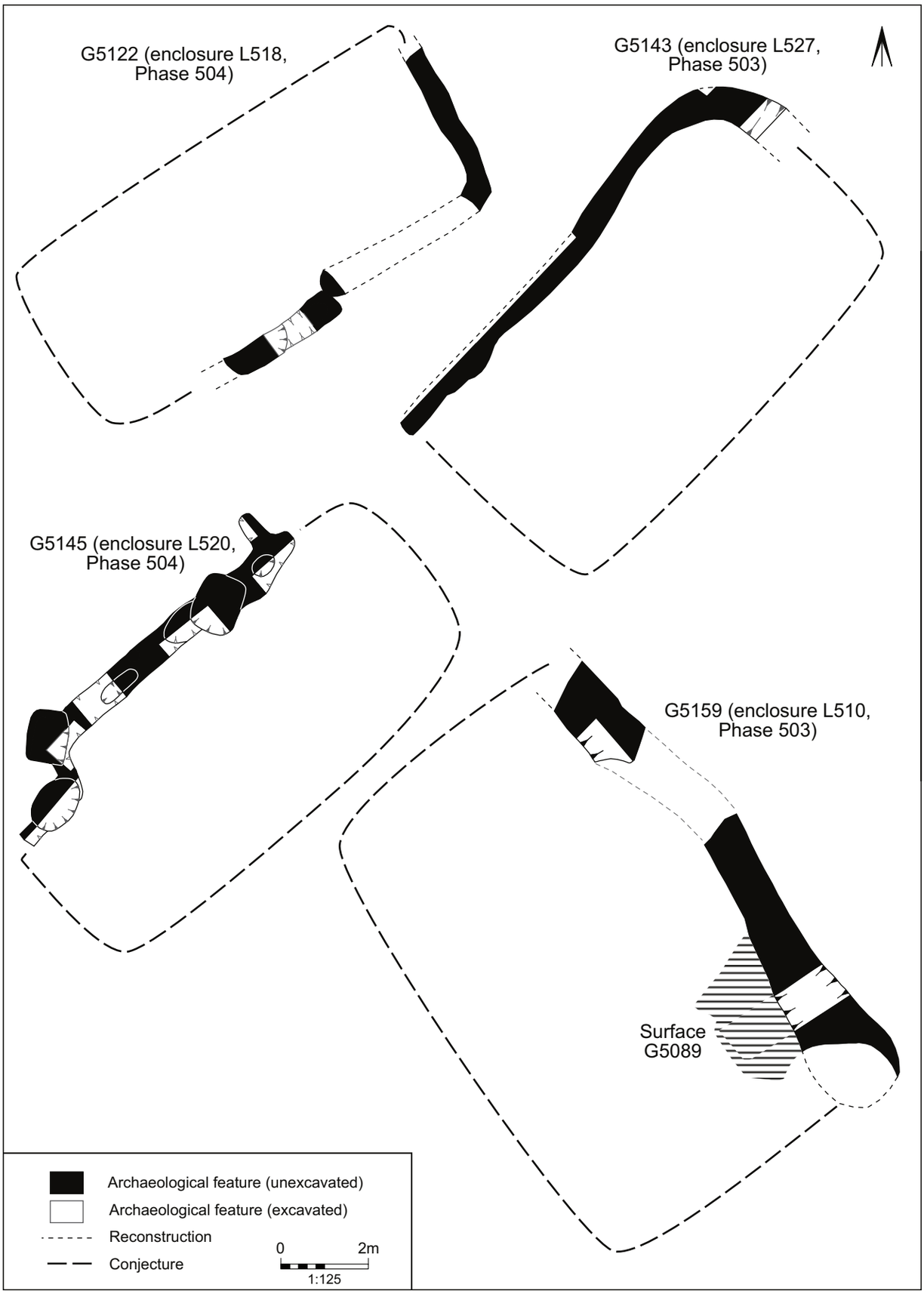


Fig. 5.16 Detailed plans of possible buildings G5122, G5143, G5145 and G5159 within roadside settlement SL155. Scale 1:125

Plate 5.14 Stone foundation of building G5051 (part of building complex L516, enclosure L518, Phase 504), from the south-east

adjacent to the road (Figs 5.8 and 5.10). This arrangement suggests that the enclosures were all part of the same property unit. The paucity of finds from these back plots (*e.g.* L515 (Phase 503), L526/L539; L524/L538 and L508 (Phase 504)), and the apparent absence of any structures suggest that they may have served a different function from that of the roadside enclosures — perhaps cultivation or short-term animal corralling.

To the north of the Bypass excavation, within the sewer investigations, the situation may have been different, because some of the ancillary enclosures adjacent to the trackway contained stone-lined wells and large pits (Fig. 5.4), suggesting that some were also used for habitation, although not necessarily throughout the Romano-British period. The narrower system of enclosures within the Bypass investigations has been proved to continue to the south. Enclosure L574 appears to be a significant one because it was situated at a change in road alignment and contained a large central geophysical anomaly, but few other pits and minimal evidence for subdivisions. Even further south within the Cutler Hammer Sportsground evaluation the enclosures appeared still to have a *c.*40m-wide road frontage, but were *c.*100m deep.

Very little is known about the enclosures to the east of the road. This part of the Roman settlement underlies modern Kempston Church End and, even where it was examined within the sewer and Bypass investigations, only very small areas were partially excavated.

Within the sewer investigations it was found that causeways provided access into enclosures from the road, tracks and adjacent enclosures (Dawson 2004, 41). Surprisingly, very few such entranceways from the road and trackway were identified within the Bypass

Plate 5.15 Stone foundation of building G5051 (part of building complex L516, enclosure L518, Phase 504), from the north-west, with alluvial deposits visible at the side of the excavation area

Plate 5.16 Yard surface G5072 (enclosure L517, Phase 502), from the north-west, with a person near well G5044

excavation. This may simply reflect the position of the excavation area in relation to the enclosures, however. In addition, the extensive redigging of the enclosure ditches may have removed causeways, making it difficult to identify crossing points. The causeway and adjacent post-holes assigned to L514 (Phase 504) were a notable exception.

Buildings

A number of different types of buildings are known within the settlement. The sewer investigations produced a wider range of designs than the Bypass excavation and are described first. Buildings were mainly rectangular, but circular and polygonal examples are also known (Dawson 2004, figs 3.18, 3.19 and 3.22). The majority were of timber construction (Dawson 2004, fig. 43); a small number had stone footings (Dawson 2004, fig. 3.22), including one with coursed stone walls (Dawson 2004, fig. 3.120). The presence of the latter and presumably other similar, but as yet undiscovered, buildings may explain the 200kg of building material recovered from the sewer investigations (Wells 2004, 504–7 and table 9.28) and the 34kg that came from the Bypass excavation (CD Section 2; Wells, CBM). The recovery of flue tile (Wells 2004, 508), painted plaster and window glass (Wells *et al.* 2004, 371–2) suggests the presence of at least one well-appointed building within the settlement. However, the majority of this material derived from the sewer investigations and no buildings with substantial enough foundations to support tiled roofs were found in the Bypass excavation, suggesting that such buildings were more likely to be located in the northern part of the settlement. The identification of a cellar (Dawson 2004, 188 and fig. 5.92), presumably associated with a building, is a most unusual feature on a rural settlement of this type.

A number of possible buildings were identified within the Bypass excavation, but in no case was a complete ground plan identifiable. There was a single possible roundhouse G5111 in the late Iron Age–early Roman period (Phase 501, Fig. 5.6) and a single building G5031 (Phase 504) with stone footings (Plates 5.14 and 5.15), which was one of nine possible rectangular buildings in the Roman period (Phases 503 and 504). They were all located within enclosures adjacent to the road, either parallel or perpendicular to it (see Figs 5.9 and 5.11). The position of G5159 would have given a view northwards along the road (Fig. 5.9). The evidence comprised linear slots, sometimes quite ephemeral and sometimes associated with post-holes (Figs 5.15–5.17 and Table 5.2). These have been interpreted as foundation trenches for possible buildings, even if no parallel slot was identified. The slots indicate that the buildings were at least 10m long and over 4m wide. A number of short lengths of structural slots, some containing limestone, adjacent to the road appear to be part of the same building complex (L516, Phase 504). Although some of these were only *c.*4.5m wide, their regularity suggests that they represent either separate rooms of a single large building or, as is more likely, a series of small shops positioned end-on to the road (Figs 5.11 and 5.16). The distribution of other features within enclosures, such as the south-east part of Phase 505 enclosure L510 (Fig. 5.8), may suggest that the 'blank' areas contained buildings which have left no trace.

There is artefactual evidence for fittings or fasteners possibly associated with buildings, but furnishings are rarer. The most common finds are nails; their types and quantities are described by Duncan (CD Section 2). Although no 'other' artefacts were found in direct association with buildings, an analysis has been made of the findspots of individual fittings and/or fasteners in relation

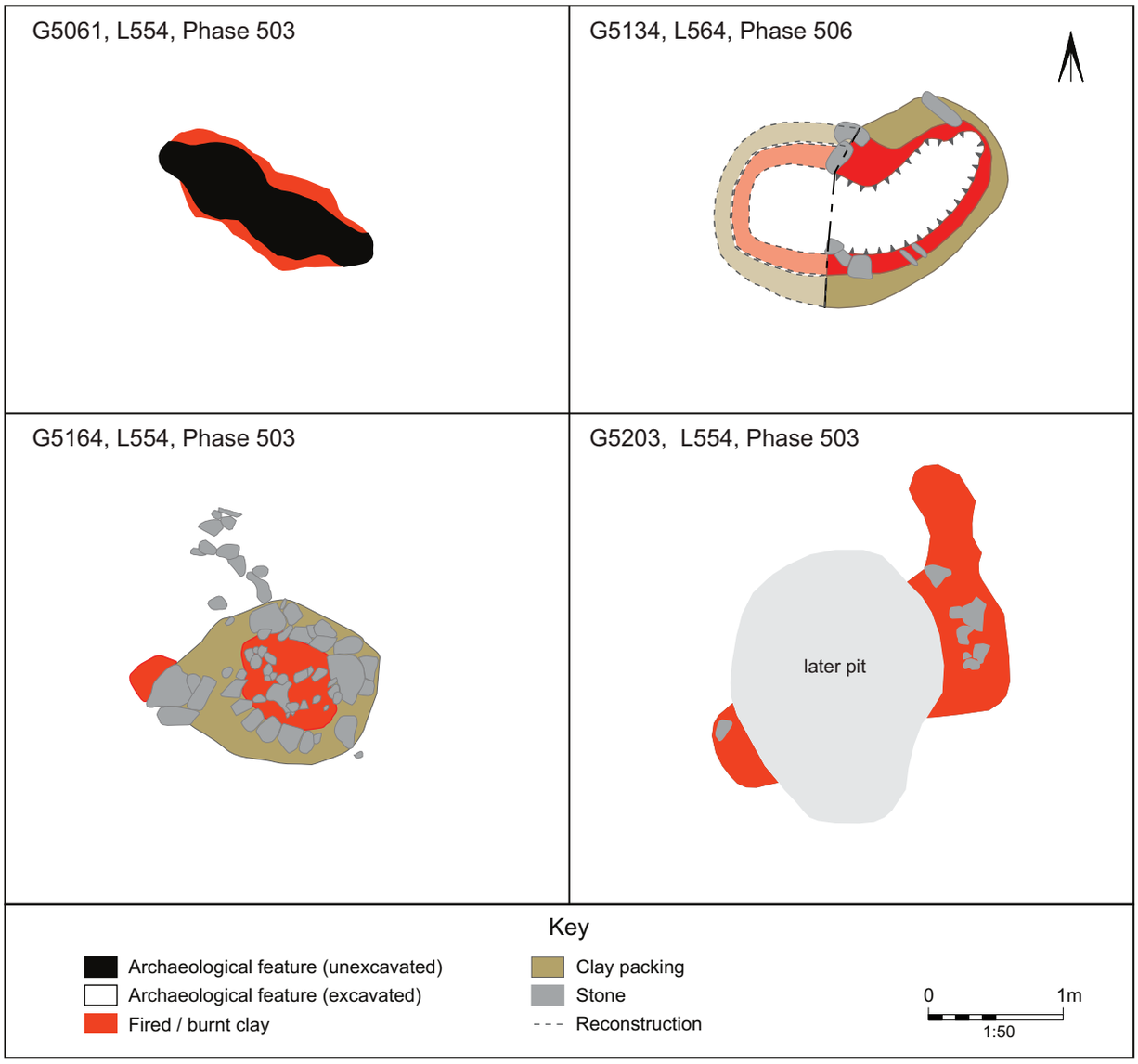


Fig. 5.17 Detailed plans of ovens/hearths G5061, G5134, G5164 and G5203 within roadside settlement SL155. Scale 1:50

Plate 5.17 Possible oven G5164 (L554, Phase 503), from the north-east (1m scale)

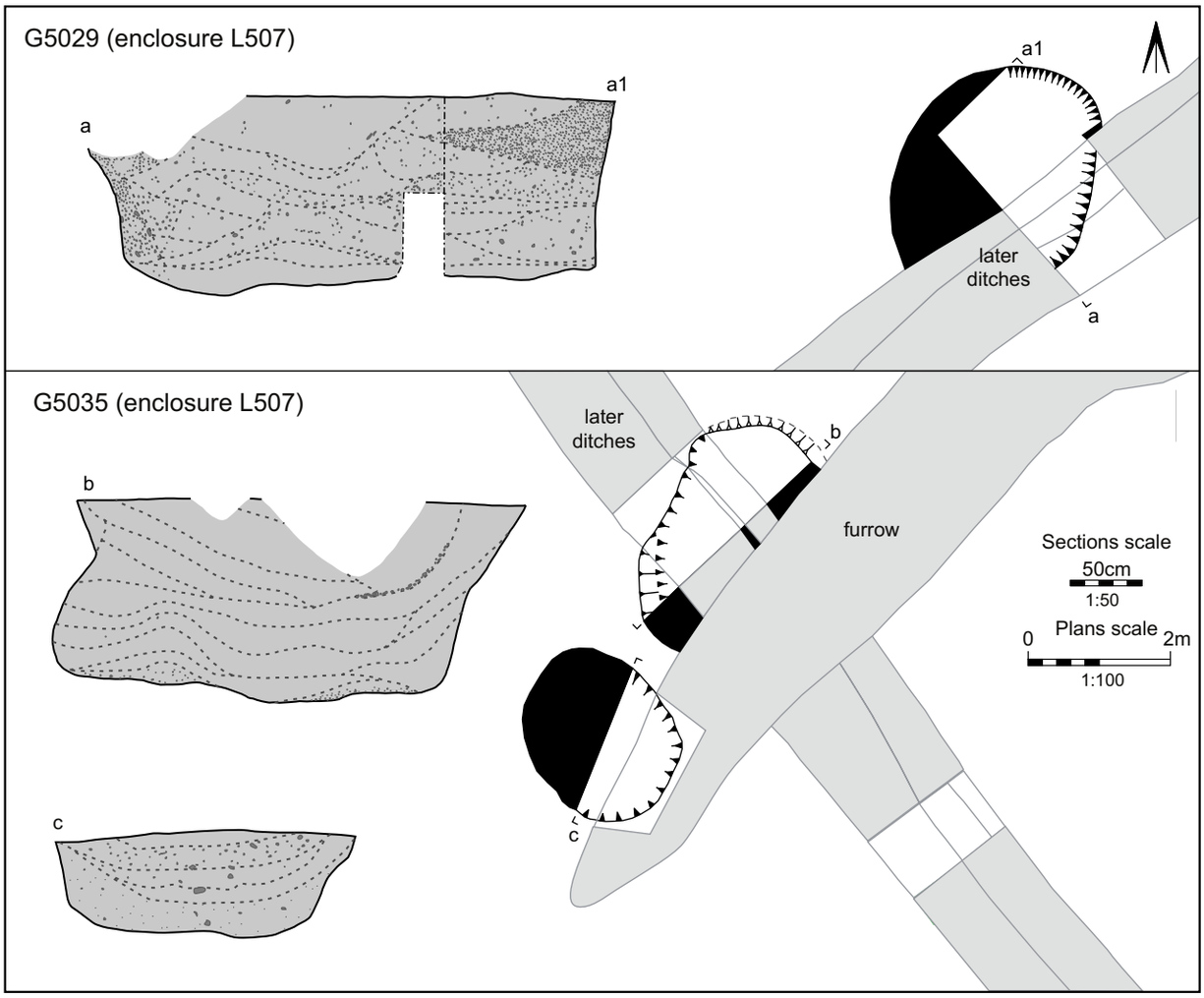


Fig. 5.18 Detailed plans and sections for Phase 502 large pits: G5029 and G5035. Scale 1:100

to specific buildings (CD Section 2; Duncan). The results are summarised below:

- **G5143 (L527, Phase 503):** it is possible that the loop-headed spike (OA44), lobate terminal of a drop hinge (OA45), fragment of stem from a lift key (OA46) and thirty nails found within the adjacent pits G5114 and G5116 served as general fasteners and fittings within the building. 'The lobate terminal of a drop hinge (OA45) and the fragment of stem from a lift key (OA46) attest to iron door fittings and locking mechanisms' (CD Section 2; Duncan).
- **G5159 (L510, Phase 503):** 'The clamps (OA64 and OA65), nails and timber dog (OA66) presumably derived from building G5159; the loop hinge (OA67) and possible lock plate (OA68) are evidence of iron door furniture and locking mechanisms within the structure' (CD Section 2; Duncan).
- **G5145 (L520, Phase 504):** a double-spiked loop (OA111), a staple/timber dog (OA112) and a possible hinge terminal (OA113) were found in pits G5124 adjacent to the building (CD Section 2; Duncan).

Other structural fasteners include a T-clamp (OA93) and parts of two loop-headed spikes (OA94 and possibly OA95) found in pits within enclosure L521 (Phase 503). This enclosure contained no other evidence for the presence of a building, although it was largely unexcavated.

Within the Bypass excavation:

> … little evidence of household furniture survived, but the two angled fittings (*e.g.* OA69) are likely to have derived from a box or chest. A complete set of similar fittings was found at the Roman villa at Bradwell, Milton Keynes, where each corner of the chest had two such bindings (Manning and Musty 1977, 330 fig. 4). Studs, such as OA70, may have been used on leather furniture (Crummy 1983, 116 and fig. 120), and it is likely that the single example of an iron nail with a domed copper alloy cap soldered on to its head (OA71) was used in a similar manner (CD Section 2; Duncan).

A domed composite boss or stud (OA114) may have decorated a chest; similar composite studs were found on a box accompanying a burial at Butt Road, Colchester (Crummy 1983, fig. 90).

The majority of the buildings within the settlement probably served a residential or storage function within individual family enclosures. However, the polygonal building found within the sewer investigations may have been a temple/shrine (see below for fuller discussion).

Plate 5.18 Stone-lined well G5044 (L553, Phase 504), from the south-west

Plate 5.19 Partially robbed well G5150 (L518, Phase 504), from the north-west (2m scale)

Yards

A number of gravel surfaces were found in the vicinity of possible buildings within the Bypass excavation (*e.g.* G5072/73 (Phase 502, Fig. 5.7), G5074 (Phase 503, Fig. 5.9), G5225 (Phase 504, Fig. 5.11)). Those to the north-east of the road contained surfaces extending over *c.*13m × 13m (Plate 5.16), but these were only partially investigated owing to the preservation *in situ* strategy (see p. 210). However, it was clear that a sequence of at least three surfaces, each with an associated make-up layer, was present in this area. The surfaces comprised hard compact gravel usually *c.*0.1m thick, while the make-up layer, a *c.*0.2m-thick silty clay, sometimes contained pottery sherds and animal bone. In places, more sterile clays occurred above the surfaces and, while these are probably part of the make-up layers, it is not impossible that they are flood deposits. Although this low-lying part of the settlement was off the gravel terrace, a stone-lined well G5044 had been constructed to provide water.

At least one substantial yard surface was located within the sewer investigations adjacent to the coursed stone building (Fig. 5.4). It comprised a layer of compacted gravel *c.*14m × 10m in extent, which had been resurfaced on a number of occasions and was revetted on one side by limestone blocks (Dawson 2004, 165, 188, fig. 5.80). Other possible yards were also identified within the sewer investigations (Dawson 2004, 196).

Ovens/kilns

Four small ovens/hearths were identified within the Bypass excavation: G5203 (L554, Phase 503, Fig. 5.9); G5061 and G5164 (L553, Phase 504, Fig. 5.11 and Plate 5.17); and G5134 (L564, Phase 506, Fig. 5.14). All were located within the zone of preservation so were only partially investigated. They were all oval in shape and

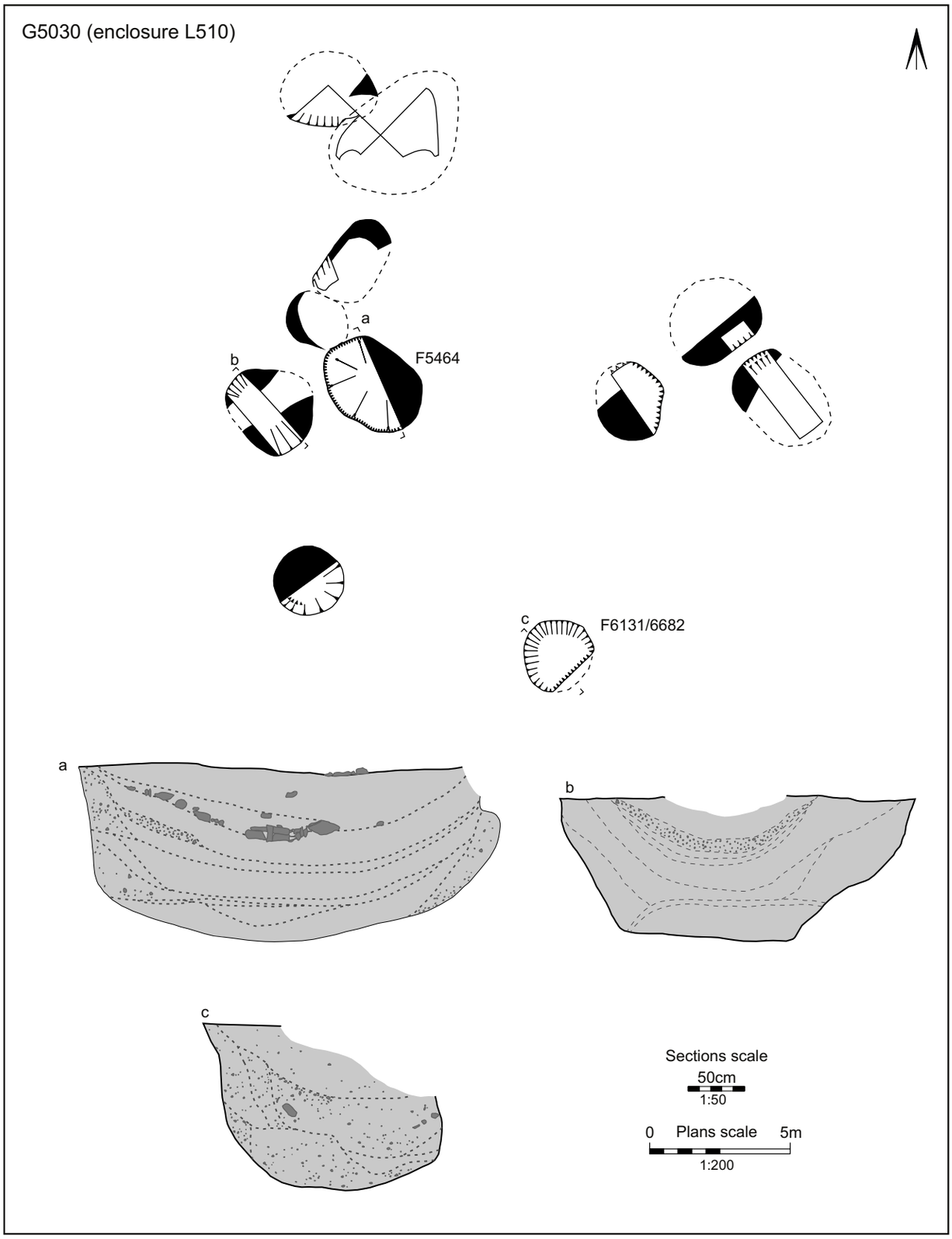


Fig. 5.19 Detailed plans and sections for Phase 503 large pits: cluster G5030. Scale 1:200

all contained stones and areas of fired clay (Fig. 5.17). As such, they were similar to those found in the sewer investigations (Dawson 2004, 188 and 197). In addition, portable furniture deriving from ovens (whether the four known ones or others is impossible to say) was recovered from ditches and pits within the Bypass excavation (CD Section 2; Wells, CBM). These include fragments of four circular tray-like objects (CD Section 2; Wells,

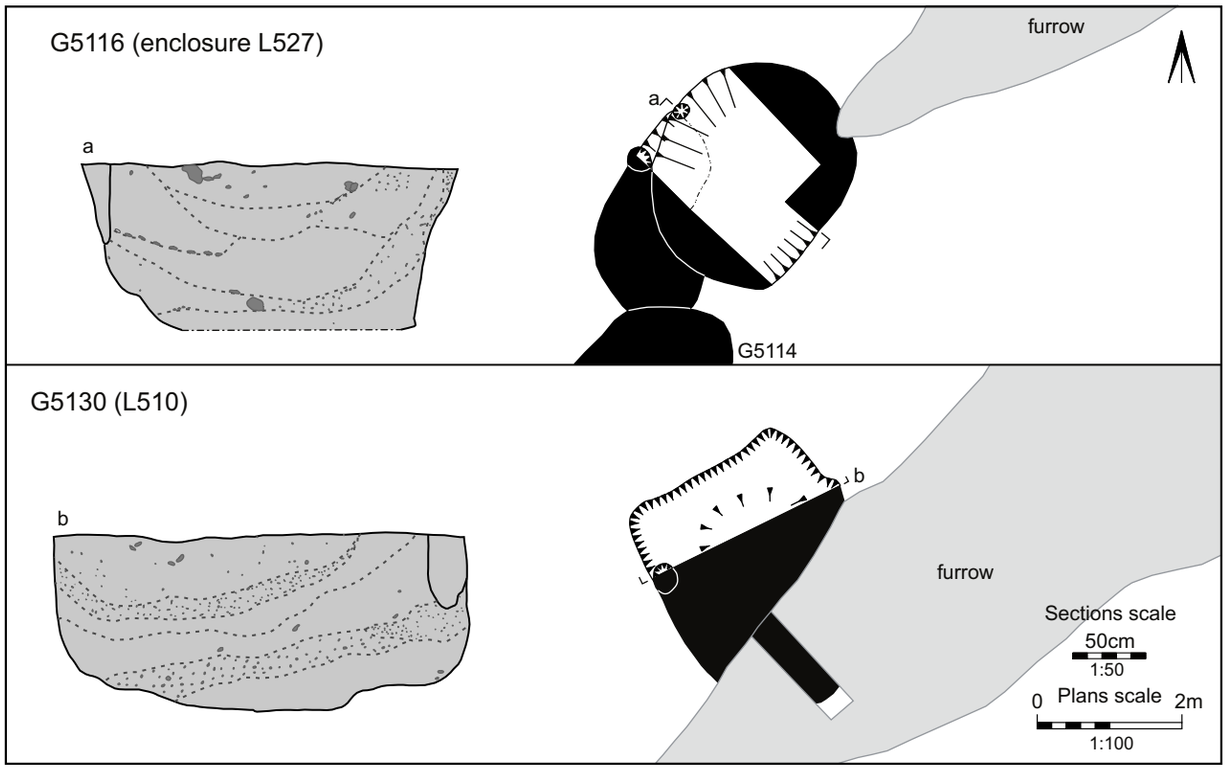


Fig. 5.20 Detailed plans and sections for Phase 503 large pits: G5116 and G5130. Scale 1:100

CBM, Fig. 1, FC3), two with flanged/raised edges (CD Section 2; Wells, CBM, Fig. 1, FC1 and FC2); three pierced plates with perforations (CD Section 2; Wells, CBM, Fig. 1, FC5); and a probable kiln bar (CD Section 2; Wells, CBM, Fig. 1, FC4). Fragments from twenty-one rectangular slabs were also found and, although their precise function is unclear, they are likely to 'represent pre-fabricated furniture from simple ovens, hearths or drying ovens of domestic or agricultural use' (CD Section 2; Wells, CBM).

Two other much larger pyrotechnical structures were also found within the settlement. A T-shaped drying oven was found within the sewer investigations (Dawson 2004, 188) (Fig. 5.4) and a possible figure-of-eight-shaped pottery kiln was found within the Box End Quarry investigations on the northern periphery of the settlement, on land later used for an inhumation cemetery (Luke and Preece forthcoming). The absence of any *in situ* lining/burning or charcoal-rich deposits suggests that the structure was unfinished. Its size, form and location relative to settlement were all closely comparable to kiln G3038 within farmstead SL54 on the Biddenham Loop (Fig. 5.30 and see below).

Stone-lined wells

Nine stone-lined wells are known within the settlement: two within the Bypass excavation, six from the sewer investigations (Dawson 2004) and one within the Box End Quarry investigations (Luke and Preece forthcoming). All were located towards the periphery of enclosures, often adjacent to the road or the parallel trackway (Fig. 5.3). All appeared to be of similar construction, although none was fully excavated under controlled archaeological conditions. Only one was half-sectioned and bottomed, but this was by machine during the excavation of the sewer trench. It was built within a construction pit *c.*3.2m in diameter and took the form of a central shaft lined with coursed limestone slabs. The shaft had an internal diameter of *c.*0.8m and was 2.4m deep (Dawson 2004, 214 and fig. 5.108).

The stone-lined wells within the Bypass excavation, G5044 (L552, Plate 5.18) and G5150 (L518, Plate 5.19), were located within different enclosures on either side of the road (Fig. 5.11). Neither was fully excavated but it is clear that the upper stonework of G5150 had been partially robbed (Plate 5.19). A similar occurrence was noted with a number of the wells within the sewer investigations, such as G4177 (Dawson 2004, 171).

Large pits

Large pits have been identified within all investigations in the settlement except at the Cutler Hammer Sportsground. Approximately thirty were found within the Bypass (Figs 5.18–5.22), forty-two within Box End Quarry and thirty-five within the sewer excavations. Additional possible large pits were detected in the geophysical survey undertaken as part of the post-excavation analysis to the north and south of the Bypass corridor (ArchaeoPhysica 2011).

The large pits within the Bypass excavation usually occurred in clusters and were found only in the domestic enclosures; some were positioned quite close to possible contemporary buildings (Figs 5.9 and 5.11). They first occurred from the late 1st century AD (Phase 502) and tended to occur in clusters. Although only a small number were intercutting (Plate 5.20), given the numbers of pits

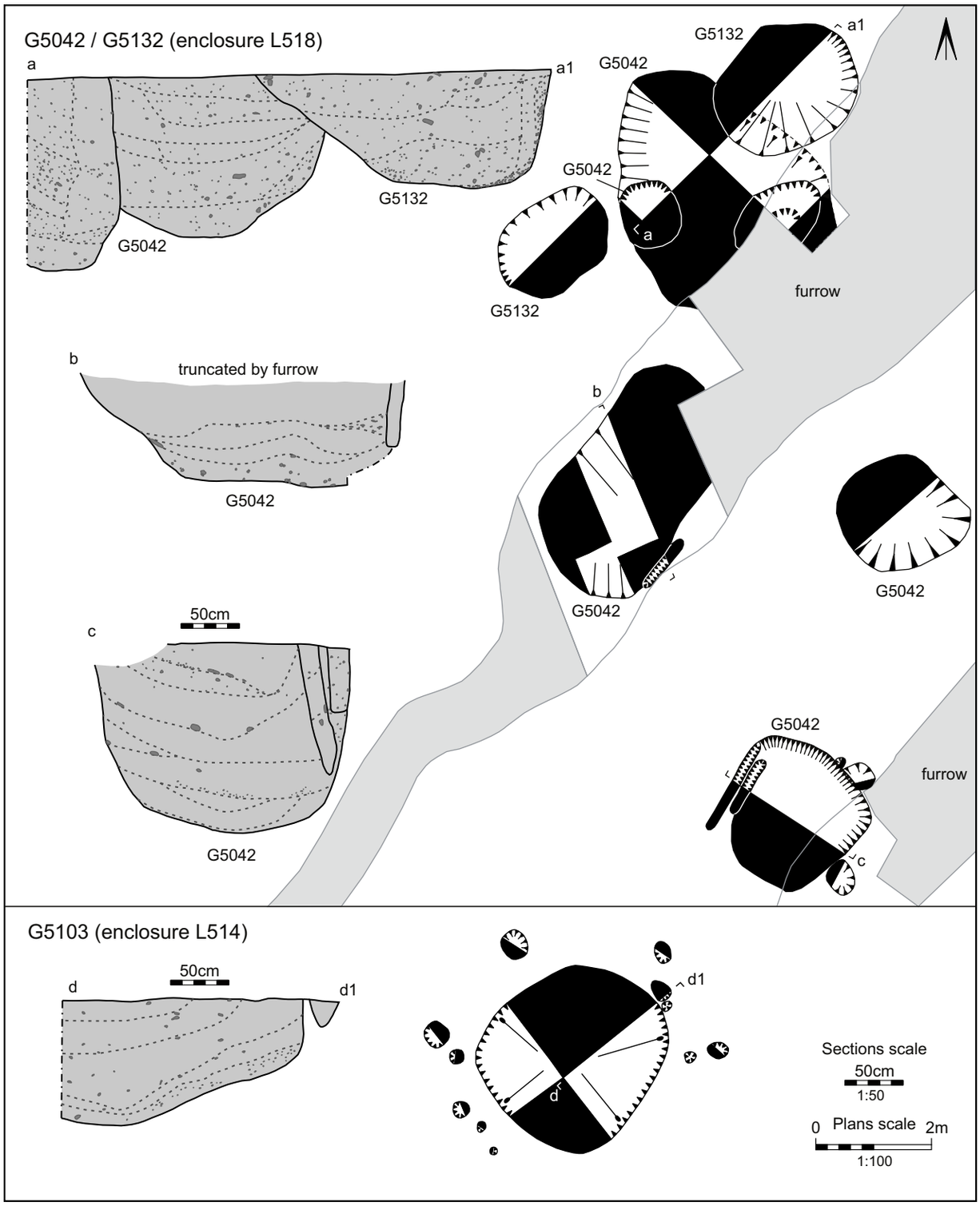


Fig. 5.21 Detailed plans and sections for Phase 504 large pits: G5042/G5132 and G5103. Scale 1:100

it is unlikely that all within a specific enclosure were contemporary. Apparently more isolated large pits were found north of trackway/major boundary L506/542 (*e.g.* G5106 (L548, Phase 504)), but these are located adjacent to the limit of excavation. The geophysical survey suggests that large pits were more widely distributed to the north of this trackway/major boundary and confirms the belief that the habitation area was wider to the north of this boundary than to the south (Fig. 5.3).

The majority of the pits had steep, often near vertical, sides and flat bases (Figs 5.18–5.22). Most were oval in plan, *c.*3m by 2m and 1m deep, such as G5029 (L507, Phase 502, Fig. 5.18), the majority in G5030 (L510, Phase 503, Fig. 5.19 and Plate 5.21), G5132 (L518, Phase 504, Fig. 5.21 and Plate 5.22), G5035 (L507, Phase 502, Fig.

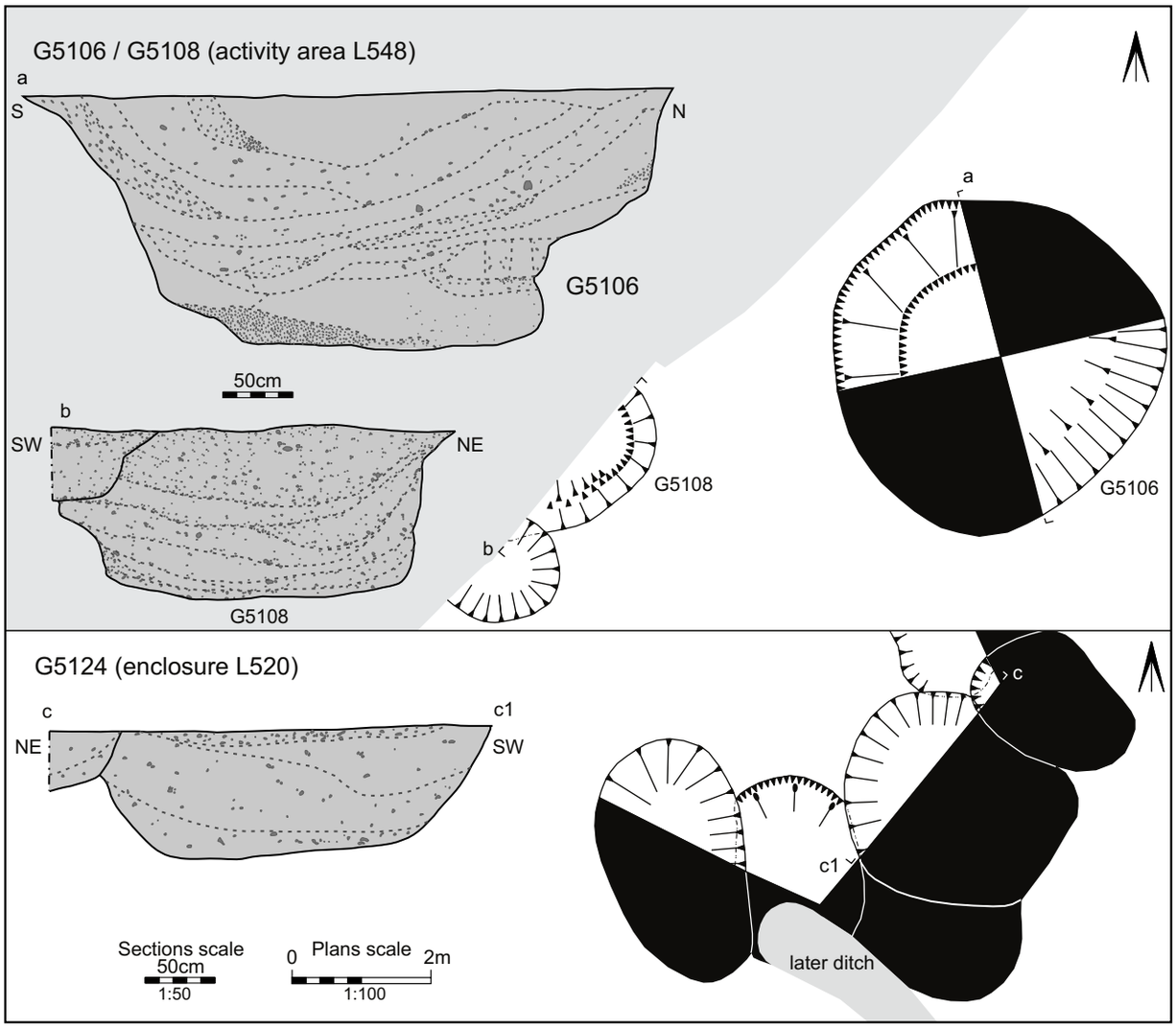


Fig. 5.22 Detailed plans and sections for Phase 504 large pits: G5106/G5108 and G5124. Scale 1:100

5.18) and G5103 (L514, Phase 4, Fig. 5.21). A smaller number were noticeably more rectangular in plan, such as G5130 (L510, Phase 503, Fig. 5.20) and the southern pit in G5042 (L518, Phase 504, Fig. 5.21), or circular in plan, such as G5106 (L548, Phase 504, Fig. 5.22 and Plate 5.23). The presence of steep sides in sandy gravel suggests that they were either backfilled very quickly (for which there is no evidence) or were revetted in some way. None of the pits was waterlogged, so no timber survived. However, some contained evidence for revetments in the form of structural slots and post-holes in their sides. The structural slots were narrow, often only visible in one side and did not appear go to the base of the pit (*e.g.* the southern pits in G5042 (L518, Phase 504, Fig. 5.21)). Quite how they functioned is uncertain, but it is possible that they represent the surviving elements of the last phase of revetment. Where post-holes were found in the sides of pits (*e.g.* G5116 (L527, Phase 503, Fig. 5.20) and G5130 (L510, Phase 503, Fig. 5.20)) they occurred in only ones or twos, so, again, probably represent only a small surviving element of the original revetment. Post-holes were also found *c.*0.5m outside the edges of some pits, such as G5103 (L514, Phase 504, Fig. 5.21); these may have been part of a superstructure over the pits or a fence around them.

The pits within the sewer investigations were up to 3m in diameter and 1.8m deep (Dawson 2004, 191 and fig. 5.96). At *c.*1.5–4m in diameter and 1m deep those within the Box End Quarry investigations were smaller, but these had clearly been truncated by quarrying operations (Luke and Preece forthcoming). Like those within the Bypass excavation, the majority of the large pits within the sewer and Box End Quarry investigations were steep-sided with flat bases.

The primary and secondary fills of the pits within the Bypass investigations comprised 0.1–0.6m-thick horizontal bands of dark greyish brown cess-like deposits, interleaved with more mid-orange silty clay. This strongly suggests that they were infilled in successive episodes. A sample from the primary fill of one of the pits in G5042 was found to be strongly phosphate-enriched, suggesting that it 'originally contained substantial amounts of phosphate-rich organic materials (midden material, cess, animal manure *etc.*) and also possibly bone' (CD Section 2; Crowther, BWB). The tertiary fills tended to contain the larger quantities of domestic debris, as in G5114 and

Plate 5.21 One of the half-sectioned large pits within cluster G5030 (enclosure L510, Phase 503)

Plate 5.20 Recording some of the large pits within roadside settlement SL155

Plate 5.22 Half-sectioned large pit within cluster G5132 (enclosure L518, Phase 504) (1m scale)

G5116 (L527) and G5120 (L521), and in some cases large stones, as in one in G5030 (L510, Phase 503). Some pits contained pottery cross-contexts, with sherds from single vessels being spread across the different fills of pits within, for example, clusters G5114 (L527), G5132 (L518) and G5124 (L520), suggesting rapid infilling with material derived from a single source (CD Section 2; Wells, Pottery).

In contrast to the meagre quantities of 'other' artefacts from the enclosure ditches and buildings, the fills of the large pits yielded abundant assemblages of broken objects. The profiles of the artefact assemblages from large pits in different enclosures share many of the same characteristics.

> Most of the pits containing 'other artefacts' have either no finds or small quantities and limited range in their primary and secondary deposits; this could suggest accidental deposition during the use of the pits. The fact that the majority of finds were concentrated in the final fill of these pits would suggest deliberate deposition. In the case of pits G5114 and G5116 in L527 this deposition pattern was thought to signal a deliberate infilling of pits prior to remodelling works (CD Section 2; Duncan).

Two pits, both within cluster G5030 (enclosure L510, Phase 503, Fig. 5.19), stand out from the rest in having either distinctive artefacts or a quantity of finds in their primary and secondary fills. 'Pit F5464 contained remains of a pewter bowl and a mortise chisel in its primary fill. The secondary fill contained a large quantity of animal bone along with a possible chisel' (CD Section 2; Duncan). 'Pit F6131/6882 had fragments of square and rectangular glass bottles and a glass bowl, along with a box-fitting and a reaping hook' (CD Section

2; Duncan). The primary deposits contained a cleaver, a plough share, the head of a drill-bit, an antler off-cut and an unusual assemblage of repaired and reworked samian, the latter 'apparently from a workshop for the repair and recycling of broken samian vessels, dating to the late second or early third century AD' (CD Section 2; Wild). 'Among the coarsewares, several cross-contexts were recorded, with sherds from single vessels being spread across the primary, secondary and tertiary fills suggesting the rapid infilling of the pits with domestic debris from a single source' (CD Section 2; Wells, Pottery). The overall finds assemblage from these two pits is very unusual and includes items such as the plough shares and pewter bowl, which 'tend to be found in hoards and/or "special" deposits in the late Roman period' (CD Section 2; Duncan). Therefore, it is possible that the assemblage represents '"an offering" or perhaps marks an event, be it, for example, a change in activities carried out within, or ownership of, the enclosure' (CD Section 2; Duncan).

The large pits could have served different functions at different times. All the pits were dug into gravel, which would no doubt have been used for a variety of purposes in, for example, buildings and yards, but they were ultimately backfilled with rubbish. For part of their existence they were used for the disposal of cess-like deposits. While some were clearly revetted internally, there is only slight evidence for a superstructure over a small number of pits. In Roman Britain latrines and cess pits are more frequently found at military sites and are not that common in towns and villas (Hobson 2009, 42–3). The situation within roadside settlements is variable, with only one being found at Higham Ferrers, Northants (Lawrence and Smith 2009, 89–90 and fig. 4.24). However, they were present in much greater numbers within the roadside settlement that developed next to a *mansio* at Neatham, Hants (Millett and Graham 1986, 30–32 and 153). Here they occurred in clusters at *c.*25m intervals and most of the pits were rectangular in plan with flat bases. Timber lining survived in some (Millett and Graham 1986, figs 25 and 26). One even produced a wooden toilet seat (Redknap 1976, 287–8 and fig. 5) and it was surmised that a wooden superstructure was associated with this cess pit, the seat being supported by corner posts. The possible presence of cess pits within the Kempston Church End roadside settlement could indicate that some of its inhabitants were accustomed to Mediterranean-style cultural behaviour, perhaps because they had served in the military or government. Two of the farmsteads on the Biddenham Loop contained possible latrine pits — the more convincing example, G3019, was located on the opposite bank of the river Great Ouse in farmstead SL54 (Fig. 5.29 and see discussion below).

Other pits

The function of the other smaller pits found within all the investigations within the settlement is uncertain. They were typically oval, 0.5–1.2m in diameter and no more than 0.5m deep. A number of those within the Bypass excavation and the pipe trench investigation appear to have been intercutting (*e.g.* G5107 (L548) and G5135 (L555)), although their shallow depth and sterile fills make it more likely that they are broadly contemporary. Their nature and often peripheral locations (see Figs 5.10 and 5.13) mean that they are often interpreted as quarry pits. Similar 'intercutting' quarry pits were identified away from the roadside settlement in locations such as within field system SL158 (Fig. 5.44) and in one of the Marsh Leys farmsteads (Luke 2011, 158). The pits within the pipe trench appeared to have been dug into the edge of the river terrace. It is possible that many of the other pits were originally dug as small, intermittent quarries, to extract gravel for use in construction work.

Burials

The nature and location of the settlement's cemeteries are summarised here and discussed in detail below (see pp. 302–3). A late Iron Age/early Roman cremation cemetery may have existed on the western periphery of the settlement, just outside the study area. Five cremation burials and three possible funerary structures were found in this area during the sewer investigation (Dawson 2004, figs 5.84 and 5.121) and similar evidence was found on the west edge of the Bypass investigations (Fig. 5.6). Two large inhumation cemeteries are known to exist from the mid-3rd century (Dawson 2004, 48 and 55–7; Luke and Preece forthcoming). Small numbers of cremation burials and inhumations have also been found dispersed throughout the settlement.

Late Iron Age/Roman farmsteads

(Figs 5.1, 5.23–5.31)

Throughout their history the farmsteads shared similar constituent features — location, layout, trackways, domestic and non-domestic areas, buildings, wells, pits, kilns and burials, all of which are discussed below.

Location, layout and continuity

(Fig. 5.23–5.28, Tables 5.3 and 5.4)

All the farmsteads within the Biddenham Loop were located on the gravel terrace immediately above the edge of the flood plain, within 160m of the present river and, in the case of Romano-British farmsteads SL51 and SL52, much closer (Plate 5.24). There were a further two on Land west of Kempston, including SL144, which later developed into the roadside settlement SL155 (Fig. 5.24 and Table 5.3). This was located in a similar position to those on the Biddenham Loop, but on the south side of the flood plain. On the southern margin of Land west of Kempston SL147 was located adjacent to a stream (which survives today as an irrigation ditch). Unfortunately it was located on the edge of the excavation area, so its nature and continued existence into the Roman period is uncertain; the proximity of a Roman period field system SL158 suggests, however, that this is likely.

Four possible late Iron Age/early Roman farmsteads have been identified on the Biddenham Loop, including two from the Bovis investigations (Luke 2008, fig. 9.1) (Figs 5.1 and 5.23, Table 5.3). Within the Loop there were fewer late Iron Age/early Roman farmsteads than there were examples dated to the middle Iron Age (compare Fig. 5.1 with Fig. 4.1). A number were located close to middle Iron Age farmsteads, however: for example, SL43 was adjacent to SL36, and SL41 was adjacent to SL27 and SL30. It is also possible that another late Iron Age/early Roman farmstead existed in the unexcavated land near middle Iron Age farmsteads SL34 and SL35, although no pottery concentrations were found in this area during the Bovis field artefact collection survey (Luke 2008, fig. 9.1). With the exception of those within the Bovis investigations, the farmsteads were only partially exposed

(*e.g.* SL43) or are known only from geophysical survey (*e.g.* SL41). However, it is clear that their defining characteristic is their rectangular ditched enclosure. Where it has been possible to determine their extent, as for Bovis farmsteads 5 and 6/8, they occupied an area of less than *c.*1.5ha and are, therefore, comparable to those at Marsh Leys (Luke 2011, 142).

If SL51 and SL52 are counted as one, there were four Romano-British farmsteads within the Biddenham Loop, including two within the Bovis investigations (Luke 2008, 46–9) (Fig. 5.1 and Table 5.4). Bovis farmsteads 13 and 10/14 and SL54 were developments of pre-existing farmsteads and comprised multiple rectangular enclosures, often with at least one integral trackway (Figs 5.26 and 5.27). They were probably created in the early 2nd century (Luke 2008, 58). On the basis of its pottery assemblage (CD Section 2; Wells, Pottery; CD Section 2; Wild) it is likely that farmstead SL51/52, which had no middle Iron Age precursor, was established in the second quarter of the 2nd century. The enclosure systems covered *c.*1.5ha (Bovis farmsteads 13 and 14, Fig. 5.27) and *c.*2ha (farmstead SL51/52, Fig. 5.25). They are, therefore, comparable to the farmsteads at Marsh Leys (Luke 2011, 142) and Roxton, Beds. (Taylor and Woodward 1983), but significantly smaller than the 3ha example at Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 83). The latter is more comparable to SL54, a development of SL43, which geophysical survey indicates covered an area of *c.*3.5ha (Fig. 5.26). Only a very small part of this farmstead was excavated, within the Bypass and Bedford Water Main investigations, because the majority of it lies within the present-day flood plain and was therefore not to be built on (it will be within the new country park). Overall, the Biddenham Loop farmsteads fit into the size ranges identified both locally (see above) and nationally (Taylor 2007, 102–4).

Romano-British farmsteads in similar positions are known upstream at Bromham (Tilson 1973), Radwell (Hall 1973), Odell (Dix 1979; 1980; 1981) and Oakley Road, Clapham, Beds. (Edmondson *et al.* forthcoming), and downstream at Norse Road, Bedford (Edgeworth 2001), and Roxton (Taylor and Woodward 1983). Farmsteads SL51/52 and SL54 were located on the periphery of the middle Bronze Age fields, many of which may still have been in existence; the western margins of farmstead SL54, including an inhumation cemetery, appeared to be

SL	*Area*	*Extent (sq m)*	*Evidence*	*Enclosures*	*Associated activity*	*Contemporary pottery sherd:weight: vessel (kg)*	*Other finds (kg)*
Farmstead? SL41	BL	1860	Geophysics	1	6? pits	—	—
Enclosure SL42	BL	3640	Excavation	1	6 post-holes 1 boundary ditch	—	0.01 animal bone 0.3 floor tile FE brooch (OA24) 4 × nails (RAl 1037–40)
Possible farmstead SL43	BL	—	Excavation (edge of)	0	1 boundary ditch	4:0.01:1	0.07 animal bone
Farmstead SL144	LWK	10914	Excavation Geophysics	2	2 trackways 1 possible funerary structure 1 cremation burial 1 roundhouse 5 pits (within L502) 7 pits (to east)	403:9.0:86	10.3 animal bone 0.6 tegula, imbrex, flue tile 0.9 fired clay FE finger ring (OA28) CA fragment (RAb 5112) FE fragment (RAb 5317) 6 × hobnails (OA29) 6 × nails (RAb 5111, 5077)
Possible farmstead SL147	LWK	480	Excavation (edge of)	1	1 enclosure	14:0.2:3	—
Bovis farmstead 5 – adjacent investigation (Luke 2008, 195–205)	BL	10647	Excavation Geophysics	1	1 post-built structure Stone pads 1 water pit 2 pottery kilns 7 pits 5 cremation burials 1 inhumation	539:10.5:175	326 animal bone fragments
Bovis farmstead 6/8 – adjacent investigation (Luke 2008, 205–26)	BL	27456	Excavation	2	2 roundhouses Stone pads 9 (clustered) 7 (dispersed) 1 inhumation Cremation cemetery	711:10.2:251	245 animal bone fragments

OA = Other artefact number; RAb = BWB1124 registered artefact number; RAl = LWB1289 registered artefact number; FE = Iron; CA = Copper alloy; BL = Biddenham Loop; LWK = land west of Kempston

Table 5.3 Details of late Iron Age/early Roman (SP9) possible settlements

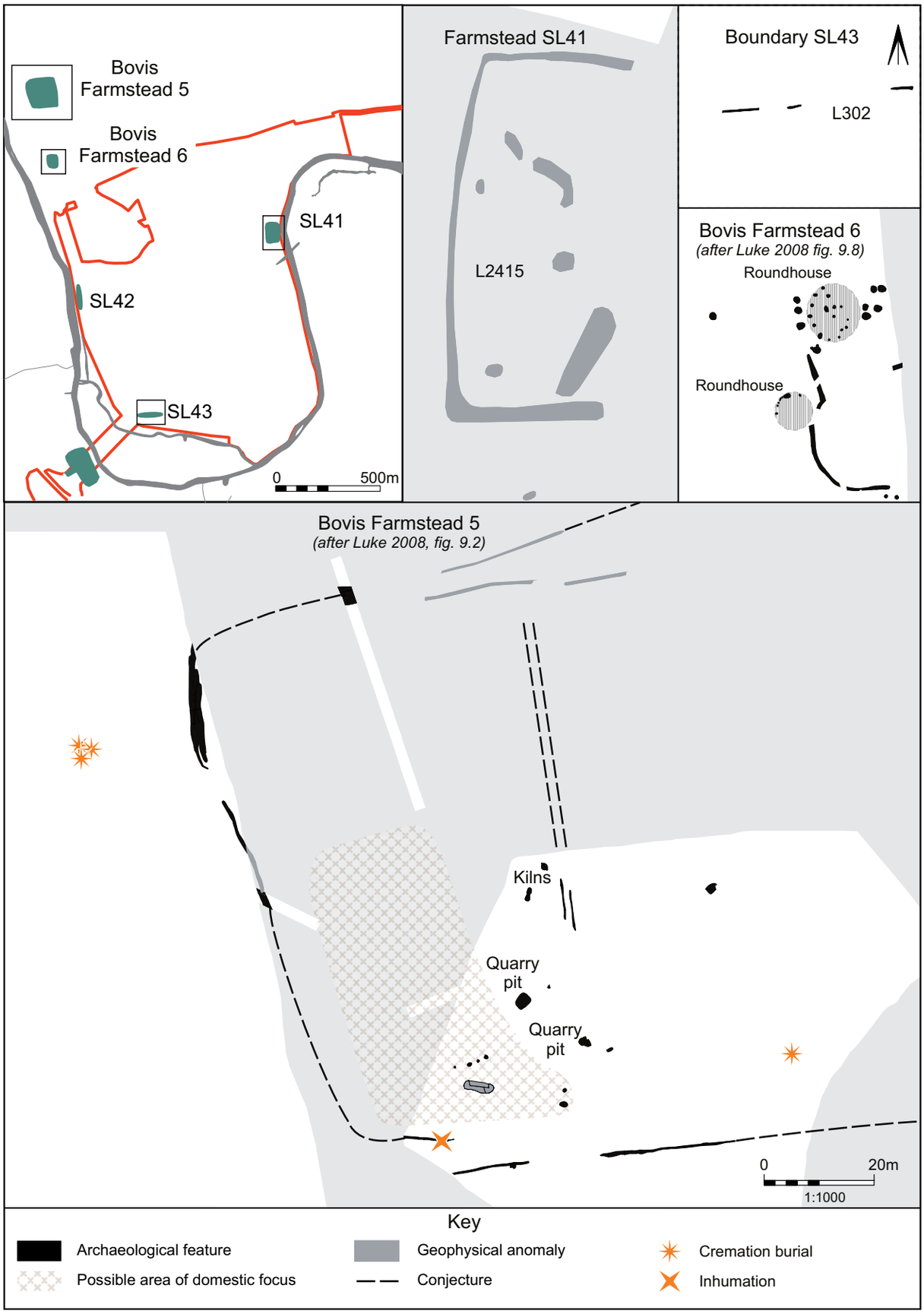


Fig. 5.23 Overall plans of all possible late Iron Age/early Roman farmsteads on Biddenham Loop, including those found in the Bovis investigations (Luke 2008). Scale 1:100

Farmstead	*Evidence*	*Area (ha)*	*Sub-phases*	*Max. No. of enclosures*	*Associated activity*	*Pottery sherd:weight:vessel (kg)*	*Other artefacts*	*Interesting finds*
Farmstead SL51/ Bovis farmstead 12/16 – adjacent investigation (Luke 2008, 267)	Excavation	2.7	—	10	Inhumation 2 trackways Pits/post-holes Large pit Internal partitions	2:0.02:1 lIA–eRB 1342:22.9:146 generic RB 30:0.9:3 1st/2nd century 129:3.2:6 2nd century 27:0.4:1 2nd/3rd century 60:1.0:3 3rd/4th century 1:0.06:1 4th century	31.8kg animal bone 1.5kg tegula, imbrex, roof tile, flue tile 0.6kg fired clay	Glass bath flask (OA150) FE turf cutter (OA149) FE stem of lift key (OA146)
Farmstead SL52	Excavation	1.5	—	5	Inhumation 3 cremation burials Pits Internal partitions	506:12.4:90 generic RB 4:0.1:1 1st/2nd century 47:0.7:1 2nd century 1:0.2:1 2nd/3rd century 47:0.8:3 3rd/4th century	8.7kg animal bone 1.4kg tegula, brick 0.05kg fired clay	FE hinge (OA155)
SL54/ Bovis farmstead 11/20 – adjacent investigation (Luke 2008, 265–7)	Excavation Cropmark anomalies	>6.1	304	3?	2 cremation burials Pits 2 large pits with some cess-like deposits	8:0.2:6 lIA–eRB 371:5.1:34 generic RB 23:0.4:1 2nd century 7:0.06:1 3rd/4th century	6.2kg animal bone 0.5kg tegula	FE padlock key (OA170)
			305	>10	2 inhumation cemeteries 6 dispersed inhumations Pottery kiln Quarry pits Pits	19:299:1 lIA–eRB 3100:59.4:320 generic RB 5:0.2:1 1st/2nd century 105:2.7:10 2nd century 5:370:1 2nd/3rd century 30:0.6:6 3rd/4th century 6:0.01:1 4th century	22.1kg animal bone 20.8kg tegula, brick, roof tile, flue tile 1.9kg fired clay 0.01kg opus signinum	FE hinge (OA174)
Bovis farmstead 13 – adjacent investigation (Luke 2008, 243–51)	Excavation Geophysical anomalies	2	—	5	1 roundhouse 1 inhumation >10 pits	1011:10.6:333 contemporary pottery	152 animal bone fragments	—
Bovis farmstead 10/14 – adjacent investigation (Luke 2008, 251–64)	Excavation	1.5	—	4	1 roundhouse (rebuilt) 2 inhumations 5 stone pads 1 water pit > 10 pits	3059:41.6:1315 contemporary pottery	1201animal bone fragments 2 kiln bar fragments Possible kiln brick Oven/kiln floor fragments	—

OA = Other artefact number; FE = Iron; lIA = late Iron Age; RB = Romano-British; eRb = early Romano-British.
Note: for information on finds from Bovis farmsteads see Wells 2008, Chapter 10, pp. 271–7

Table 5.4 Details of Romano-British (SP10) farmsteads on the Biddenham Loop

restricted by a middle Bronze Age boundary (Fig. 5.28).

Although only a small part of farmstead SL54 was investigated (Plate 5.25) it is clear that the enclosure boundaries were modified at least once; these have been designated Phase 304 (earlier Roman) and Phase 305 (later Roman) (Fig. 5.28). The recutting of ditches, occasionally on slightly different alignments, testifies to minor alterations to the enclosures of the other farmsteads. However, the alterations broadly mirror the alignments of the earlier boundaries, suggesting no significant break in occupation. The enclosures of Bovis farmstead 14 were subject to extensive redesign on at least three occasions, resulting in the creation of a wide surrounding boundary ditch (Luke 2008, fig. 10.8).

As discussed above (see p. 206), Roman farmstead SL51/52 was the only one where an early Saxon settlement was established but there is no evidence for the maintenance or alteration of the pre-existing boundaries. The layout of the early Saxon settlements is discussed below (see p. 265).

The nature of SL42 (not illustrated)

Late Iron Age/early Roman enclosure SL42 was situated *c.*70m from middle Iron Age farmstead SL31 on the Biddenham Loop (Fig. 5.1). It may, therefore, represent some kind of continuation of activity associated with the earlier farmstead. Interpretation is hampered by the small number of features and its proximity to the limit of excavation. In addition, it produced a small assemblage of domestic debris, including nails and an iron brooch (CD Section 2; Duncan, Fig. 3, OA24). The latter 'may be an unusual example of the continental Unguiforme

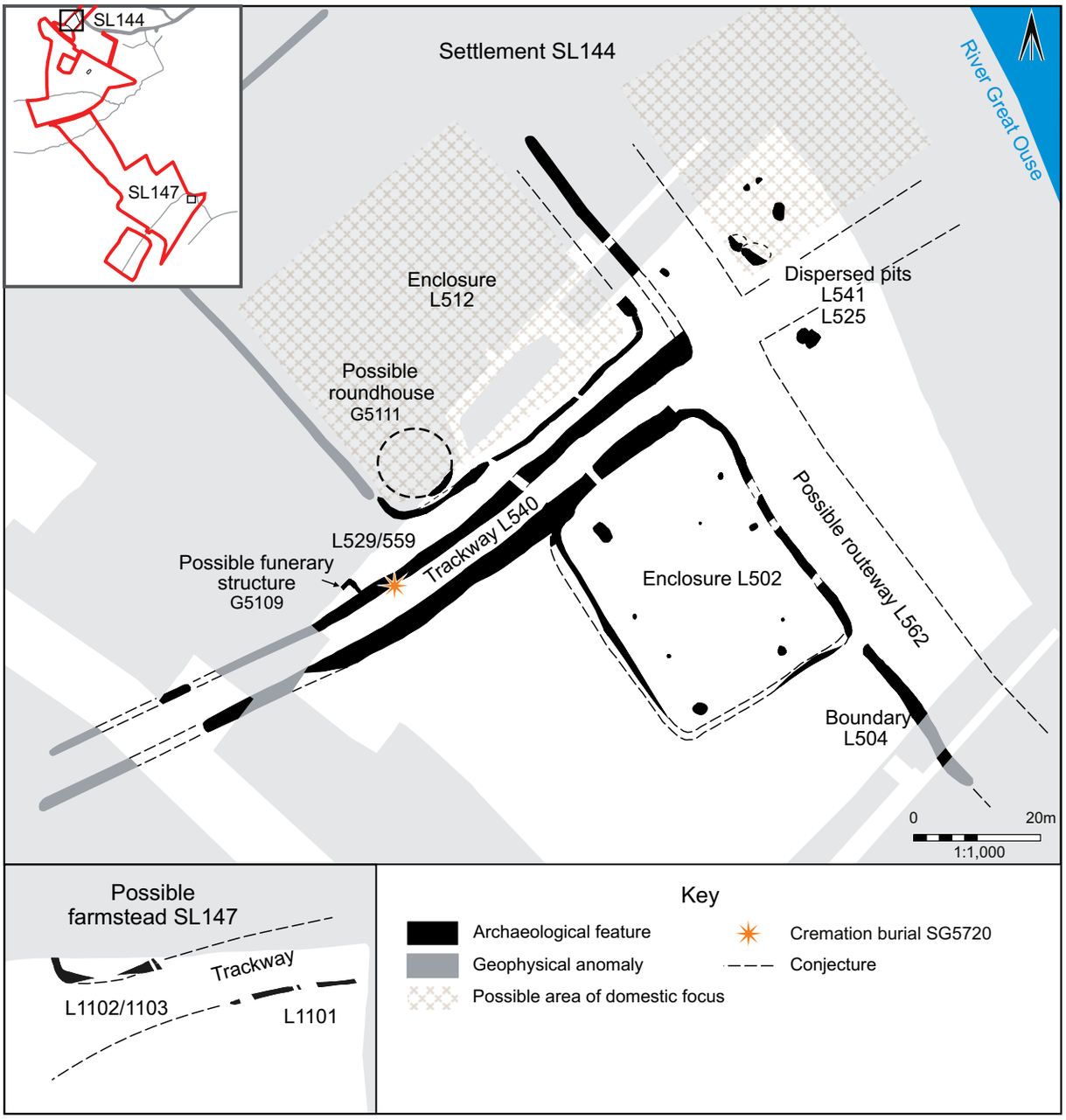


Fig. 5.24 Overall plans of all possible late Iron Age/early Roman farmsteads on land west of Kempston. Scale 1:100

type' or 'an incomplete example of a Kragenfibel' (CD Section 2; Duncan). Other evidence for settlement in this area was described in Luke 2008 (226–7). In summary, this comprised small quantities of pottery found in this area during Bovis field artefact collection and records of 'quantities of Belgic and early Roman pottery' being found during 19th-century quarrying in South Field, Biddenham (Simco 1984, 98). Unfortunately South Field is very large and the precise location of the finds is unknown.

Trackways

Trackways are typically identified by the occurrence of two closely spaced but parallel ditches. Their origins are often difficult to determine. Even if they originated in the late Iron Age, as was the case with L540, within farmstead SL144 (Fig. 5.24), they usually remained in use during the Romano-British period and their fills are dominated by finds of the later period. Late Iron Age trackways were found within the Marsh Leys farmsteads, to the south of the study area, although one was inferred from a gap in the distribution of features rather than from the presence of parallel ditches (Luke 2011, 145 and fig. 9.1).

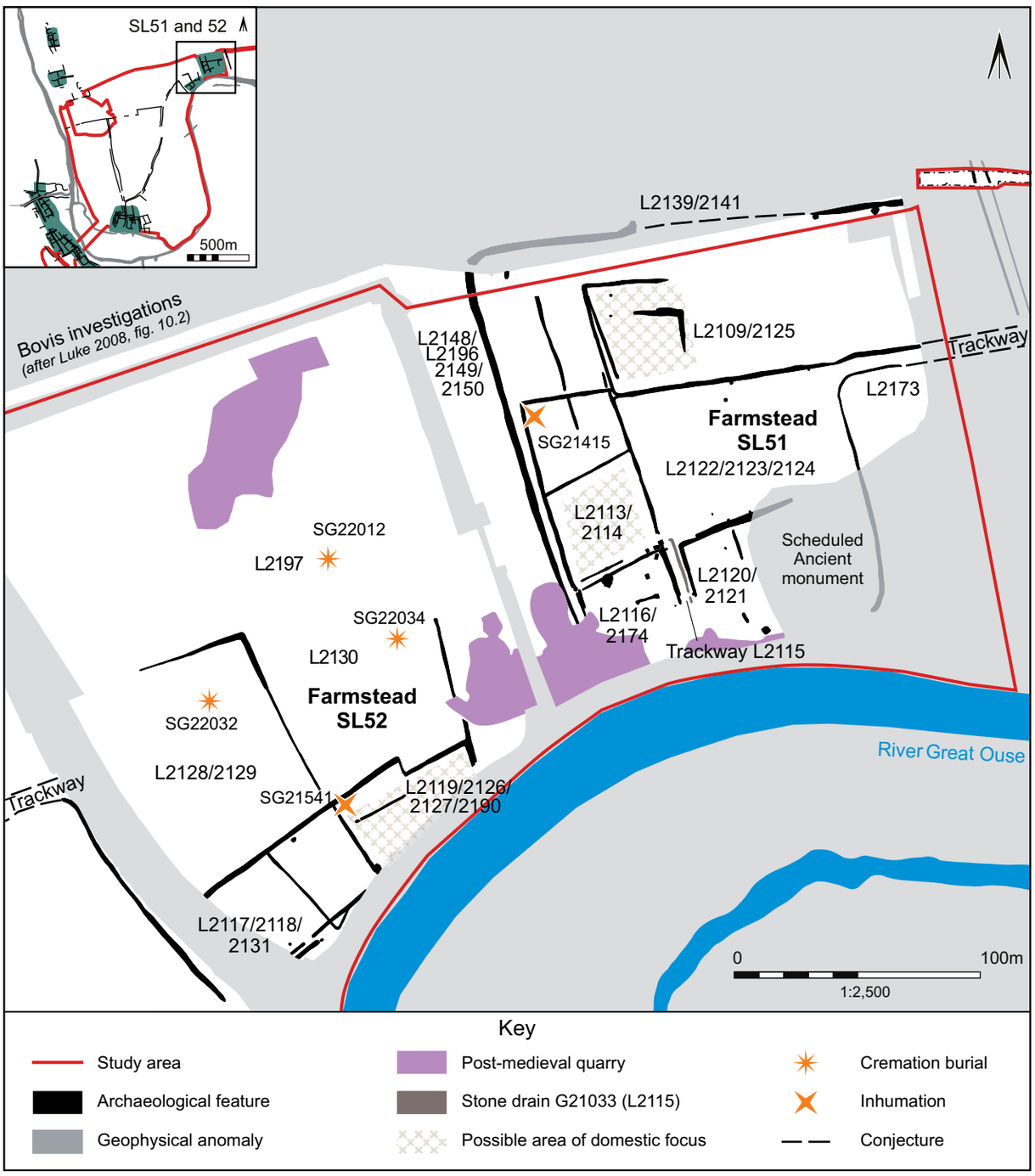


Fig. 5.25 Overall plan of Roman farmsteads SL51 and SL52 on the Biddenham Loop. Scale 1:2500

Plate 5.23 Quarter-sectioned large pit G5106 (L548, Phase 504) (1m scale)

All the Romano-British farmsteads on the Biddenham Loop, including those within the Bovis investigations (Luke 2008, 62–3), contained trackways defined by parallel ditches which were integral to the enclosure systems (Figs 5.25–5.27). The gap between the ditches was typically 4–8m. None produced evidence for surfacing or rutting. Trackways associated with farmsteads are known at Great Barford Site 8 (Poole 2007a, 107), Broom (Cooper and Edmonds 2007, fig. 6.4), both Bedfordshire, and Haddon, Cambs. (Hinman 2003, 32, fig. 13). With the exception of trackway L2376/2428 within farmstead SL54, which extended for 800m to the north (see below), the trackways were visible only within the actual farmsteads themselves. If they did extend beyond the farmsteads, which seems likely, they were not defined by ditches.

There is no evidence to suggest that any of the trackways were maintained in the early Saxon period but this does not necessarily mean that they were not used. However, the construction of two sunken-featured buildings within trackway L2115 (SL51) (compare Fig. 5.25 and Fig. 5.32) clearly demonstrates that this one at least had fallen out of use.

Plate 5.24 Aerial view of Romano-British farmsteads SL51 and SL52, from the south

Plate 5.25 Aerial view of the excavated part of farmstead SL54 looking along Bypass road corridor, from the south

Domestic foci

An attempt was made within the publication to identify the location of the domestic foci within each farmstead layout. At its simplest this is considered to be where the occupants of the farmstead lived and was a way of contrasting evidence for activity here with evidence from other parts of the farmstead. On the Biddenham Loop they have been identified on the basis of the presence of buildings, feature and/or artefact clusters.

There was insufficient evidence to identify the domestic foci of the late Iron Age/early Roman farmsteads within the recent investigations. However, the domestic foci of the Bovis farmsteads was perhaps indicated by the presence of roundhouses (farmstead 6) and other settlement-type features (farmstead 5) (Fig. 5.23), usually adjacent to or within ditched enclosures (Luke 2008, 2.10). Similar arrangements are quite common during this period, as at Marsh Leys (Luke and Preece 2011, 145, fig. 9.1 and 9.2), Wavendon Gate (Williams *et al.* 1996, 12–5, fig. 5) and Monument 97, Orton Longueville (Mackreth 2001, 7, fig. 4) (see Luke and Preece 2011, fig. 9.1 and 9.2).

Although the Roman farmsteads had a slightly different layout to their late Iron Age/early Roman predecessors, where a domestic focus was identifiable in the Bovis farmsteads it remained essentially in the same place (compare Luke 2008, fig. 2.10 with fig. 2.16). The domestic foci of Bovis farmsteads 13 and 14 were adjacent to trackways (Fig. 5.27; Luke 2008, fig. 2.16), as were those at Marsh Leys (Luke 2011, 145 and fig. 9.4). This is comparable to the suggested 'farmyard' at Haddon (Hinman 2003, fig. 13). Although a similar trackside location is possible for the largely unexcavated farmstead SL54, a large assemblage of domestic debris was recovered from the excavation area on its western periphery, well away from its trackway (Fig. 5.26). Based on other artefacts, 'Enclosure L312 (phase 305) produced the greatest evidence for domestic occupation' (CD Section 2; Duncan).

Farmsteads SL51 and SL52 are intriguing because they appear to comprise two separate enclosure systems. They are located only *c.*50m apart and separated by a corridor devoid of any evidence for linking ditches or contemporary activity (Fig. 5.25). They are also unusual because, with the exception of burials, very few subsurface features were present within the enclosures. However, large quantities of domestic debris were found in the enclosure ditches. A similar absence of isolated features in contrast to large quantities of domestic debris was observed at Marsh Leys farmstead 5 (Luke 2011, 145). The nature of the pottery assemblage from SL52 'suggests that much of the material occurred in or near its primary context, close to areas where the pottery was used' (CD Section 2; Wells, Pottery). Enclosure L2113 (SL51) 'yielded what is possibly the stem of an L-shaped lift key (OA146), suggestive of locking devices and hence domestic occupation of this enclosure' (CD Section 2; Duncan). In addition, the other artefact assemblage from enclosure L2190 (SL52) included a clench bolt (CD Section 2; Duncan, Fig. 10, OA156), an annular collar or ring (OA157) and a possible drop hinge (OA158), all suggestive of 'the presence of some form of structural timbers, be it gate, door or well-covering' (CD Section 2; Duncan). It is therefore possible that the domestic foci were located in the smaller enclosures, such as L2109 and L2113 (in SL51) and L2190 (in SL52).

The domestic foci of the early Saxon settlements are presumed to coincide with the concentrations of sunken-featured buildings (although these are not themselves necessarily domestic in function) and contemporary features. This is most clear in the case of SL62, where the buildings are clustered within the former non-domestic enclosure L2130 of Romano-British farmstead SL51 (Fig. 5.33).

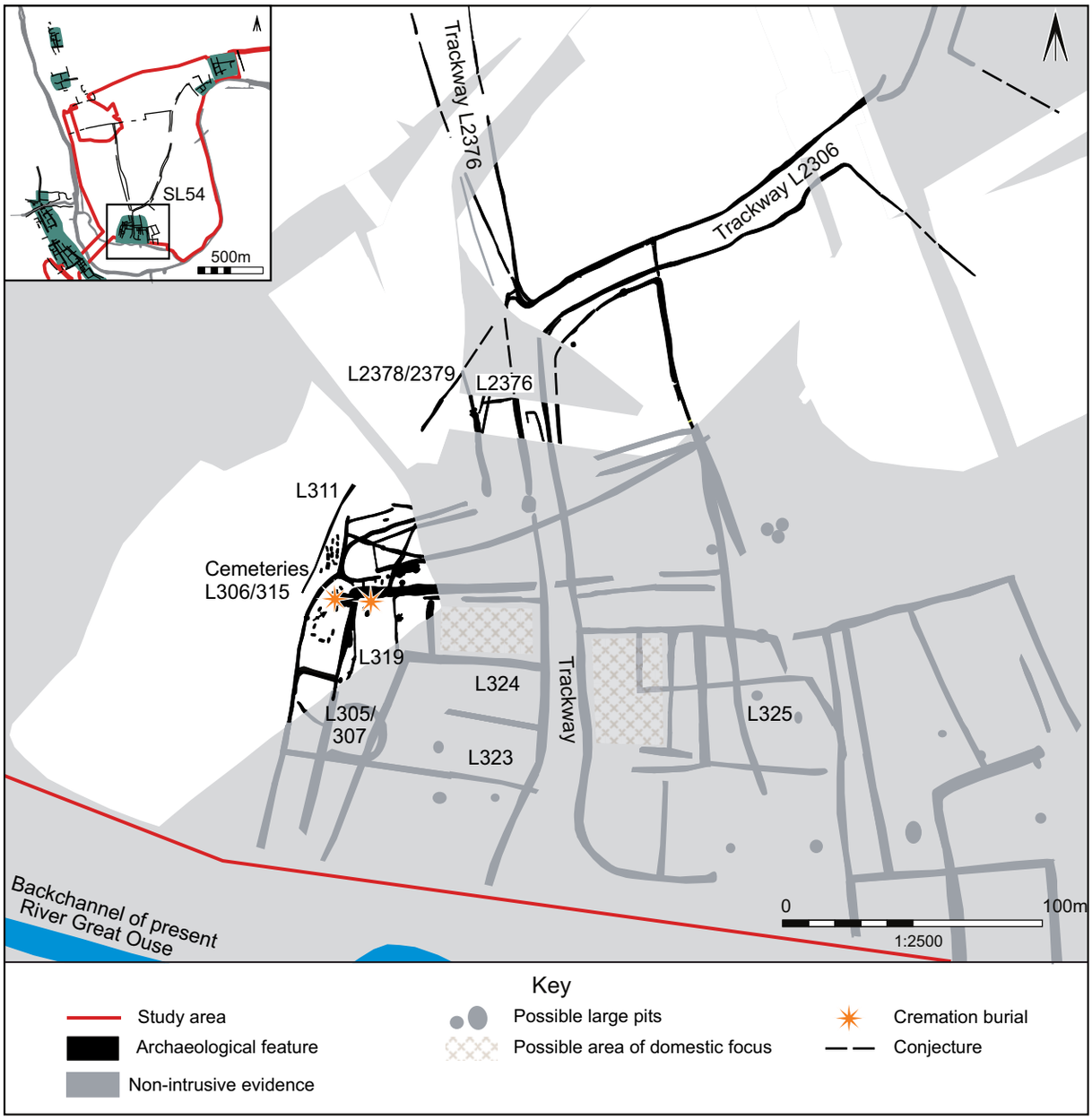


Fig. 5.26 Overall plan of Roman farmstead SL54 on the Biddenham Loop. Scale 1:2500

Enclosures

As stated above, the late Iron Age farmsteads comprised ditched enclosures which either contained or were adjacent to the domestic foci, as at Marsh Leys (Luke and Preece 2011, fig. 9.1). These sometimes appeared to be integrated into a major linear boundary or trackway, such as SL144 and SL147 (Fig. 5.24), as was the case at Marsh Leys (Luke 2011, 139). By the Roman period all the farmsteads were integrated into a major linear boundary or trackway, such as SL54 (Fig. 5.26) and Bovis farmsteads 13 and 10/14 (Fig. 5.27). The majority of the enclosures within the late Iron Age farmsteads were rectangular, as at Bovis farmstead 5, SL41, SL144 and SL147 (Figs 5.23 and 5.24), like those at Monument 97, Orton Longueville, Cambs. (Mackreth 2001, fig. 4), although oval enclosures are perhaps the commonest type in the region (Bryant 1997, 28). The only farmstead with what could be described as oval enclosures was Bovis farmstead 6 (Fig. 5.23; Luke 2008, fig. 9.7), where they were like those at Marsh Leys (Luke and Preece 2011, 146).

All the enclosures associated with the Romano-British farmsteads were rectangular or square in plan and were defined by medium-sized ditches (Plates 5.24 and 5.25). The number of enclosures within each farmstead varied: six within Bovis farmstead 13 (Fig. 5.27), around four within Bovis farmstead 14 (Fig. 5.27), around eight within SL51 (Fig. 5.25), around five within SL52 (Fig. 5.25) and more than twelve within SL54 (Fig. 5.26). With the exception of the latter this is far fewer than at Marsh Leys, where fourteen were associated with farmstead 4 and eighteen with farmstead 5 (Luke 2011, 146), with similar numbers being found at Haddon, Cambs. (Hinman 2003, fig. 13). Entranceways were identified in

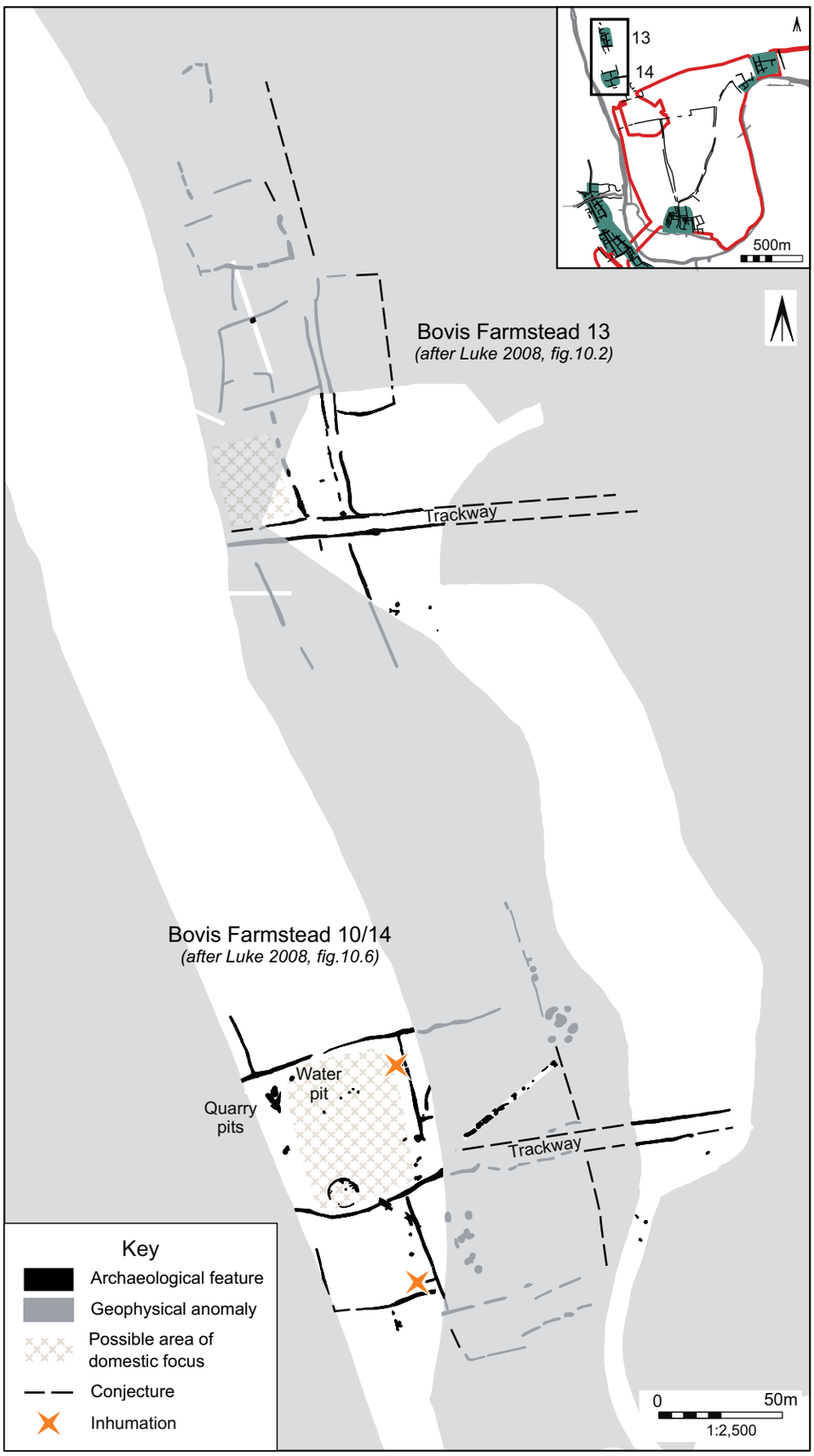


Fig. 5.27 Overall plans of Roman farmstead within the Bovis investigations on the Biddenham Loop. Scale 1:2500

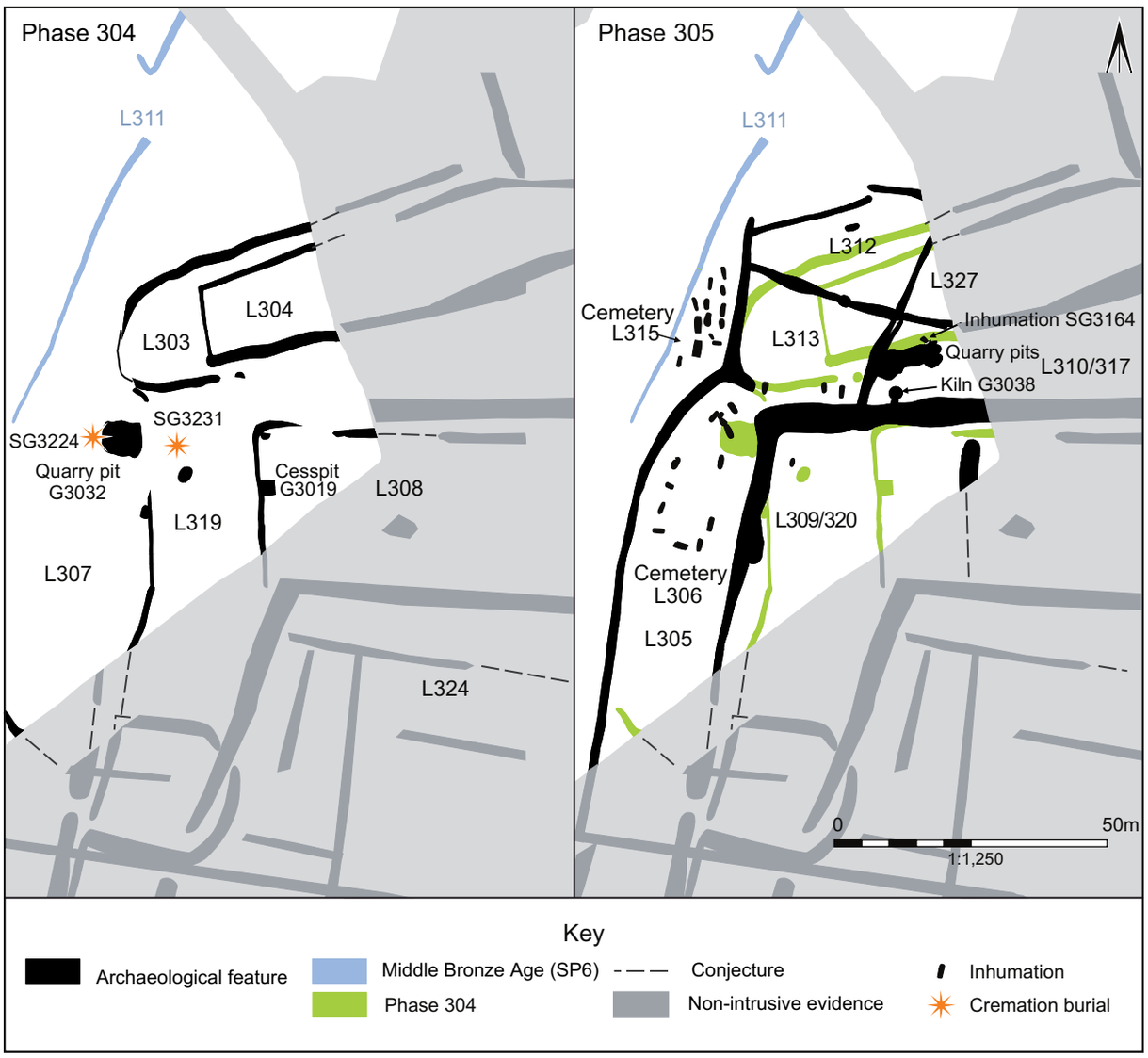


Fig. 5.28 Phased development plans for Roman farmstead SL54. Scale 1:2500

only a minority of enclosures; their absence could suggest that access was via planks or logs positioned over open ditches or that redigging of the ditches had removed the evidence for earlier causeways.

The enclosures varied in size: the smaller ones were *c.*1200sq m within SL51 and SL52, whereas the larger ones ranged from *c.*2500sq m (Bovis farmstead 13) to 4900sq m (Bovis farmstead 14) (Luke 2008, 58). At Marsh Leys they ranged from 230sq m to 3250sq m (farmstead 4) and from 150sq m to 2000sq m (farmstead 5), with the larger examples interpreted as fields (Luke 2011, 146–8 and fig. 9.6). The smaller size range at Marsh Leys is comparable to the enclosures at Odell, Beds., which, at 250–2500sq m, were interpreted as 'cultivation plots' (Dix 1979; 1980; 1981). Similar small enclosures at Haddon were thought to be associated with stock management (Hinman 2003, 41).

At Marsh Leys the larger enclosures were interpreted as fields and they tended to be on the periphery of the farmsteads, but a similar pattern was not observed on the Biddenham Loop. Three field sizes were defined at Old Covert, Milton Keynes: 500sq m, 1000sq m and 10,000 sq m (Petchy 1978, 639). The two smaller sizes are equivalent to the non-domestic enclosures at Marsh Leys. The variation in size and shape of fields may indicate a variety of uses, including both arable and pasture.

Buildings

A number of different building types were identified on the late Iron Age/early Roman, Roman and early Saxon farmsteads: roundhouses, possible rectangular buildings and sunken-featured buildings.

The only positively identified late Iron Age/early Roman building within the recent investigations was possible roundhouse G5111 within farmstead SL144. It was located on the very edge of the excavation area but appeared to comprise a curving drainage gulley with a postulated diameter of *c.*8m (Fig. 5.24). Bovis farmstead 6 contained evidence for two buildings in the form of incomplete circular arrangements of post-holes (Fig. 5.23) presumably representing the walls of roundhouses, with projected diameters of *c.*6.5m (G86) and *c.*8.4m

(G114) (Luke 2008, 49 and fig. 2.12). The arrangement of the post-holes is comparable to examples at Odell (Dix 1979, 217) and Ursula Taylor Clapham (Dawson 1988, fig. 3), both Bedfordshire. Although roundhouses of this period are relatively common, as at Stagsden bypass G2, G5 and G6 (Dawson 2000b, 33–6) and Marsh Leys (Luke 2011, 1525 and Fig. 9.13), their identification on the basis of post-holes rather than a drainage gulley is rare.

No roundhouses of Romano-British date were found within the Biddenham Loop farmsteads during the recent investigations. However, roundhouses were found in the Bovis investigation (Luke 2008, 49). One, within Bovis farmstead 10 (Fig. 5.27), was defined by narrow trenches, and was somewhat polygonal in plan, rather than truly circular, with a diameter that ranged from 10.5m to 12m. It was rebuilt on two occasions (Luke 2008, fig. 10.5). The trenches were steep-sided and flat-bottomed, and probably represent the wall of the building rather than drainage gullies. Given their angular form, it is even possible that the trenches held prefabricated wall panels. It was suggested, based largely on the arrangement of an enclosure ditch, that the Bovis roundhouse continued in use into the early 3rd century (Luke 2008, 58). Hingley believes that roundhouses may have been very common throughout lowland Britain during the 1st and 2nd centuries and that at some sites they continued in use into the 3rd/4th centuries (1989, 31). Roundhouses dated to the later Roman period are known throughout the region, as at Great Barford Bypass (Poole 2007a, 110–12), Luton Road, Wilstead (Luke and Preece 2011, 153), Wavendon Gate (Williams *et al.* 1996, 86) and Somersham, Cambs. (Hingley 1989, 172).

As on so many excavated Roman settlements in Bedfordshire and elsewhere, there is no clear evidence for rectangular buildings. The apparent absence of rectangular buildings, in contrast to roundhouses, has been noted on many sites in the region, such as Marsh Leys (Luke 2011, 155) and Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 86). Some rectangular buildings may have been constructed in a way that left little sub-surface evidence. This might account for some of the more speculative rectangular buildings put forward for some sites. These are often based on ephemeral slots which are sometimes, but not always, at right angles, such as those at Marsh Leys (Luke 2011, fig. 9.14) and Luton Road, Wilstead (Luke and Preece 2010, 110 and fig. 5), as well as building 22 at Gorhambury (Neal *et al.* 1990, 39, fig. 49) and buildings F181 and F182 at Ivy Chimneys, Essex (Turner 1999, 26–9 and fig. 25). The rectangular arrangements of ditches has also been used to suggest the location of rectangular buildings (*e.g.* enclosure L13 on farmstead 4 at Marsh Leys (Luke 2011, 155) and Ivy Chimneys (Turner 1999, 41 and fig. 37)). The location of possible rectangular buildings associated with farmsteads was suggested on the basis of post-holes within Bovis farmstead 14 and the *c.*20m × 12m rectangular arrangement of ditches within Bovis farmstead 14 (Luke 2008, 61).

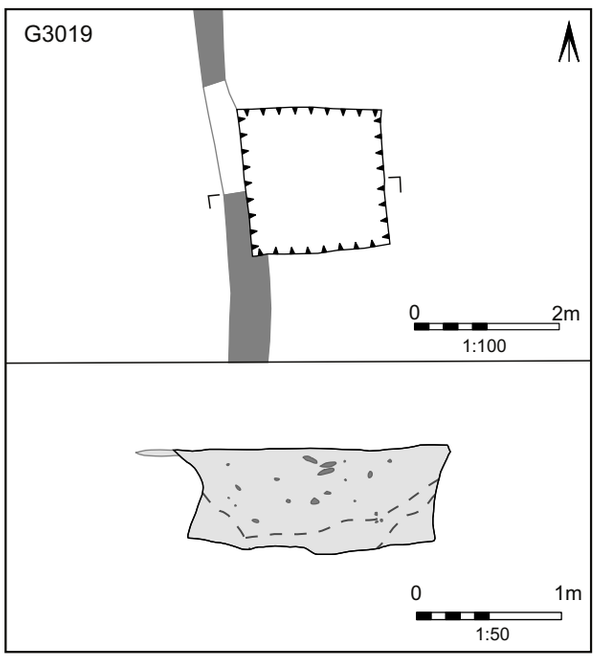


Fig. 5.29 Detailed plans of large pit G3019 within farmstead SL54. Scale 1:100

Indirect evidence for buildings within farmsteads was found in the form of artefacts, such as the iron lock bolt for a tumbler lock (CD Section 2; Duncan, Fig. 11, OA175), within farmstead SL54. Quantities of ceramic building material were found on all farmsteads, but, as with the Bovis investigations (Slowikowski 2008, 279), the quantities were far too small to suggest the existence of a substantial building (with the exception of farmstead SL54). During the recent investigations *c.*20kg of mainly *tegula* and *imbrex* were found on the latter; similar material has previously been found in the area (Luke 2008, 265). Unfortunately, the majority of this farmstead was not excavated. It is, therefore, uncertain whether the greater quantity of building material derives from a substantial building within the farmstead or from the nearby roadside settlement at Kempston Church End, which certainly would have contained tiled buildings.

Pits

Probably no more than ten small pits were present within the farmsteads and these tended to be located on the periphery of enclosures. A similar distribution was noted at Roxton (Taylor and Woodward 1983, 11). Most had no clear storage or rubbish function and it is difficult to offer a meaningful interpretation for them. It is possible that some of the pits were originally dug as small, intermittent quarries to extract gravel or clay for use in buildings or areas of hardstanding. Gravel quarrying is likely to be the reason for the excavation of the shallow but quite extensive pits to the west of Bovis farmstead 10 and the more irregular ones in Bovis farmstead 14 (Luke 2008, 253). Similar interpretations are possible for some of the shallow pits within the recent investigations, such as G3016 within farmstead SL54. Similar shallow pits, interpreted as areas of gravel extraction, were found at one of the Marsh Leys farmsteads, albeit on a much more extensive scale (Luke 2011, 158).

Some of the deeper pits, which occur only in small numbers, can be interpreted as clay quarries: examples include the four partially intercutting pits *c.*3m north of kiln G3038 within farmstead SL54 (Fig. 5.28) and the two pits within *c.*25m of the kilns on Bovis farmstead 5 (Fig. 5.23; Luke 2008, 199). Clay underlies the gravel in many parts of the Loop, although the edge of the terrace or river exposures may have been more common places to access it.

Plate 5.26 Fully excavated square pit G3019 (enclosure L308, farmstead SL54), from the north (1m scale)

Plate 5.27 Half-sectioned square pit G3019 (enclosure L308, farmstead SL54), from the north (1m scale)

Plate 5.28 Quarter-sectioned square pit G21106 (enclosure L2120, farmstead SL51), from the south-west

Plate 5.29 Possible stone drain G21033 (trackway L2115, farmstead SL51), from the south-east

Within the Bovis investigations, a single pit on farmstead 14 was tentatively interpreted as a water pit (Fig. 5.27; Luke 2008, 61). It was located on the periphery of the main domestic focus enclosure and was later 'cut through' by a ditch (Luke 2008, 259–60). No water pits were positively identified within farmsteads SL51/52 or SL54 within the recent investigations. However, a number of large pit-type anomalies were identified within the unexcavated part of SL54 and these are likely to be water pits (see Fig. 5.26). The presence of water pits on Romano-British farmsteads is relatively common (*e.g.* G33, G34 and G43 at Luton Road, Wilstead, Beds. (Luke and Preece 2010, 153); pits 651 and 786 at Haddon, Cambs. (Hinman 2003, 37–8); and pit 835 at Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 64–6)). Therefore, the numbers within the Biddenham Loop farmsteads seem quite low, especially when compared to the twenty-five within two farmsteads at Marsh Leys (Luke 2011, 157–8). It may be that their relatively scarcity is simply due to the fact that all the settlements on the Loop were located adjacent to the river.

Pit G3019 within farmstead SL54 stands out because of its shape and fills (Fig. 5.29). It was 2m square and 0.7m deep, with vertical sides and a flat base (Plates 5.26 and 5.27). Its primary fill comprised cess-like, mid-greenish-brown silty sand. A sample from this fill was analysed and found to have an exceptionally high phosphate-P concentration; 'it contained what appeared to be partially mineralised plant material of a form that is often associated with cess-type deposits (Kate Griffiths, pers. comm.)' (CD Section 2; Crowther, BWB). The levels of enrichment 'suggest that these deposits originally contained substantial amounts of phosphate-rich organic materials (midden material, cess, animal manure, *etc.*) and also possibly bone' (CD Section 2; Crowther, BWB). Bone actually survived from both amphibians (mainly toads) and small mammals, including an immature hedgehog. Their presence indicates that the pit had lain open for a time prior to infilling (CD Section 2; Maltby). The tertiary fill contained a moderate quantity of domestic debris, suggesting that it had been backfilled with rubbish. It also produced the remains of a padlock key (CD Section 2; Duncan, Fig. 11, OA170). Another pit, G21106 within farmstead SL51, shared some similarities with G3019 in that it was square and had vertical sides. However, at 2.6m square and 2.5m deep (Plate 5.28) it was larger than G3019 and did not contain obvious cess-like deposits or domestic debris. The shape of G3019, and possibly G21106, and the presence of cess-type deposits in the former suggest that they were timber-lined latrine pits.

Similar pits, some with surviving timber lining, were found at the roadside settlement at Neatham, Hants (Millett and Graham 1986, 30–32 and figs 25 and 26). Possible latrine pits with cess-like deposits and, in some cases, evidence for a timber lining were identified within the Kempston Church End settlement (see above). As discussed above (p. 241), there is a 'dearth of information' in general about toilets in towns and villas in Roman Britain (Hobson 2009, 42–3), and the identification of latrine pits on farmsteads is very rare. The probable presence of one within farmstead SL54 could suggest that at least one of the inhabitants was more accustomed to Mediterranean cultural behaviour than the residents of the other farmsteads, perhaps because they had served in the military or the government. Alternatively, it could be that they wanted to embrace new practices (see discussion on status and Romanisation below).

Stone structures

A possible stone drain G21033 (L2115) was found centrally within trackway L2115, which provided access from the flood plain to farmstead SL51. It was 23m long, 1m wide and 0.3m deep and was filled with limestone fragments (under 0.15m in size) and some ceramic building material (Plate 5.29). These fragments were not packed very tightly and were not bonded, hence the suggestion that this was a rubble-filled drain.

Plate 5.30 Fully excavated kiln G3038 (enclosure L310, farmstead SL54), from the south-west (1m scale)

Brief mention should be made of the stone pads found in the late Iron Age and Romano-British farmsteads within the Bovis investigations (Luke 2008, 49, 61, figs 2.13 and 2.18) but absent from the recent investigations. These comprised shallow, sub-rectangular pits, often with rounded corners, *c.*1.1m by 0.8m, containing one or more horizontal layers of clay and limestone fragments, all unburnt (Luke 2008, 61). One was located within a roundhouse but others were located away from the domestic focus of farmsteads. One was associated with fragments of pierced clay plates/oven floor, although it is unclear whether these were related to the feature's original function. No precise parallels could be found but it is possible that hearths H4 and H5 at Roxton are comparable (Taylor and Woodward 1983, 13). The stone pads may also represent foundations for raised ovens or, less probably, water containers (Luke 2008, 61).

Ovens, kilns

No domestic ovens or hearths were identified within the farmsteads on either the recent or the Bovis investigations. However, small quantities of portable oven/kiln furniture were found within both the Bovis investigations (Slowikowski 2008, 277–9) and the recent ones (CD Section 2; Wells, CBM). These are believed to 'represent pre-fabricated furniture from simple ovens, hearths or drying ovens of domestic or agricultural use' (CD Section 2; Wells, CBM). In addition, fired clay fragments, charcoal and burnt stones indicate that there were ovens or hearths within the farmsteads, although distribution mapping of this material did not assist in locating their position.

Three pottery kilns are known within the Biddenham Loop (Fig. 5.30): one was associated with Romano-British farmstead SL54, to the south of the Loop, and two with late Iron Age/early Roman farmstead 5, within the Bovis investigations (Luke 2008, 201–5 and fig. 9.4).

Plate 5.31 Kiln G3038 being examined by Albion pottery specialists

All three were located on the periphery of their respective farmsteads.

Kiln G3038, within the recent investigations, was *c.*3.1m long, 1.6m wide and 0.6m deep with a keyhole-shaped plan (Plates 5.30 and 5.31). In both shape and size it was closely comparable to the kiln found in Box End Quarry within the northern part of the Kempston Church End roadside settlement (Luke and Preece forthcoming). Both kilns were situated in the vicinity of cemeteries — probably reflecting the inhabitants' deliberate selection of peripheral location for both burial and pottery manufacture. The base and sides of the oven of the Biddenham

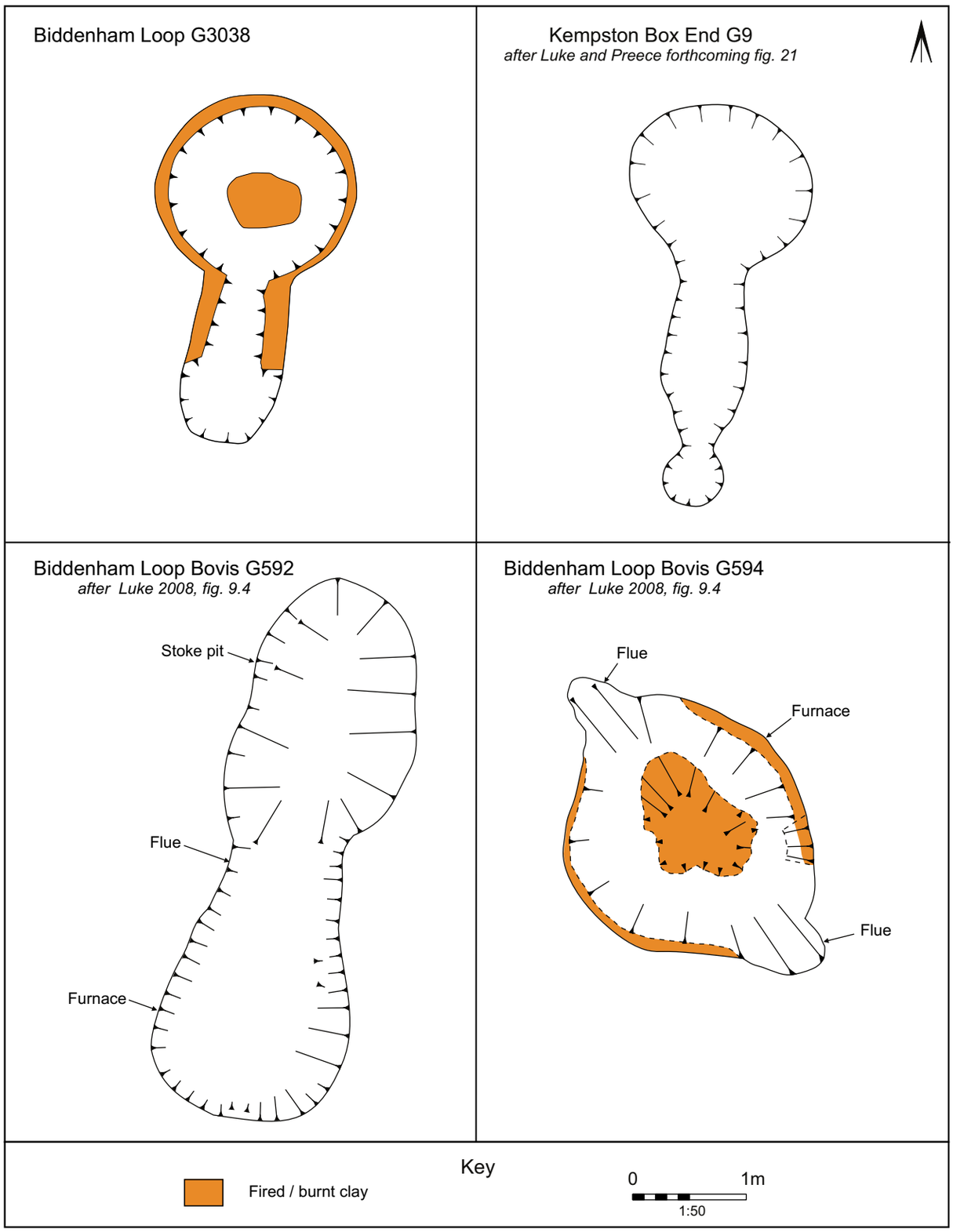


Fig. 5.30 Detailed plans of kiln G3038 (SL54) and others found on and near the Biddenham Loop. Scale 1:50

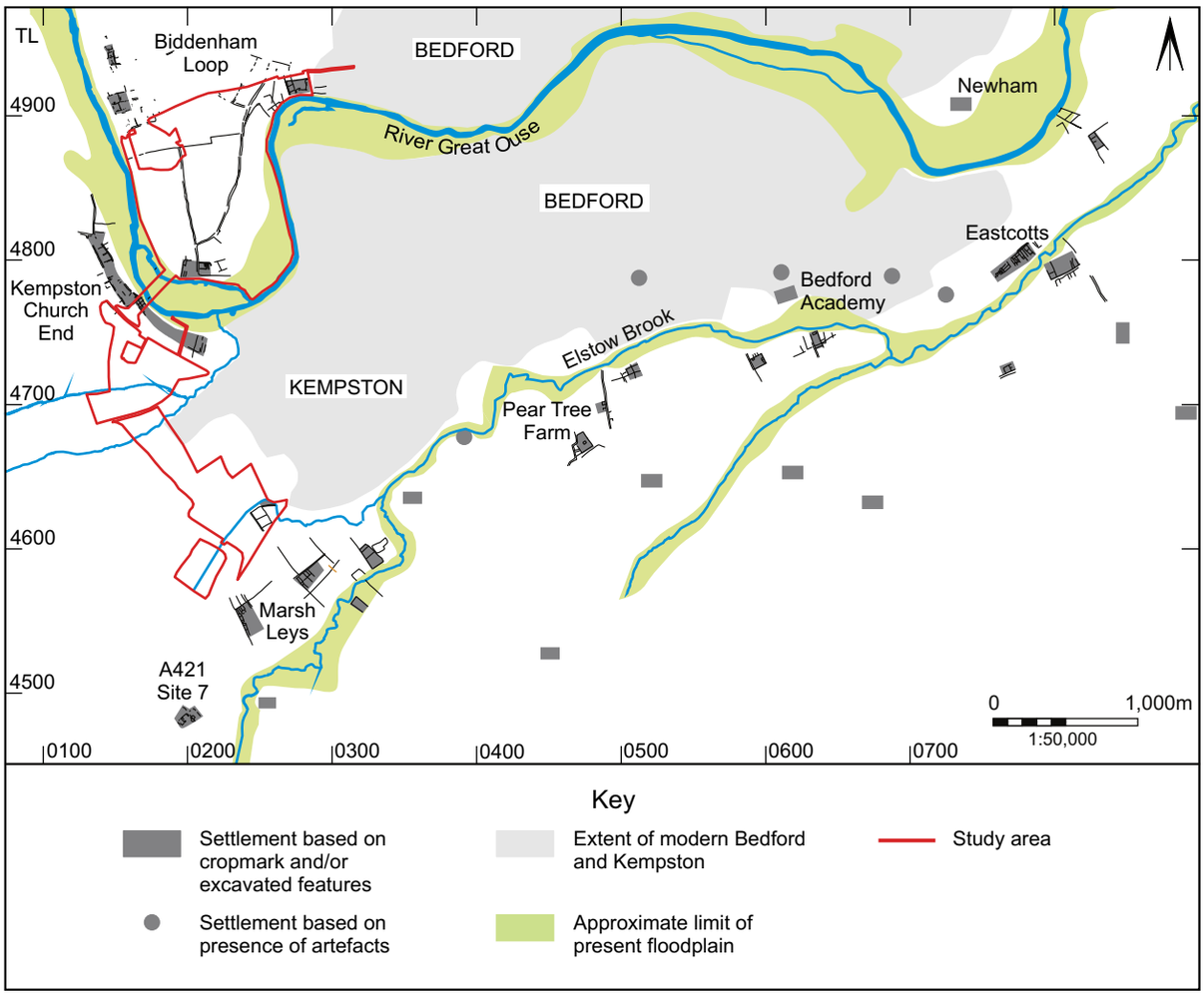


Fig. 5.31 The Romano-British settlement densities in the Bedford area. Scale 1:50,000

Loop kiln were lined with clay and in its centre was a pedestal in the form of a limestone block that had been carved out of the bedrock. A lip around the oven survived and probably represents a ledge for supporting kiln bars. The walls of the flue were not parallel, but widened towards the stokehole. They were not mortared but, in places, were lined with clay. Evidence for the superstructure was found in the form of nearly 2kg of fired clay, some with finger-smoothed surfaces, within the kiln. The stokehole appeared to make use of a partly infilled enclosure ditch. No kiln furniture was present.

The kiln produced an assemblage of 1,850 pottery sherds (37.4kg), nearly all of which were grey, fine sand or shelly wares. The majority derived from the primary fill of the flue and the secondary fill of the chamber. The pottery recovered from the kiln is generally of 2nd–3rd century date (CD Section 2; Wells, Pottery). Although archaeomagnetic dating of the kiln lining provided a date of AD 300–460, this may relate to use of the structure after the final pottery firing.

Waster sherds constitute approximately 40% of the kiln assemblage and provide an insight into a range of manufacturing problems encountered by the potter. Wasters are here defined as sherds displaying cracked surfaces (crazing), cracks (dunting), spalling, flaking, overfiring, partial vitrification and variable/patchy firing or fire clouds, associated with regulation of kiln temperature and the speed of vessel heating and cooling. As seconds, the latter would be more usable than other waster types, although aesthetically not very attractive. Nearly all sherds in fabric R29 can be classified as wasters (Fig. 13, P85–P90), and the majority of the shelly vessels. A smaller proportion of the greywares exhibit waster characteristics. Sherds in type R29 were recovered exclusively from the kiln and fills of adjacent enclosure ditch G3063. They perhaps represent a failed version of one of the greyware variants, which were considered unsuitable for use (CD Section 2; Wells, Pottery).

The charred plant remains in the pottery kiln consist of the products (cereal grain) and by-products (chaff, weed seeds) of crop-processing activities, the chaff and weed/wild plant remains probably being used as tinder for fuelling the kiln.

The two kilns within the Bovis investigations comprised a single-flued ‘figure-of-eight’ kiln and a twin-flued kiln (Luke 2008, 49). Similar single-flued kilns of this period are relatively common, as at Stagsden bypass (Dawson 2000b, 37–9 and 41–2). The other kiln was more unusual in having small twin flues and an integral clay ‘bollard’-type pedestal. Comparable twin-flued kilns have been found at Lodge Farm, Harrold, *c.*10km upstream, but these tend to be larger, with longer flues (Brown 1994, 26–9 and fig. 9). The proximity of the two Biddenham Loop kilns is interesting, given that the differences in form and alignment make it unlikely that they are contemporary. Single-flued kilns of this type are believed

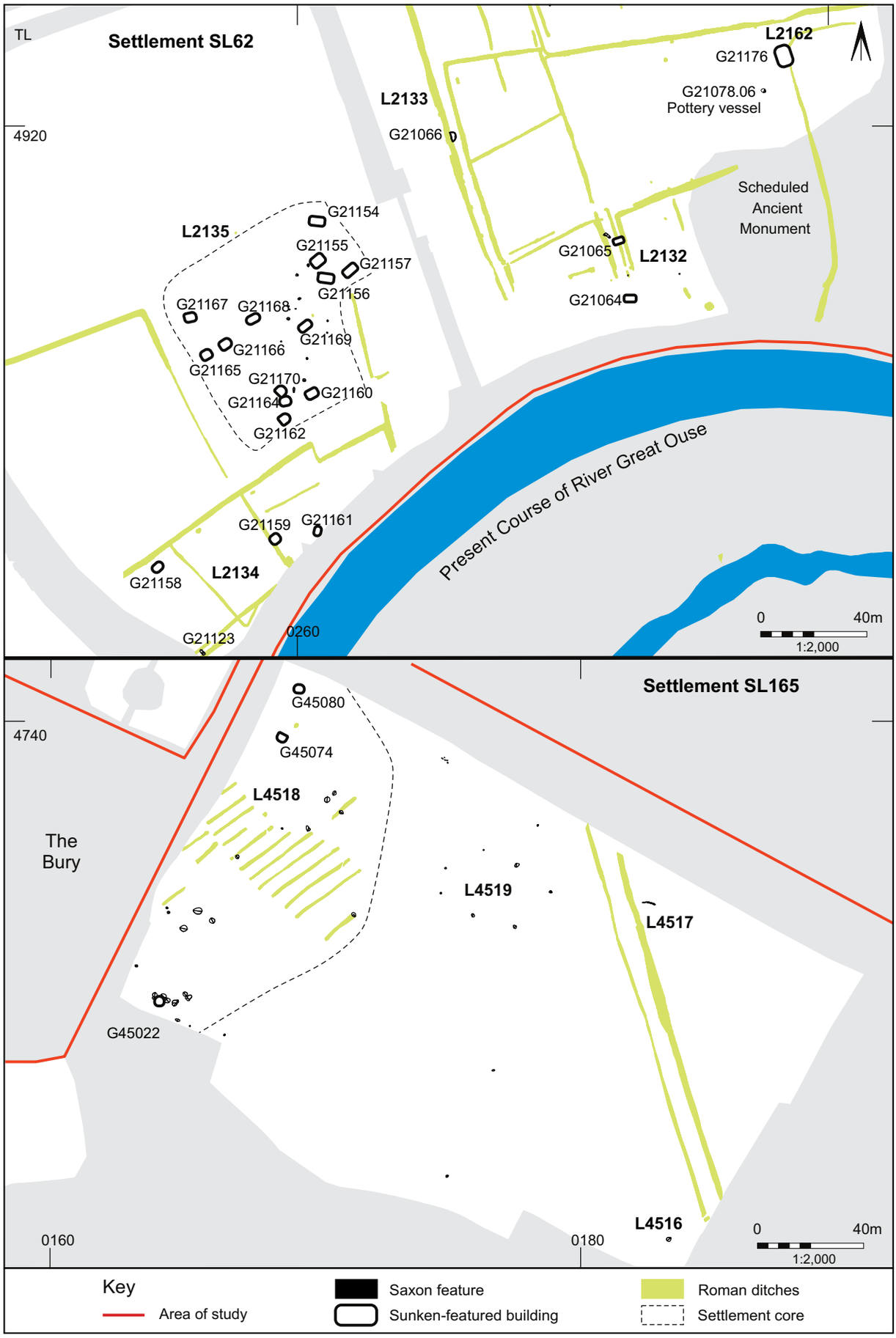


Fig. 5.32 Overall plan of early Saxon settlements SL62 (on Biddenham Loop) and SL165 (land west of Kempston). Scale 1:2000

SL	*L*	*Extent (ha)*	*Relationship with earlier activity*	*Number of SFBs*	*Associated features*	*Pottery sherd:weight:vessel (kg)*	*Other finds (kg)*
62	2132 2133 2134 2135 2162	6	Within area of Roman farmsteads SL51/52. Early Saxon focus L2335 restricted to single Roman enclosure	13 (L2335) 2 (L2134) 2 (L2132) 1 (L2162)	7 small pits 1 large pit 7 post-holes	241:4.4:46 generic RB 2:0.03:1 1st/2nd century 36:0.8:1 2nd century 1:0.02:1 2nd/3rd century 25:0.3:3 3rd/4th century 1470:31.2:113 early Saxon	54.6 animal bone 0.6 tegula, flue tile 4.2 fired clay 1.1 shell 24 × antler/bone working off-cut/waste fragments (OA237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250) 1 × antler box mount (OA228) 5 × 6th-century annular loomweights (OA233, 234) 2 × antler pin beaters (OA235, 236) 3 × spindle whorls (OA229, 230, 231) 1 × FE awl (OA251) 1 × FE reaping hook (OA256) 1 × perforated lead weight (OA255) 5 × bone dress pins (OA257, 258, 259) 1 × FE dress pins (OA260) 1 × CA strap mount (OA262) 6 × 6th-century antler combs (OA263, 264, 265, 266, 267, 268) 1 × quern stone (OA221) 2 × whetstones (OA222, 223)
63	114 129 205 2362	13.3	Located on periphery of middle Bronze Age field system SL13 and near Roman *bustum* burial	8	1 small pit (L205) 2 small pits (L2362)	53:0.5:3 early Saxon 1:1g:1 generic RB	12.1 animal bone 0.1 fired clay 13.3 unfired clay, some in the shape of loomweights 1 × 7th-century intermediate loomweight (OA270) 1 × loomweight (OA271) 1 × FE arrow/spear head (OA274) 2 × 7th-century CA strap mounts (OA276, 277) 1 × FE fibre processing spike (OA269) 1 × quern (OA273)
165	4516 4517 4518 4519	3.5	In vicinity of Roman bedding trenches on periphery SL156 of roadside settlement	3	24 pits (L4518) 5 small pits (L4519) 12 post-holes (L4519) 1 small pit (L4516) 12 post-holes (L4517)	9:0.04:1 generic RB 1:1g:1 2nd century 1:0.3:1 2nd/3rd century 1:0.01:1 3rd/4th century 26:0.5:6 early Saxon	20.5 animal bone 0.1 fired clay 1 × spindle whorl (OA212) 2 × quern (OA213, 214)

OA = Other artefact number; FE = Iron; CA = Copper alloy; RB = Romano-British

Table 5.5 Details of the early Saxon (SP11) settlements within the study area

SL	*L*	*G*	*Alignment*	*Shape of sunken area*	*Dimensions length:width: depth (m)*	*Profile*	*Post-hole arrangements (Refers to short side unless otherwise stated)*	*Pottery sherd:weight:vessel (kg)*	*Interesting finds*	*Other finds (kg)*
62	2132	21064	E–W	Rectangular (rounded corners)	3.3:1.7:0.2	Gradual sloping sides and uneven base	2 opposing central posts 1 corner post	3:0.4:1 generic RB 1:3g:1 2nd century 1:0.3:1 3rd/4th century 32:0.5:10 early Saxon	FE staple (OA226) Antler casket/box lid mount (OA228) Spindle whorl (OA230)	0.7 animal bone
		21065	ENE–WSW	Rectangular (rounded corners)	2.7:2:0.2	Steep sloping sides and flat base	2 opposing off-central posts	2:0.07:q generic RB 54:1.1:3 early Saxon	Loomweight (OA233)	0.6 animal bone 0.2 tegula
	2133	21066	ENE–WSW	Oval	ud:2:0.1	Gradual sloping sides and flat base	1 central post (opposing side truncated)	7:0.08:1 early Saxon	Annular loomweight (OA234)	—
	2134	21158	NE–SW	Oval	3.2:2.5:0.1	Moderate sloping sides and uneven base	2 central adjacent 2 internal	17:0.2:3 early Saxon	—	0.03 animal bone
		21159	NE–SW	Square (rounded corners)	2.0:2.0:0.5	Moderate sloping sides and uneven base	2 opposing central posts	17:0.2:6 generic RB 1:1g:1 2nd century 1:0.05:1 3rd/4th century 106:1.1:69 early Saxon	Antler comb (OA266)	1.2 animal bone
		21161	NNE–SSW	Oval	2.5:1.9:0.4	Steep sloping sides and concave base	1 central post	204:3.8:58 generic RB 2:0.03:1 1st/2nd century 28:0.7:2 2nd century 1:0.2:1 3rd/4th century 18:0.1:3 3rd/4th century 13:0.4:7 early Saxon	Bone off-cut (OA247)	0.7 animal bone 0.8 fired clay 0.03 tegula
	2135	21154	ESE–WNW	Rectangular (rounded corners)	3.5:2.9:0.3	Moderate sloping sides and uneven base	2 central opposing	22:0.3:1 early Saxon	—	0.02 animal bone
		21155	NE–SW	Rectangular (rounded corners)	4.12:>4.0:0.8	Near vertical stepped sides and flat base	6 opposing posts 1 corner 1 internal	2:0.06:2 generic RB 3:0.03:2 2nd century 3:0.08:2 3rd/4th century 464:12.3:9.2 early Saxon	Quern stone (OA221) 2 fragments of whetstone (OA222, 223) FE staple (OA227) Antler pin beater (OA235) 10 red deer antler/bone off-cut/waste (OA239–246) Lead weight (OA255) Reaping hook (OA256) Antler comb (OA265)	22.6 animal bone 0.03 flue tile 0.2 fired clay
		21156	E–W	Oval	>4.1:3.4:0.5	Near vertical sides and flat base	2 ?central (truncation)	18:0.3:7 early Saxon	—	0.5 animal bone
		21157	NE–SW	Rectangular (rounded corners)	3.7:2.5:0.2	Steep sloping concave sides and flat base	2 opposing central posts	3:0.02:1 generic RB 48:0.6:27 early Saxon	Fragment of glass (OA2119) Spindle whorl (OA231)	0.3 animal bone 0.04 tegula
		21160	NE–SW	Rectangular (rounded corners)	3.7:3:0.6	Moderate sloping stepped sides and uneven base	2 opposing central posts 2 adjacent internal	1:0.01:1 generic RB 1:0.06:1 2nd century 212:4.2:54 early Saxon	Antler comb (OA267)	4.1 animal bone 0.8 fired clay

SL	*L*	*G*	*Alignment*	*Shape of sunken area*	*Dimensions length:width: depth (m)*	*Profile*	*Post-hole arrangements (Refers to short side unless otherwise stated)*	*Pottery sherd:weight:vessel (kg)*	*Interesting finds*	*Other finds (kg)*
62 cont.	2135 cont.	21162	NE–SW	Sub-circular	3.7:2.8:0.2	Moderate sloping stepped sides and flat base	1 corner	1:3g:1 generic RB 7:0.1:3 early Saxon	—	0.1 animal bone
		21164	ENE–WSW	Oval	3.7:2.8:0.2	Gradual sloping sides and flat base	2 opposing off-central posts	16:0.3:3 early Saxon	FE wall hook (OA225) Bone rough-out (OA248, 2492) FE knife (OA252) Antler comb (OA268)	1.0 animal bone
		21165	??	Sub-circular	3:2.5:0.5	Moderate sloping sides and flat base	2 opposing off-central posts	2:0.04:2 generic RB 31:0.7:16 Early Saxon	Bone pin (OA259)	1.5 animal bone
		21166	NE–SW	Sub-rectangular (rounded corners)	4.2:3:0.4	Steep sloping sides and flat base	6 opposing posts	4:0.1:1 generic RB 1:0.07:1 3rd/4th century 167:4.2:42 early Saxon	Red deer antler off-cut (OA250) Whetstone (OA254) Bone pin (OA257) FE pin (OA260) CA chain link (OA261) CA Strap mount (OA262) 2 antler combs (OA263, 264)	3.2 animal bone
		21167	E–W	Rectangular (rounded corners)	3.4:2.8:0.3	Moderate sloping sides and flat base	2 opposing central posts 1 corner	95:1.0:23 early Saxon	—	0.8 animal bone 0.3 fired clay
		21168	NE–SW	Oval	4.7:2.6:0.1	Gradual sloping sides and flat base	2 opposing central posts	4:0.06:3 early Saxon	—	0.07 animal bone
		21169	NE–SW	Sub-rectangular (rounded corners)	2.8:2:0.3	Steep sloping sides and flat base	3 corner 3 internal	1:0.01:1 generic RB 2:0.08:1 2nd century 1:0.02:1 3rd/4th century 10:1.8:22 early Saxon	Spindle whorl (OA229) Bone pin beater (OA236) FE awl (OA251) Red deer antler handle (OA253) Bone pin (OA258)	2.1 animal bone
		21170	NNW–SSE	Sub-rectangular (rounded corners)	2.7:2.1:0.3	Moderate sloping sides and uneven base	10 against sides 7 internal arc	42:1.1:16 early Saxon	—	0.5 animal bone
	2162	21176	NNW–SSE	Square (rounded corners)	5.4:5:0.3	Moderate sloping asymmetrical sides and uneven base	2 internal	1:0.02:1 generic RB 5:0.08:1 early Saxon	FE linch pin (OA220)	0.4 animal bone
63	114	1049	—	Oval	3.0 (diameter):0.6	Concave with a step on the eastern side	None	4:0.02:2 early Saxon	—	—
	129	1067	ENE–WSW	Sub-rectangular (rounded corners)	3.2:2.8:0.3	Asymmetrical concave sides and flat base	2 central opposing	5:0.05:2 early Saxon	—	0.35 animal bone

SL	*L*	*G*	*Alignment*	*Shape of sunken area*	*Dimensions length:width: depth (m)*	*Profile*	*Post-hole arrangements (Refers to short side unless otherwise stated)*	*Pottery sherd:weight:vessel (kg)*	*Interesting finds*	*Other finds (kg)*
63 cont.	205	2002	NW–SE	Rectangular (rounded corners)	4:2.8:0.4	Steep sloping sides and flat base	2 central opposing	1:1g:1 generic RB	CA strap mount (OA277)	0.1 animal bone
	2362	23241	NE–SW	Sub-rectangular (rounded corners)	4.5:3.9:0.3	Gradual sloping sides and uneven base	2 central opposing 1 external	8:0.05:1 early Saxon	CA wire (OA257)	0.2 animal bone 0.1 fired clay 11.4 unfired clay lumps
		23243	NE–SW	Rectangular (rounded corners)	5.1:3.2:0.2	Moderate sloping asymmetrical sides and uneven base	2 central opposing 3 internal pairs	17:0.1:4 early Saxon	Iron fibre processing spike (OA269) Intermediate loomweight (OA270) CA needle (OA272) Quern stone (OA273) FE arrow/spear head (OA274) CA strap mount (OA276)	3.6 animal bone 1.8kg unfired clay lumps
		23244	E–W	Rectangular (rounded corners)	3.4:2.5:0.2	Moderate sloping sides and flat base	2 central opposing (both external)	—	—	0.1 animal bone
		23245	NNE–SSW	Rectangular (rounded corners)	5:3.1:0.3	Moderate sloping sides and flat base	2 central opposing	10:0.2:1 early Saxon	—	5.4 animal bone
		23246	ENE–WSW	Rectangular (rounded corners)	4.3:3.6:0.2	Asymmetrical gradual sloping sides and uneven base	2 central opposing	9:0.1:2 early Saxon	Intermediate loomweight (OA271)	0.1 animal bone 0.1 fired clay
165	4518	45022	NNW–SSE	Oval	2.4:2.1:0.4	Vertical sides and uneven base	2 central opposing	3:4g:1 generic RB 1:0.3:1 3rd/4th century 11:1.2:1 early Saxon	—	4.8 animal bone
		45074	NNE–SSW?	Sub-oval	2.2:2.1:0.5	U-shaped	1 central	3:0.02:3 late Saxon–eSN	—	0.05 animal bone
		45080	NE–SW	Pear-shaped	0.9:1.2:0.2	U-shaped	2 internal 4 external	1:0.02:1 generic RB 1:1g:1 late Saxon–eSN 1:0.01:1 early Saxon	—	0.1 animal bone

OA = Other artefact number; CA = Copper alloy; FE = Iron; RB = Romano-British; eSN = early Saxo-Norman

Table 5.6 Details of early Saxon (SP11) SFBs within study area

to originate in the pre-Conquest period, continuing in use into the late 1st century AD (Swan 1984, 55). However, twin-flued kilns are considered to be a later development and were not constructed in Britain before the Conquest (Swan 1984, 119–20; Brown 1994, 44). Those at Lodge Farm, Harrold, Beds., were dated to the later 2nd century (Brown 1994). However, on the basis of its pottery assemblage, which contained no fully Romanised types, the Biddenham Loop example is dated somewhat earlier, to the late 1st century AD. Lodge Farm, Harrold, is held to be a production centre because of the large number of kilns at the site.

Farmstead densities within study area and beyond (Fig. 5.31)

Three of the four Roman farmsteads within the Biddenham Loop lie on its northern edge, *c.*1.2km from SL54, which occupied a central position to the south. Dawson has suggested that, within Bedfordshire, 'many smaller settlements seem to cluster either close to villas or are on the periphery of potential estate boundaries' (2004, 76). The inference is that they represent tied or estate settlements. This is a possibility at Biddenham Loop, where the three farmsteads are located *c.*600m beyond the major boundary that appears to define the northern limit of farmstead SL54 (see below). A number of strands of evidence combine to suggest that SL54 may be a higher-status settlement. In spatial terms, it is located centrally within the Loop, at its southern end, closest to the roadside settlement at Kempston Church End. It is also the largest farmstead-type settlement on the Loop. It contained an inhumation cemetery and it produced larger quantities of ceramic building material (roof and flue tile) than the other farmsteads (Luke 2008, 265). Thus, it is likely that the distribution and density of farmsteads within the Biddenham Loop are not representative of the wider landscape. More typical may be the 400–500m spacing of the farmsteads along the Elstow Brook, a tributary of the Great Ouse (Luke 2011, 168 and fig. 9.18). A similar density can be seen along the river Ivel near Broom, Beds. (Cooper and Edmonds 2007, fig. 6.4).

On Land west of Kempston, the possible continuation of farmstead SL147 was contemporary with the two

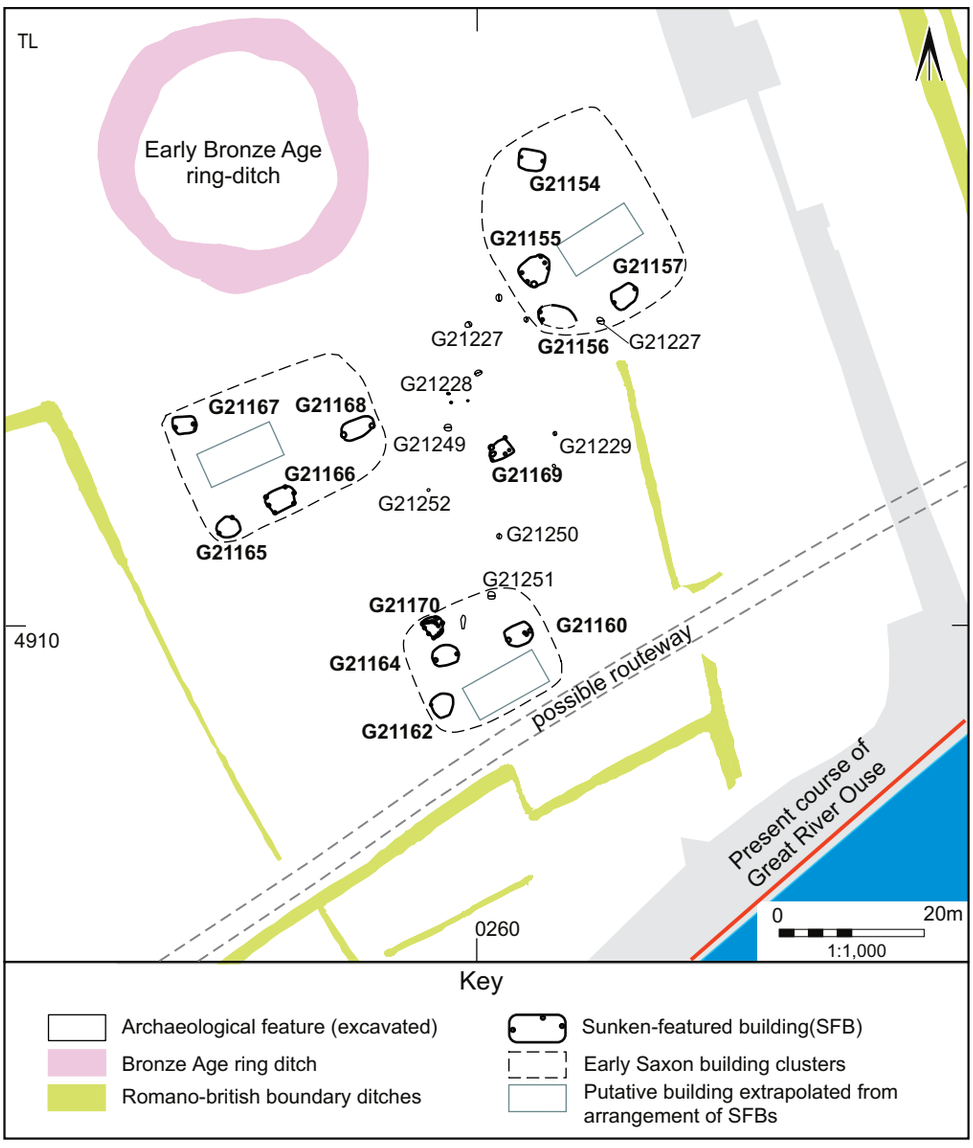


Fig. 5.33 Plan of core area (L2135) of early Saxon settlement SL62 on Biddenham Loop. Scale 1:1000

farmsteads at Marsh Leys. All were located on a thin band of gravel overlying the Oxford Clay which dominates the Marston Vale (Luke 2011, 168). In the past it was argued that, during this period, settlement was focused on the Great Ouse gravel terraces rather than on the claylands away from the river (see Simco 1984, 21, maps C and D). It is now accepted that this apparent bias reflects the location of modern development and the greater visibility of gravel terrace sites. Over the last ten years there has been a dramatic increase in the number of Romano-British sites identified on the Oxford Clay in Bedfordshire (see Poole 2007b, 145–9; Luke and Preece 2010, 156). It is now believed that farmsteads occurred at intervals of 0.5–2km, as demonstrated by the Great Barford Bypass (Poole 2007b, 148–9), and that in some parts of the county the density of sites was similar to that seen on the gravels of the Great Ouse and its tributaries.

Early Saxon settlements
(Figs 5.32–5.41, Table 5.5 and 5.6)

Continuity?
The evidence from the study area fits the Bedfordshire pattern whereby a minority of 'excavated Romano-British sites show continuity of occupation into the Saxon period' (Edgeworth 2007, 87), which is suggestive of a decline in population. Of the five Roman farmsteads within the Biddenham Loop only one was definitely occupied into the 5th century. Here, in the part of the Loop known as Honey Hill, the early Saxon settlement core (SL62) was focused on a previously uninhabited enclosure on the periphery of Roman farmstead SL52 (Fig. 5.32). There is also sufficient evidence to suggest that some parts of the Kempston Church End Roman roadside settlement were still occupied (SL164 and SL199, Fig. 5.1).

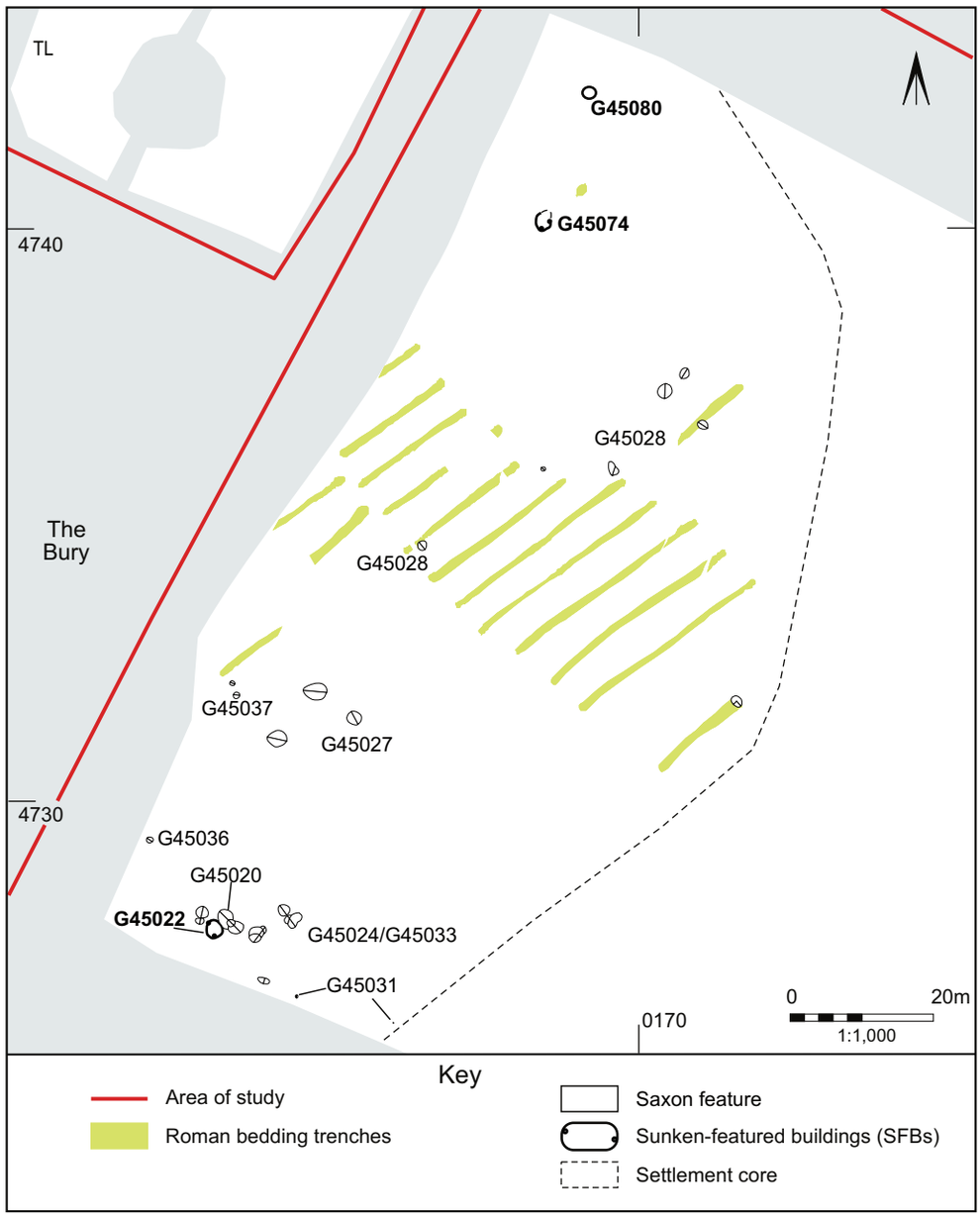


Fig. 5.34 Plan of core area (L4518) of early Saxon settlement SL165 on land west of Kempston. Scale 1:1000

As at the national level, 'the impression of an abrupt change may be partly the result of the cessation of coin and pottery production in the late 4th century, leaving little for the archaeologist to use as dating material' (Edgeworth 2007, 89). Without these datable artefacts, identifying settlements that continued to be occupied into the 5th century becomes extremely difficult (Cleary 2001, 93). Simco, in her survey of Roman Bedfordshire, noted that 'occupation of a site may appear to come to an end at the end of the 4th century, but it may be that the signs of continuing occupation are just not being recognised' (1984, 71–2). Therefore, the assumption that the farmsteads within the Bovis investigations ceased to function in the 4th century (Luke 2008, 56) may not be entirely accurate. In relation to this point it may be significant that the settlements dated to the 5th–6th centuries within the study area contained early Saxon pottery types and sunken-featured buildings (SFB), which could be associated with Germanic immigrants. However, if the early 5th-century Romano-British population had continued to live in the same buildings as they had in the 4th century, using the same artefacts, it would be difficult to identify them on the basis of the archaeological evidence.

Place-names

Place-names containing a Celtic element are extremely rare in Bedfordshire (Mawer and Stenton 1969, xviii, 75–7). Kempston, which appears as *Camestone* in Domesday Book, is believed to derive from the Primitive Welsh **camm* 'crooked' and the Old English *tūn*, giving 'farmstead at the bend' — that is, at the pronounced bend in the Great Ouse at this point (Kuhlicke 1966, 13; Mills 1998, 201). It is generally accepted that the survival of pre-English place-name elements indicates a period of co-existence by Welsh and English speakers. In the case of Kempston, this is an inference that is certainly in accord with the archaeological evidence from the study area.

New settlement locations

Two settlements were identified on previously unsettled farmland — SL165 in a former vineyard or orchard, *c.*200m from the Kempston Church End Romano-British roadside settlement (Fig. 5.1); and SL63, a loose arrangement of eight SFBs on the west side of the Loop (Fig. 5.1). Five of these buildings were near the Roman *bustum* burial L2399 (Fig. 5.35), suggesting that it may still have been a feature of the local landscape and, perhaps, held some significance for the settlement's occupants. In this respect, it is interesting that all but one of the SFBs were located to the south of the major east–west boundary L112/2336, which 'cut off' the Roman estate in the southern part of the Loop.

Duration of settlements

On the basis of their associated pottery assemblages all the settlements are likely to be broadly contemporary.

> The dominance of sand-tempered fabrics, in particular types A16 and A18, coupled with the low quantities of organic wares, suggests a 5th-/6th-century date for the assemblage. This is further indicated by the absence from the site of characteristic middle Saxon types such as Maxey or Ipswich wares' (CD Section 2; Wells, Pottery). However, the other artefacts evidence may suggest that SL62 is earlier in date than SL63. 'The antler combs, annular loomweight and loop-headed pin from SL62 indicate a date in the 6th century, while the intermediate loomweights and belt fittings from SL63 suggest a date in the 7th century (CD Section 2; Duncan).

There are too few chronologically diagnostic finds and too few stratigraphic relationships between features to suggest an intra-settlement development sequence of the type seen at sites such as Mucking, Essex (Hamerow 1993, 86–9). One of the most closely dated artefacts from SL62 'was an iron loop-headed pin of Ross type XVIII [Fig. 16, OA260], dated to the earlier half of the 6th century (Ross 1991, 201–4)' (CD Section 2; Duncan), which is consistent with the dates of combs from the same settlement. One of the strap mounts (Fig. 17, OA277) from SL63 is later in date as it is 'paralleled by a mount from a 7th-century burial at Water Lane, Melbourn, Cambs. (Duncan *et al.* 2003, fig. 21, SG93 no. 5)' (CD Section 2; Duncan). However, single artefacts cannot be used to date settlements. It seems very unlikely that all the SFBs within each settlement were in use at the same time but it is impossible to determine how many were contemporary. One possibility is that the dispersed SFBs within SL63 represent a small, shifting settlement. Although parts of settlement SL62 have been described below as 'core' and 'periphery', it is always possible that they too represent a shifting settlement focus. Of all the settlements in the study area only SL165 contained intercutting features, but these were the possible quarry pits in the southern part of L4518 and so cannot contribute to the discussion.

The artefactual evidence suggests that all the settlements on the Biddenham Loop ceased to exist at some point in the 7th century. This would broadly correspond with the wholesale changes in settlement patterns seen throughout England in the decades around *c.*700 (Hamerow 2002, 121–4). Only one settlement within the study area — SL165, adjacent to The Bury on Land west of Kempston — has produced sufficient evidence to suggest that it was continuously occupied into the late Saxon period. However, it is also likely that settlement continued in the area around Kempston Church End, only a small part of which was within the study area.

Layout and extent

(Figs 5.32–5.35)

A number of characteristics distinguish the early Saxon settlements from those of the Roman period. Firstly, there is no evidence to suggest that they were enclosed or had internal subdivisions. For SL62 it is possible to argue that some of the existing Roman boundaries were utilised (Fig. 5.32), but this is not the case for SL165, which was established on previously unsettled land. Of course, it is possible that boundaries could have been defined by fences or hurdles that have left no sub-surface traces. Secondly, while there is some evidence for spatial organisation within the settlements, this is on nothing like the level seen in the Roman period, when different enclosures were used for different activities.

All the early Saxon settlements produced clear evidence for buildings, unlike the Roman farmsteads, where buildings must have existed but were constructed in a way that left no sub-surface evidence. The SFBs are discussed in more detail below. The other type of building characteristic of this period, the post-built hall, was not identified in any of the settlements within the study area. The reason for this, like the absence of evidence for buildings in the Roman farmsteads, is uncertain. While modern ploughing had clearly heavily truncated the archaeological features, especially within

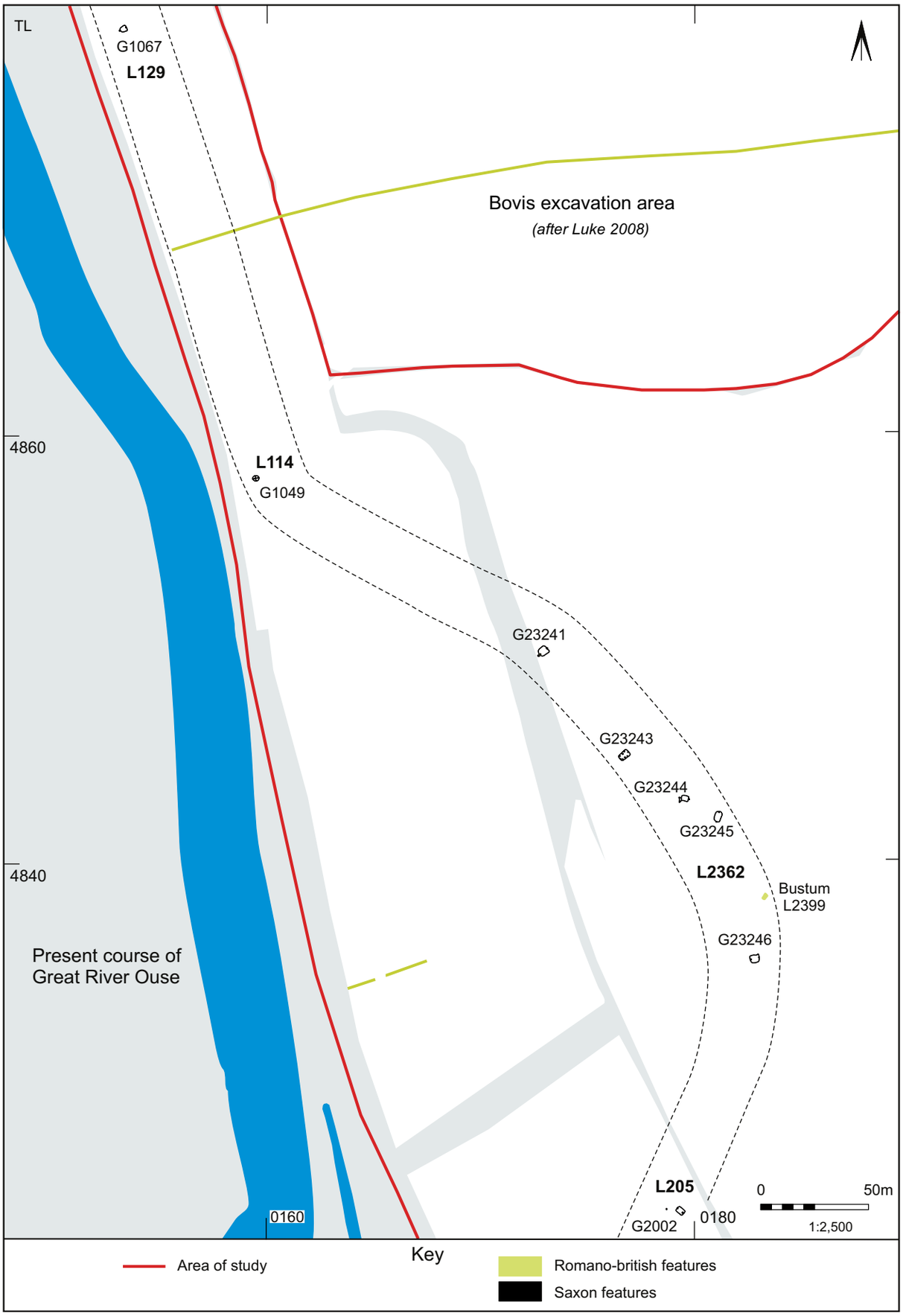


Fig. 5.35 Overall plan of early Saxon settlement SL63 on Biddenham Loop. Scale 1:2500

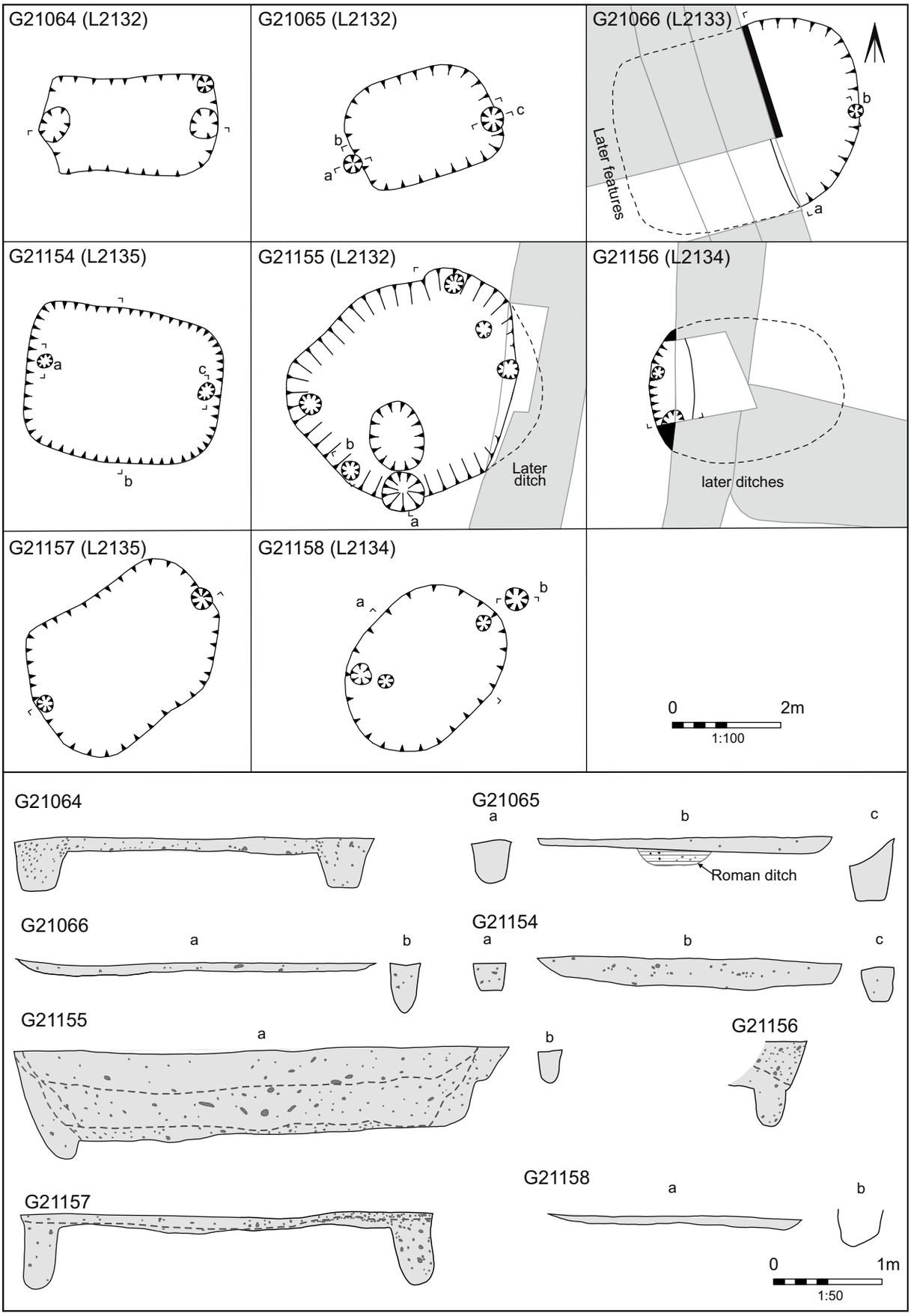


Fig. 5.36 Detailed plans and sections for SFBs in early Saxon settlement SL62, in G number order (1 of 3). Scale 1:100

Box 21: Early Saxon settlement at Honey Hill (Biddenham Loop)

This reconstruction by Cecily Marshall aims to give an impression of what the early Saxon settlement to the north-east of the Biddenham Loop might have looked like.

The core of the settlement was established within a previously unoccupied enclosure on the periphery of a Roman farmstead. It is unclear if any of the farmstead's buildings remained in use; this is thought unlikely and none are shown above. This part of the Biddenham Loop is known as Honey Hill, a name which may derive, in part, from a surviving early Bronze Age burial mound (shown in the foreground).

A number of characteristics distinguish the early Saxon settlements from those of the Roman period. No new boundaries were created, although these could have taken the form of fences or hurdles which have left no sub-surface traces. There is some evidence for spatial organisation — seen here in the three clusters of small buildings — but nothing like that of the Roman period, when different enclosures within the farmsteads were used for different activities.

The only definite Saxon buildings within the settlement are the sunken-featured buildings, which take their name from the sunken area forming the central component of the structure. No post-built halls, which represent the other type of building typically found on settlements of this period, were identified. However, the location of such buildings has been postulated on the basis of the clustering of the sunken-featured buildings around a central space which is devoid of other features.

The sunken-featured buildings produced a range of textile-working tools, loomweights and bone/antler offcuts. These are likely to derive from the disposal of the inhabitants' rubbish, rather than being directly related to the use of the buildings. However, they do give a vivid impression of the type of craft-related activities taking place within the settlement.

NOTE. As with previous reconstructions there is no firm evidence for the nature of the flood plain and river channels at this time. It is also uncertain to what extent the Roman landscape of hedges and trackways survived.

the Biddenham Loop, small post-holes did survive within settlements SL62 and SL165. It may be that the building techniques of the Roman period, which did not use earth-fast foundations, continued in use. Another possibility is that post-built halls were located some distance from the SFBs, as at Pennyland, Milton Keynes (Williams 1993, fig. 25). However, this explanation seems unlikely, given the large scale of the excavations within the study area.

Settlement SL62 covered an area of more than 6ha. It comprised a concentration of thirteen SFBs (L2135) within a pre-existing Roman enclosure and another seven SFBs in more peripheral locations (Fig. 5.32). The arrangement of the SFBs within the enclosure suggested

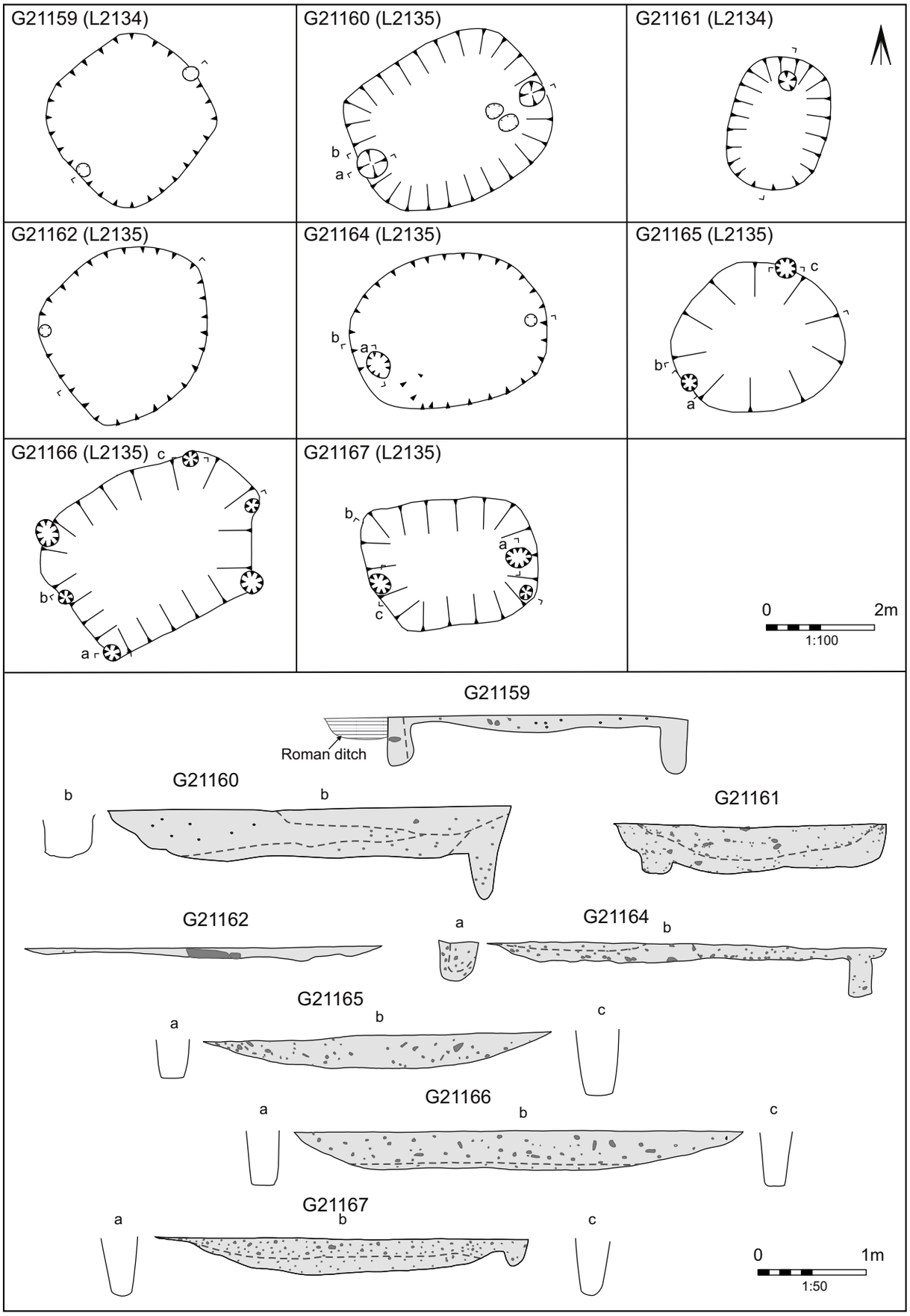


Fig. 5.37 Detailed plans and sections for SFBs in early Saxon settlement SL62, in G number order (2 of 3)
Scale 1:100

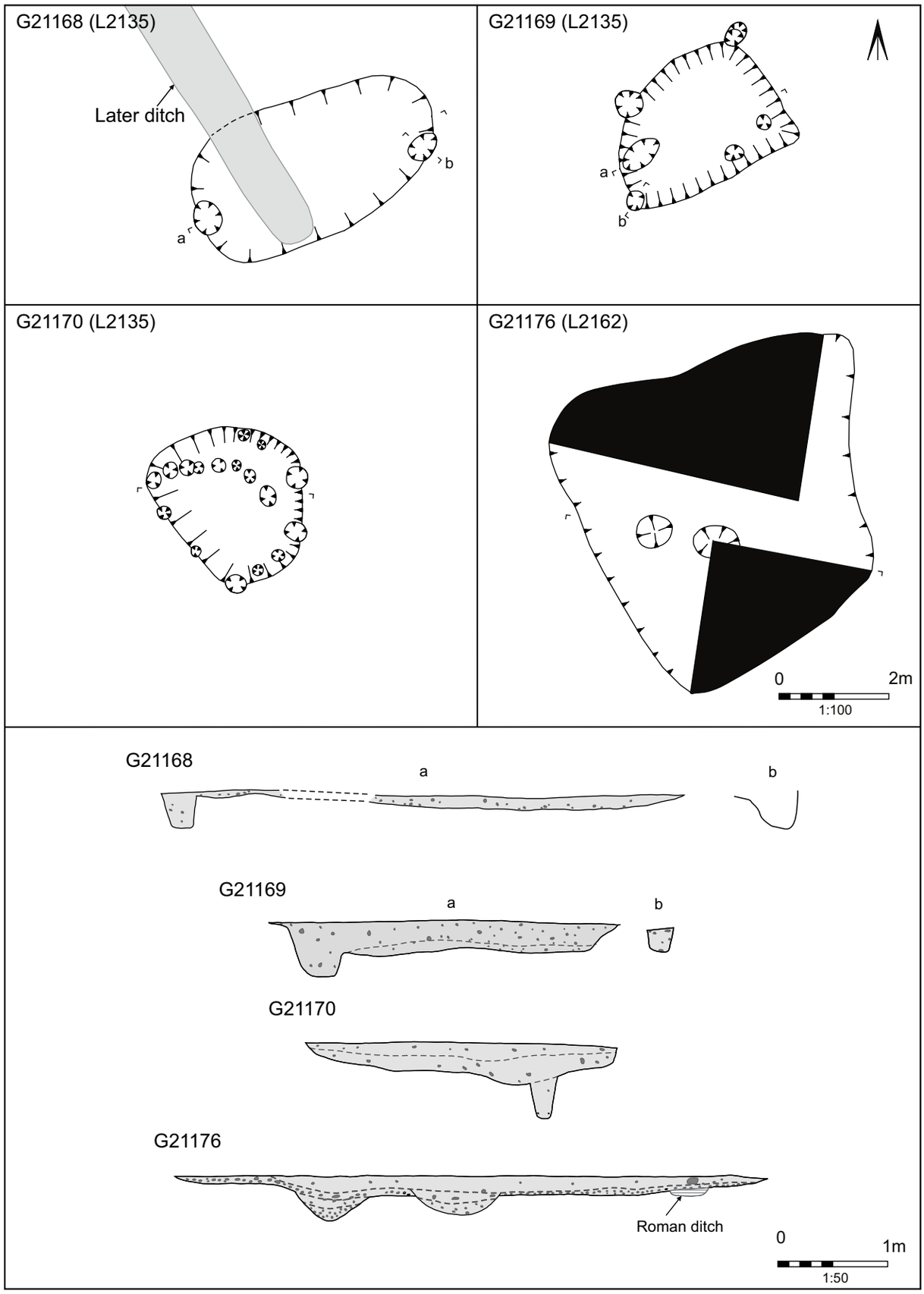


Fig. 5.38 Detailed plans and sections for SFBs in early Saxon settlement SL62, in G number order (3 of 3). Scale 1:100

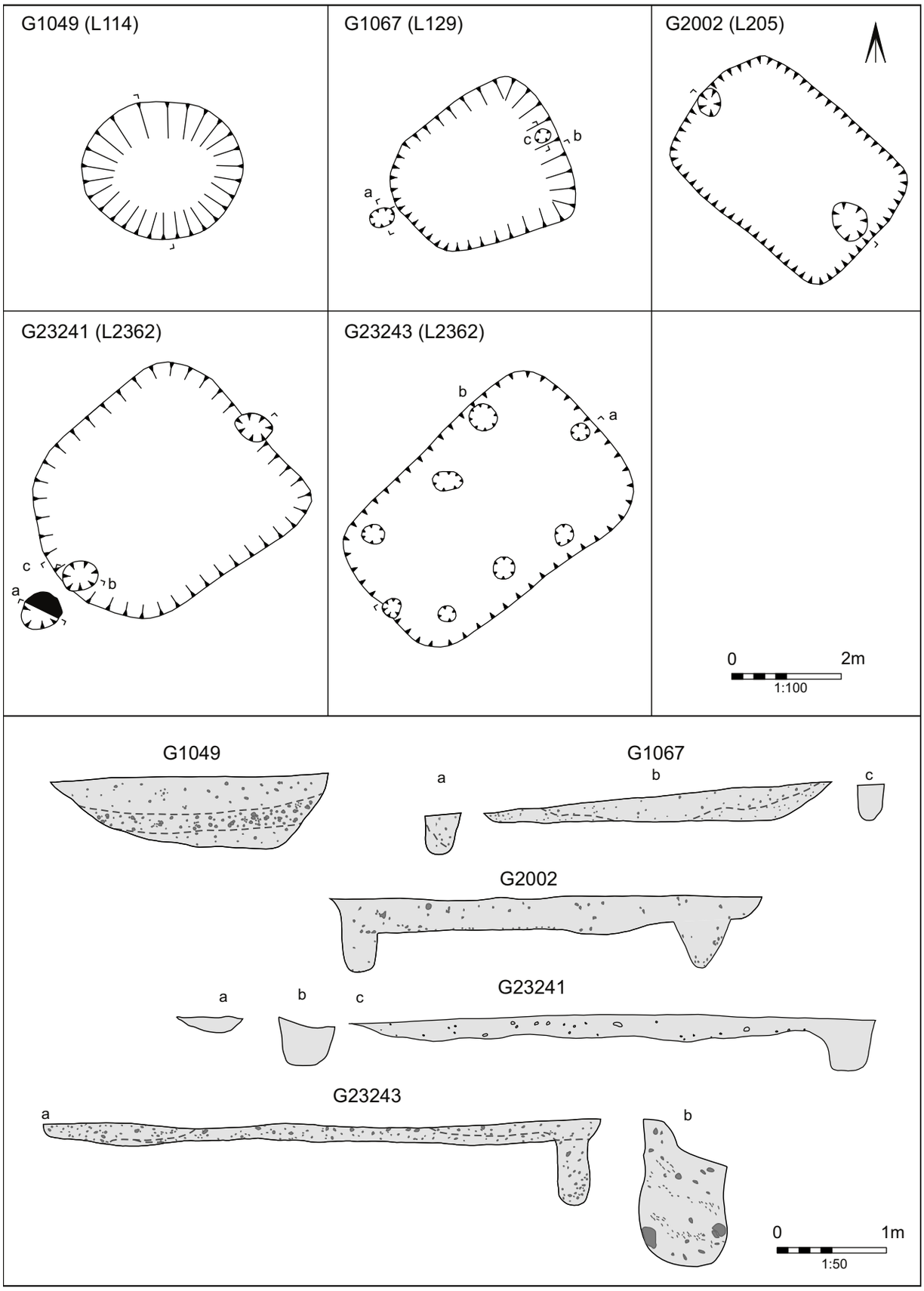


Fig. 5.39 Detailed plans and sections for SFBs in early Saxon settlement SL63, in G number order (1 of 2). Scale 1:100

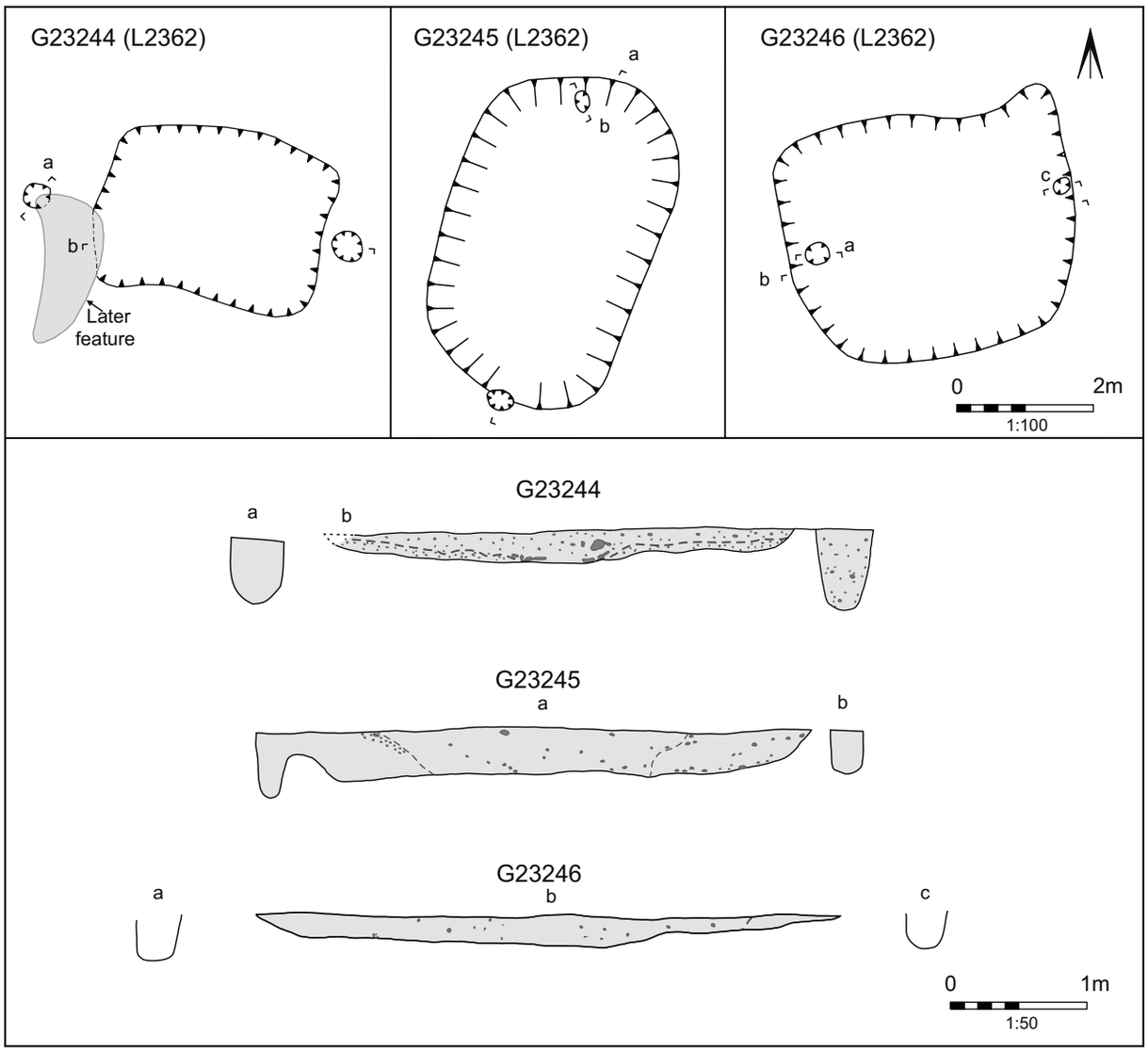


Fig. 5.40 Detailed plans and sections for SFBs in early Saxon settlement SL63, in G number order (2 of 2). Scale 1:100

a degree of spatial organisation — three clusters of four SFBs surrounded a central space, which contained a single SFB (G21169), dispersed post-holes (which may be evidence for a post-built hall) and small pits (Fig. 5.33). This arrangement of buildings may be related to either settlement organisation or chronology. At Brandon Road, Thetford, Norfolk, seven SFBs were arranged equidistant around a central space which contained a post-built hall (Atkins and Connor 2010, 110 and fig. 9). Although a much larger settlement, West Heslerton, N. Yorks., featured different zones for different activities; SFBs were present only in the craft-working and multi-purpose zones, while the residential zone contained only post-built buildings (Powlesland 2000, fig. 3.2). Within SL62 the seven SFBs in more peripheral locations (L2132 (two), L2133 (one), L2134 (three) and L2162 (one)) were similar in form and contained similar domestic and craft debris to those within the enclosure. The only observable difference was that they were all located adjacent to Roman boundaries, a phenomenon seen on other sites, such as Bridgman Joinery, Harrold (Luke and Preece 2012, 37).

On the west side of the Loop settlement SL63 comprised eight SFBs dispersed in a sinous linear fashion over 600m (Fig. 5.35). They would all have been on the periphery of the middle Bronze Age fields, which were still in use in the Roman period (Fig. 5.1) and perhaps even in the 5th–6th centuries. Five of the SFBs (L2362) were loosely clustered over a distance of 170m. A similar loose cluster of SFBs represented the early phase of Saxon settlement at Pennyland, Milton Keynes (Williams 1993, fig. 52). Within L2362 four of the SFBs formed a south-east–north-west alignment which, if projected south-east, would be close to the Romano-British *bustum* burial. The other three SFBs were in more isolated locations (L114, L129 and L205) closer to the river. Evidence for similar contemporary rural settlements often takes the form of apparently isolated SFBs, as at Oakley Road, Clapham (Albion in prep.), Bridgman Joinery, Harrold (Luke and Preece 2012, 37), and Hartigans, Milton Keynes (Williams 1993, 185). It is sometimes suggested that such isolated SFBs were part of larger settlements in adjacent unexcavated land. However, owing to the exten-

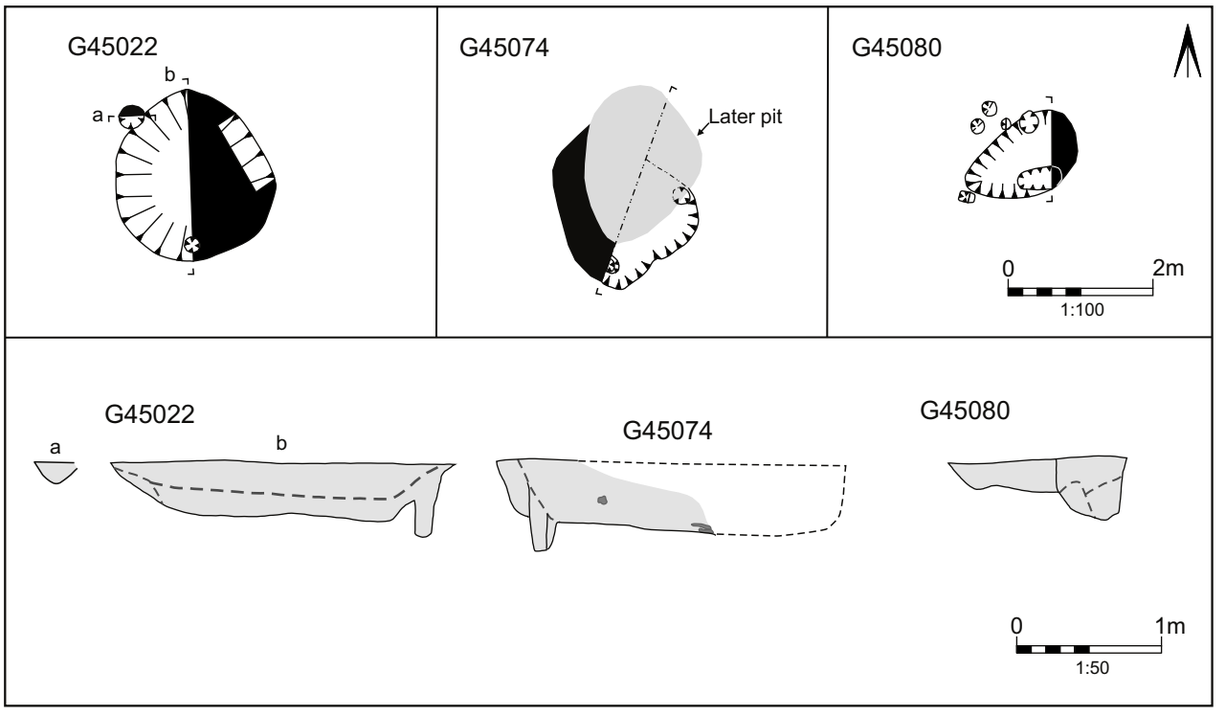


Fig. 5.41 Detailed plans and sections for possible SFBs in early Saxon settlement SL165, in G number order. Scale 1:100

sive nature of the excavations, this is not likely to be the case within the Biddenham Loop.

Settlement SL165 covered an area of 3.5ha. It was located on previously unsettled land in an area of peripheral Roman activity SL156 (Fig. 5.34) close to the Kempston Church End roadside settlement. It is the first settlement within the study area to be located on clay rather than gravel since the late Bronze Age/early Iron Age settlement SL125 that occupied the same location. Feature distributions suggest a domestic core (L4518) *c.*1ha in extent and containing three possible SFBs and a zone of peripheral activity to the south-east (L4506, L4517 and L4519). The latter appears to be bounded to the south-east by a Roman trackway leading to the roadside settlement (Fig. 5.32). Although domestic core L4518 is centred on an area of Roman bedding trenches, the SFBs and the majority of the other features are not dug into them, possibly suggesting that this land was still being cultivated in some way.

Some of the settlements within the study area exhibit a degree of internal spatial organisation not always apparent on early Saxon sites. The clusters of SFBs L2135 within settlement SL62 could indicate the presence of different family groups living within the same settlement, as was suggested at Pennyland, Milton Keynes (Williams 1993, 54). However, clusters of SFBs at Stratton, Beds., were interpreted as evidence for a settlement that shifted over an extensive area (Edgeworth 2007, 93) and, as discussed above, this is one possible explanation for the peripheral SFBs within settlement SL62.

Sunken-featured buildings

(Figs 5.36–5.41, Table 5.6, Plates 5.32–5.42)

A brief introduction to the *Grubenhaus* or sunken-featured building (SFB) is necessary, as these are the only definite Saxon buildings within the study area; they represent the principal identifiable component of the Saxon settlements. SFBs are characterised by a sunken area or pit that forms the central component of the structure, hence their name. 'They are typically sub-rectangular in shape, measuring *c.*3m × 4m in area × *c.*0.3–0.5m in depth with sides sloping down to a roughly flat base. There are often two post-holes along the short walls of the pit, often referred to as the gable post-holes, although the number of post-holes varies from zero to six, including additional post-holes in the four corners of the pit' (Tipper 2004, 1). This description covers all the SFBs within the study area (Plates 5.32–5.34), with the exception of the three in SL165. Although the latter had flat bases and associated post-holes, they were not sub-rectangular and were all less than 2.4m long. They are referred to as possible SFBs throughout this report. Plans and sections for all SFBs within the study area are shown, in G number order by settlement, on Figs 5.36–5.41.

In terms of origins, SFBs are 'unknown in Roman Britain' and clearly derive from north-west Europe (Tipper 2004, 7), hence the Germanic name *Grubenhaus*. In England they are found from the 5th century onwards and include a growing number of examples dated to the 8th and 9th centuries (Tipper 2004, 7), such as G23395 from the study area (see below, p. 351). It is generally accepted that the SFB, as a building type, was introduced into Britain by immigrants from the continent, but, as Wingfield said, 'they may also have been used by the British population' (1995, 32).

Determining the shape of SFBs is somewhat subjective. However, within the study area it is clear that the majority of the sunken areas associated with the buildings were rectangular with rounded corners (*e.g.* G21064 (Plate 5.35), G21065, G21154, G21155, G21157 (Plate 5.36), G21166 (Plate 5.37)). The others appear to be oval in plan (*e.g.* G21158 (Plate 5.38), G21161, G21164,

Plate 5.32 General view of location of early Saxon settlement SL62 with river Great Ouse in background — metal detecting was systematically undertaken before and during hand excavation of the SFBs

Plate 5.33 Where recognised as such prior to excavation, all SFBs were dug in quadrants — here the second quadrant of SFB G21167 (L2135, SL62) is being excavated with construction works underway in the background

G21168 within settlement SL62 and G1049 within settlement SL63), or even circular (*e.g.* G21162, G21165 within SL62 and G45022 (Plate 5.39) within SL165). Two within SL165 (G45074 and G45080) were more pear-shaped (Fig. 5.41), but these are the least convincing SFBs within the study area. It is uncertain to what extent these variations in shape are truly representative of how the sunken areas were originally dug. However, there does seem to be some spatial significance in the distribution of the different types within L2135 in settlement SL62 (see below). While some changes to the sides of the sunken area occurred over time in the experimental SFB at West Stow, changes to the actual shape were not noted (Tipper 2004, 104–6).

On average the SFBs within settlement SL62 were *c.*3.4m long, 2.5m wide and 0.3m deep (excluding G21176, whose interpretation is less certain) (Figs 5.37 and 5.38). The SFBs within SL63 were noticeably larger — on average they were *c.*4m long, 3.1m wide and 0.3m deep (Figs 5.39 and 5.40). The three possible SFBs within settlement SL165 on Land west of Kempston were noticeably shorter, at less than 2.4m, and more rounded in shape (Fig. 5.41). The average lengths of 4.05m at Brandon Road, Thetford, Norfolk (Atkins and Connor 2010, 112), 4.0–4.1m at West Stow, Suffolk (West 1985, 115), and 4.1m at Pennyland, Milton Keynes (Williams 1993, 79), are comparable to those of the SFBs within settlement SL63. Such consistency in length may reflect

Plate 5.34 All SFBs were fully excavated — here G21135 (L2135, SL62) is being cleaned after excavation has been completed

Plate 5.35 Rectangular SFB with rounded corners G21064 (L2132, SL62), from the east (1m scale)

a number of factors, such as functional requirements or the size of available timber. It is interesting to note that the three smallest SFBs (G21065, G21159 and G21161) were all located in peripheral areas, although the significance of this is uncertain.

There is a marked consistency in the alignment of the SFBs within the study area; the majority are aligned either east–west or north-east–south-west (Figs 5.36–5.41). Clearly there may be a number of reasons for the positioning of a building, such as its relationship to other structures, routeways and boundaries. However, two of the most important are prevailing wind and light. None of the SFBs within the study area produced evidence for the position of doorways. However, if they were east-facing, they would have avoided the prevailing winds; and if south-facing, they would also have maximised the amount of sunlight entering the building.

In West's (1985) analysis of the Saxon settlement at West Stow, Suffolk, the SFBs are classified on the basis of the position of their constituent posts. The majority of the SFBs on the Biddenham Loop have two opposing central posts in the shorter sides of the sunken area, corresponding to West's Type A. These represent the predominant type in England and on the continent during this period (Tipper 2004, 68). They are presumed to have supported a 'tent-like roof of thatch, sloping down to the ground, or low turf or mud walls, on the long sides' (Booth *et al.* 2007, 84). SFBs with more complex arrangements of post-holes are known within the study area. The positions of the posts along the short sides of the sunken area can be summarised as follows:

- **Settlement SL62, twenty SFBs:** ten had central pairings of opposing posts (*e.g.* G21064 (Plate 5.35) and G21157 (Plate 5.36)), with a further three probable; two had three pairs of opposing posts (*e.g.* G21166 (Plate 5.37)); in five cases the evidence was inconclusive.
- **Settlement SL63, eight SFBs:** seven had central pairings of opposing posts (*e.g.* G1067 (Plate 5.40)), of which G23243 also had three pairs of opposing

Plate 5.36 Single central pairing of opposing posts in SFB G21157 (L2135, SL62), from the north-west (1m scale)

posts on the longer sides of the sunken area (Plate 5.41); in one case the evidence was inconclusive.

- **Settlement SL165, three possible SFBs:** two probably had central pairings of opposing posts (Plate 5.39); in one case the evidence was inconclusive. Although these features were associated with post-holes and early Saxon pottery they were less convincing as SFBs than those within SL62.

In the majority of the SFBs within the study area the central posts were located well within the sunken area. In three cases, G21065 (SL62), G1067 (SL63) and G45022 (SL165), one of the paired posts lay outside the sunken area. Only in the case of G23244 (SL63) did both posts lie outside the sunken area. There was no apparent correlation between this arrangement and the size or alignment of the buildings. Replacement or reinforcing posts on the same axis as the gable posts were present in buildings G21158 and G21160 (both SL62) and G23241 (SL63). The absence of postpipes within the post-holes means that there is no firm evidence for the type and size of timber used. It also suggests that at least these timbers were removed for reuse.

A number of the SFBs (all settlement SL62 unless stated) featured additional posts in the following locations:

- **Corner:** G21064 (1), G21167 (1), G21169 (3?)
- **Near to the side:** G21156 (2), G21158 (2), G21169 (3)
- **Away from the side:** G21155 (1), G21160 (2) (Plate 5.42), G21176 (2)
- **Multiple posts:** G21170. Some were located on the sides, suggesting pairing, but the majority form an internal arc-shaped arrangement somewhat similar to that seen within an SFB at Hartigans, Milton Keynes (Williams 1993, 185 and fig. 80)
- **Clustered on one side, both inside and outside the sunken area:** G45080 (SL165)

Plate 5.37 Three pairs of opposing posts in SFB G21166 (L2135, SL62), from the south-east (1m scale)

Plate 5.38 Oval SFB G21158 (L2134, SL62), from the north-east (1m scale)

Plate 5.39 Possible SFB G45022 (L4518, SL165), from the west (1m scale)

Plate 5.40 Central pairings of posts in SFB G1067 (L129, SL63), from the north (1m scale)

Plate 5.41 Three pairings of posts in SFB G23243 (L2362, SL63), from the south

Plate 5.42 Additional posts within SFB G21160 (L2135, SL62), from the north-west (1m scale)

As noted above (p. 272), each of the three clusters of SFBs within the core area L2135 of settlement SL62 comprised four buildings, both sub-rectangular and oval in shape. It is interesting that the two SFBs with three pairs of opposing posts (G21155 and G21166) occurred in different clusters and that the third cluster contained the only other possible candidate (G21170) for this type of building. This may indicate that the different types of SFB served different functions and that each cluster required a standard 'suite' of buildings. It is also, of course, possible that not all the buildings were occupied at the same time, in which case the ones disused first might be the more oval ones because they will have been subjected to a longer period of weathering.

The majority of the SFBs were filled by a dark homogenous soil. Where multiple fills were identified, some, such as G21155, exhibited a sterile primary fill followed by dumping of domestic and craft debris in the secondary and tertiary fills, whereas others, such as G21160, exhibited dumping of domestic and craft debris in the primary and secondary fills, but not in the tertiary fill. Unfortunately, the SFBs within the study area cannot advance the analysis of such differences because most of them contained only a single, uniform fill. Tipper identified that SFBs have distinctive deposits that consist of two or three stratified fills (2004, 106). The lower fill was interpreted as a combination of 'silting through cracks between suspended floor boards and/or the remains of superstructure, in particular external turf wall' (Tipper 2004, 107). The middle fill was interpreted as the 'deposition of material from other sources, including rubbish dumps' (Tipper 2004, 107) and the upper fill the result of 'natural silting and accumulation of deposits in a hollow' (Tipper 2004, 107). As Tipper also said, this does not mean that all tripartite fills formed in the same way and the nature of the artefact content often complicates the situation (Tipper 2004, 107).

Other than the shape of the sunken area and the position of the post-holes, the only other possible evidence for the buildings' superstructure comprised fragments of fired clay.

> Diagnostic elements recovered from settlement SL62 include thirty-eight sand-tempered daub fragments (406g) which retain impressions of circular wattles, ranging in diameter from 35–40mm, some placed at right angles to each other. Each piece has one finished surface — an oxidised external wall face, and wattle impressions on the reduced sides and reverse (CD Section 2; Wells, CBM).

There has been much debate as to whether artefacts found within SFBs are related to the buildings' original function. Within the study area, where artefacts associated with craft activities were either in the primary fill or on the base of the sunken area, there was nothing about their nature or position to suggest that they were necessarily related to activities undertaken within the building. In terms of pottery,

> … two examples of vessel links within individual SFBs occurred in the sole fills of G21155 and G21169, probably indicating that the sherds had been deposited together, or that they had broken at the time of, or post-, deposition. Vessels links were established between the primary and secondary fills for four vessels within G21161 (one example), G21167 (two examples) and G21155 (one example). This suggests disposal of broken pots from a secondary source, perhaps a midden, in abandoned SFBs close to dwellings (CD Section 2; Wells, Pottery).

All the evidence from the study area suggests that the sunken area was used for the disposal of domestic and craft debris after the building had gone out of use. Therefore, artefacts within the fills are unlikely to be associated with the buildings' original function. This is consistent with Tipper's detailed study of the character and deposition of artefact assemblages within SFBs (Tipper 2004). The infilling of an experimental SFB dug at West Stow demonstrated that the sunken area 'would have taken a considerable amount of time to fill in without the deliberate deposition of material' (Tipper 2004, 106). The absence of artefacts in any of the post-holes within the SFBs in the study area may indicate that, after removal of the post, the holes were rapidly infilled by slumping, as observed within the experimental SFB at West Stow (Tipper 2004, 105).

For decades there has been a great deal of debate about the sunken area of this type of building — specifi-

cally, does its base represent the floor of the building or does it represent an open space below a suspended timber floor? The SFBs within the study area produced no positive evidence for either interpretation. However, it is probably significant that no floor surfaces, trample layers or hearths were found at the base of the sunken areas of any SFBs. After a comprehensive study of the evidence nationally, Tipper took the view that the sunken area represented an open space below a suspended floor. This would have created a dry environment for storage above by allowing the free circulation of air beneath a wooden floor (2004, 92–3, 184–5).

The presence within the SFBs in the study area of numbers of textile tools, loomweights and bone/antler offcuts might suggest that these buildings were used for craft-related activities or storage. However, as described above, although such objects are commonly found in the sunken area, none of this material is necessarily related to the function of the SFB within which it was found. The objects do, however, give an indication of activities being carried out in the vicinity. SFBs are usually interpreted as ancillary to main domestic buildings (Booth *et al.* 2007, 85) and they 'might have served a variety of functions at the same and/or different times during their use' (Tipper 2004, 185).

Other evidence for buildings

No buildings, other than the SFBs, were positively identified within the study area. Rectangular buildings, often referred to as post-built halls, are rarely found on contemporary settlements in Bedfordshire (*e.g.* Medbury Lane and Village Farm, near Elstow (Albion in prep.)), although they are known in the wider region (*e.g.* Pennyland, Milton Keynes (Williams 1993, 72–7)). The absence of direct evidence for such buildings within the study area could mean that, as in the Roman period, they were constructed in a way that has left no sub-surface traces. However, there is also indirect evidence for such structures. The arrangement of the SFBs in L2135 is suggestive of three clusters, each around a central space that could be the site of a post-built hall (Fig. 5.33). A similar layout was seen at Brandon Road, Thetford, Norfolk, where seven SFBs were arranged around a central space containing a post-built hall (Atkins and Connor 2010, 110 and fig. 9). Loose clusters of post-holes were found at the two settlements near Elstow and within the study area (*e.g.* within the central area of L2135 (SL62) and within the peripheral area L4519 (SL169)). Although these do not form coherent building plans, they could be associated with structures for which no other evidence has survived.

Some fastenings and fittings used in buildings, such as nails, staples and wall hooks, were found in the SFBs within SL62. These could have derived from the wider settlement, but none are typologically datable 'and it is therefore likely that some of the nine items recovered in this category may have derived from the earlier activity' (CD Section 2; Duncan).

Evidence for household furnishings comprised a single antler box mount (CD Section 2, Duncan, Fig. 14, OA228) found within SFB G21064 (SL62). 'It is possible this example may have been of late Roman date, but considering how few antler items were recovered from the Romano-British deposits on the Biddenham Loop, OA228 more probably belongs to the Anglo-Saxon period' (CD Section 2; Duncan).

Other features

A small number of other settlement-type features, such as pits and post-holes, were identified. Pits appear to be fairly uncommon on rural settlements (Hey 2004, 71), so they are described here in some detail. The majority contained no datable artefacts, in contrast to the Roman and post-medieval/modern features in the vicinity. This, and their proximity to the SFBs, is often the only reason for their assignment to the early Saxon period. In a small number of cases, such as G21123 (Fig. 5.32), they were stratigraphically later than Roman features.

Seven post-holes, seven small pits and one large pit were found within settlement SL62; all were shallow. The post-holes were typically <0.4m in diameter. Most were situated within the presumed domestic focus L2135 and were located in the space between the SFB clusters (Fig. 5.33). It is possible that they are the only surviving evidence for post-built structures, but no coherent building plans could be discerned. With the exception of G21123 (2m × 1m wide and 0.2m deep), all the pits within SL62 were under *c.*1m in diameter and 0.4m deep. Very few produced finds, although G21078 (within L2162 to the east) contained the semi-complete lower part of an undiagnostic early Saxon pottery vessel (eighteen sherds, 370g). If this were originally a deliberately placed complete vessel, then it might, given its peripheral location, represent a grave good associated with a burial that has subsequently been removed by modern ploughing (see p. 321 for further discussion).

Settlement SL165 contained an unusually large number of pits and post-holes. Twenty-four pits were located within the domestic core L4518, all but four of which lay either to the north or to the south of the Roman bedding trenches (Fig. 5.34). Their size and shape were not dissimilar to those of the possible SFBs in this area (see above). However, their U-shaped profile and the absence of post-holes make it more likely that they represent small-scale quarries. The six pits G45028 located mainly to the north of the bedding trenches were all <1.5m in diameter and 0.4m deep. They produced small quantities of early Saxon pottery and animal bone. The pits to the south of the bedding trenches occurred in two clusters near the limit of the excavation area. The southern cluster contained both large pits G45020/G45033 (*c.*2m × 1.6m × 0.4m deep) and smaller pits G45024/G45036 (*c.*1.5m in diameter × 0.4m deep), a small number of which were intercutting. They produced small quantities of early Saxon pottery and larger quantities of animal bone, although approximately half were sterile. The smaller, northern cluster contained only five pits, again both large (G45027) and small (G45037). They also produced small quantities of early Saxon pottery and animal bone. Two possible post-holes (G45031) to the south-east of these pits were unusual in that they contained eight sherds of early Saxon pottery.

The area between the domestic core L4518 and the Roman trackway to the east contained numerous pits and post-holes (L4516/L4517/L4519). Other than post-hole clusters G4501 (L4519) and G45105/6/7 (L4517), the features were dispersed across a wide area and no discernible patterns could be discerned. It is noteworthy that post-hole cluster G45105/6/7 (L4517) and small pit

G45021 (L4516) were located adjacent to the Roman trackway. Other than small quantities of animal bone, only pit G45021 (L4516) produced diagnostic finds — two sherds of early Saxon pottery and a spindle whorl (OA212) made in an early Saxon pottery fabric.

In summary, the pits within the early Saxon settlements in the study area are quite diverse in terms of form and spatial location. The majority of those on the Biddenham Loop (*e.g.* in L2135 (SL62)), were smaller than those on Land west of Kempston (*e.g.* L4518 (SL165)). In contrast to the SFBs, only a minority of the pits contained domestic and craft debris, always in relatively small quantities (see below). It seems likely that, regardless of their original function, they were not used for the disposal of rubbish in the way that the SFBs were. Comparable pits and fills have been found at other contemporary settlements, such as Brandon Road, Thetford, Norfolk (Atkins and Connor 2010, 29), Yarnton, Oxon (Hey 2004, 103), and Pennyland, Milton Keynes (Williams 1993, 90–92).

Although the use of water pits/wells is commonplace on contemporary settlements, such as Brandon Road, Thetford, Norfolk (Atkins and Connor 2010, 31), and Pennyland, Milton Keynes (Williams 1993, 86–90), no such features were identified within any of the settlements within the study area. The reasons for this are unclear. It is possible that, at least on the Biddenham Loop, sufficient water could be collected from the river. It is also possible that water pits/wells were more associated with agricultural than domestic activity and are therefore located some distance from the settlement, as at Brandon Road, Thetford, Norfolk, where they were *c.*100m away (Atkins and Connor 2010, 31). Although the excavations on the Biddenham Loop were quite extensive, settlement SL165 on Land west of Kempston was located adjacent to the limit of the excavation area. A final possibility, which may also explain the absence of burials, is that post-medieval quarrying, which occurred in the vicinity of both settlements on the Biddenham Loop, has destroyed any such evidence.

Finds assemblages

The majority of the finds were recovered from the SFBs, which is to be expected given the scarcity of other settlement features, especially on the Biddenham Loop. The situation is a little different within settlement SL165 on Land west of Kempston and this is described in more detail below. The quantities of finds varied between SFBs; a few patterns were apparent, but it is unclear if any of these are genuinely meaningful. For example, the two SFBs with the largest quantities of finds within settlement SL62 were those with three opposing post-holes (G21155 and G21169). They contained, respectively: 464 and 167 sherds of early Saxon pottery; 28kg and 3.2kg of animal bone; and a relatively large numbers of other artefacts. While this may be significant, it needs to be noted that G21155 was the deepest SFB within the settlement.

A considerable degree of residuality is evident within the assemblages from the SFBs in settlement SL62. 'Given that the SFBs were located within an area of Romano-British activity, it is unsurprising that there are some residual items' (CD Section 2; Duncan). There are also some artefacts which are not closely dated and could be either Roman or Anglo-Saxon in date. Some of the Roman artefacts present may be

> … due to the Saxon penchant for collecting and recycling Roman items. The most obvious of these is the later 3rd- to 4th-century coin from SFB G21155 (RA7), which, like many Roman coins found in Anglo-Saxon deposits, is perforated, presumably for suspension around the wearer's neck (CD Section 2; Duncan).

Interestingly, only one quern fragment was recovered from all the SFBs in SL62; it does not retain any typologically distinctive features, so may be Roman in date (OA221).

Pottery was the most commonly occurring find within the SFBs in settlement SL62. Overall, 17% of the assemblage comprises Roman sherds; the percentage within each SFB ranged from 1% (G21160) to 95% (G21161). It is not clear whether the latter might indicate a particularly early SFB or the continued use of Roman pottery, but it is interesting to note that this building was within one of the peripheral clusters of SFBs L2134 and was the closest to the present course of the river.

> Considerable variation was observed between assemblages recovered from each SFB …. The quantity of pottery ranged from five sherds (70g) in G21168 up to 472 sherds (12.5kg) in G21155, although variations in depth were clearly a factor. The average sherd weight ranged from 10g (G21167) to 27g (G21155, G21170) (CD Section 2; Wells, Pottery).

The only possibly significant variation in the assemblage from SFBs in different parts of the settlement was that decorated vessels were recovered from L2132 and L2135, but not from the buildings in L2133, L2134 and L2162 (CD Section 2; Wells, Pottery).

Craft-related items are by far the best represented category of artefacts from the SFBs within SL62. Despite this, the evidence is not plentiful, with generally one textile-related item per SFB (CD Section 2; Duncan). At nearly 3000 fragments (40.2kg), animal bone was also a common find, although the quantities within each SFB were highly variable. Four contained less than 10g (G21066, G21154, G21158 and G21168) while seven contained over 1kg (G21155, G21156, G21158, G21160, G21165, G21166, G21169); of these, G21155 contained over 28kg (CD Section 2; Maltby).

> The finds assemblage from SL63 was dominated by animal bone, in contrast to that from settlement SL62, in which pottery was prevalent. … As with SL62, variation was observed between assemblages recovered from each SFB. The quantity of Saxon pottery ranged from five sherds (24g) in isolated SFB G1049 to seventeen sherds (119g) in G23243. The average Saxon sherd weight ranged from 5g (G1049) to 20g (G23245) (CD Section 2; Wells, Pottery).

As with settlement SL63, the bulk of the other artefact assemblage related to craft activities, with textile-related items dominating; however, quantities were again small. Of the non-craft objects the most interesting were two strap mounts (OA276 and OA277) and an arrowhead or spearhead (OA274) (for fuller discussion see CD Section 2; Duncan). Animal bone comprised nearly 1500 fragments (10kg); most was found in SFBs G23243 (3.5kg) and G23245 (5.4kg).

The domestic debris within settlement SL165 on Land west of Kempston was dominated by animal bone rather than pottery; it was also found within pits, as well as SFBs. However, with the exception of animal bone, the actual quantities of material within individual features were much smaller. In addition, several of the pits were sterile, suggesting that they had not been used for the

disposal of archaeologically visible rubbish (*cf.* Yarnton, Oxon (Hey 2004, 71)).

> The majority of the [pottery] assemblage (forty-seven sherds: 802g) derives from the fills of pits and SFBs within settlement core L4518. The three SFBs yielded eighteen undecorated sherds (368g), most deriving from the tertiary fill of G45022 (CD Section 2; Wells, Pottery).

Pottery and animal bone occurred in very small quantities in the pits and post-holes in the peripheral areas to the south-east (L4516, L4517 and L4519). The only other artefact found within this settlement was a ceramic spindle whorl (OA212), recovered from a pit within L4516 adjacent to a Roman trackway. A total of 294 animal bone fragments was recovered, all but six of which derive from domestic core L4518. Most (160, 4.8kg) of the bones were found in SFB G45022; pits in cluster G45027 were the only other element of the settlement to produce over fifty fragments (CD Section 2; Maltby).

Kempston Church End SL164/SL199

The presence of chronologically diagnostic pottery indicates the location of two areas of early Saxon activity within the former Roman roadside settlement — SL164 (within the Bypass excavation) and SL199 (*c.*400m to the south within the pipe trench adjacent to Cutler Hammer Sports Ground) (Fig. 5.1).

SL164 comprised two possible pits L503 and inhumation L509. The possible pits G5047 were *c.*60m apart, over 1.7m in diameter and under 0.5m deep. However, they produced only five undiagnostic early Saxon pottery sherds (26g). Neither was fully excavated — SG6092 was situated within an evaluation trench and the possible significance of SG6043 was not recognised during fieldwork; it was initially interpreted as the upper fill of a Roman ditch and was, therefore, only partially excavated. It is not inconceivable that it may have been an SFB, although the small quantity of pottery recovered (compared to the SFBs on the Biddenham Loop) perhaps makes this unlikely. The presence of early Saxon pottery within the upper fills of Roman ditches is discussed further below. Inhumation SG5927 (L509) contained no grave goods; it was assigned to this period because the grave was dug into a post-settlement layer. Its backfill contained three residual Roman sherds (31g) and the skeleton produced a radiocarbon date of 260–530 cal AD (SUERC-25521: 1660±35).

Interpretation of activity area SL199, *c.*360m to the south, is difficult because the remains were found within a narrow pipe trench. A shallow spread of material (G53018) containing mainly Roman but some early Saxon pottery partly overlay a Roman ditch; it may represent ground levelling. More early Saxon pottery derived from the upper fill of Roman boundary ditch G53010. The other artefact assemblage from SL199 includes five nails, a sawn animal bone (OA213), lead waste (14.5g) and two quern fragments. It would appear that much, if not all, of the assemblage from SL199 may be residual from the Romano-British settlement SL155 (CD Section 2; Duncan). Given that early Saxon pottery occurred only in the upper fill of the ditch, it is likely that this survived as a hollow. Similar spreads of material containing Saxon artefacts are known from Roman ditches on other sites, such as Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 94 and fig. 52), and Barton Court Farm, Oxon (Miles 1986, 18 and fig. 13). It is only possible to speculate as to whether hedges survived adjacent to the ditches, but this seems likely and may be one explanation for the absence of early Saxon boundaries.

As discussed above, given the difficulties of dating activity at the end of the 4th century and the beginning of the 5th century, it is not impossible that some of the features assigned to Phase 506 of the Roman roadside settlement SL155 may in fact be early Saxon in date. While they were stratigraphically the latest features, none contained early Saxon artefacts. A number were dug into the Roman road, suggesting that at least parts of it had gone out of use. Although pure speculation, if the parallel ditches L500 (Phase 506) define a new routeway, it is interesting to note that it is closer to the medieval routeway in this area than the Roman one.

No other evidence for 5th- or 6th-century activity has been found elsewhere within the roadside settlement as a result of the sewer (Dawson 2004, 52), Box End Quarry (Luke and Preece forthcoming) or Cutler Hammer Sports Ground (BCAS 1999a) investigations. It is likely, therefore, that the density and nature of occupation within the roadside settlement was fundamentally different to that of the Roman period. The existing evidence suggests that it probably comprised a small number of families possibly occupying Roman enclosures. A cemetery of probable 7th-century date was partially investigated within the sewer investigation, *c.*400m to the north of the bypass excavation. No contemporary buildings were identified, although the cemetery is situated behind Roman buildings fronting the road which may have been in use in some form. This is discussed further below (see p. 368).

Activity focus to south of The Bury, Land west of Kempston SL166

The interpretation of activity focus SL166, *c.*230m to the south of settlement SL165 (Fig. 5.1), is uncertain. It comprised two small pits, one of which (G50001) contained a semi-complete early Saxon stamped globular jar (CD Section 2; Wells, Fig. 19, P147). It was placed centrally within the pit, although post-deposition disturbance makes it unclear whether the vessel was originally upright or inverted. It contained a small quantity of burnt animal bone. A 40m × 40m area was carefully examined around the pits but no other contemporary features were found. It is possible that the pottery vessel represents a grave good associated with an isolated burial subsequently removed by modern ploughing.

V. The wider landscape

(Fig. 5.1 and 5.42)

The extensive open area excavations, in conjunction with non-intrusive surveys, have provided valuable evidence for Roman activity away from settlements. Features such as trackways, major land boundaries, fields, bedding trenches and quarries help us to understand how people used the wider landscape around their homes. Perhaps the most significant elements of this evidence are the late Iron Age/early Roman ritual complex and a 4th-century *bustum* burial. Although the early Saxon evidence is limited, it tends to suggest that the Biddenham Loop was still utilised for mixed farming. The flood plain would have continued to provide good grazing for cattle and

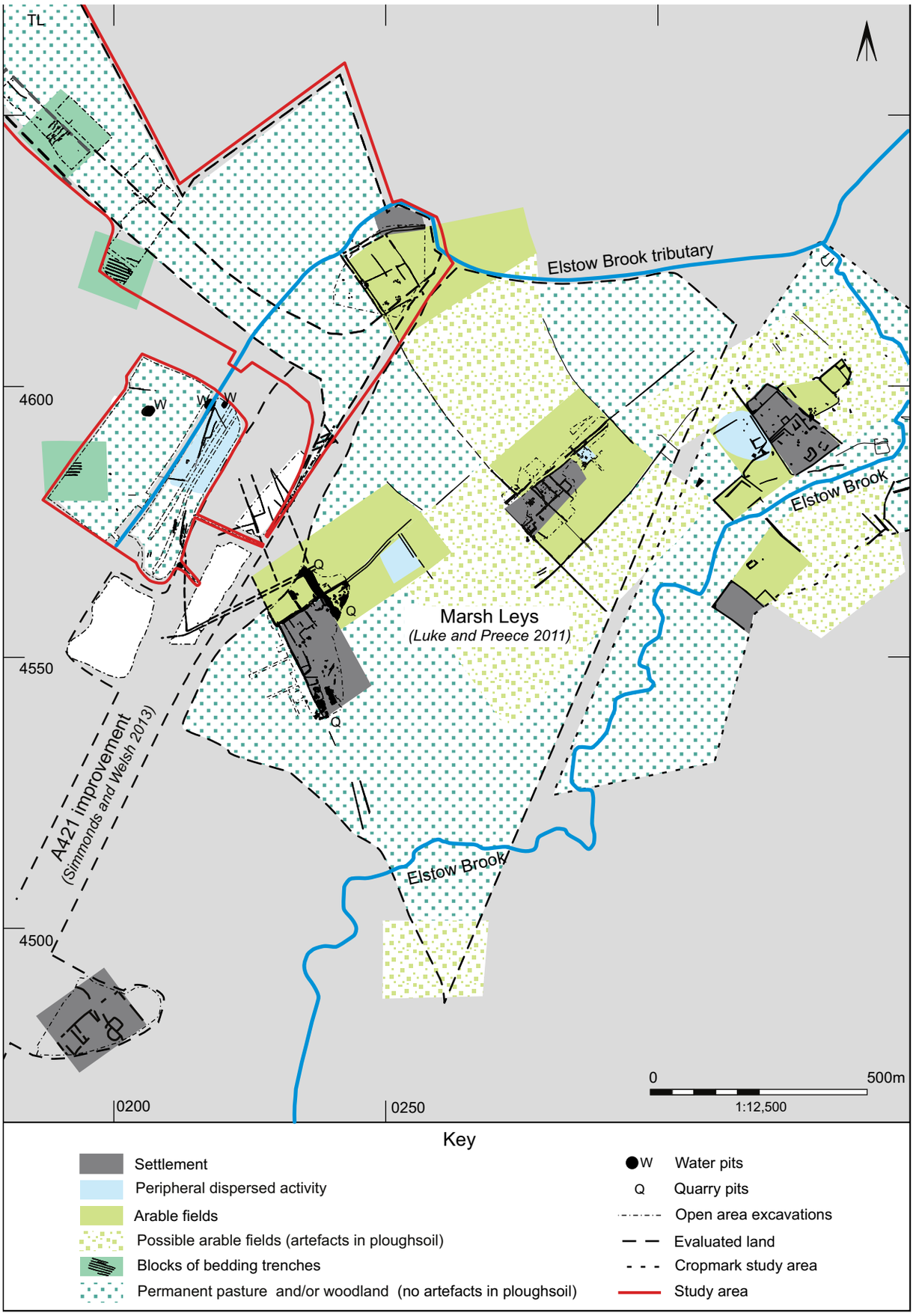


Fig. 5.42 Roman environs to the south of the study area in the vicinity of the contemporary Marsh Leys farmsteads. Scale 1:12,500

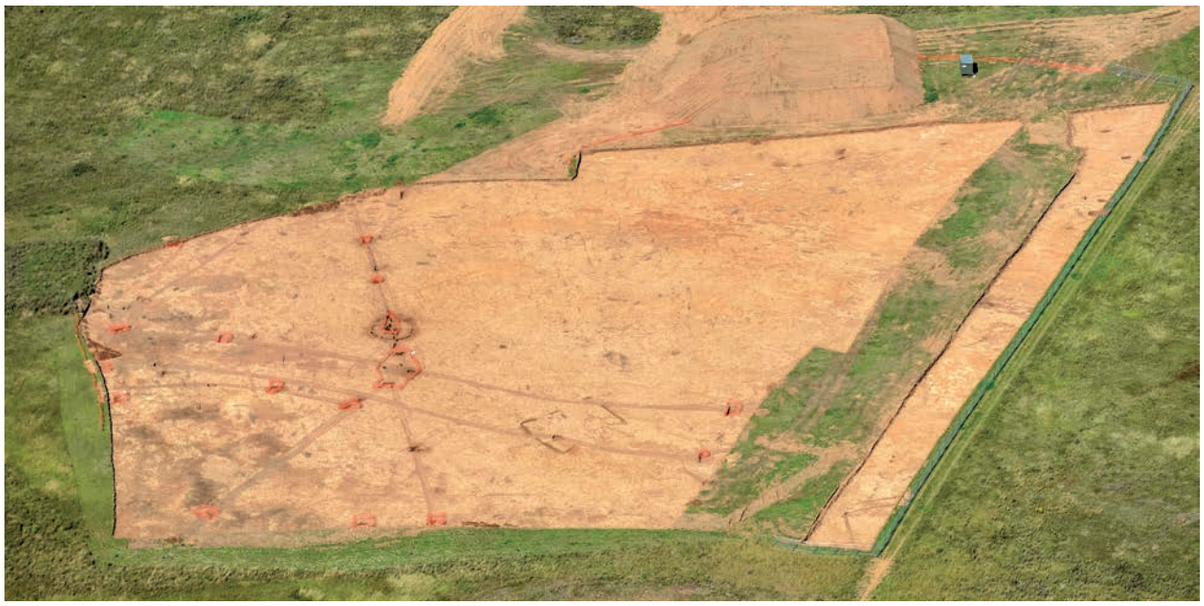


Plate 5.43 Aerial view of parallel ditches of trackway L2306 (from left to right in foreground) just north of farmstead SL54, from the south

possibly hay meadows. There was no evidence to suggest the replacement of Roman boundaries, which probably indicates that some, at least, of the existing fields and tracks remained in use. It is noticeable that the early Saxon settlements were not situated adjacent to Roman trackways. For example, settlement SL63, within the Loop, was nearer the river than the north–south Roman trackway, while settlement SL165, within Land west of Kempston, was located to the west of a Roman trackway but its domestic core was not adjacent to it. The absence of new boundaries or, less easily identified, the maintenance of Roman boundaries could suggest that defining land, even if it had changed ownership, was not as important as in the Roman period. This might reflect a fall in population and a concomitant lessening of pressure on the land.

Communications

The trackways within the farmsteads and the Kempston Church End settlement are detailed elsewhere (see pp. 218–19). Apart from the road, the trackways described here probably served as local routes linking different settlements. It is likely that they represent a small proportion of a much wider network extending across the landscape. Where archaeologically visible they were usually defined by ditches; only in the case of L702 did a metalled surface survive. As is often the case, the ditches produced very few artefacts, except in the vicinity of settlements. They have been assigned to the Romano-British period because of the way they interact with the better-dated settlements and enclosure systems; however, they are likely to have originated in the late Iron Age or earlier.

Trackways on the Biddenham Loop

Two extensive trackways were created within the Biddenham Loop; they joined to the north of farmstead SL54 (Fig. 5.1). North–south-aligned trackway L2376 extended for 0.9km, most of which fell within excavation areas. To the east, trackway L2306 was traced as linear cropmarks and geophysical anomalies for 1km; it was largely within the present-day flood plain so was investigated only within the excavation area to the south of the Loop (Plate 5.43). The trackways either stopped (L2376) or changed form (L2306) where they met extensive land boundary L112/L2336 (described below). They linked settlements and would have provided a route for animal movement through arable fields and onto the flood plain. The line of trackway L2306 appeared to respect the natural topography, some of the early Bronze Age monuments and the alignment of the middle Bronze Age fields. Trackway L2376 heads, presumably deliberately, for the late Iron Age/early Roman ritual complex, although its side ditches stop at the boundary mentioned above (Fig. 5.1). In doing so the trackway 'cuts across' the grain of the middle Bronze Age field system. However, given the way its course passes through the corners of several fields (Fig. 5.1) it is possible that some boundaries were retained.

The ditches defining trackway L2376 were typically *c.*0.9m wide and 0.2m deep, although their dimensions did vary. As they neared farmstead SL54 they increased in size to 1.9m wide and 0.6m deep (within the Bedford Water Main investigation). The width of the trackway also varied along its course — it was only 8m wide to the north, 14m wide to the south and over a 200m stretch was 32m wide (Fig. 5.1). There was no obvious explanation for the latter, although it did occur near a middle Bronze Age trackway. The intersection of the trackway and the extensive land boundary was examined within the Bovis investigations. However, the boundary ditch had been extensively recut and ultimately the trackway had been blocked. Overall, the ditches produced only a small quantity of Roman artefacts. However, the short length within the Bedford Water Main investigations (designated L2428) produced 3kg of pottery, including Hadrianic to Antonine samian (CD Section 2; Wild). This material presumably derives from the nearby farmstead SL54.

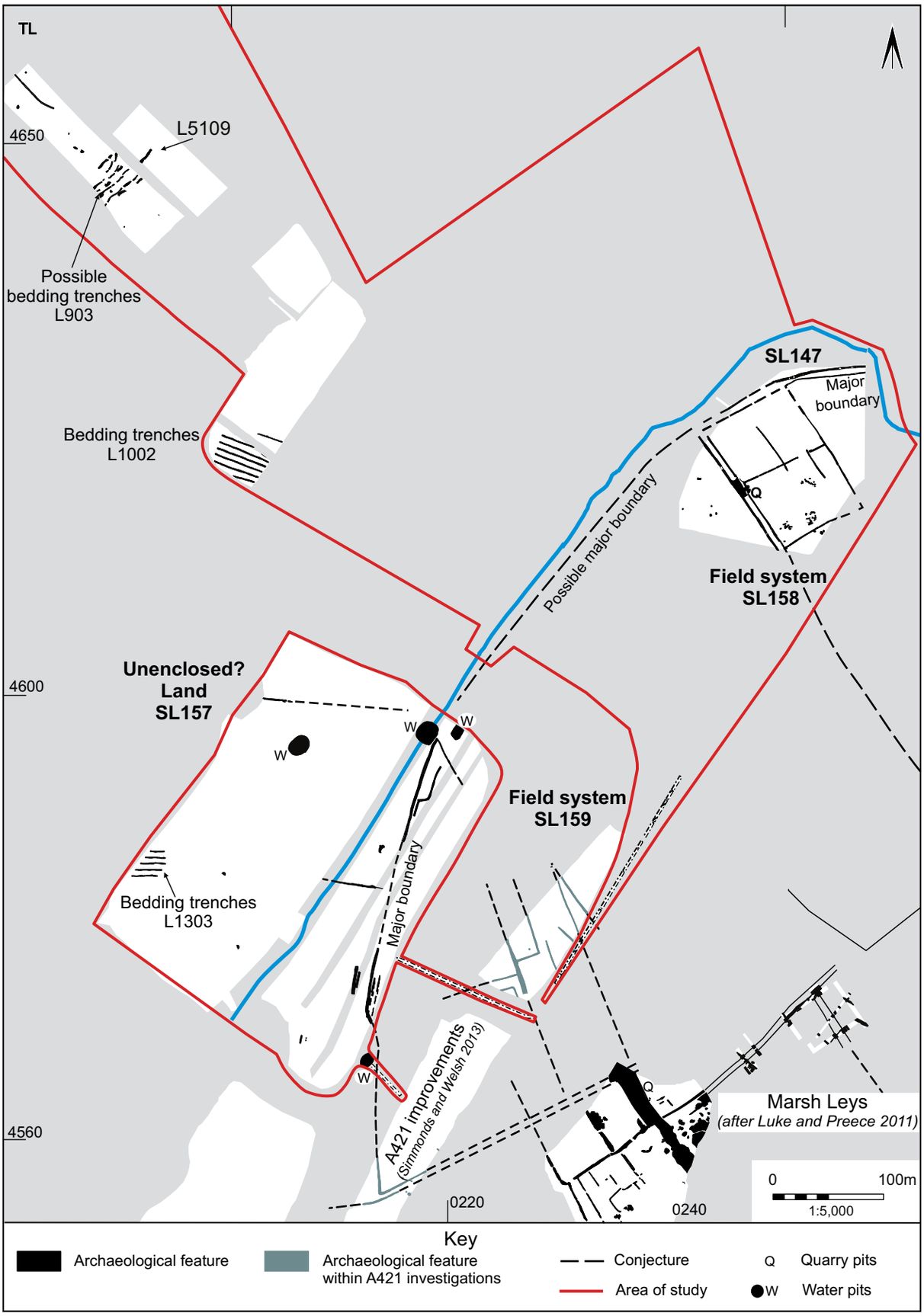


Fig. 5.43 Overall plan of Roman field systems SL158 and SL159 near Marsh Leys. Scale 1:5000

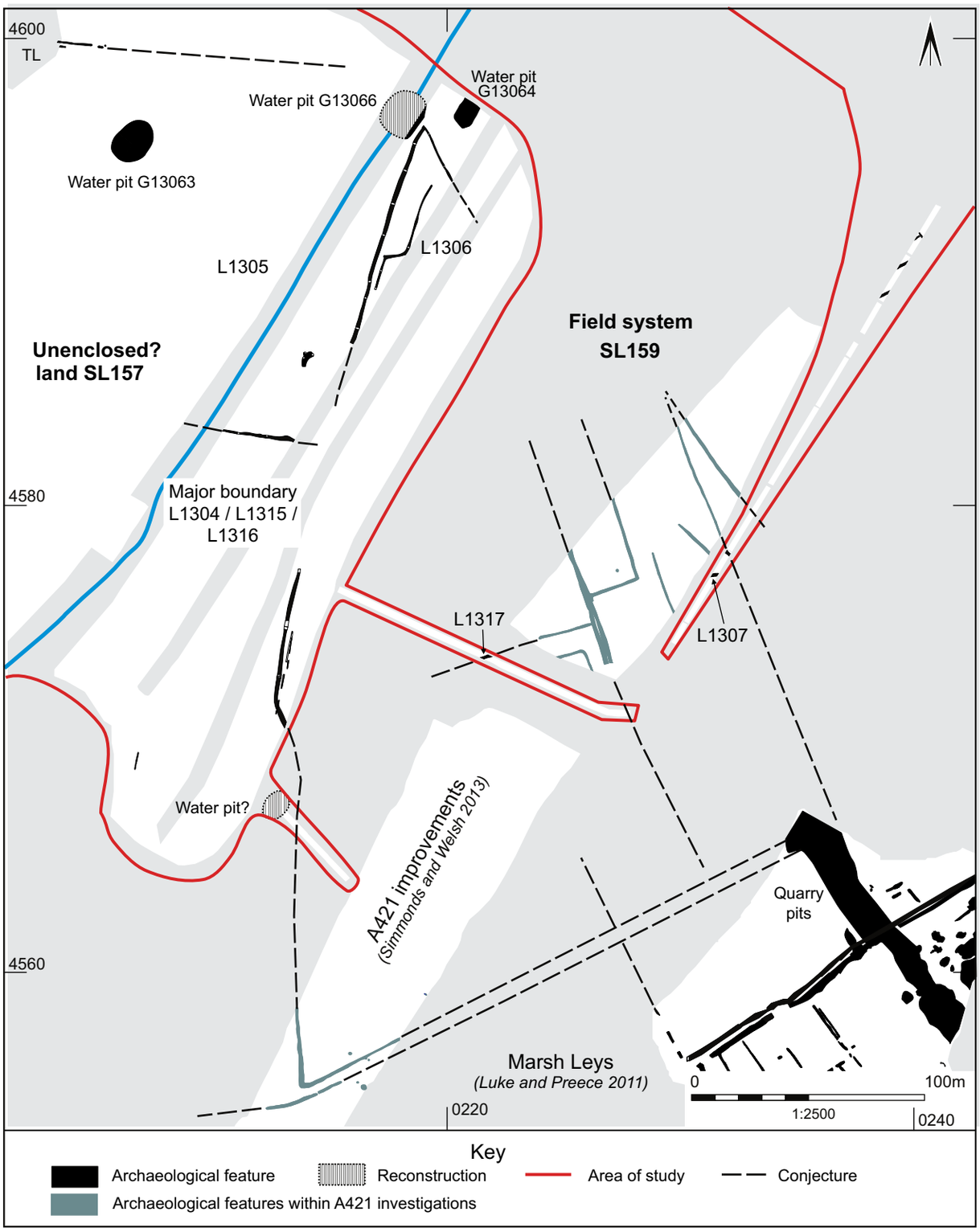


Fig. 5.44 Plan of Roman field system SL159 near Marsh Leys. Scale 1:2500

The ditches defining trackway L2306 were *c.*1.2m wide and 0.3m deep, although only two short lengths fell within excavation areas. To the south, the trackway was 12m wide; to the north of the land boundary it narrowed to only 7m.

Trackways on Land west of Kempston

The majority of the trackways on Land west of Kempston led to the Kempston Church End roadside settlement and some were integral to its layout (see p. 218). Most were archaeologically visible only within *c.*100m of the settlement, where they were defined by ditches (Fig. 5.3). An exception is trackway L4501, which extended for over

Plate 5.44 Aerial view of trackway/major boundary L1105 (SL158) on the edge of the excavation area, from the east

Plate 5.45 Boundary ditch L112 at the limit of excavation, from the east, with river Great Ouse in background (1m scale)

350m to the south of the settlement. Its ditches, which were *c.*6.5m apart, <1.3m wide and <0.9m deep, had been recut on at least one occasion. Trackway L702, *c.*400m to the north-west, was unusual in that parts of a metalled surface (G7008.02) survived. It was up to 0.5m thick and comprised patches of compacted gravel and larger stones. Near the settlement the trackway was defined by ditches *c.*10m apart, but further away a ditch was present only on the south side. The recovery of medieval finds suggests that this trackway continued to function for several centuries; a hollow is still visible on its course further upslope.

Further south two trackways (L1104 and L1105) were associated with field system SL158 (Fig. 5.43). Trackway L1104 was defined by parallel ditches *c.*5m apart; they were *c.*0.7m wide and under 0.5m deep. The western ditch had been extensively recut. This trackway may be part of a quite extensive routeway — if projected northwards it would line up with trackway L4501 and if projected southwards it would line up with a major boundary/routeway within one of the Marsh Leys farmsteads (Luke 2011, 168 and fig. 9.17).

River crossings

Although, for convenience, the trackways on the Biddenham Loop and Land west of Kempston have been described separately, it is important to stress that the river Great Ouse was almost certainly crossed near Kempston Church End and possibly to the north-east, near farmstead SL51. This is indicated by the arrangements of trackways leading to the flood plain, although the actual crossings lay outside the study area. It has long been speculated that there was a Roman ford near Kempston Church End (Bagshawe 1957–9, 57–60; Viatores 1964, 281–2 and plate XI). Two are listed in the HER (see Fig. 5.3 for their locations) and one is still scheduled as an ancient monument (HER 814). The latter is now thought to have been the remains of a post-medieval bridge (see p. 368–9), but this does not disprove the presence of river crossings in the Roman period.

Roads

Only the routeway within the Kempston Church End settlement was substantial and extensive enough to be classified as a road (Plates 5.6–5.11). Two short lengths of it were examined within two separate parts of the study area (Fig. 5.3). However, it is still worth briefly considering its possible extent, while accepting that it was probably never a major road and may have been built up only where necessary, such as within settlements or at river crossings. Even before the nature of the Kempston Church End settlement was recognised it had been suggested that a road would have linked the Kempston area to the walled small town of Irchester, *c.*15km to the north (Viatores 1964, 290–93), and this now seems highly likely. In the other direction, to the south, the road appears to turn eastwards. It may have followed the Great Ouse flood plain, although its route is now lost in the outskirts of modern Kempston. Intriguingly, an east–west road is known to run from the eastern outskirts of Bedford to the substantial Roman town at Sandy (Simco 1984, 65–6; Meade 2010, 95 and fig. 8.1). It has been

Fig. 5.45 Plan of Roman field system SL158 near Marsh Leys. Scale 1:1000

suggested, partly because of its intermittent nature, that this road was unfinished or may have been the work of a local leader rather than the central authorities (Simco 1984, 66; Meade 2010, 95).

Land boundaries

Single examples of extensive, continuous ditches were located on the Biddenham Loop and Land west of Kempston.

An east–west ditch (L112/2336) was traced for a distance of 800m, apparently 'cutting off' the southern part of the Biddenham Loop, which may, therefore, have constituted a single land holding (Fig. 5.1). The boundary appears to have been continuous, with no significant gaps which could not be explained by truncation. It extended from the limit of excavation on the west side of the Loop (Plate 5.44) but did not continue beyond the point where it was met by south-west–north-east trackway L2306 (see above). The ditch was located to the north of the southern

field system which originated in the middle Bronze Age, but does cut across the southern fields of the northern field system. At one location the ditch performs a *c.*40m dog-leg before continuing on its previous alignment. There is no obvious explanation for this feature, although it occurs on the projected line of a middle Bronze Age field ditch so may have been related in some way to existing boundaries or trees. Another significant aspect of the boundary's alignment is that it is broadly parallel to, but c. 80m (west of the dog-leg) and 130m (east of the dog-leg) north of, the early Iron Age pit alignment L2801. All these factors lead to the conclusion that it may represent an ownership boundary of considerable antiquity. However, the ditch itself was not substantial, being *c.*1m wide and 0.4m deep (Plate 5.44).

Apart from ditches clearly associated with trackways, the only extensive ditch on Land west of Kempston was L1304/1345/1316, located at the southern end of the study area (Fig. 5.45). As far as could be determined, the ditch was continuous and at least 300m long, and was probably located within the A421 investigations to the south, where it changed direction (Simmonds and Welsh 2013, fig. 2.135). Within the study area it was *c.*1.8m wide and 0.4m deep but had been redug on a number of occasions. The ditch divided the field systems SL159 to the east, mainly located within the A421 investigations (Simmonds and Welsh 2013, fig. 2.132), from the largely unenclosed land SL157 to the west. It is possible that it was a continuation of trackway/major boundary L1105, *c.*350m to the north-east (Fig. 5.44 and Plate 5.45). Both are located to the south of a stream, now canalised, which, if it existed in the late Iron Age/Romano-British period, might explain the curving nature of the boundary.

Fields

This section deals with fields which apparently lie some distance from settlements, rather than with enclosure systems associated with settlements. The majority of the evidence was found on Land west of Kempston.

Biddenham Loop

With the exception of the major boundaries and trackways (described above), no extensive field systems were created during this period in the southern part of the Loop. A similar situation was noted along the Great Barford Bypass (Poole 2007b, 149). It is, therefore, presumed that, although the north–south trackway L2376 clearly cut across some of the middle Bronze Age boundaries, some of fields remained in use. To the north of the major east–west boundary L112/2336, the edges of a few fields (SL49) were identified (Fig. 5.1). However, these are clearly associated with Bovis farmstead 10/14, identified within previous investigations (Luke 2008, 269 and fig. 10.12).

Land west of Kempston

(Figs 5.44 and 5.45)

The main areas of new fields were located at the south of the study area. These comprised rectangular fields (SL158) and more angular fields (SL159) (Fig. 5.43). Fields SL158 were attached to the east side of trackway L1104 and to the south of possible trackway/major boundary L1105 in the vicinity of late Iron Age/early Roman possible farmstead SL147 (Fig. 5.44). The full extent of both systems is unknown because they continued beyond the limit of excavation and were not visible in non-intrusive surveys. However, as suggested above, it is possible that trackway L1105, which is parallel to a modern watercourse, formed the northern boundary of field system SL158 and continued to the south-west in the form of extensive boundary L1304 on the north side of field system SL159 (Fig. 5.45). Further evidence for the layout of the fields was found within the adjacent A421 investigations (Simmonds and Welsh 2013, 124–30 and fig. 2.131). The land to the west of extensive boundary L1304 appeared to have been largely open (SL157), although it did contain four large water pits, three adjacent to it, and two areas of bedding trenches (L1002 and L1303) (Fig. 5.45; see below).

Plate 5.46 Aerial view of bedding trenches L1002 (SL157), from the south. The other linears in this photograph are furrows

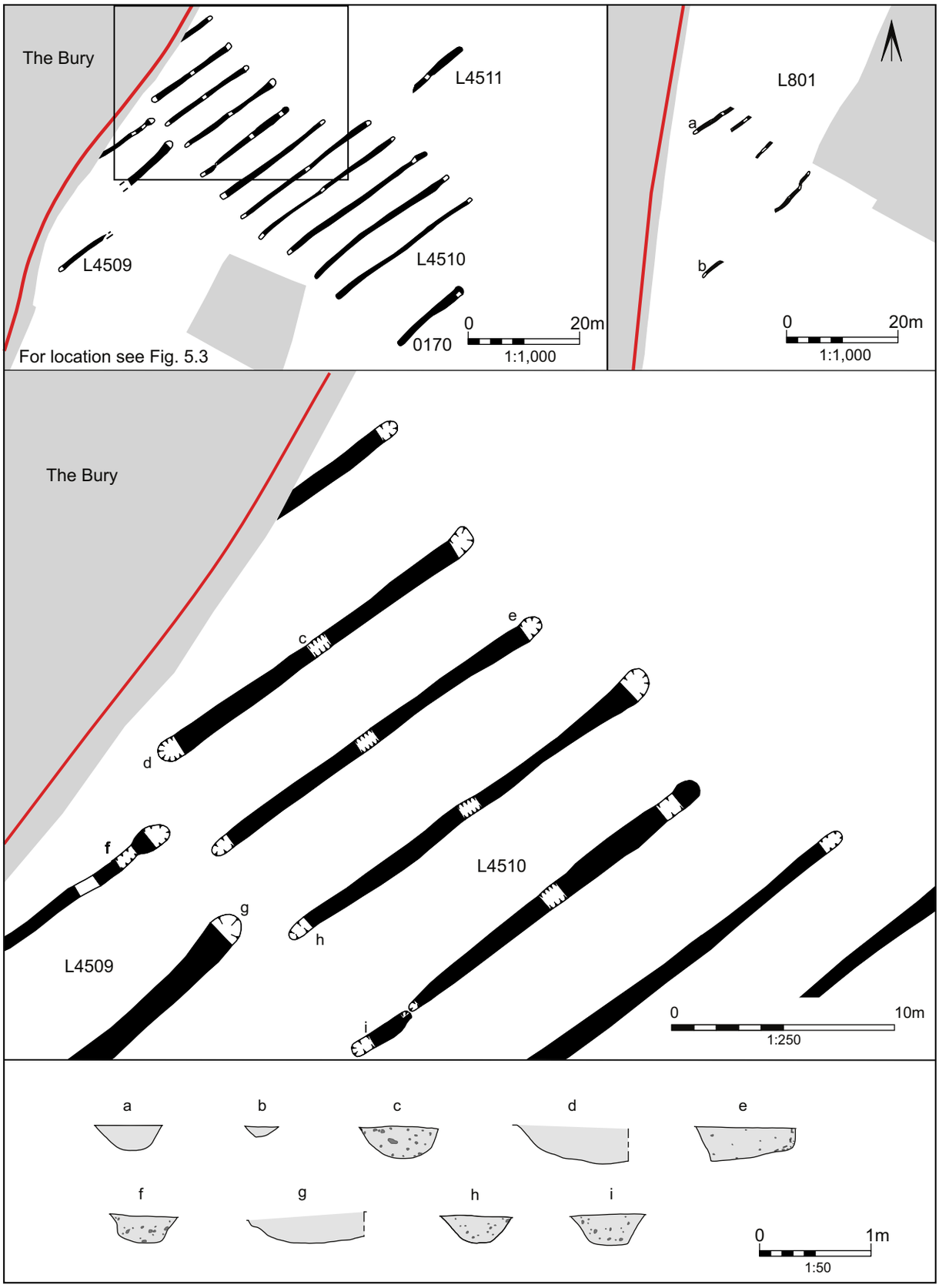


Fig. 5.46 Roman bedding trenches L801 and L4509/10/11 (SL156) near The Bury, with close-up of L4510. Scale 1:100 and 1:250

SL	*L*	*Extent (ha)*	*Number of trenches*	*Alignment*	*Dimensions (length:width: depth) (m)*	*Distance apart (m)*	*Trench profile*	*Terminals*	*Nature of fills*			*Pottery sherd:weight: vessel (kg)*	*Other finds (kg)*
									Primary	Secondary	Tertiary/sole		
156	801	0.07	4	NE–SW	0.5:0.2	5m	Steep/ concave	Truncated	Mid-orangey-brown clayey silt	Mid-greyish brown clayey silt	Mid-brownish grey clayey silt. Inclusions of stones and charcoal flecks	30:0.3:14 generic RB 1:2g:1 2nd century	0.1 animal bone 2 x slag fragments
	4509	0.06	3	NE–SW	11:0.8:0.3	4.5	Steep/ U-shaped	Steep/ rounded	—	—	Mid-greyish brown silty clay. Stone inclusions	1:4g:1 lIA–eRB 3:0.03:3 generic RB	0.1 animal bone 2 x FE fragments (RAl 20008–09) 1 x FE pruning hook/ knife 1st–2nd century (OA 143) Slag
	4510	0.5	12	NE–SW	30:0.8:0.5	4.5	Steep/ U-shaped	Square	Mid-brownish/ greenish grey silty clay. Charcoal flecks and stone inclusions	Mid-brownish grey silty clay. Charcoal flecks and stone inclusions	Mid-greyish brown silty clay. Charcoal flecks and stone inclusions	9:0.1:4 lIA–eRB 39:0.2:5 generic RB 4:0.02:1 2nd century	0.01 animal bone 1 x CA bracelet (OA 144)
	4530	—	1	NE–SW	12:0.7:0.1	—	Steep/ U-shaped	Rounded	—	—	Firm mid-greyish brown silty clay. Stone inclusions	—	—
157	1002	0.3	7	NW–SE	45:0.8:0.4	5	Steep/ U-shaped	Square	Mid-orangey grey silty clay. Stone inclusions	—	Mid-orangey grey silty clay. Stone inclusions	20:0.2:3 lIA–eRB 18:0.07:3 generic RB 5:41:1 2nd century	—
	1303	0.06	5	E–W	22:0.8:0.2	5	Concave	Rounded/ moderately sloping	—	—	Light greyish brown silty clay. Stone inclusions	—	—

OA = Other artefact number; RAl = LWB1289 registered artefact number; CA = Copper alloy; FE = Iron; lIA = late Iron Age; eRB = early Romano-British. All weights rounded up to the nearest 0.01g

Table 5.7 Details of the Romano-British (SP10) blocks of bedding trenches

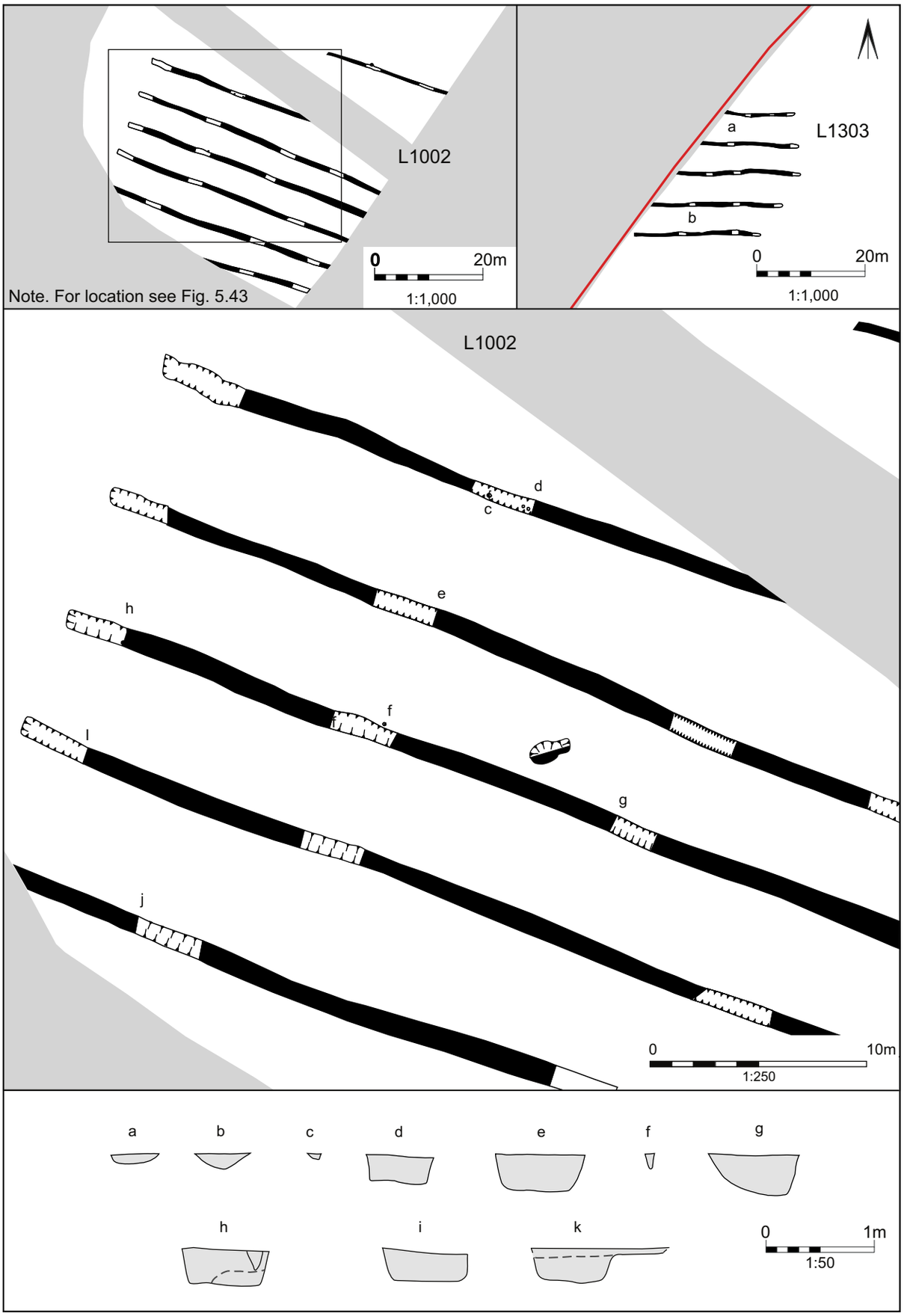


Fig. 5.47 Roman bedding trenches L1002 and L1303 (SL157) near Marsh Leys, with close-up of L1002. Scale 1:100 and 1:250

Box 22: Romano-British bedding trenches

This reconstruction by Cecily Marshall aims to give an impression of what the Romano-British bedding trenches within the study area might have looked like.

Four discrete areas of bedding trenches were identified on Land west of Kempston, all on clay geology. Each area was no larger than c.50m × 50m in extent and only one featured more than a single block of trenches (L4509/4510/4511). In the better-preserved areas, such as L1002, the trenches were 0.8m wide, steep-sided, c.0.4m deep and ended in square terminals; some featured post-holes and stake holes in their sides or base. In all areas the trenches were spaced c.4.5m apart.

In some areas the trenches were filled with dark deposits that contained moderate quantities of domestic debris, including pottery. Although metal artefacts were rare, the most interesting was a small hook (OA143) from L4509 which may have been used to prune the plants (CD Section 2; Duncan).

Comparable trenches have been discovered on other sites in the region; they were particularly extensive near Wollaston in the Nene Valley in Northamptonshire. Here, posts were inserted along both sides of the trenches, some of which also contained root balls spaced 1.5m apart. Pollen from grape vine (Vitis vinifera) was identified and the trenches were interpreted as part of a vineyard with the posts supporting the vines (Brown et al. 2001). The similarity of the bedding trenches at Wollaston suggests that those found to the west of Bedford may also have been dug for vines. However, in the absence of pollen evidence, fruit hedges would be another possibility.

The trenches within the study area, like those near Wollaston, were not near particularly high-status settlements, although they were within 500m of both the roadside settlement at Kempston Church End and the farmsteads at Marsh Leys. The Wollaston vineyards were 6km from the small town of Irchester. In both cases cultivation did not begin before the 2nd century and may represent an attempt to diversify into non-traditional crops.

NOTE. This reconstruction is based on one produced by Alexandra Thorne for the vineyards near Wollaston, Northants (Meadows 1996).

Bedding trenches

(Figs 5.46 and 5.47, Table 5.7, Plates 5.46–5.49)

Four blocks of bedding trenches (referred to as fields) were identified on Land west of Kempston. All were on clay geology. Fields L801 and L4509/10/11 lay *c.*200m apart and *c.*200m from the Kempston Church End roadside settlement (Fig. 5.3). The nearest known settlement to fields L1002 and L1303, which were *c.*330m apart, was one of the farmsteads at Marsh Leys, *c.*0.5km away (Fig. 5.42). Even the possible late Iron Age/early Roman farmstead SL147 would have been a similar distance away. It is noteworthy that L801 and L4509/10/11 were both aligned south-west–north-east (Fig. 5.46), in contrast to L1002, which was aligned north-west–south-east (Fig. 5.47 and Plate 5.46), and L1303 (Fig. 5.47), which was aligned east–west. The majority of the trenches continued beyond the limit of excavation, so that their full extent is unknown. However, it is clear that they were not part of

Plate 5.47 A typical bedding trench within block L1002 (SL157) (1m scale)

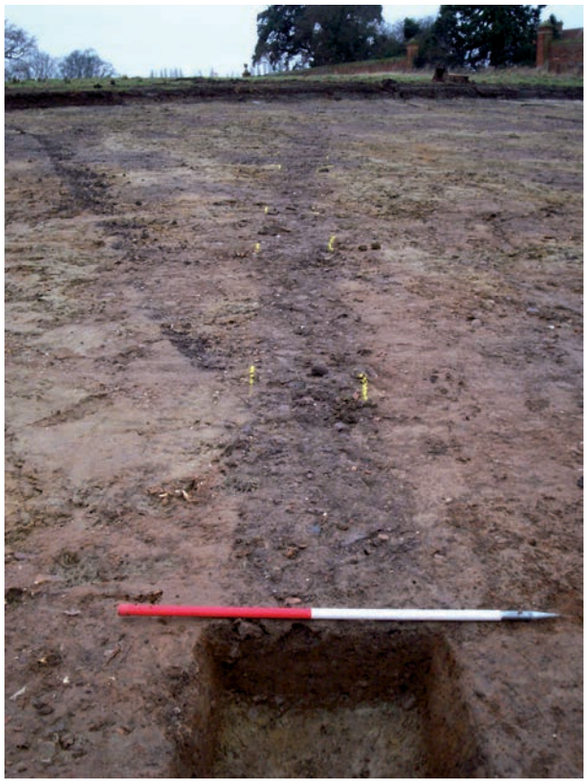


Plate 5.48 A typical bedding trench within block L4510 (SL156) (1m scale)

a single, extensive system; each field appeared to be no larger than *c.*50m × 50m in extent. Only in the case of L4509/4510/4511 was more than one block of trenches identified (tentatively three). The trenches in the central block L4510 and in L1303 all appeared to terminate in similar positions, but only in the case of L1002 did this form a straight line.

The profile of the features varied in different areas. Some were obviously trench-like, such as L1002 (Fig. 5.47 and Plate 5.47) and L4510 (Fig. 5.47 and Plate 5.48), while others were more like gullies, such as L1303 (Fig. 5.47), although this was within one of the watching brief areas. However, they can be described overall as

Plate 5.49 Traces of possible post-holes at the base of a bedding trench in block L1002 (SL157) (1m scale)

parallel trenches *c.*4.5m apart and *c.*0.8m wide with steep sides and fairly even bases. In the better-preserved areas, such as L1002, the trenches were *c.*0.4m deep and ended in square terminals; some featured post-holes and stake holes in their sides or base (Fig. 5.47 and Plate 5.49).

In some fields, such as L1002, L4509/L4510, the trenches were filled with dark deposits containing moderate quantities of domestic debris including pottery. Although metal artefacts were rare, the most interesting was a small hook (OA143) from L4509, which may have been used to prune the plants (CD Section 2; Duncan). It is presumed that the dark, almost midden-like, deposits were deliberately placed in the trenches to improve the quality of the soil, which would otherwise be dominated by clay. They presumably derived from the nearby settlements. Samples were taken for pollen analysis from six different bedding trenches but pollen concentrations were extremely low and preservation was poor (CD Section 2; Cruise).

Comparable trenches have been discovered on other sites in the region, such as Wollaston, Northants (Brown *et al.* 2001; Brown and Meadows 2000; Meadows 1996), Cranfield, Beds. (Albion 2011b), and Caldecote, Cambs. (Kenney 2001). At Wollaston the trenches were located on the flood plain of the river Nene and were much more extensive. They featured post-holes dug along both sides through the fills, although not in a coherent pattern (Brown *et al.* 2001, 747). Some trenches also contained root balls spaced 1.5m apart. Pollen from the Wollaston trenches was characteristic of an open landscape with both arable and pastoral indicators. Pollen from grape vine (*Vitis vinifera*) was present (Brown *et al.* 2001, 749), leading to the conclusion that the trenches were part of a vineyard,

with the posts supporting the vines. The similarity of the bedding trenches at Wollaston suggests that those found to the west of Bedford may also have been dug for vines. However, in the absence of pollen evidence, fruit hedges would be another possibility.

The trenches within the study area are dated by the pottery they produced — residual late Iron Age material, as well as Romanised types including late 2nd- or 3rd-century samian (L4510). If the latter got into the trenches when they were first dug, then cultivation must have started no earlier than the late 2nd century. It is impossible to determine how long the trenches remained in use; the only stratigraphic evidence indicates that they all predate the late Saxon/early medieval furrows. The trenches at Wollaston are considered to be 'no earlier than the 2nd century AD and are unlikely to extend into the 4th century AD' (Brown *et al.* 2001, 749).

Brief mention should be made of another arrangement of parallel south-west–north-east-aligned gullies (L903), located *c.*200m north of L1002. They were much more irregular and shallow than the bedding trenches, suggesting that they were dug for a different purpose. However, the small quantity of late Iron Age/early Romano-British pottery from their fills suggests that they are likely to be contemporary.

Quarry pits

One area of quarry pits (L1117) was identified away from known settlements to the south of Land west of Kempston (Fig. 5.45). The quarry pits extended over 18m × 9m between the ditches of one of the trackways associated with field system SL158. They were located over a pocket of gravel within an otherwise clay geology. They were *c.*0.4m deep and had been dug through the gravel onto the underlying clay. They appeared to intercut, but this may be an effect of their backfilling with material partly derived from the excavation of new pits. Similar, but more extensive, gravel quarry pits were found within one of the farmsteads at Marsh Leys, *c.*550m to the south (Luke 2011, 158). Such features are often found in the vicinity of settlements, as at Ampthill Road, Shefford, Beds. (Luke and Preece 2010, 333), Great Barford Site 8, Beds. (Poole 2007a, 107), and Roughground Farm, Glos. (Allen *et al.* 1993, 109–10). It is, however, relatively unusual to find quarry pits in apparent isolation. It is possible that, once the trackside ditches had revealed the presence of gravel in this area, it was used as a quarry when the trackway went out of use.

Water pits

Four water pits, away from settlements, were found to the south of the study area on Land west of Kempston; none was found on the Biddenham Loop. They were located in the unenclosed land SL157, to the west of extensive boundary L1304 (see above); three were adjacent to the boundary (Fig. 5.44). None of the water pits was fully investigated — three were within the watching brief area (which flooded following removal of the topsoil) and one was found in an evaluation trench. As a result, their assignment to the Roman period is largely based on their proximity to boundary L1304. Insofar as it was possible to tell, they ranged in size from *c.*20m × 15m to *c.*10m × 7m and were over 1m deep. However, the excavation of water pits on other clay sites in the vicinity, such as

Plate 5.50 Aerial view of ditched enclosure L2700 (SL50) with the two square shrines visible, from the north

Luton Road, Wilstead, Beds. (Luke and Preece 2010, 124), indicates that they were often redug on a number of occasions and overlain by quite widespread deposits.

Other isolated features
A number of clusters of post-holes and small pits were identified within field system SL158, towards the south of the study area in Land west of Kempston (Fig. 5.44). Although largely undated, they respected the boundaries of the field system so could be contemporary. Most were located in the southern field L1107. They are presumed to indicate the location of short-term farming activities such as animal management or crop processing. No such clusters were identified on the Biddenham Loop.

VI. Ritual and religion

On the basis of comparisons with other sites, a shrine/ritual complex has been tentatively identified towards the centre of the Biddenham Loop. This is an important discovery because it is isolated from contemporary activity, even, apparently, burials, and may have served as a sacred space for the wider community. The majority of the firm evidence for religious activities and rituals derives from formal human burials and 'structured' deposits. On site a number of deposits were identified as 'special' because they contained large or unusual deposits of artefacts or ecofacts. Those that have been interpreted as 'structured' as a result of post-excavation analysis are discussed in this section. Of course, the recognition and interpretation of religious activities and rituals based on archaeological evidence alone is not a straightforward process.

Possible shrine/ritual complex on the Biddenham Loop
(Figs 5.48–5.50, Table 5.8, Plates 5.50–5.53)

Introduction
(Fig. 5.48)
A possible shrine/ritual complex SL50 was located to the north-west of the Loop on the edge of the recent excavation area and *c.*250m north of extensive Romano-British boundary L112/2336 (Fig. 5.1). It comprised three square structures, one of which was found in a service corridor within the Bovis investigations (Luke 2008, 53–5, 227–31). The two within the recent investigations were both positioned central to the long axis of the larger rectangular ditched enclosure (Plates 5.50 and 5.51).

The square structures/buildings
The three structures (referred to as shrines from now on) shared a number of attributes: they were square; they were of similar dimensions; they were defined by a continuous ditch with slightly rounded corners; and they contained at least one internal pit (Fig. 5.48). If, as seems likely, they were originally of similar size and shape, then those within the recent investigation had been more heavily truncated. This may be because the Bovis shrine was located closer to a modern field boundary, which existed prior to development and had probably served to reduce the impact of ploughing on the structure.

The shrines were:

- **G27009:** 4.5m square, with a surrounding ditch 0.2–0.5m wide and 0.02–0.2m deep (Plate 5.52). The ditch on the north side was heavily truncated but is believed to have been continuous. A circular pit 0.7m in diameter and 0.1m deep was located just

Plate 5.51 Aerial view of ditched enclosure L2700 (SL50) with the two square shrines visible, from the west, with the Bovis development on the left

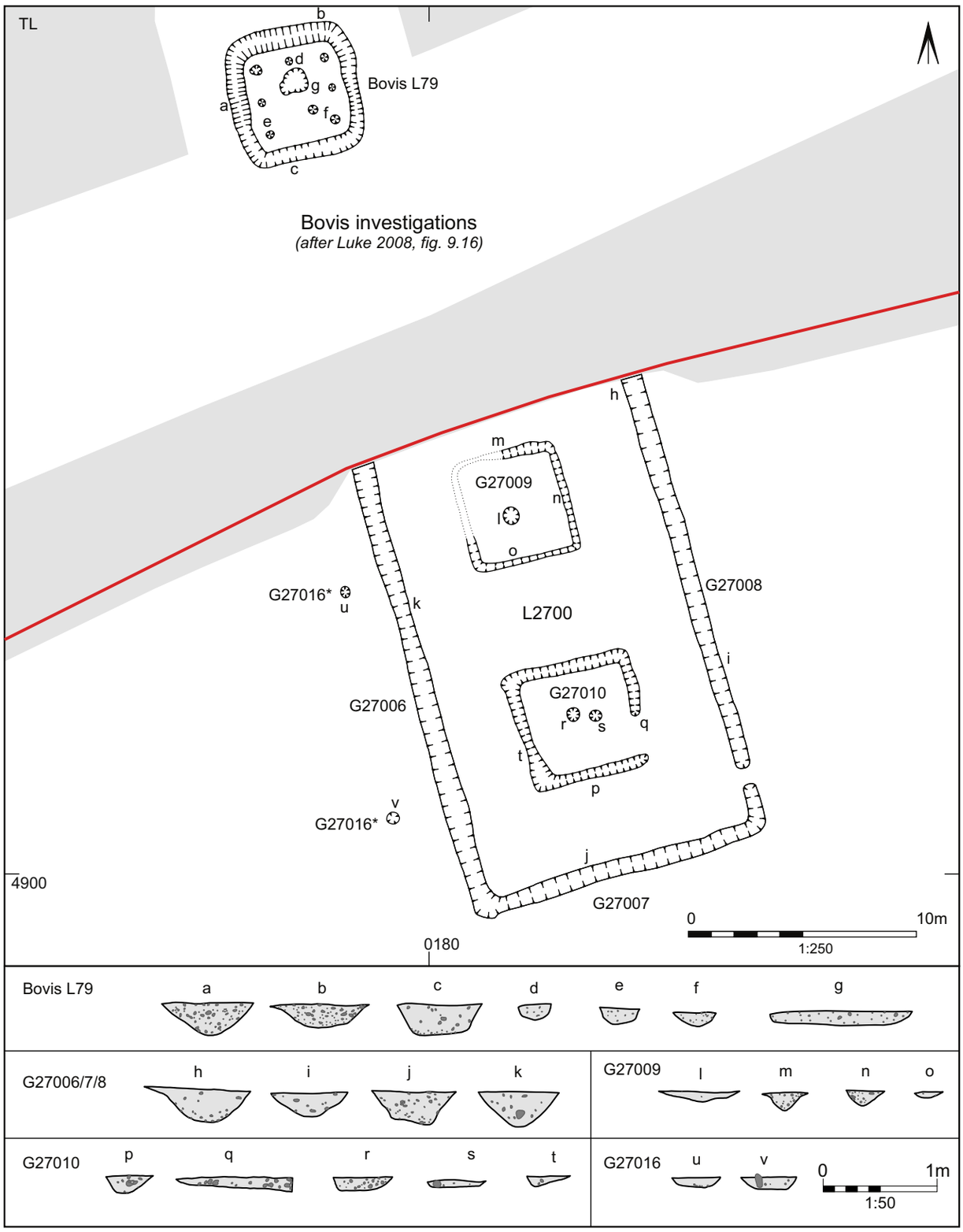


Fig. 5.48 Late Iron Age/early Roman ritual complex SL50 on Biddenham Loop. Scale 1:250

off-centre within the interior. Twenty-one nails were recovered from the ditch and one from the central pit (CD Section 2; Duncan).

- **G27010:** 4.3m square, with a surrounding ditch 0.3–0.4m wide and 0.2m deep (Plate 5.53). Given the shallowness of the ditch it is possible that the 1.7m-wide gap in the south-east corner is the result of truncation rather than being a real entrance. There were two circular pits, *c.*0.5m apart, in the centre of the structure. They were 0.5m in diameter and 0.1m deep. Nine nails were recovered from the ditch and a single nail from the western pit (CD Section 2; Duncan).

Type	*Extent (sq m)*	*Dimensions width:depth (m)*	*Profile*	*Entrance*	*Pottery sherd: weight:vessel (kg)*	*Other finds (kg)*	*RCD*
Biddenham Loop enclosure L2700							
Enclosure ditch G27006, G27007 and G27008	11.5 × *c.* 20m	0.8:0.3	Asymmetrical steep sloping concave	SE corner	6:0.06:6 IA 3:0.02:1 lIA–eRB 3:2g:1 RB	Blue glass minute bead (OA27) eNeo flint blade (RAl 7020) Flint flake (RAl 7021) 4 × nails (RAl 7015, 7004)	—
Northern Shrine G27009							
Shrine ditch	4 × 4	0.4:0.2	Moderate sloping concave/V-shaped	—	—	0.2 animal bone 21 × nails (OA 25, 26) (RAl 7000–02, 7007–09, 7011–14, 7016–18, 7022–23) Flint blade (RAl 7025)	—
Internal pit	—	0.7:0.1	Gradual sloping sides, uneven base	—	—	0.01 animal bone Nail	—
Southern Shrine G27010							
Shrine ditch	4 × 5	0.5:0.2	Moderate sloping sides, flat base	—	3:0.01:1 RB	9 × nails (RAl 7003, 7005–06) Flint flake (RAl 7024)	10–130 cal AD (SUERC-26329, 1925±30 BP
Western internal pit	—	0.5:0.1	Steep sloping straight sides, flat base	—	—	Nail Hobnail	—
Eastern internal pit	—						
External features G27006							
Northern small pit	—	0.4:0.1	Steep concave sides, flat bases	—	—	—	—
Southern small pit				—			
Bovis Shrine L79 (adjacent investigation, Luke 2008)							
Shrine ditch	4 × 5	0.6:0.2	Asymmetrical, moderate sloping, concave	—	9:0.2:7: lIA–eRB	47 × nails 6 × animal bone fragments	—
Outer post-holes (7)	—	0.4:0.3	Steep sides, concave bases	?South		5 × nails	—
Internal post-hole	—	1.30:0.1	Steep sides, uneven base	—		—	—
Internal scoop/pit	—	0.4:0.1	Gradual sloping, concave	—		15 × nails	—

OA = Other artefact number; RAl = LWB1289 registered artefact number; Meso = Mesolithic; eNeo = Early Neolithic; IA = Iron Age; lIA = late Iron Age; RB = Romano-British; eRB = early Romano-British. All weights rounded up to the nearest 0.01g

Table 5.8 Details of Late Iron Age/early Roman (SP9) ritual complex SL50

- **Bovis L79:** 4.3m square, with a surrounding ditch 0.6–1m wide and 0.2–0.3m deep. There were post-holes in each corner and at the midpoint of each side, except to the south, where there may have been an entrance. Near the putative entrance there was a further single internal post-hole. Within the interior was a sub-rectangular pit 1.25m by 1.05m and 0.13m deep. It was situated on the opposite side to the possible entrance and equidistant from the sides (Luke 2008, 227–31, fig. 9.16 and plate 9.11).

The Bovis shrine was interpreted as a building because of the regularity of the post-holes, the absence of a central post-hole on its south side (suggesting a doorway) (Luke 2008, 227–31) and the presence of sixty-seven nails (Duncan 2008, 237). No post-holes were found in similar positions within the two other square structures, but, given the level of truncation, it is possible that they were originally present. The nature of the surrounding ditch and its fills suggests that it was open and presumably served as a drain. The function of the internal pits,

Plate 5.52 Aerial view of shrine G27009, from the north

Plate 5.53 Aerial view of shrine G27010, from the north

present within all structures, is uncertain, although they were clearly not structural.

Ditched enclosure

Shrines G27009 and G27010 were enclosed within a ditched enclosure at least 20m long and 11.5m wide (Fig. 5.48, Plates 5.50 and 5.51). It was defined by a ditch (G27006/G27007/G27008) which was under 1m wide and 0.4m deep. The 0.7m-wide gap in the south-east corner of the enclosure may have been an entrance. The ditches became shallower in this area and their profiles suggest that this was not the result of truncation. The northern arm of the enclosure was destroyed by road construction subsequent to the Bovis investigations.

Dating evidence

On the basis of a small and unexceptional pottery assemblage (CD Section 2; Wells, Pottery) the shrine complex has been dated to the late Iron Age/early Roman period.

> Western enclosure ditch G27006 and one internal pit within shrine G27010 yielded seventeen undiagnostic late Iron Age and early Roman sherds (93g). The size, poor condition and overall composition of this assemblage are directly comparable with that recovered from the Bovis shrine L79. Post-holes and a ditch associated with the latter contained nine abraded late Iron Age and early Roman sherds weighing 164g (Luke 2008, 227)(CD Section 2; Wells, Pottery).

The radiocarbon date is consistent with the pottery dating: 10–130 cal AD (SUERC-26329: 1925 ± 30BP) (charred grain from the ditch fill defining structure G27010).

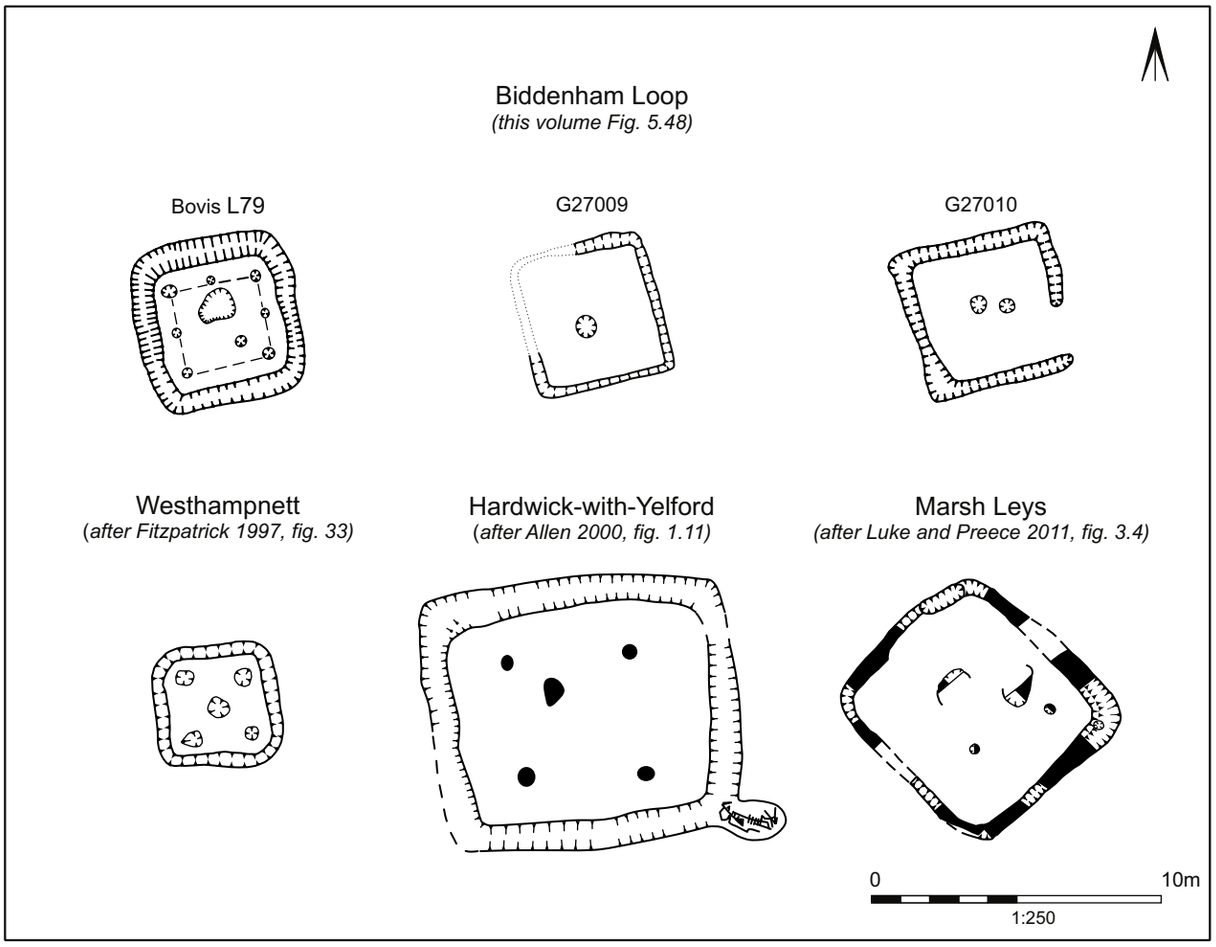


Fig. 5.49 Comparative plans showing the late Iron Age/early Roman shrines from Biddenham Loop, Westhampnett, Marsh Leys and Hardwick-with-Yelford. Scale 1:250

Nails

Thirty-seven nails were found in the fills of shrine complex SL50 within the recent investigations, but they 'were not distributed evenly between the components' (CD Section 2; Duncan). 'With a single exception, the nails from the two shrines were more "tack-like" in appearance, having flat rectangular heads, square sectioned shanks generally measuring 2mm by 2mm and lengths of the more complete examples between 24mm to 30mm (Fig. 3, OA25 and OA26). A similar preponderance of small nails was also noted in Bovis shrine L79, where the size range of the nail assemblage is comparable to that from SL50 (Duncan 2008, 237). The quantities of nails recovered from L79, and the consistency in size, led to the suggestion that they affixed weatherboarding to the building in a similar manner as proposed for a building at Wavendon, Bucks (Duncan 2008, 237; Williams *et al.* 1996, 125 and 162); the same would appear to apply to buildings G27009 and G27010 in SL50. This may be a regional variation in construction; shrines identified at Danebury and more recently at Westhampnett are thought to have had close-set planks placed side-by-side in continuous bedding trenches (Cunliffe 1983, 113–16; Fitzpatrick 1997, 231)' (CD Section 2; Duncan). Little can be said about the minute bead of deep blue glass (OA27) and the single hobnail.

Samples

No human bone or unusual/'special' artefacts were recovered during hand excavation or from the environmental samples.

> Five samples from the shrine complex produced good to rich assemblages of charcoal in which *Quercus* sp. (oak) was predominant. One sample (7011) was analysed in full, and showed that *Prunus spinosa* (blackthorn), Maloideae (hawthorn group) and *Fraxinus excelsior* (ash) were also present in the assemblage in small quantities. Whilst further identifications from the other shrine samples might have increased the species list, it is apparent that oak was the main taxon. Whether these charcoals resulted from ritual activities, crop processing or other domestic waste is unclear. It is interesting to note the possible context-related variation between these oak-dominated assemblages and the more mixed assemblages of the pits and post-holes of the settlement. These latter samples contained a similar range of taxa as sample 7011, and some *Acer campestre* (field maple). The significant difference lies in the types of wood used — mainly roundwood from the pits and post-hole — and no single taxon was dominant. It is tempting to speculate that this reveals a more deliberate selection of fuel in the shrine samples appropriate to ritual activities (CD Section 2; Challinor).

Discussion

(Fig. 5.49)

The structures share the general characteristics of shrines: that is, they are small, square and 'spatially separated from domestic buildings' (Woodward 1992, 31–2).

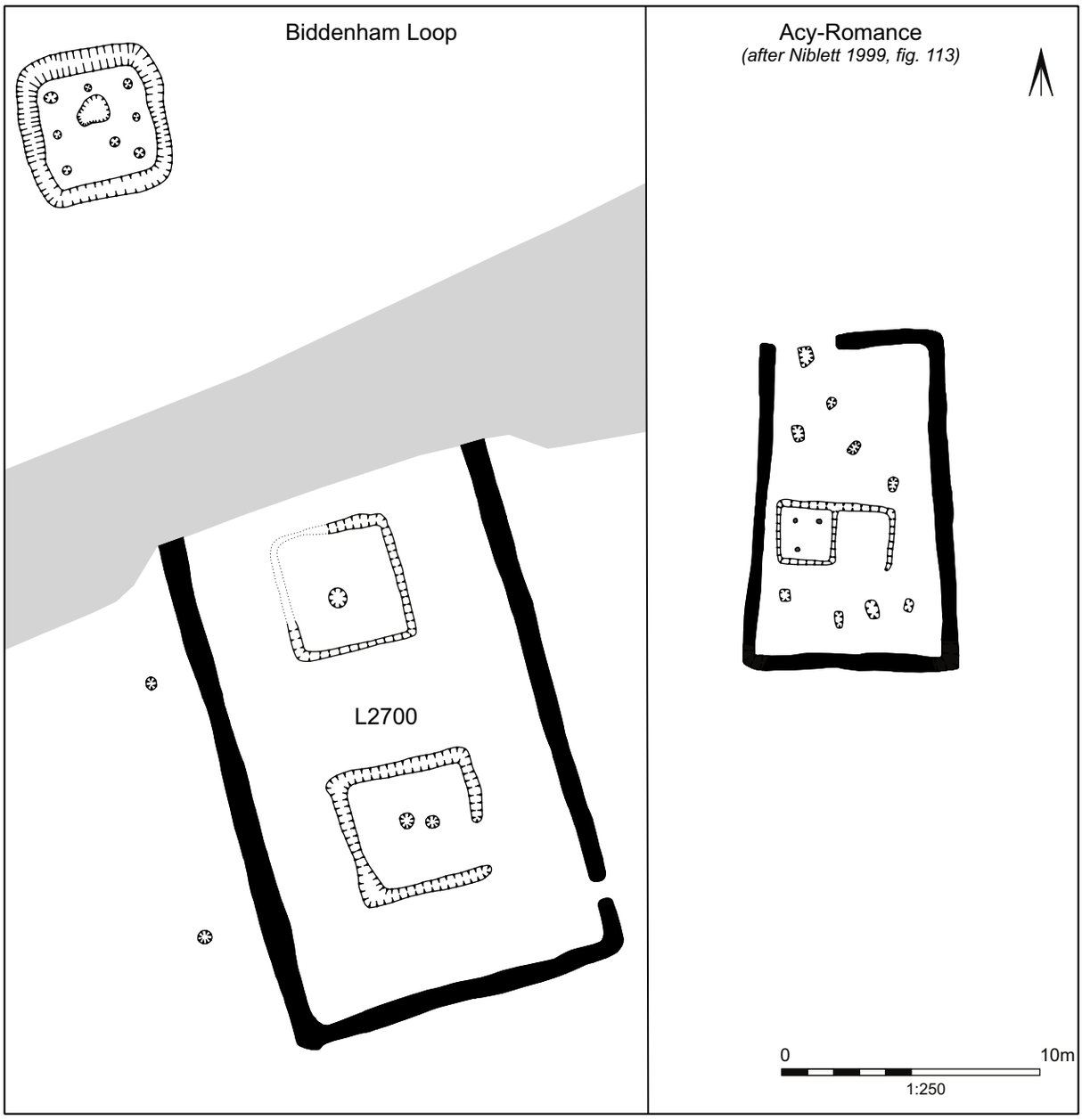


Fig. 5.50 Comparative plans showing the late Iron Age/early Roman ritual complexes at Biddenham Loop and Acy-Romance. Scale 1:250

Similar structures, sometimes found within contemporary settlements, have been interpreted as shrines owing to their shape and 'special' artefact content; examples include Stansted (Brooks 1989, 323–4; Brooks and Bedwin 1989) and Heybridge (Atkinson and Preston 1998, 92–3), both in Essex, and Hardwick-with-Yelford, Oxon (Allen 2000, fig. 1.11). A similar contemporary structure, although slightly larger and located within a polygonal ditched enclosure, was identified within one of the farmsteads at Marsh Leys (Luke 2011, 16–18, 159–60, fig. 3.4 and fig. 9.15). The structure was defined by a continuous ditch defining an area of *c.*7m by 6m which contained two post-holes and two pits (Fig. 5.49). As with the Biddenham Loop structures, it contained no human bone or unusual/'special' artefacts. Other possible shrines in the Bedford and Milton Keynes area have been discussed by Meade (2010, 67–71, figs 5.15–5.21).

Similar small square enclosures have also been found associated with cremation burials. These occur both isolated from contemporary settlements, as at Roughground Farm, Glos. (Allen *et al.* 1993, 53, fig. 30), and within ritual complexes, as at Westhampnett, West Sussex (Fitzpatrick 1997, 15–18, 40, fig. 33). It is therefore possible that the internal pits within the Biddenham Loop structures originally contained cremation burials like feature 20566 within the enclosure at Westhampnett (Fitzpatrick 1997, 40).

Although no exact parallels are known in Britain for the Biddenham Loop complex, the arrangement of square structures within a larger ditched enclosure is closely comparable to that at Acy-Romance (Niblett 1999, fig.

113) (Fig. 5.50) and has some similarities to others found also in northern France (Haselgrove 2007, 496–8, fig. 3), albeit again usually associated with cremation burials. Therefore, although the interpretation of the Biddenham Loop complex must remain uncertain, it is likely that it served as a ritual focus for the wider community. As at Danebury, the absence of 'structured' deposits or objects of overtly religious or spiritual nature does not mean that it was not a shrine, sanctuary or temple complex. As Lambrick discusses, such sites might be concerned with the 'veneration of natural phenomena or beliefs that would have left little trace' (2009, 333). It is also possible that the complex was associated with the treatment/storage of the dead prior to burial. In this period the latter normally occurred closer to settlement areas (see below), but no pyre sites were located within the Loop and, while it is quite possible that all trace of these has been lost to modern ploughing, they could have taken place near the shrine complex. With this in mind it is noteworthy that the later Romano-British *bustum* burial was also located in an isolated position within the interior of the Loop (see below).

Possible temples or shrines within the Kempston Church End roadside settlement

Most large settlements of this period are likely to contain temples or other religious structures (Burnham and Wacher 1990, 22); on present evidence there are two candidates within the Kempston Church End roadside settlement. Neither was found within the recent investigations but their presence is significant and they are therefore briefly discussed.

The only partially excavated candidate is the polygonal building within the sewer investigations (Dawson 2004, 48, 202–3). A similar building of comparable size within the villa at Bancroft, Milton Keynes, was thought to be a shrine (Williams and Zeepvat 1994, 189–91 and fig. 103); similar structures were found at Collyweston, Northants (Knocker 1965). As Dawson notes, the 'discovery of 17 coins in a small pit just west of the building and the discovery of a silver coin hoard (HER 162) in the vicinity supports such an interpretation' (2004, 203). The Kempston Church End building was situated within an enclosure that extended from the road to the parallel trackway at the narrowest point between the two. The enclosure was bounded to the south by one of the minor trackways. Geophysical survey indicated that this enclosure, in contrast to those adjacent, was not subdivided (ArchaeoPhysica 2011); nor did it contain large pits (Dawson 2004, fig. 5.101). This, again, supports its interpretation as a shrine within its own sacred enclosure. It may also be significant that one of the inhumation cemeteries is situated across the trackway.

The second possible candidate for a temple/shrine is known only from non-intrusive evidence to the south of the Bypass. It comprises a large ditched enclosure (L574) which does not appear to have been subdivided or to contain many large pits. Centrally positioned within it was a possibly circular geophysical anomaly *c.*16m in diameter (ArchaeoPhysica 2011), which was also visible as a cropmark. It is unclear whether this represents a building or an area of significant disturbance. The enclosure is located just north of the junction between the road and a trackway to the south, at the point where there appears to be a significant change in the alignment of the road.

Temples/shrines are well known in Roman towns and cities; they also occur in isolation within the countryside. However, few have been positively identified within roadside settlements like Kempston Church End. One example is the roadside settlement at Higham Ferrers, Northants, where a shrine was identified on the basis of a monumental entranceway and a dense concentration of votive objects (Lawrence and Smith 2009, 325–34). Although the building form and the quantity of votive objects offer a contrast to the possible temples at Kempston Church End, they do share some similarities in that all were located adjacent to roads, at a junction with side roads and within large enclosures.

Burials

(Tables 5.9–5.11)

Burials are the most archaeologically visible evidence for the spiritual beliefs of the people living within the Biddenham Loop at this time. However, the actual form of burial is likely to be the result of a complex combination of the views of the deceased prior to death and the wishes of the next of kin. These in turn need to be set against the established range of cultural traditions (Barber *et al.* 1990, 10–11) and some will probably reflect wider changes in society. Some chronological changes in burial practice were evident within the study area; accordingly, the following discussion is split into later Iron Age/early Roman and later Roman, a division corresponding broadly to different burial rites. In addition, the possible casket burials, *bustum* burial and an inhumation cemetery are discussed separately.

Late Iron Age/early Roman (100 BC–mid-2nd century AD)

As is the case nationally, cremation burial was the dominant rite within the study area during this period. In the main, the burials were dated on the basis of pottery typology. However, 1st-century AD radiocarbon dates

Plate 5.54 Urned cremation burial SG5720 (L529, Phase 501, SL144) prior to excavation (0.25m scale)

were also obtained from two inhumations associated with farmsteads on the Biddenham Loop within the Bovis investigations (Luke 2008, 53). Philpott observed that inhumations do occur, alongside cremation burials, as a small but significant minority within areas dominated by the La Tene III cremation tradition, which includes the Biddenham Loop (1991, 55; 57) (see also King Harry Lane, St Albans (Stead and Rigby 1989, 81)).

Kempston Church End roadside settlement
One urned cremation burial (SG5720) was found on the periphery of Kempston Church End roadside settlement SL144/SL155 (L529, Phase 501). The urn comprised the lower half of a badly truncated late Iron Age grog- and sand-tempered vessel (Table 5.10 and Plate 5.54). The grave was located on the side of the northern ditch defining trackway L540 and in the vicinity of possible rectangular funerary structure G5109. Similar structures (Dawson 2004, 42 and fig. 3.18) and four cremation burials (Dawson 2004, fig. 5.121) were found in the adjacent sewer investigations. It is therefore possible that this area contained a cremation cemetery associated with the late Iron Age/early Roman phase of the settlement.

Biddenham Loop
No cremation burials of this period were found within the recent investigations on the Biddenham Loop. However, there were a number within the Bovis investigations: two small cemeteries associated with Bovis farmstead 5 (Luke 2008, 51) and a larger cemetery associated with Bovis farmsteads 6/8 (Luke 2008, 51–3, 213–26, figs 9.10–9.14). Little can be said about the Bovis farmstead 5 burials, which were unurned and contained no grave goods, other than to note that three graves were near the western entrance to the enclosed farmstead (possibly adjacent to a routeway to the flood plain) and another was adjacent to its presumed southern boundary (Fig. 5.23). The cremation cemetery near farmstead 6/8 was located on the edge of the flood plain. It comprised sixteen graves concentrated in a *c.*12m × 8m area (Luke 2008, 51 and fig. 9.10). There was a clear distinction between the three large peripheral graves (burials not always urned, sometimes with joints of meat, accessory vessels and metal grave goods) and the main cluster of twelve smaller graves (burials urned, often with accessory vessels and occasional metal grave goods, some paired graves) (Luke 2008, 51–3). The cemetery fits into the La Tene/early Roman tradition of small unenclosed cremation cemeteries (Whimster 1981). In terms of number of graves, date, types of burials and associations with a probable farmstead, the cemetery is closely comparable to that at Bancroft, Milton Keynes (Williams and Zeepvat 1994, 62–72). The larger graves may be regarded as outlying examples of the group of relatively richly furnished La Tene III burials found in the north Thames area, particularly in Essex and Hertfordshire. There are observable variations in the patterns of burial within the cemetery in terms of, for example, the pairing of graves and the differing grave types. These may be related to factors such as family groupings, the status of the deceased or chronology.

Plate 5.55 Isolated inhumation SG5717 (L528, Phase 503, roadside settlement SL155), from the north-east (0.25m scale)

Roman (mid-2nd–late 4th century)
During the 2nd century inhumation gradually replaced cremation as the favoured burial rite within Roman Britain (Philpott 1991, 53), and this was the case for the overwhelming majority of the burial population within the study area. However, a small number of cremation burials, dated to this period by pottery typology, still occurred, including a number with significant quantities of nails and a *bustum* burial (see separate discussions below). Of these, only the 4th-century *bustum* burial was firmly dated. Even if the cemetery associated with farmstead SL54 is included, the number of burials within the study area dated to the mid-2nd–late 4th century appears quite small. Although not all the farmsteads were fully excavated the investigations were extensive, so that any cemeteries away from settlements would have been found even if they had been heavily truncated by modern ploughing. Therefore, the small numbers found may indicate that most people were buried either on the flood plain or in the cemeteries associated with the roadside settlement, or that some other treatment of the dead also occurred at this time.

Kempston Church End roadside settlement
It is presumed that the majority of the inhabitants of the roadside settlement in the later part of the Roman period were buried in one of the two known inhumation cemeteries outside the study area (Fig. 5.3). These were established within existing enclosures on the western edge of the settlement (within the sewer investigations; Dawson 2004, 48 and 55–7) and on its northern edge (within the Box End Quarry investigations; Luke and Preece forthcoming). Both are believed to contain *c.*100 graves, among which supine burials dominated, alongside prone and decapitation burials and empty graves. The existence of the cemeteries probably explains why

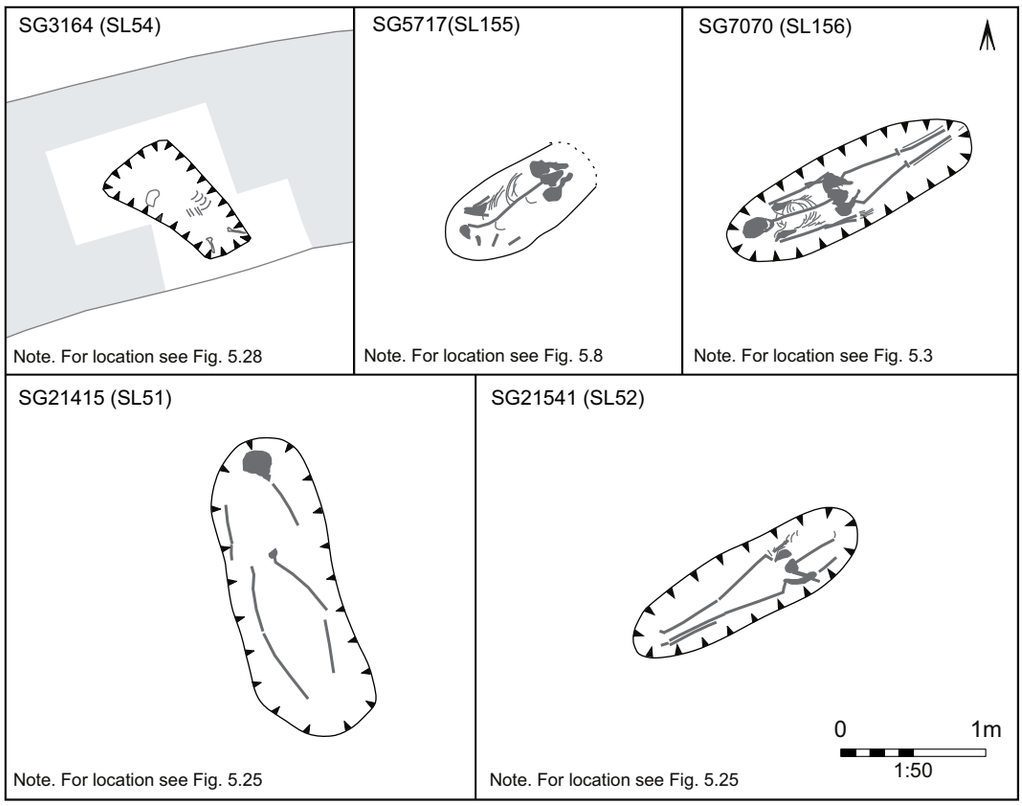


Fig. 5.51 Comparative plans of dispersed Roman inhumations on Biddenham Loop and west of Kempston: SG3164, SG5717, SG7070, SG21415 and SG21541. Scale 1:50

the majority of the inhumations found dispersed within the settlement were those of foetuses or infants (Dawson 2004, 265).

During the recent investigations only one burial was firmly identified within the Kempston Church End roadside settlement SL155 (Fig. 5.8); a further three were found on land to the west of the settlement (SL156) (Fig. 5.3). The burial within the settlement was a heavily truncated adult inhumation (SG5717) of undetermined sex and age (CD Section 2; Powers) buried in the top of a ditch (Fig. 5.51, Table 5.9, Plate 5.55). It may be significant that the grave was on the western periphery of the settlement (Fig. 5.8), in the same location as the possible late Iron Age/early Roman cremation cemetery (see above).

Inhumation SG7070, a 26–35-year-old female (Fig. 5.51; Table 5.9; CD Section 2; Powers), was found *c.*100m further to the west. The grave contained a small fragment of copper alloy, probably from the shank of a hairpin or perhaps a needle (RA7014). Unurned cremation burials SG7302 and SG8050 were situated a similar distance from the settlement (Fig. 5.3 and Table 5.10). Cremated human bone from SG8050 returned a radiocarbon date of 50–250 cal AD (SUERC-25697: 1865±40BP), which means that it could be related to the earlier period of cremation burial. SG7302 is noteworthy in that it contained a large number of nails (see below).

Farmsteads

With the exception of SL54, which featured an inhumation cemetery, there were fewer than four burials on each of the other farmsteads within the Biddenham Loop, including those within the Bovis investigations.

Farmsteads SL51 and SL52 respectively contained single inhumations (Fig. 5.25 and Table 5.9) comprising an extremely poorly preserved possible male SG21415 (Plate 5.56) and a probable male aged 36–45 years (SG21541) (Plate 5.57, Fig. 5.51). Two isolated inhumations were found *c.*25m from the cemetery in SL54 (Fig. 5.28) — a 36–45-year-old male (SG3138) (Plate 5.58) and an infant within a ditch (SG3164) (Fig. 5.51) (Table 5.9). Additional isolated inhumations were found within Bovis farmsteads 13 and 14 (Luke 2008, fig. 10.2 and 10.8; Holst 2008, 284–5). The majority of the inhumations were laid out in the extended supine position, a posture which was common from the mid-2nd century (Philpott 1991, 53). Bovis grave G146, containing an adult female, was unusual in that it featured a cist, with limestone slabs lining the grave and probably sealing it (Luke 2008, 62). Limestone outcrops are quite common along the Bedfordshire Great Ouse but cist-type graves are rare — there was only one (grave 102) among the fifty-four graves in the cemetery at Bletsoe (Dawson 1994, fig. 14, 29) and none of the graves in the two cemeteries in the Kempston Church End roadside settlement contained limestone slabs (Dawson 2004, 231–66; Luke and Preece forthcoming). This suggests that the woman buried within the Biddenham Loop was of some importance.

Three unurned cremation burials were found within farmstead SL52 (Fig. 5.25) and two urned within farmstead SL54 (Fig. 5.28) (Table 5.10). Two (SG22032 and SG22034) of the three cremation burials within SL52

Plate 5.56 Isolated inhumation SG21415 (L2113, farmstead SL51) (1m scale)

Plate 5.57 Isolated inhumation SG21541 (L2119, farmstead SL52) (1m scale)

Plate 5.58 Isolated inhumation SG3138 (L312, farmstead SL54)

L	*G*	*SG*	*Orientation*	*Layout of skeleton*	*Age*	*Sex*	*Grave goods and significant other finds*	*Coffin nails*	*Comments*
306 (SL54)	3033	3167	NE–SW	Supine/extended	36–35 years	Female	—		—
		3169	NW–SE	Supine/extended	18–25 years	Probable female	22 tacks (OA181) Base of later 2nd-century prismatic glass bottle (OA182)	28 (RAb 3022–23, 3032–37, 3039, 3041–58, 3376)	—
		3171	NW–SE	Flexed/on its right side	26–35 years	Female	—	—	—
		3173	NE–SW	Disturbed grave, no bone	—	—	—	—	—
		3175	NW–SE	Supine/extended	18–25 years	Probable female	4 sherds of a Oxfordshire colour-coated 4th-century vessel	—	—
	3034	3177	N–S	Unknown	>18 years	Undet.	—	—	Truncated by grave SG3179
		3179	N–S	Supine/extended	26–35 years	Female	—	2	Decapitated with skull at feet
		3181	NNE–SSW	Supine/extended	>46 years	Probable female	—	—	—
		3183	ESE–WNW	Supine/extended?	Sub-adult	—	—	1 (RAb 3089)	—
		3185	NE–SW	Supine/extended	36–45	Undet.	—	—	—
		3187	E–W	Supine/extended	36–45 years	Male	—	1	—
		3189	ESE–WNW	Prone/extended	>46 years	Probable female	1st-/3rd-century globular glass flask (OA183)	18 (RAb 3090–3105, 3381)	—
		3191	NNE–SSW	Supine/extended	36–45 years	Probable male	Miniature 2nd-century fine grey ware jar (P59)	7 (RAb 3060–64)	—
		3193	NNE–SSW	Supine/extended	6–11 years	—	—	3 (RAb 3110–11, 3379)	—
309 (SL54)	3043	3208	N–S	Supine	6–11 years	—	—	—	—
310 (SL54)	3031	3164	NW–SE	Undet.	<1 month	—	Sheep/goat mandible Partial neonatal calf skull	—	—
312 (SL54)	3027	3138	ENE–WSW	Supine/extended	36–45 years	Male	5 hobnails (RAb 3069, 3073, 3083, 3085–86, 30)	10 (RAb 3067–68, 3070–72, 3074, 3081–2, 3084, 3087)	—
313 (SL54)	3029	3143	N–S	Extended/on its left side	26–35 years	Male	—	—	—
		3145	N–S	Supine/extended	>46 years	Probable male	—	—	—
		3147	N–S	Supine/extended	>46 years	Male	—	—	—

L	*G*	*SG*	*Orientation*	*Layout of skeleton*	*Age*	*Sex*	*Grave goods and significant other finds*	*Coffin nails*	*Comments*
315 (SL54)	3003	3019	NNW–SSE	Prone/extended	36–45 years	Probable male	—	—	—
		3021	N–S	Supine/extended	18–25 years	Male	—	—	—
		3023	N–S	Prone	>46 years	Male	—	—	—
		3025	NNW–SSE	Supine/extended	26–35 years	Probable male	—	—	—
		3027	NNE–SSW	No skeleton	—	—	—	—	—
		3029	N–S	On its right side	Adult	Probable female	—	—	—
		3031	N–S	Supine/extended	36–45 years	Female	CA finger ring (OA185) 70 hobnails (RAb 3192–212, 3214–41)	11 (RAb 3181–91)	—
		3033	NNE–SSW	Supine/extended	26–35 years	Undet.	1 shale arm ring (OA209) 2 CA bracelets (OA 210, 211) 2 CA necklace chains (OA 206) 6 CA necklace rings (OA207–208) Necklace of 30 glass and 1 jet bead (OA 186–188, 192, 193, 197) 1 necklace of 4 jet beads (OA 200, 201, 204, 205) 1 necklace of 4 glass beads (OA 190, 191, 194, 196) 23 hobnails (RAb 3169–79, 3305)	11 (RAb 3304, 3312–17, 3325–26)	—
		3035	N–S	On its left side	6–11 years	—	—	—	—
		3037	NW–SE	Unknown	Adult	Undet.	—	—	—
		3039	E–W	Semi-crouched on left side	>46 years	Male	—	—	—
		3041	NNE–SSW	Supine/extended	26–35 years	Male	—	10 (Rab 3112–120, 3382)	—
		3043	NNE–SSW	Supine/extended	6–11 years	—	1 CA earring (OA184)	—	—
528 (SL155)	5146	5717	NE–SW	Supine	Adult	Undet.	—	—	—
70 (SL156)	7031	7070	NE–SW	Supine	26–35 years	Female	1 CA wire or pin shank (RA7014)	—	—
2113 (SL51)	21074	21415	NNW–SSE	Supine	Adult	Possible male	1 hobnail (RAl 1021)	—	—
2119 (SL52)	21107	21541	ENE–WSW	Supine	36–45 years	Probable male	—	1	—

OA = Other artefact number; RAb = BWB1124 Registered artefact number; P = Pottery illustration number; CA = Copper alloy

Table 5.9 Details of Romano-British (SP10) inhumations burials

L	*G*	*SG*	*Total weight (g)*	*Age*	*Sex*	*Urn*	*Grave goods and significant other finds*	*Comments*
307 (SL54)	3045	3224	47	Adult	Unidentified	RB shelly vessel	—	—
319 (SL54)	3050	3231	121.3	Adult	Unidentified	RB greyware jar (with burnished lattice decoration)	Generic RB sand-tempered folded beaker Generic RB greyware poppy headed beaker Form 36 2nd-century samian dish (all incomplete through modern truncation)	—
529* (SL144)	5147	5720	50.8	Adult	Unidentified	lIA–eRB sand and grog	—	—
731 (SL156)	7305	7302	20	Unidentified	Unidentified	—	Possible cinerary box or casket: 7 nails (RAl 501, 502, 504–506) 5 × hobnails (RAl 503, 507)	—
800 (SL158)	8015	8050	144.3	?adult	Unidentified	—	—	50–250 cal AD (SUERC-25697, 1865 ± 35BP)
2128 (SL52)	21216	22032	269.7	Adult	Unidentified	—	Possible cinerary box or casket: 38 nails (RAl 2441, 2443–2447) 2 × shells 39 fragments of animal bone	—
2130 (SL52)	21217	22034	41.8	Adult	Unidentified	—	Possible cinerary box or casket: 28 nails (RAl 1–4, 6, 8–11, 13–17, 20–24, 26, 31, 32, 34–36, 38, 39, 41) FE brooch (OA 161) (possibly burnt) 13 hobnails (RAl 5, 7, 12, 18, 19, 25, 27, 33, 37, 40, 42, 43)	—
2197 (SL52)	21273	22012	150	?adult	Unidentified	—	FE brooch fragment (OA 159) CA brooch coil fragment (OA 160)	—
2399 (SL53)	23312	24636	953.9	Adult	Unidentified	—	117 × nails (OA162–6) Hinged brooch pin (OA 167) 17:445 generic RB fine greyware dog dish (P95)	Within *bustum* burial
	23313	24637	983.6	Adult	?male	RB shelly jar (P81)	1 fragment of animal bone 3rd-/4th-century Roman beaker (P118)	—

OA = Other artefact number; RAl = LWB1289 Registered artefact number; P = Pottery illustration number; CA = Copper alloy; FE = Iron; lIA = late Iron Age; eRB = early Romano-British; RB = Romano-British

Table 5.10 Late Iron Age (SP9) and Romano-British (SP10) cremation burials (SP9 denoted by *)

Fill	*Seg 1 (NNE)*	*Seg 2*	*Seg 3*	*Seg 4*	*Seg 5*	*Seg 6*	*Seg 7*	*Seg 8 (SSW)*	*Lense approx above Seg 5*	*Lense approx above Seg 8*		*Backfill*	
Context no.	14029	14030	14031	14032	14033	14034	14035	14036	14060	14025		14024	
Sample no.	14009	14010	14011	14012	14013	14014	14015	14016	14022	14007	14006	14008	14023
Human bone (g)													
Skull	1.3	13.5	55.3	12.4	—	—	—	—	—		—	—	—
Axial	—	—	8.9	18.5	1.2	—	—	—	—	—	—	—	—
Upper limb	—	—	—	15.2	11.3	—	—	—	—	—	—	—	—
Lower limb	—	12.2	—	18.0	124.1	—	1.1	—	—	—	—	—	—
Animal bone													
Dog (fragments)							48						
Fowl (fragments)							1					1	
Unidentified animal bone fragments							300						
Finds													
Nails (NB – hand-collected and from samples)	6	7	16 (OA162, 163)	28	9	14 (OA 165, 166)	17	18 (OA164)	—	—		2	
Pottery								16:0.44 2nd-century dog dish (P95)					
Other finds						Brooch pin (OA167)							
Charcoal													
Worked wood	✓	✓	—	—	—	—	—	✓	—	✓	✓	✓	✓(?)

OA = Other artefact number; P = Pottery illustration number; Seg = Segment

Table 5.11 Details of bustum G23312, L2399 (SL53)

contained a large number of nails and are discussed separately below. The two urned cremation burials, SG3224 and SG3231, the latter with accessory vessels, were located in the vicinity of the inhumation cemetery on the periphery of farmstead SL54. None of the burials contained substantial amounts of identifiable bone. 'It is not possible to conclude that any deliberate selection of remains for burial was undertaken, though clearly the total weight of bone in each deposit does not represent a complete individual' (CD Section 2; Powers). The shelly coarseware jar used as an urn in SG3224 was placed centrally within the grave in an upright position and is likely to be of 2nd-/3rd-century date (CD Section 2; Wells, Pottery). The urn in nearby burial SG3231 comprised a greyware jar with burnished lattice decoration, of probable 2nd-century date (CD Section 2; Wells, Pottery). This burial was the only one to contain accessory vessels, which had all been broken by modern disturbance. They comprised a sand-tempered folded beaker, a greyware poppy head beaker (CD Section 2; Wells, Pottery) and a probable Central Gaulish form 36 samian dish of Trajanic to Hadrianic date (CD Section 2; Wild). On the basis of pottery typology most of the cremation burials associated with the farmsteads are considered to be 2nd or 3rd century in date, rather than 4th century. Those within farmstead SL52 are presumed to be at least 2nd century in date, as this is when the settlement was established.

Excluding the cremation burials with nails and the *bustum* burial, only one of the isolated graves from the recent investigations contained possible metallic grave goods. These were fragments from iron (OA159) and copper alloy (OA160) brooches in unurned cremation burial SG22012 (SL52) (Table 5.10). Only one burial within the Bovis investigations contained grave goods — a greyware jar placed next to the right foot (Luke 2008, 62 and fig. 10.2).

The presence of only small numbers of burials on farmsteads is commonly seen in this part of the Great Ouse valley and the wider region (Going 1997, 40); for example, each farmstead at Marsh Leys had two inhumations (Luke 2011, 159). Within the Biddenham Loop farmsteads the inhumations tended to be situated adjacent to ditches and sometimes in the corners of enclosures, whereas the cremation burials tended to be located more towards the interior of enclosures or fields. Such locations are common on Romano-British rural settlements. Burials occurred next to ditches at Wavendon Gate, Milton Keynes (Williams *et al.* 1996, 80–82, 89), and 'in the corner of a field at the limits of the habitation site' at Roxton, Beds. (Taylor and Woodward 1983, 11).

Cremation burials with significant quantities of nails

Three unurned cremation burials were unexceptional in appearance (Plate 5.59), but contained relatively large quantities of iron nails (Table 5.10). There were seven in SG7302 (SL156), to the west of the Kempston Church End roadside settlement (Fig. 5.3), and thirty-eight in SG22032 and twenty-eight in SG22034, within farmstead SL52 on the Biddenham Loop (location of both shown on Fig. 5.25). Two contained grave or pyre goods and SG22032 contained abraded sherds of pottery, none of which are closely datable. These are significant numbers, given that two of the graves were 0.5m in diameter and under 0.4m deep; SG7302 was only 0.35m in diameter and 0.2m deep. The nails from SG22032 and SG22034

Plate 5.59 Un-urned cremation burial SG22032 (L2197, farmstead SL52). Prior to excavation this looked unexceptional, but it was one of a number of burials to contain numerous nails (0.4m scale)

appear to be in two size ranges, which were 'suggested not only by their surviving lengths but also by shank dimensions': estimated lengths of 25mm to 35mm with thinner shanks and estimated lengths of 40mm to 45mm with more robust shanks (CD Section 2; Duncan). A few have bent or clenched lower shanks.

Nails found within cremation deposits are thought to derive either from a cinerary container (box or casket) or from items on the pyre, such as bier, coffin, objects or individual pieces of used timber. Wooden cinerary containers, as discussed by Philpott (1991, 12–21), served as the receptacle for cremated bone and grave goods after cremation on the pyre, as at Site 8 on Great Barford Bypass (Poole 2007a, 127 and fig. 4.33), and this is a possibility. However, the nails from the recent investigation, as at Wallington Road, Baldock (Fitzpatrick-Matthews and Stevenson 2010, 211–14), exhibited no significant distribution pattern. They appeared to be randomly distributed throughout the grave and, therefore, it is difficult to see how they could represent evidence for a container. In addition, if these 'burials were accompanied by boxes, the absence of urns is unusual as most box or casket cremation burials are usually contained within a glass or ceramic vessel (Philpott 1991, 16)' (CD Section 2; Duncan). They are more likely to represent the remains of material placed on the pyre, like the nails in cremation deposits at Brougham Cumbria, which were thought to be associated with wooden objects and biers (Mould 2004, 271).

Graves SG7302 and SG22034 contained evidence for footwear in the form of five and thirteen hobnails respectively. In addition, SG22034 contained a misshapen iron object (OA161) that may have been a brooch (CD Section 2; Duncan). The thirty-nine fragments of animal bone from SG22032 may have been part of a joint of meat associated with the burial but they could not be identified to species.

These burials are interesting because the discovery of significant quantities of nails within cremation deposits is relatively uncommon. Rather than simply being explained as nails already in timbers used in the pyre they may be evidence of either a bier or wooden objects. It is possible,

therefore, that these are part of a very local tradition in this part of the Great Ouse valley.

***Bustum* burial**
(Fig. 5.52, Table 5.11)

Introduction
Perhaps the most unusual individual burial, L2399, of a type known as a *bustum* burial, was found in isolation within the southern part of the Loop (SL53). This fairly rare type of burial takes its name from the Latin *bustum*, which can best be rendered as: 'the place where corpses were burned and buried'. *Bustum* burials result from the cremation of the deceased on a pyre constructed over the grave pit itself, in contrast to the majority of cremations in Roman Britain, where the body was burnt on a pyre away from the actual grave. After combustion the pyre material and cremated bone is allowed to fall, or is pushed, into the grave pit. In this case, the deceased was an adult probable male who was probably laid out on couch with his dog at his feet. Prior to backfilling, some

Box 23: Romano-British *bustum* burial

This reconstruction by Cecily Marshall (copyright Bedford Museum) aims to give an impression of what the cremation pyre and associated funerary gathering for this 4th-century bustum burial might have looked like.

This is undoubtedly the most unusual Roman burial found within the investigations. It took place in an isolated spot in the southern part of the Biddenham Loop. The Latin word *bustum* can best be rendered as: 'the place where corpses were burned and buried'. Bustum burials result from the cremation of the deceased on a pyre constructed over the grave pit itself — in contrast to the majority of cremations in Roman Britain, where the body is burnt on a pyre away from the actual grave. After combustion the remains of the pyre and the cremated bone is allowed to fall, or is pushed, into the grave pit.

The characteristics and distribution of the contents of the grave pit show that the deceased was a probable adult male who was laid out on a couch with his dog at his feet. The inclusion of a couch on the pyre is very seldom seen in Britain but was popular with the residents of Italian cities. Its use in this burial is clearly signalled by the charred wood in the grave pit — its form, positioning and species type — and by the presence of nails with decorative heads. It is not unknown in the Roman world for animals to be killed as offerings to the gods or, as in this case, to accompany their masters to the next world. Once the pyre had burnt itself out the larger pieces of cremated human bone were collected in a pottery urn which was placed in the grave with two chicken bones on top of it. The latter may derive from the mourners' feasting or may be food for the deceased in the next life. Similarly, the pottery beaker placed next to the urn may have contained wine for him to drink.

The use of the *bustum* rite (at a time when most people were inhumed), the grave's central location within the Loop and the inclusion of a dog and a couch make this burial unique in the region. Roman authors have described how the corpses of the rich were conveyed to cemeteries on funerary couches which were then burnt atop the pyre. It seems likely that this individual was a wealthy landowner who, if local, had embraced Roman culture and beliefs.

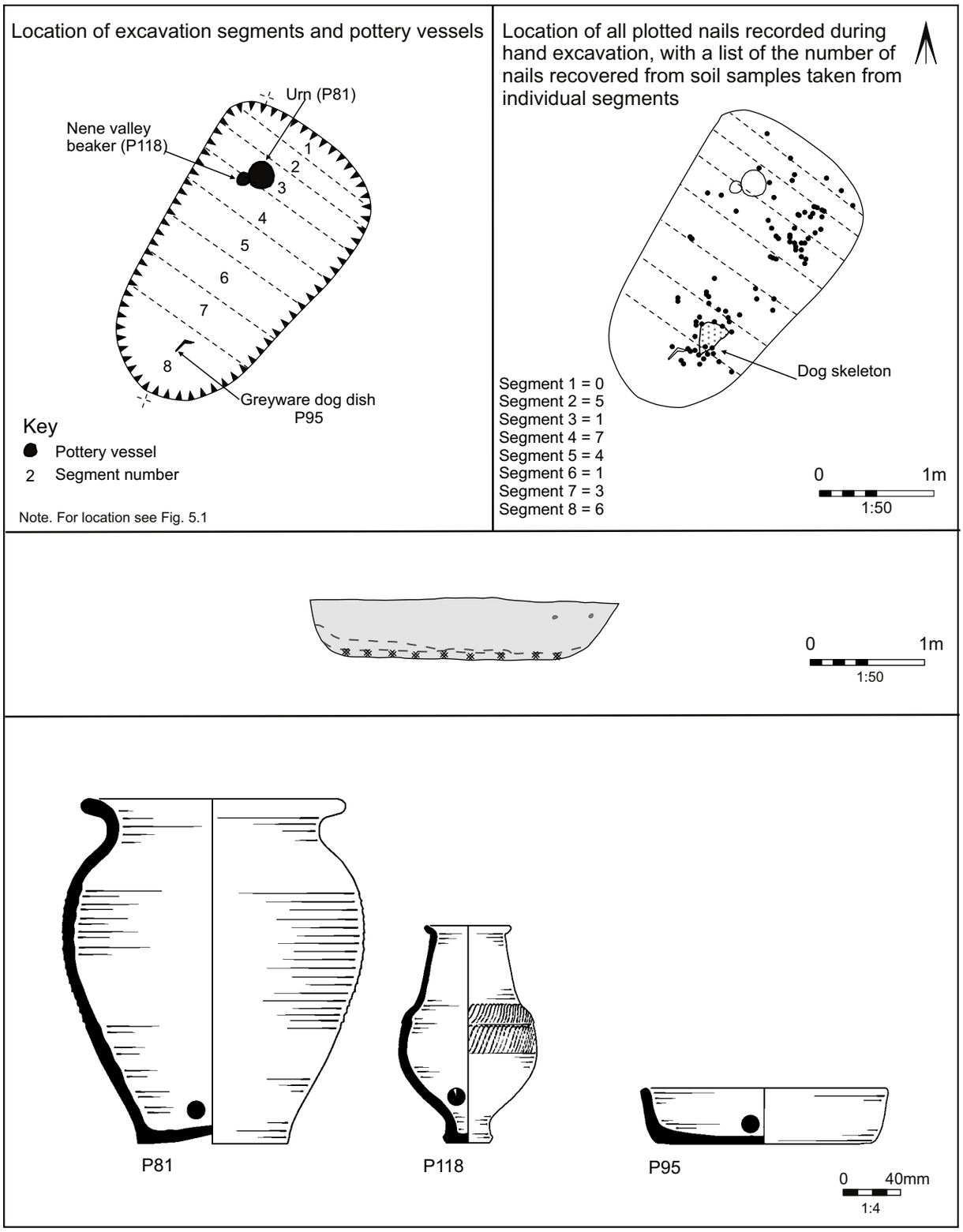


Fig. 5.52 Detailed plan of *bustum* burial L2399, showing segments, nail distributions and position of pottery vessels and dog. Scale 1:50

cremated bone was collected and placed in an urn, which was put in the grave along with a number of other items.

The *bustum* burial was located *c.*100m west of north–south trackway L2376 and, perhaps more significantly, was equidistant between farmstead SL54 and major land boundary L112/L2336, which crossed the Loop to the north (Fig. 5.1). It comprised a north-east–south-west - aligned sub-rectangular grave pit (G23312) that was 2.7m long, 1.4m wide and 0.6m deep, with visible scorching on its sides and base (Plates 5.60 and 5.61).

Plate 5.60 Lower pyre-related fills of the *bustum* burial G23312 (L2399) as first seen, from the south-east (1m scale)

Plate 5.61 Investigation of the *bustum* burial G23312 (L2399), from the north-west

Plate 5.62 Close-up of pottery vessels P81 and P118, placed at the north-east end of the bustum pit (0.4m scale)

Charcoal, including some large pieces, and cremated human bone were present in the lower fill of the grave pit. Both were visible from the start of excavation of this deposit, which was therefore fully sampled in eight segments, numbered 1–8 from north-east to south-west (Fig. 5.52). This allowed the subsequent study of the spatial distribution of the charcoal, bone and other material. Additional samples were taken from the general backfill, which included a number of distinct charcoal lenses. In total, the grave pit contained three pottery vessels (CD Section 2; Wells, Pottery), 117 nails (or parts thereof) (CD Section 2; Duncan, Fig. 10, OA162–166) and a copper alloy hinged brooch pin (CD Section 2; Duncan, Fig. 10, OA167). Where nails were identified during hand excavation their location was recorded (Fig. 5.52).

Human bone

Nearly 954g of cremated human bone was recovered from the lower fill of the grave pit. Analysis has shown that it remained in approximate anatomical position suggesting that the body was positioned with the head to the north-east and the feet to the south-west (CD Section 2; Powers, Fig. 6). A further *c.*1204g of cremated human bone was deposited in a pottery urn (P81) placed at the north-east end of the grave pit.

'The quantity of burnt bone within the urn constitutes a significant proportion of an adult individual. The morphology of the medial pubis and a narrow sub-pubic angle indicated the remains are those of a probable male. Whilst no estimation of sex was possible for the remains

Plate 5.63 Close-up of the charred bones of an adult dog at the south-west (feet) end of the *bustum* pit (0.25m scale)

from within the pit, numerous teeth were identifiable and, together with the robusticity of the bone indicated that the remains were those of an adult. There were no elements repeated within the urn or the pit, and the presence of paired elements (*e.g.* ilia) strongly suggests that the remains are from a single individual' (CD Section 2; Powers).

There is clear evidence for the selection of certain types of human bone for inclusion in the urn.

> Comparison of the percentage of identifiable bone within each body area to that expected from the relative proportions present in a complete skeleton demonstrated that the skull was over-represented within the pit fill, but the reverse was true within the urn. Similarly, the axial skeleton was under-represented in the pit fill but significantly over-represented in the urn (CD Section 2; Powers).

Grave goods

(Fig. 5.52)

Grave goods were placed at the north-east and south-west ends of the grave pit. The urn, one of two pottery vessels G23313 placed at the north-east (head) end (Plate 5.62), contained cremated human and dog bones. It was a complete late Roman wide-mouthed rilled shelly jar (CD Section 2; Wells, Fig. 10, P81) and was placed in an upright position on top of the pyre material at the base of the grave pit. Two calcined bones of domestic fowl appear to have been placed near the urn; it is possible they belonged to the same adult bird (CD Section 2; Maltby). Both bones were calcined, but it is unclear whether they represent remnants of feasting and/or grave goods. Two of the cremations burials within the sewer investigations at Kempston Church End contained the remains of domestic fowl (Boghi and Roberts 2004, 316). Next to the urn was a 4th-century Nene Valley colour-coated, pentice-moulded beaker (CD Section 2; Wells, Pottery, Fig. 15, P118), which was found on its side.

Grave goods placed at the south-west (feet) end comprised a 2nd-century greyware dog dish (CD Section 2; Wells, Pottery, Fig. 13, P95) and the calcined or severely charred bones of an adult dog (Plate 5.63). 'Although most fragments were too fragmented to be identifiable, sufficient survived to indicate that a complete skeleton is represented' (CD Section 2; Maltby). The dog had presumably been killed to accompany the deceased in line with some Roman practices (Toynbee 1971, 50), and then placed on the pyre at the feet of its master. Dogs are rarely identified within cremation burials but are known to occur occasionally with inhumations (Philpott 1991, 204). An unusual example from nearby was a dog's skull found in an empty grave within the Box End Quarry cemetery (Luke and Preece forthcoming). The pottery dish is partially burnt on its surfaces and along broken edges, presumably as a result of fire damage. This may suggest deliberate breakage ('ritual killing') prior to burning, perhaps as part of the cremation and burial rite (*cf.* Weekes 2008, 155)' (CD Section 2; Wells, Pottery). It is tempting, given its type and position, to see this as a water or food bowl used by the dog. It is unclear whether the copper alloy brooch pin found at the base of the pit in segment 6 was part of a complete brooch worn by the individual or an accidental inclusion (CD Section 2; Duncan, Fig. 10, OA167).

Worked wood

Ten samples from the lower fill of the grave pit were extremely rich in charcoal and because they 'had resulted from *in situ* burning the degree of fragmentation was less, leading to the preservation of some very large fragments (>50mm in cross section) in some samples' (CD Section 2; Challinor). Segments 3 and 4, where the pottery urn was located, contained little charcoal. Challinor comments that this may relate to the disturbance of the pyre material when the bone was collected for deposition in the urn. Duncan (CD Section 2) suggested that these were the hottest parts of the pyre and that the wood had been burnt to ash.

> A surprisingly diverse range of seven taxa was identified; *Quercus* sp. (oak), *Corylus avellana* (hazel), *Populus*/*Salix* (willow/poplar), *Prunus* sp. (cherry/blackthorn), Maloideae (hawthorn group), *Acer campestre* (field maple) and *Fraxinus excelsior* (ash) … The main taxon recovered from the burial is *Fraxinus*, both in terms of frequency and quantity … Romano-British cremation assemblages typically include *Quercus* and *Fraxinus*, which were used for fuel and pyre structure (Challinor 2007a; Challinor 2007b; Gale 1997). Similarly, the Maloideae (hawthorn group), *Prunus* (cherry/blackthorn) and *Corylus* (hazel) all derived from roundwood, appropriate for the brushwood infilling and/or kindling used in the pyre. The use of *Prunus* has also been linked to odour, as cherry woods are sweet-smelling (Challinor 2007b)(CD Section 2; Challinor).

The most unusual and significant element of the assemblage was the presence of worked wood in several samples. This is

> … particularly rare since the fragmentation of charcoal (both during burning and subsequent depositional processes) generally masks such features. That the *Fraxinus excelsior* (ash) charcoal in this burial came from worked wood was unmistakable as the wood had been curved and shaped in a manner which would not be produced by general wood fragmentation … Ash wood has excellent wood-working properties; it is strong and resilient to stress, making it appropriate for many artefactual items such as tool handles. It was also recorded as being used for beds in the Ancient Mediterranean (Gale and Cutler 2000, 120) and even noted by Pliny as suitable for chariots (*NH* XVI, 84). The quantity of worked ash wood in the burial samples rather suggests that a larger item is represented, particularly if the likely under-representation of the worked wood (owing to the fragmentation and brittleness of charcoal) is taken into account (CD Section 2; Challinor).
>
> Segment 5 [of the *bustum* burial] was dominated by *Populus*/*Salix* charcoal, in complete contrast to the other assemblages, and *Fraxinus* was absent. … That this sample was so different to others in the same fill … suggests that a specific artefact (or decoration on a larger item) may be represented. Both *Salix* and *Populus* have

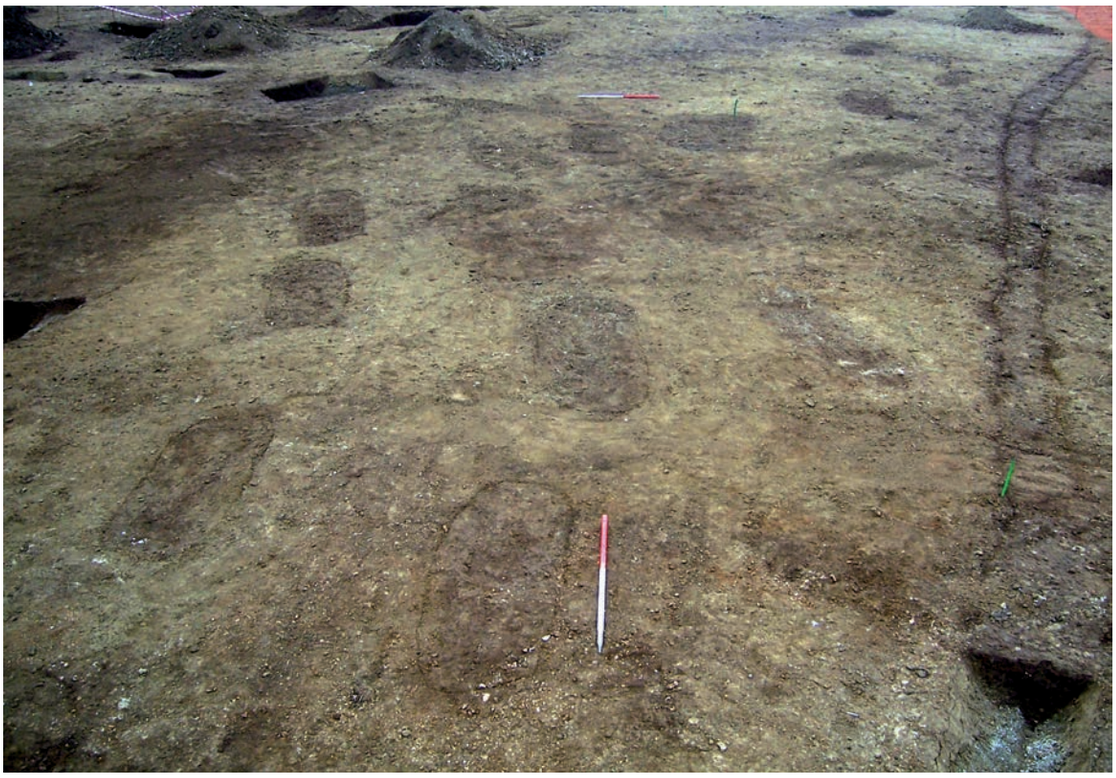


Plate 5.64 Grave group G3003 (cemetery L315, farmstead SL54), looking south, prior to excavation (1m scale)

various domestic uses (Gale and Cutler 2000, 418) and either taxa could have been used in a decorative manner. Pliny records that, in the Roman world, poplar and willow were suitable for wicker-work and carvings (*NH* XVI, 77), and that willow was used for luxurious easy chairs (*NH* XVI, 68) (CD Section 2; Challinor).

Challinor also noted insect damage to the *Populus*/*Salix* (poplar/willow) charcoal, including some of the worked pieces. The insect tunnels were 'characteristic of the types of wood-boring beetles commonly found in structures and furniture (Mark Robinson, pers. comm.)' (CD Section 2; Challinor).

The presence of furniture is also indicated by the recovery of 117 nails, all Manning's type 1b (1985, 134).

> The majority of heads were square or rectangular in plan (see Fig. 10, OA162, OA163 and OA165), but fourteen had heads of pentagonal to hexagonal shape (Fig. 10, OA164 and OA166) … The shape of the heads may have been accidental, but the possibility of some form of decorative nailing should not be overlooked (CD Section 2; Duncan).

> One possible explanation for the worked wood is the reuse of timbers from buildings. However, the nature of the worked wood in the *bustum* burial from Biddenham is not characteristic of reused building material, nor does it suggest coffin planks. It seems likely that an item of furniture is represented. The possibility that old, broken furniture was placed on the pyre also seems unlikely, when *bustum* burials generally required an investment in the individual accordant with their high status. Of particular significance is that the worked *Fraxinus* wood is present in segments 1, 2, 7 and 8, as well as the general backfill … These segments (and the backfill) correspond to either end of the burial and also form four of the five largest assemblages in the whole burial. This corroborates the interpretation that a larger piece of furniture, such as a couch, is represented. The additional presence of worked *Salix*/*Populus* in sample 14008, from a distinct lense overlying the area of segment 3, suggests that either other wooden pyre goods were included in the cremation, or that some decorative element associated with the larger piece of *Fraxinus* furniture is present. The analysis of the iron (CD Section 2; Duncan) demonstrated that at least some of the nail heads were shaped and may have had a decorative function. Other taxa in the burial, including the possible worked *Quercus* fragment from sample 14023 (one of the distinct lenses overlying the lower fill) and the small quantity of Acer in segment 3 may have also come from artefacts, but the general distinction between pyre good and fuelwood is not always clear. For example, the cremation cemetery at Pepper Hill, Kent, included five *busta* which were entirely dominated by *Quercus*, with no significant spatial differences between the spits of the burials or, indeed, between different deposit types (redeposited pyre debris, pyre sites and *busta*) across the site (Challinor 2006) (CD Section 2; Challinor).

Discussion

Although *bustum* burials are uncommon, a number have been found at sites in south-east England. McKinley (2000, 40) identified ten possible *busta* from St Albans, Herts., and a group of eight *busta* was identified at The Lea, Denham, Bucks. (Coleman *et al.* 2004). More locally, one has recently been identified within a cemetery at Court Drive, Dunstable, Beds (Edwards 2010, 241). Those from The Lea, which have not yet been analysed, have some similarities to the Biddenham Loop example: they are dated to the 3rd–4th centuries AD; they have a rectangular grave pit; and they are aligned north-east–south-west. The similar alignment and shape are likely to have a functional explanation, perhaps related to prevailing wind direction.

> Provisional examination of the burnt bone at The Lea indicated variety in the treatment of the remains following cremation. In one burial the burnt bone remained in approximate anatomical position within the pit (as it did in the Biddenham assemblage), whilst in others the human remains had been gathered up and separated from other materials before the pit was backfilled (Coleman *et al.* 2004)(CD Section 2; Powers).

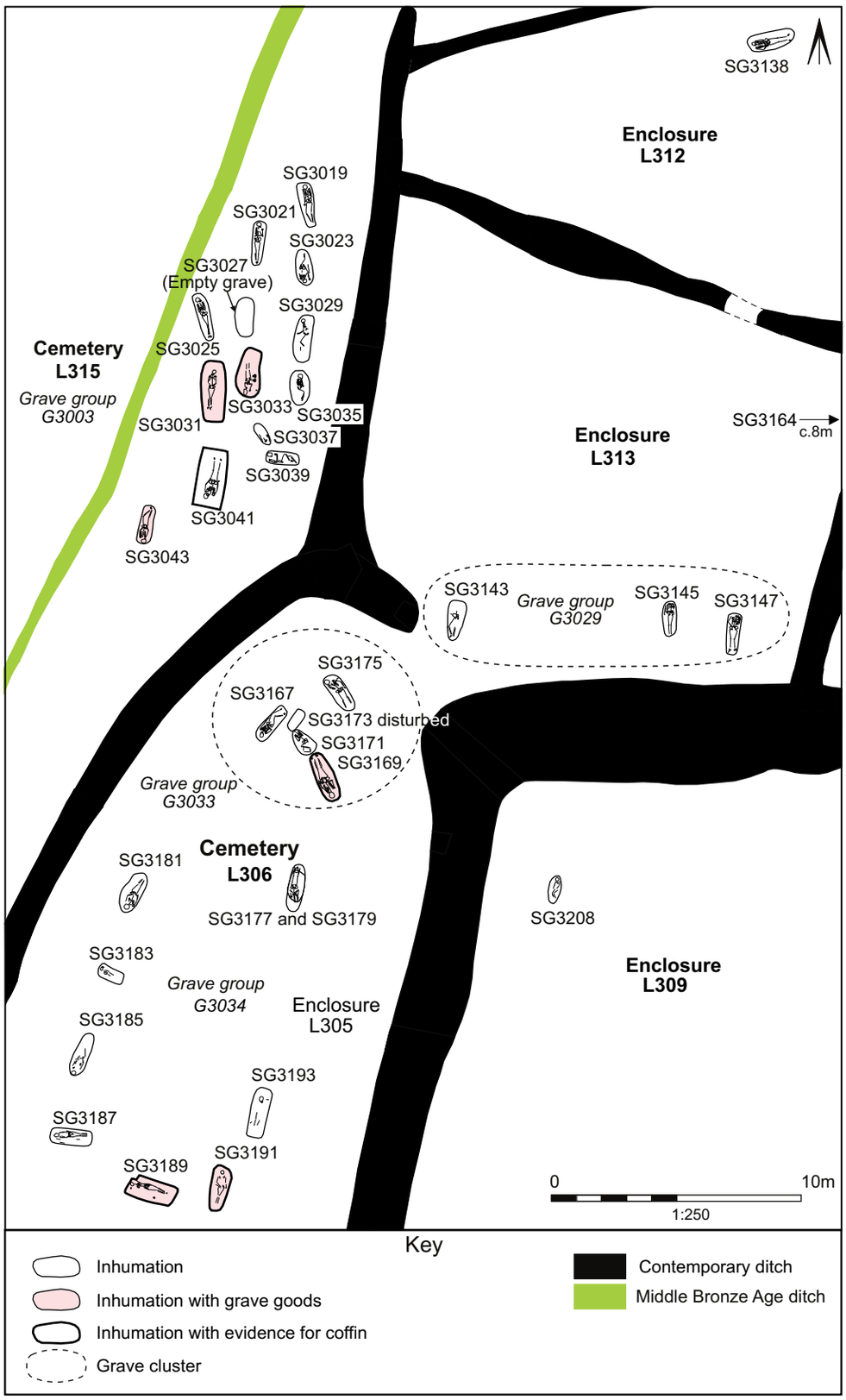


Fig. 5.53 Overall plan of late Roman cemetery L306 and L315 (farmstead SL54). Scale 1:250

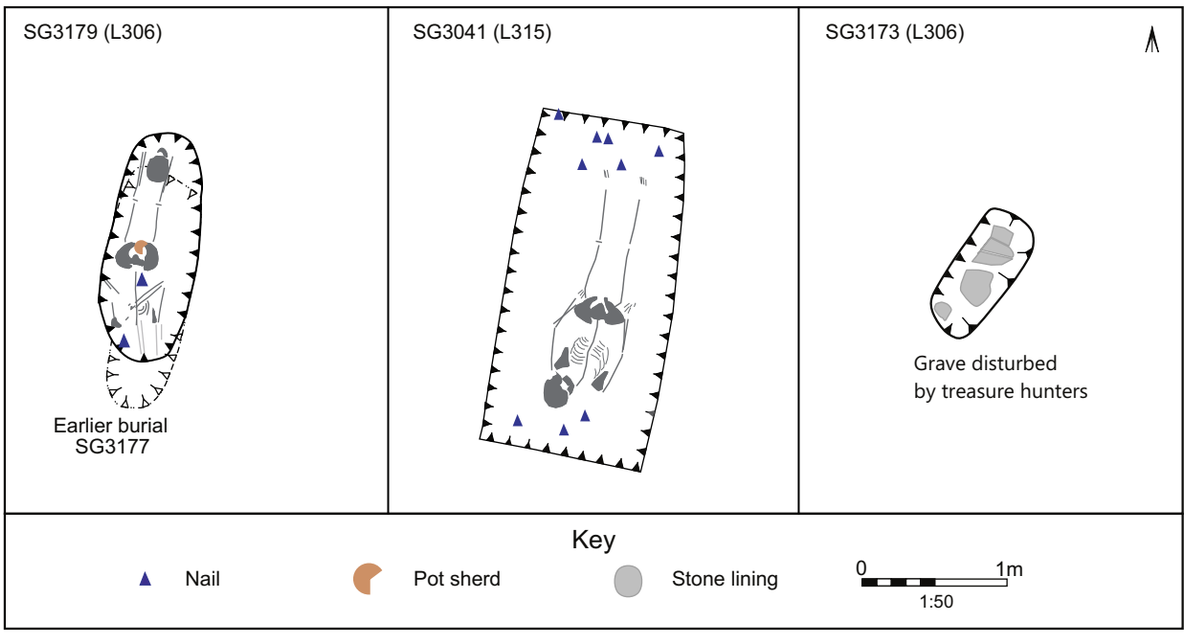


Fig. 5.54 Comparative plans of decapitation SG3179 with earlier grave SG3177 (cemetery L306), grave with coffin nails SG3041 (cemetery L315) and grave with ceramic tiles SG3173 (cemetery L306). Scale 1:50

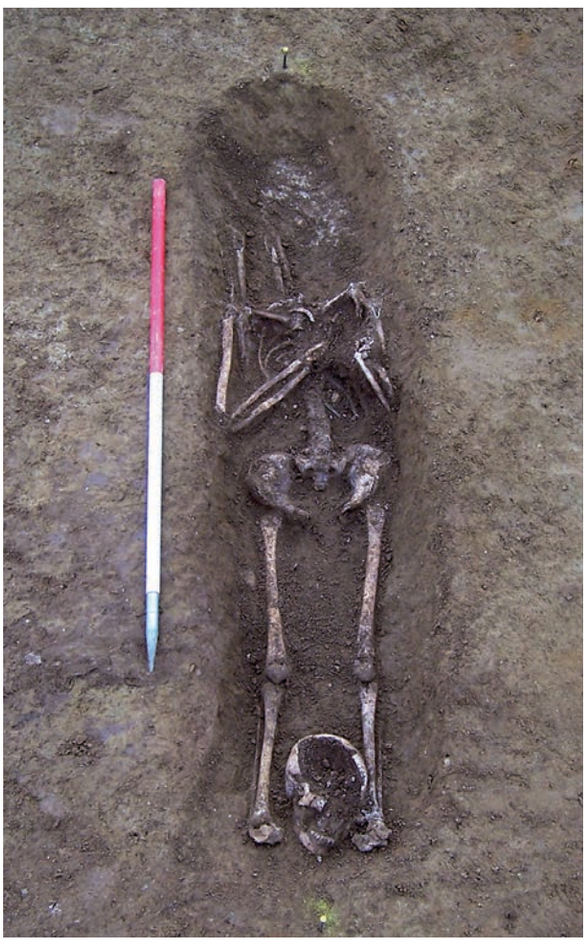


Plate 5.65 Decapitated inhumation SG3179 (cemetery L306, farmstead SL54), looking south, with legs of earlier inhumation SG3177 visible in the background (1m scale)

The burial of an individual of high status is suggested by the unusual burial rite, the grave's isolated location within the centre of the Biddenham Loop and the inclusion of a dog. However, the presence of a substantial piece of wooden decorated furniture, probably a couch, makes this burial unique in the region. 'Roman authors describe that corpses of the rich were carried on funerary couches (*lectia*) which were then burnt atop the pyre, while those of lower status were cremated on biers or in coffins (*sandapila*) (Toynbee 1971, 49–50)' (CD Section 2; Challinor). There are a few examples of couch burials in Roman Britain, all from high-status sites, as at Colchester (Eckardt 1999) and Folly Lane, St Albans (Niblett 1999).

Inhumation cemeteries L306 and L315 attached to farmstead SL54
(Figs 5.53–5.56)

The majority of the thirty-three graves on the periphery of farmstead SL54 were clustered in two discrete cemeteries L306 and L315 (Fig. 5.53; Table 5.9; Plate 5.64). They were adjacent but separated by an enclosure ditch and their full extent was within the excavation area. The longevity of each cemetery is difficult to establish with precision owing to the small number of datable artefacts in the graves. However, burials probably took place between the late 2nd century and the late 4th century.

Within cemetery L315 all graves except SG3039 were aligned roughly north–south, reflecting the alignment of the main enclosure ditches (Fig. 5.53). While the majority of the graves in L306 were also aligned roughly north–south there was a greater number with different alignments, as seen in grave group G3033 (Fig. 5.53). To the south of these, grave group G3034 appeared to respect a rectangular area devoid of features which may have contained a structure (Fig. 5.53). Only one grave SG3179 disturbed another, earlier burial (SG3177), of which only the legs remained (Fig. 5.54).

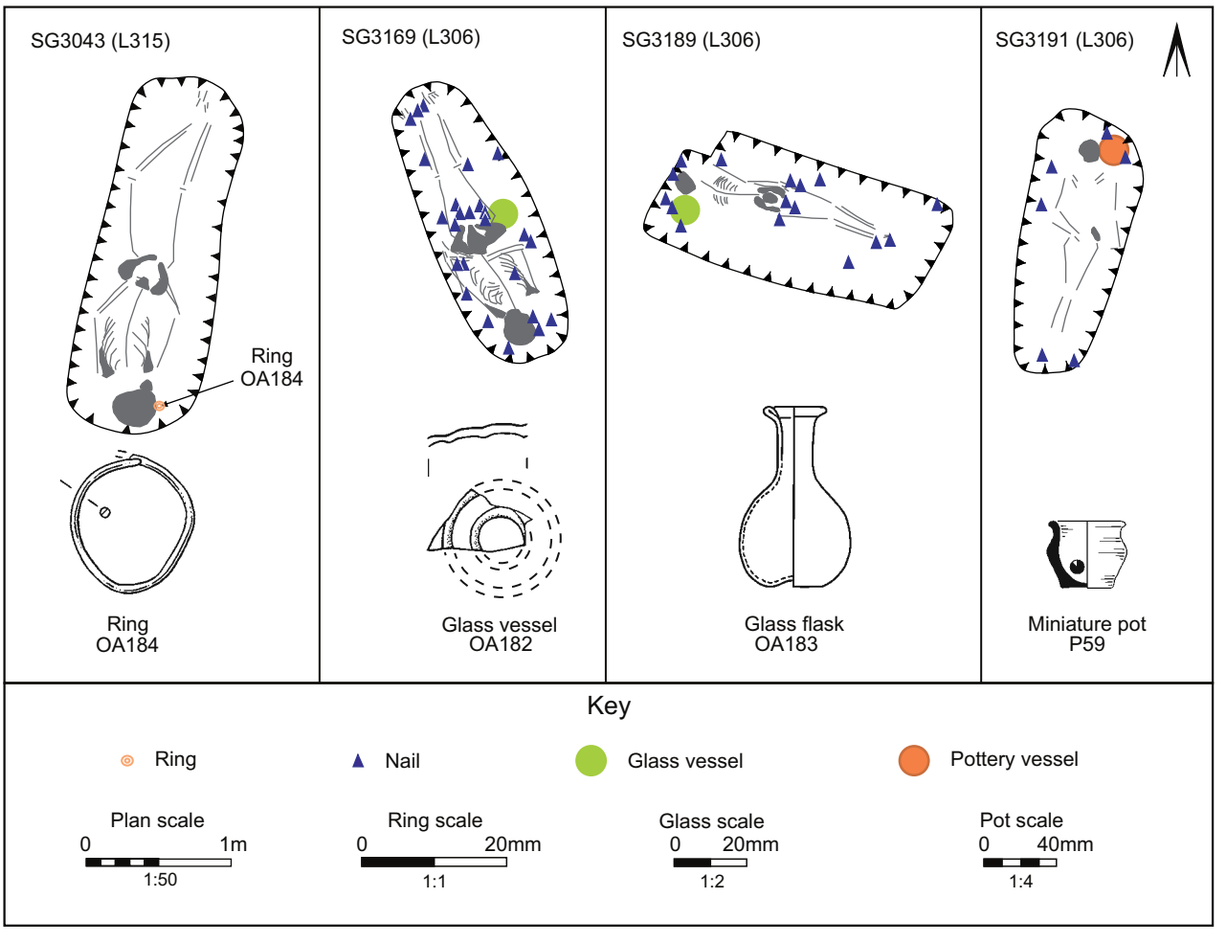


Fig. 5.55 Comparative plans of graves with grave goods from cemetery L306 (SG3169, SG3189 and SG3191) and cemetery L315 (SG3043). Scale 1:50

Plate 5.66 Exposing inhumation SG3169 (G3033, cemetery L306, farmstead SL54), from the south-west

Plate 5.67 Exposing inhumation SG3031 (G3003, cemetery L315, farmstead SL54), from the north

The most common body position was supine and extended, although the position of the head varied. Three burials were fully prone: SG3189, a female aged ≥46 years; SG3019, a probable male aged 36–45 years; and SG3023, a ≥46-year-old male with tuberculosis.

> The latter individual is intriguing. A comparison can be made with the late Roman (AD 450–690) burial of a subadult from Hitchin, Hertfordshire, the only prone individual in a small cemetery group who also had skeletal changes consistent with possible early tuberculosis (Davis 2005, 63)(CD Section 2; Powers).

The head of burial SG3179 (L306), a 26–35-year-old female, had been removed and repositioned between the feet (Fig. 5.54, Plate 5.65). 'Unfortunately the poor preservation of this woman prevented observation of any

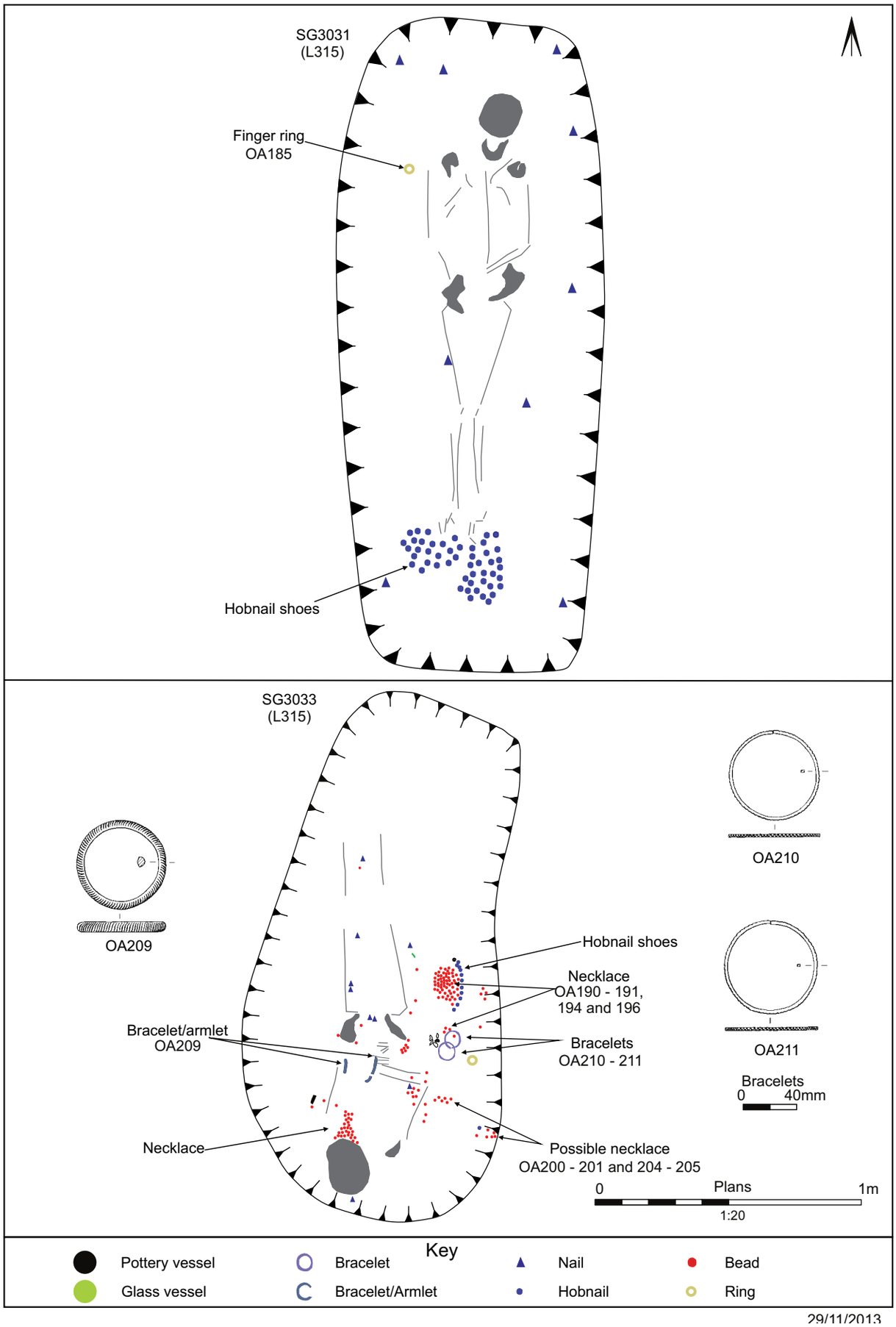


Fig. 5.56 Detailed plans of graves with multiple grave goods SG3031 and SG3033 (cemetery L315). Scale 1:20

Plate 5.68 Recording beads associated with the area around inhumation SG3033 (G3003, cemetery L315, farmstead SL54), from the east

possible cut marks and limited the information which her remains could provide' (CD Section 2; Powers).

> Decapitation and prone burial are recognised burial rites across Roman Britain. Such 'deviant' burial may signify a cultural or religious difference, and may be a positive or negative signifier. Some have commented on the possible sacrificial connotations of decapitation (Esmonde Cleary 2000, 135), while prone burial has been interpreted as signifying the disposal of an individual who was considered spiritually dangerous; ethnographic examples show this may include those who die of infectious disease (Taylor 2003, 123; Barley 1995). Two mature males from Great Barford had been decapitated (Geber 2007, 312), and during the earlier excavations at Kempston Church End, 13% of the total cemetery population (12/92 burials) were found to have been decapitated, with a further 13% placed in a prone position (Boylston *et al.* 2000, 247). Here, a similar proportion of burials were prone 11.1% (4/36), but the percentage of decapitation is far lower at 2.8% (1/36)(CD Section 2; Powers).

Grave SG3176 (L315) was exceptional in that it contained no skeleton. The presence of skeletons in adjacent graves suggests that this absence was not due to localised soil conditions. The empty grave may reflect funerary practices associated with someone whose body was not available for burial, perhaps because they had, for example, died away from home. An empty grave was also identified within one of the cemeteries in the Kempston Church End roadside settlement (Luke and Preece forthcoming). Grave SG3173 also did not contain a skeleton. However, in this case the absence of a skeleton is probably because the grave had been heavily disturbed prior to investigation, presumably by illicit treasure hunters, which may indicate that it originally contained metal grave goods. It was clearly an unusual grave because of the presence of ceramic tiles. Fig. 5.54 shows their position as recorded after disturbance; they are unlikely to have been in their original positions, so it is unclear exactly how they had been used to line the grave. This is extremely unfortunate because, while graves containing roof tiles are known from cemeteries such as Poundbury, Dorset (Woodward 1993, 228), none have been previously identified on the Biddenham Loop or at Kempston Church End. The size of the grave suggests that it probably contained a child.

The thirty-two inhumations comprised twelve males or probable males, ten females or probable females, four adults of undetermined sex and six subadults (CD Section 2; Powers). The demographic profile of the inhumed population conforms to that seen across Britain, though the male bias is somewhat lower than that seen at the previously excavated cemetery within the Kempston Church End settlement (Boylston and Roberts 2004, 336 and table 8.18).

> Nails were the most commonly occurring item in the graves, quantities ranging between one and twenty-eight examples per grave. The presence of nails within graves is frequently the only surviving evidence for the use of a coffin. However, as nails can be inadvertently incorporated into fills of negative features, as witnessed by the frequency with which they occurred in pit and ditch fills of the enclosures in SL54, a minimum number of more than three nails was set before suggesting the existence of a coffin (CD Section 2; Duncan).

This suggests that at least three adult inhumations were buried in coffins of nailed construction in L306 (probable females SG3169 and SG3189 and male SG3191) and another three adults in L315 (female SG3031, probable female based on grave goods SG3033 and male SG3041). Of these, only SG3041 did not contain grave goods, but the nails were concentrated in the area below the feet and above the skull; none was found along the length of the body (Fig. 5.54). This suggests a slightly different construction method than that used, for example, in SG3031, where the nails were distributed around the outer edges of the skeleton (Fig. 5.56; CD Section 2; Duncan). Philpott argues that the presence and material of a coffin provides the most direct indicator of status in Romano-British inhumations (1991, 53). On the basis of nail lengths, Duncan (CD Section 2) identified coffins of

substantial construction (SG3031, SG3033, SG3189 and SG3191) and those of slighter construction (SG3041 and SG3169).

Six burials contained grave goods:

- **SG3169** (L306) (Fig. 5.55, Plate 5.66): a coffined 18–25-year-old probable female 'had a group of up to twenty-two flat headed tacks (Fig. 11, OA181) set between the skeleton's upper legs and a fragment from the base of a prismatic bottle with two raised concentric circles (Fig. 11, OA182)' (CD Section 2; Duncan). 'A date in the later 2nd century would thus be most likely for these small bubbly bottles' (CD Section 2; Cool, in Duncan). The tacks 'could conceivably be extremely worn hobnails, but other possibilities, such as a small box or perhaps a studded belt, should not be overlooked' (CD Section 2; Duncan).
- **SG3189** (L306) (Fig. 5.55): a coffined probable female of 46 years or older 'was accompanied by a small globular flask (Fig. 11, OA183) placed to the right of the skull. This extremely simple globular form with a rolled-in rim is, perhaps surprisingly, one that never found favour amongst the general repertoire of Roman unguent bottles' (CD Section 2; Cool, in Duncan). As Cool discusses, typological dating of these items is difficult. Given the type of glass, a later 2nd- or 3rd-century date is possible. However, a similar small flask was found in the Station Road area of York (RCHM 1962, 82, no. IV.c.iv; Harden 1962, 141, fig. 89 no. H.103.1) where it was dated to the last decade or so of the 4th century at the earliest, on the basis of the dating of other grave goods. 'What may be stated with more confidence is that this middle-aged woman was marked out as special in some way during her funeral as, in general, glass vessels were never a particularly common grave good among the Romano-British population' (CD Section 2; Duncan).
- **SG3191** (L306) (Fig. 5.55): a coffined 36–45-year-old male was accompanied by an almost complete miniature fine greyware jar of 'probable 2nd-century date' (CD Section 2; Wells, Pottery)
- **SG3031** (L315) (Fig. 5.56, Plate 5.67): the presence of seventy hobnails indicates that a coffined 36–45-year-old female had been buried in her shoes. A plain copper alloy trinket finger ring with a slight expansion in height, presumably imitating a bezel (CD Section 2; Duncan, Fig. 12, OA185), had been placed by her right shoulder. The ring is not typological datable; 'it was probably home-made rather than a product of a professional craftsman' (CD Section 2; Duncan).
- **SG3033** (L315) (Fig. 5.56, Plate 5.68): a coffined (based on number of nails) 26–35-year-old individual — unsexed on the basis of the skeletal remains — produced the richest assemblage of grave goods within the two cemeteries: shoes, necklaces, armlets and bracelets. They were both worn and unworn and 'strongly suggest the burial was that of a female' (CD Section 2; Duncan). The presence of shoes was indicated by twenty-three hobnails near the upper right leg. A necklace, worn at the neck, comprised thirty-one small beads, including seven annular beads of green glass (*e.g.* CD Section 2; Duncan, Fig. 12, OA186–187), eleven globular beads of blue glass (*e.g.* CD Section 2; Duncan, Fig. 12, OA188), twelve square-sectioned beads of blue glass (*e.g.* CD Section 2; Duncan, Fig. 12, OA192–193) and a single cylindrical jet bead with a single circumferential groove (OA197). A shale armlet or bracelet (CD Section 2; Duncan, Fig. 12, OA209) was worn on the left arm. Down the right hand side of the body were the remains of at least two further necklaces: one by the right arm comprised jet discs (CD Section 2; Duncan, Fig. 12, OA204–205) and cylindrical beads (CD Section 2; Duncan, Fig. 12, OA200–201); the second, by the upper right leg, comprised blue glass globular (*e.g.* CD Section 2; Duncan, Fig. 12, OA190–191), conical (*e.g.* CD Section 2; Duncan, Fig. 12, OA196) and square beads (OA194, Fig. 12). Two bangle bracelets (OA210–211, Fig. 12), five white metal plated copper alloy wire rings (*e.g.* CD Section 2; Duncan, Fig. 12, OA207–208) and segments of double loop-in-loop copper alloy wire chain links (CD Section 2; Duncan, Fig. 12, OA206), possibly a fourth necklace, were adjacent to the right pelvis. Duncan (CD Section 2) discusses the date of the beads, which, on comparative evidence from other sites, is likely to be 4th century; the shale armlet is likely to date to the 3rd–4th century. 'This assemblage of grave goods, although not containing items of precious metal, does suggest the individual was someone of status. It also appears to be slightly unusual in having both worn and unworn ornament in combination with unworn hobnails (Philpott 1991, 142–9; 168–73)' (CD Section 2; Duncan).
- **SG3043** (L315) (Fig. 5.55): a sub-adult, not in a coffin, was probably buried wearing a single earring (OA184 Fig. 12) (CD Section 2; Duncan), given the green staining on the bone (CD Section 2; Powers). The earring 'is a long-lived form but studies have suggested that the majority of Roman examples date to the 3rd century (Allason-Jones 1989, 6)' (CD Section 2; Duncan).

> Seventy-one of the seventy-six sherds recovered from twelve graves derive from the backfill and are unlikely to be associated with the interred individual. Most are small and abraded coarseware sherds, whose low weight and poor condition are consistent with their accidental incorporation into the infill … Four Oxfordshire colour-coated sherds (6g) from a late Roman vessel were found by the left leg of inhumation SG3175. The 4th-century date of the pottery complements the late date of the non-ceramic artefacts from some of the other graves (CD Section 2; Wells, Pottery).

The discovery of two inhumation cemeteries associated with farmstead SL54 is significant because such cemeteries are relatively rare on rural settlements in the region (Going 1997, 40) and farmsteads typically contain very few inhumations (see above). Inhumation cemeteries on the periphery of rural settlements are known at Bletsoe (Dawson 1994) and Great Barford Bypass Site 4 (Poole 2007a, 90–96), both Bedfordshire; and Lynch Farm (Jones 1975) and Higham Road, Burton Latimer (Albion 2011c), both Northamptonshire. These respectively contained fifty-six, eleven, thirty-seven and thirty burials, although there were also additional outlying graves. Some of these cemeteries are clearly associated with villas, as at Bletsoe (Dawson 1994, 33), and it has been believed for a long time that such establishments would have featured formal burial areas (Webster 1969, 233). Other settlements, such as Higham Road, were clearly not villas but produced large numbers of coins and unusual artefacts, suggesting that they may not have

been simple farmsteads (Albion 2011c). It is, therefore, significant that farmstead SL54 was the only settlement within the Biddenham Loop to contain a cemetery (in fact two adjacent cemeteries) — particularly as there is other evidence to suggest that its occupants were of a higher status than those of the other farmsteads in the area (see below). It is therefore possible that the occupants of higher-status settlements were buried in their own cemeteries, while those of farmsteads were often buried in a way that is not archaeological visible.

Human remains from non-burial features

Two pits within the Kempston Church End roadside settlement SL155 produced single bones from a foetus (L507, Phase 502) and a neonate (L518, Phase 504) (CD Section 2; Powers). A fragment of bone from a neonate was also found within farmstead SL54. Similar bones were also present in two non-funerary features within Bovis farmstead 14 (Holst 2008, 285). These represent a well-known practice whereby foetuses and infants were treated very differently from adults and older children (Philpott 1991, 97).

Saxon

Given the extensive nature of the investigations in the vicinity of the early Saxon settlements, it is perhaps surprising that no definite burials of this period were identified.

Although no human bone was found, the discovery of two semi-complete early Saxon pottery vessels may indicate the location of graves. On the Biddenham Loop, small pit G21078 (L2162) contained the lower part of an undiagnostic vessel. It was located *c.*60m from the nearest contemporary SFB within settlement SL62 (Fig. 5.32). The other candidate was pit G50001 (SL166), *c.*230m to the south of settlement SL165 (Fig. 5.1), which contained a semi-complete stamped globular jar (CD Section 2; Wells, Pottery, Fig. 19, P147).

In the Thames valley 'early Saxon cemeteries occur near to rural settlement sites, and graves are often grouped near to enclosure boundaries' (Booth *et al.* 2007, 238), so the absence of firm evidence for burials within the study area is therefore unusual. Given the extensive nature of the investigations, especially on the Biddenham Loop, they should have been identified even if they lay some distance from the settlements. One possible explanation for their absence is truncation by modern ploughing. However, the presence of middle Bronze Age and Roman burials in the vicinity of settlement SL62 makes this unlikely. It is possible that the inhabitants of settlement SL62 reused the mound of the adjacent early Bronze Age monument for burying their dead. The subsequent denuding of this earthwork by ploughing would have destroyed any graves. However, perhaps the most likely explanation for the absence of burials near SL62 is that the cemetery was located in the areas of post-medieval quarrying or the modern farmhouse. If so, this might explain the records of Saxon brooches and *sceattas* being found in this general area (Luke 2008, 64).

On Land west of Kempston inhumation SG5927 within SL164 is likely to be early Saxon in date on stratigraphic grounds, although radiocarbon dating placed it in the range of mid-3rd to mid-6th century. Also within the Kempston Church End roadside settlement a cemetery of probable 7th-century date was partially investigated within the sewer investigation, *c.*400m to the north of the bypass excavation. The north-east–south-west alignment of the graves respected the alignment of the Roman boundaries in this area (Dawson 2004, 61–3). Although only nine graves were excavated, the presence of another *c.*27m to the south suggests it may have contained at least thirty graves and that it extended across two Roman enclosures. Grave goods, some of which could be could be dated to the 7th century, accompanied seven of the nine excavated inhumations (Wells *et al.* 2004, 432).

Brief mention should be made of the large cemetery located 1.3km from the Bypass excavations in Kempston (Edgeworth 2007, 90). It was found during gravel digging in the early 1860s and recorded by the Rev. S.E. Fitch. The standard of record was comparable to that of other similar discoveries of the day, but the records and finds became disorganised before museum acquisition, significantly hampering subsequent analysis (Kennett 1986, 4). Kennett's (1986) re-examination of the records and finds indicates that there were at least 129 inhumations and fifty-one cremation burials, making it one of the larger cemeteries in the region. Some 440 non-ceramic objects were found, including swords, spears, shield bosses and brooches. The available evidence suggests that the cemetery was in use from the early 5th to the early 7th century.

Fitch himself published an account of his discoveries in the form of a combined summary report and journal (Fitch 1864). The interpretation of such antiquarian accounts is not straightforward, but Fitch's description of one burial is particularly striking in the light of the 4th-century *bustum* burial L2399 found on the Biddenham Loop (see pp. 310–16). In his summary he writes:

In the most remarkable instance of cremation that has presented itself, where the entire body at full length was burned in a pit more than seven feet long and four wide, and about four feet deep, the uncollected ashes were, with the still living embers of the wood, covered over with earth (Fitch 1864, 277).

And in his journal is a description of what is, presumably, the same grave:

> Nov. 16. Examined a spot in the grave-yard which had some days since awakened my attention, by exhibiting a mass of very fine dark earth and burnt ashes, portions of charred wood. Fragments of rude pottery were discovered, and after awhile portions of what seemed at first to be parts of a well formed urn; but proved on closer inspection to be portions of a human skull, which had been much burnt. We found that we had come upon a pit, which exceeded seven feet in length; its general width being three feet, the widest part 4ft. 3 in.; the depth 3½ feet. It proved to be a place where an entire body, stretched at full length, had been consumed by fire. As far as I could judge, the pit must have been occupied with live embers up to a certain height, the body placed carefully thereon, and then more material for burning heaped upon it. Large branches of thoroughly charred wood, retaining their form, and exhibiting their concentric layers, were discovered in connection with this cremation, above the human remains. The head and upper part of the frame were more completely burnt than the lower extremities — the skull being in pieces.
>
> A very fine, and heavy spear-head, 12 inches long, was found on the left side (Pl. iii., Fig. 1.) with traces of its wooden shaft for some distance, while the socket was full of woody fibre. A knife of a better character than those usually met with, and a piece of iron pronged at one end, as if it had admitted the insertion of some handle which had perished. Traces of small bones of some inferior animal, probably a rat, were found burnt also (Fitch 1864, 288).

There are no other examples of *bustum* burials in early Anglo-Saxon cemeteries in England, although they are known from the Low Countries, as at Oosterbeintum

(Friesland), where *bustum* grave 160 was dated to the second half of the 5th/early 6th century (Knol *et al.* 1996, 347). Other explanations of Fitch's observations are a pyre-site or post-burial burning within an inhumation grave. However, the presence of the 4th-century *bustum* burial on the Biddenham Loop does raise the possibility that we are seeing the survival of this rare cremation rite into the immediate post-Roman period. Burials of this type are virtually unknown in Bedfordshire and the presence of two within the Kempston area would be more than a coincidence.

Wild animals and fish: a religious taboo?

A paucity of wild animal and fish bones is a consistent feature of all the settlements in the study area and matches a wider phoneoman (Meade 2010, 143). It suggests that hunting or fishing were rarely undertaken by the local population. There may have been many reasons for this: practical ones, such as an absence of suitable woodland for deer; or legal ones, such as landowners' restriction of access to these resources (discussed in more detail below, p. 328). However, another possibility is that wild species were believed to be sacred. In Dobney and Ervynck's article on fish consumption around the North Sea in the Iron Age they concluded that the absence of fish on settlements was 'a real phenomenon, not merely an artefact of various taphonomic processes' (2007, 409). They argued that this was probably the result of the way 'communities perceived and classified the natural world'.

Unusual, possible structured deposits

It has long been recognised in Iron Age studies that certain deposits may be associated with ritual activity rather than simply being the result of rubbish disposal (Hill 1995; Cunliffe 1992). More recently Fulford has noted that 'in the case of Roman Britain there has also been a growing awareness of diversity in expressions of ritual behaviour as evidenced in the archaeological record' (2001, 199). He presented a number of case studies of such deposits in secular contexts — all from cities and small towns, not rural settlements. Within the recent investigations to the west of Bedford the term 'special' was used to identify deposits with unusual artefactual or ecofactual content. Their identification during fieldwork ensured that they were recorded to a level of detail that would allow their potential status as 'structured' deposits to be further investigated during analysis. Initial identification was based on broad criteria such as the presence of human bones, complete or near-complete animal skeletons, complete or near-complete pottery vessels and metal artefacts. During analysis the term was used to alert all specialists to the fact that there was something unusual about a particular deposit and for them to consider that in relation to their own data-set.

Following analysis, a number of possible 'structured' deposits, which occurred throughout the Roman period, may be put forward:

- **Ditch G21012** (east side of enclosure L2114, farmstead SL51) contained five semi-complete decorated samian bowls of 2nd-century date. Such a concentration is unusual because the entire investigations produced only eight decorated bowls. 'This is unlikely to have been a typical case of waste disposal' (CD Section 2; Wild).
- **Possible quarry pit G3016** (enclosure L307, farmstead SL54), assigned to Phase 304 (earlier Roman), produced a large assemblage of animal bones comprising nineteen bones from a juvenile sheep and forty unidentified mammal fragments which could have belonged to the same sheep. A chop mark indicated that the lamb had been at least partially butchered and some of the bones were burnt, possibly as a result of roasting (CD Section 2; Maltby).
- **Four deposits with either unusual quantities of dog bones, or unusual skeletal elements**, were recovered from later Roman (Phase 305) deposits within farmstead SL54. The complete skull of an adult dog was found in a ditch defining enclosure L312. Five bones of an adult dog were found in a ditch defining enclosure L317. Eleven bones of a large dog were found in a ditch defining enclosure L320; the same ditch produced a further nine bones from another adult dog. The absence of butchery marks and the existence of 'partial skeletons indicate that dog carcasses were not subjected to the same processing as the main food mammals' (CD Section 2; Maltby).
- **Two pits, *c.*6m apart, in pit group G5030** (L510, SL155), assigned to the late 2nd to early 3rd century (Phase 503),

  > … stand out from the norm in having either distinctive artefacts or a quantity of finds in their primary fills, suggestive of deliberate placement, and unusual deposits in their secondary fills. Pit F6131 had fragments of square and rectangular glass bottles and a glass bowl, along with a box-fitting and a reaping hook. The primary deposits also contained an assemblage of repaired and reworked samian thought to represent a workshop (CD Section 2; Wild), along with a cleaver, a plough share, the head of a drill-bit and an antler off-cut. Pit F5464 contained the remains of a pewter bowl and a mortise chisel in its primary fill. The secondary fill contained a large quantity of animal bone along with a possible chisel. Both plough shares and the pewter bowls tend to be found in hoards and/or 'special' deposits in the late Roman period … It is possible these items represent 'an offering' or perhaps mark an event, such as, for example, a change in activities carried out within, or ownership of, the enclosure (CD Section 2; Duncan).
- **Eleven coins from the tertiary fill of pit G5132** (L518, Phase 504, SL155).

  > Of these, nine were struck between 330 and 378, and could represent a dispersed hoard deposited when the large pit had been already partially infilled. However, the distribution of the eleven coins within the fill suggests that these coins were not deposited together as a single hoard, but that they were deposited on separate occasions, perhaps because the pit was believed to be 'special' in some way (or at least different from the other pits) (CD Section 2; Guest).
- **Bones from an immature dog and a pair of mandibles from an older dog** in pit G5008 (enclosure L502) were assigned to the late Iron Age/early Roman period (Phase 501). The same pit also produced cattle skulls, a pair of cattle mandibles and a large cattle horn core and radius. There is a possibility that all or some of these represent a ritual deposition'(CD Section 2; Maltby). The same pit produced an iron finger ring with a cornelian intaglio depicting Mars (CD Section 2; Duncan, Fig. 3, OA28).

'Special' deposits were also identified during the Bovis investigations, mainly on basis of the presence of human bones (specifically foetal and neonatal) and articulated animal bones (Luke 2008, 62).

It is not easy to distinguish ritual deposition from discard for other reasons. Most of the finds assemblages

from pits within the Kempston Church End roadside settlement SL155 comprised large quantities of pottery sherds, broken artefacts and fragments of animal bone. These could be interpreted as the result of dumping of rubbish into a convenient hole in the ground rather than as ritualistic behaviour. This is particularly the case where they do not contain any unusual artefacts or animal bone. However, there are examples where so-called rubbish appears to have been deposited prior to significant changes in settlement layout. For example, 'it is perhaps significant that enclosure L527 was the subject of remodelling in Phase 504 (L514), and building G5143 was enlarged, the floor plan of the modified building G5205 extending over the area of large pits G5114 and G5116. The in-filling of the pits with accumulated rubbish therefore could be interpreted as a deliberate act prior to any building works' (CD Section 2; Duncan). It is therefore clear that, while some of the evidence will remain ambiguous, some represents the continuation of Iron Age ritual practices into the Romano-British period.

VII. People and the activities in their daily lives

Evidence for the people who lived in the study area and for their daily lives can be derived from a number of sources. Their skeletal remains can tell us much about their health and lifestyles. The artefacts they used shed light on both farming and craft activities, and on aspects of their lifestyles. The ecofacts they produced indicate which animals and plants they tended or utilised. The combined evidence suggests that the majority of the local population was engaged in mixed agriculture, with a smaller focus on a range of crafts. As Duncan (CD Section 2) discusses, the artefact profiles 'do not suggest great wealth but do suggest that the inhabitants were comfortably off, having the means to purchase at least some of the greater range of imported goods available and happy enough to adopt the outward trappings of "being Roman".' The early Saxon evidence from the study area for farming and craft activities would appear to accord with Wingfield's view that 'the removal of the late Roman administration and attendant economy would have necessitated a realignment of post Romano-British society and a return to a largely self-sufficient agricultural economy' (1995, 32). The communities within the study area are likely to have been self-sufficient in food and clothing, echoing the situation of their pre-Roman predecessors.

Health and disease

Burial practices are discussed elsewhere (see above, pp. 301–22); this section focuses on the health of the local population as evidenced by their skeletal remains. The majority of the data derives from cemeteries L306/L315 on the periphery of farmstead SL54; unless otherwise stated, this is where the individuals described below were buried. The skeletal data is too limited to allow many general statements to be made about the local population, but a number of useful observations about individuals can be made. Unless otherwise stated, this section is based on Powers' human bone report (CD Section 2).

The mean heights of the burial population were 160.6cm for women and 169.8cm for men, which are in line with the Romano-British 'national' averages of 159cm for women and 169cm for men (Roberts and Cox 2003, 163). Comparable measurements are reported from one of the cemeteries in the Kempston Church End roadside settlement (Boylston and Roberts 2004, 337 and table 8.20).

Over half of the adult assemblage suffered from dental problems, specifically caries and calculus, probably mainly related to diet. It did not just affect the adult population because SG3043 and SG3193, both aged *c.*11 years at death, were also affected by dental disease.

> Extreme dental attrition, most likely to be related to the coarseness of the diet, was noted in five adults: 36–45 year old female SG3031, probable female SG3029, ≥46 year old males SG3023 and SG3039, and probable female SG3189, also ≥46 years … Enamel hypoplasia rates are somewhat lower in this population than those reported by Roberts and Cox (2003), whilst the caries rate is nearly twice that reported for the period as a whole (CD Section 2; Powers).

Along with the coarseness of the diet, dental problems may have also been related to increased consumption of sugar, probably from imported fruits such as plums, apples and cherries, and vegetables, such as peas, parsnips and carrots (Boyston and Roberts 2004, 349), along with poor oral hygiene, which is a relatively recent concept.

Four males, four females and an adult of undetermined sex had suffered from spinal osteoarthritis.

> Osteophyte formation was noted in seven males … three females … and an adult of undetermined sex, and affected the cervical spine, lower thoracic and lumbar vertebrae. Intervertebral disc degeneration affected six males … three females … and an adult of undetermined sex … Osteoarthritis affected the hip, hands (two adults each) and a rib head (SG3147). In total 5/30 adults were affected …. Bilateral joint changes in the hips of SG3187, a 36–45-year-old male, may have been related to underlying trauma … A number of minor spinal and extra spinal anomalies were noted. Spina bifida occulta affected two males (SG3143 and SG3138) and an adult of undetermined sex (SG5717 [buried on the periphery of the roadside settlement]) (CD Section 2; Powers).

Eleven cases of spina bifida were observed within one of the cemeteries associated with the Kempston Church End roadside settlement (Boylston and Roberts 2004, 343 and table 8.29).

> Evidence of infectious disease was limited to two individuals with non-specific skeletal changes and a case of probable tuberculosis …. The right tibia of male SG3041 had an area of raised bone on the medial side of the distal shaft; an isolated area of soft tissue infection, such as an ulcer, leading to periostitis is the primary diagnosis (soft tissue injury and neoplastic diagnoses remain possible) … The skeleton of male SG3023, aged ≥46 years, showed changes characteristic of tuberculosis or brucellosis … Tuberculosis remains relatively uncommon in the Roman-British period, with Roberts and Cox (2003, 120) citing just eleven cases. It has been suggested that the appearance of the disease at the time indicates close contact with animals (one mode of transmission of the disease, the other being human contact and often correlated with confined living conditions) and the expansion of trade (Roberts and Cox 2003, 119) (CD Section 2; Powers).

Fractures affected four adults: three males (one with multiple injuries) and one female. 'A spiral fracture of the mid shaft of the left fifth metacarpal of female SG3029 was well-healed, though with slight angulation' and 'a very well-healed fracture of the neck of a left rib was present in male SG3147' (CD Section 2; Powers). The multiple fractures in male SG3138 comprised 'a further (right) rib fracture and a possible well-healed fracture of a proximal left foot phalanx (digit 4?) with slight shortening' (CD Section 2; Powers). Male SG3187

had suffered a probable fracture of the left proximal femur, which would have required considerable force but appeared well-healed. Fracture rates appear lower than those noted within one of the cemeteries associated with the Kempston Church End roadside settlement (Boylston and Roberts 2004, 340–42 and table 8.25). At the latter, the disparity in the later 3rd century between the sexes and 'considerable interpersonal violence' suggested to Boylston and Roberts a military connection (2004, 348). This is further discussed below (see p. 335)

Infant mortality would have been high and such fatalities were treated differently from those in the sub-adult and adult population. This is most clear within the roadside settlement, where they were often buried within non-funerary features in domestic enclosures.

Landscape management

Although some changes were made, much of the pre-Roman system, especially the fields created in the middle Bronze Age on the Biddenham Loop, continued in use. New trackways were constructed, mainly linking settlements and providing access through them onto the flood plain. Some of these may have followed routeways established in the Iron Age, such as L501/L702. Two new extensive boundaries were constructed on the Biddenham Loop (L112/2336) parallel to an early Iron Age pit alignment and to the south of Land west of Kempston (L1304). New fields were created adjacent to the Kempston Church End roadside settlement (SL155) and to the south of Land west of Kempston (SL158 and SL159). In addition, blocks of bedding trenches were created on the claylands of Land west of Kempston. It is likely that some of the changes, such as the increased use and division of Land west of Kempston, reflect an increase in the local population. This is represented by the creation and expansion of the Kempston Church End roadside settlement and the creation of farmstead SL51/52 on the Biddenham Loop. However, it may also reflect decreases in soil fertility and possibly loss of some land to flooding. The fields would have been used for mixed farming, with the arable fields periodically manured by animals.

On the farmsteads and within the roadside settlement some enclosures were devoid of evidence for any particular activity. These were probably used for short-term animal management, as gardens or vegetable plots and as orchards. The absence of any contemporary waterlogged deposits within the study area has hindered the recognition of the more exotic plant species. However, their presence on some farmsteads in the vicinity is not in doubt — fragments of walnut and box leaves were found at Marsh Leys, with the evidence suggesting that they were grown locally rather than imported (Robinson 2011, 129).

The charcoal assemblage indicates that woodland was still available in the locality. It is certain that some of it was managed, along with the hedgerows, to ensure a supply of the variety of wood needed on rural settlements. There may have been pockets of managed woodland within the Biddenham Loop, although more extensive woodland probably existed to the north of the Biddenham Loop and on Land west of Kempston.

Farming

By the late Iron Age the Biddenham Loop had a long-established, well organised agricultural landscape, and probably farming regimes, dating back to the middle Bronze Age. There were arable fields on the gravel terraces within the Biddenham Loop and possibly near Kempston Church End. The heavier soils of Land west of Kempston were probably used extensively for animal grazing, along with the flood plain of the river Great Ouse at certain times of the year. The majority of the local population was involved in farming, both for subsistence and to produce sufficient surplus to meet the requirements of the local chiefs (in the Iron Age) or tribal and provincial government (in the Roman period). Structures such as drying ovens and artefacts provide some insights into how the people farmed the land, but the majority of the evidence derives from (charred) plant remains and animal bones. During this period there were no major changes in cereal crops or domestic animals, but there were developments in some aspects of agriculture. For example, seed grain was stored above ground rather than in large pits and crops were dried prior to processing.

> Although it is likely that the early Saxon communities would have been self-sufficient in food production, very few objects that could be associated with farming were found within the study area; the majority of the evidence for farming comes from plant and animal remains. A reaping hook with a crescent-shaped blade (CD Section 2; Duncan, Fig. 15, OA256) was found in SFB G21155 (SL62). As a type they are not closely datable, being current in the Roman period (Manning type 2; 1985, 53 and fig. 14) and continuing throughout the medieval period (Goodall type 1A: 1980, 71). Two examples were found in fills of SFBs thought to date to the late 5th–earlier 6th and the 6th–7th centuries at West Stow (SFB 1 Fig. 30.4 and SFB 8 fig. 48.1; West 1985, 146–9)(CD Section 2; Duncan).

The problem with residuality of Roman artefacts has been discussed above and this applies to the quernstone (OA221) and whetstones (OA222–OA223) from SL62. However, the presence of part of a Millstone Grit rotary quern (OA273) in SFB G23243 (SL63), an area away from any Roman settlements, may be significant. Although incomplete, it may suggest the continued use of a Roman object, although 'it is possible that trade continued unaffected throughout the Anglo-Saxon period, as excavations in Southampton have produced fragments of Millstone Grit of Saxon date (Addyman and Hill 1969)' (CD Section 2; Duncan).

The late Iron Age and Roman plant evidence

Unfortunately, relatively few charred plant remains were recovered from late Iron Age/early Roman features within the study area. However, 'the limited cereal evidence was similar to the preceding periods with hulled wheat, both emmer and spelt, and barley and traces of possibly free-threshing wheat and also tentative evidence for flax' (CD Section 2; Giorgi).

The charred plant remains from the Roman period suggest extensive activity for the first time on Land West of Kempston as well as within the Biddenham Loop.

> The data suggests that spelt was the main hulled wheat during the Roman period and possibly increasingly so towards the later Roman period … Barley (including evidence for six-row hulled barley) was the second best represented cereal but with significantly smaller numbers of grains in twenty-one assemblages. Small numbers of oat grains (and occasional awn fragments) were identified in twelve samples, although it was not possible to establish if the oats were cultivated and/or wild because of the absence of diagnostic floret bases (CD Section 2; Giorgi).

This range of cereals, with hulled wheat, particularly spelt, and hulled barley being the main grains during this

period, together with some emmer and free-threshing wheat, is similar to that found on other sites in the vicinity, such as Marsh Leys (Robinson 2011, 128–9) and Great Barford Bypass (Druce 2007, 369–70), and indeed in southern England in general (Greig 1991, 309).

> The cereals may have been used for baking and making porridge and gruel (Renfrew 1985, 22) including *puls* or *polmentus*, not unlike modern Italian polenta and usually made from emmer, which was also the best wheat for making cakes (Cool 2006, 70, 75). Spelt, together with free-threshing wheat, on the other hand, has excellent baking and milling properties (Jones 1981, 107) and it has been suggested that the increased cultivation of spelt may be partly associated with a preference for bread in Britain during the Roman period (Cool 2006, 75). Spelt and sometimes barley were used for brewing, although there were no sprouted grains from either of the two areas. Barley was used to make flat bread and griddle cakes as well as for horse fodder (Cool 2006, 71). Legumes, including peas, were high in protein and played an important part in the Roman diet, according to historical sources, with pea appearing in the recipes of Apicius (Cool 2006, 127). Pulses may have also been added to soups/stews, or dried, ground up and used with cereal flour. Flax seeds may have also been used in soups/stews, although the fibres from the plant were also used for textiles (CD Section 2; Giorgi).
>
> There was a wide range of other plants represented by the charred remains, with a notable increase in the number of potential arable weeds compared to earlier periods. … There was no significant botanical evidence to suggest arable expansion onto unfavourable more difficult heavier clay and waterlogged soils in the Roman period (CD Section 2; Giorgi).

There was, however, a substantial increase compared with previous periods in the presence of leguminous seeds. 'These plants thrive in soils with low nitrogen levels and may indicate low or decreasing soil fertility from over-cropping, and could suggest rotation as a means of restoring nitrogen to the soil' (CD Section 2; Giorgi).

> A number of the wild plants represented as charred seed remains may also grow in grassland habitats … These plants may have been gathered for animal bedding and/or fodder from meadows and pastures, possibly from along the banks and flood plain of the river (CD Section 2; Giorgi).

The management of grasslands was probably a Roman innovation and would have enabled larger numbers of animals to be kept in the settlements over winter.

There is no significant difference in the Roman assemblages between the Biddenham Loop and Land west of Kempston. The plant remains 'largely suggest the continued cultivation of light well-drained sandy loam soils on the sandy gravels of the river terraces and alluvial deposits nearer the river' (CD Section 2; Giorgi).

The early Saxon plant evidence

Fully analysed and published charred plant assemblages in the eastern region, especially Bedfordshire, are very rare and, where they exist, few come from sites with evidence for continuity from the 4th century into the 5th century. Therefore, although the assemblage from SL62 is small, it is particularly important for the county. 'The early Saxon samples produced a much smaller amount of material compared to the Romano-British period' (CD Section 2; Giorgi), and a similar change in quantity has been observed in the Thames valley, where Booth *et al.* commented:

> There are two possible explanations. The first is that the processing of cereals was on a much smaller scale than previously. The second is that the nature of the crops or the processing methods was different, so less material was becoming charred (2007, 322).

The assemblage was

> … mostly of cereal grains and mainly from the Biddenham Loop, with only limited evidence from Land West of Kempston. There was a significant change from the Roman period in the range of cereals being cultivated, with free-threshing wheat, hulled barley and oats being the main grains and only traces of hulled wheat, which are probably residual finds or cereal weeds from previous harvests. This concurs with archaeobotanical evidence from southern England, which suggests a change from the Romano-British to the early Saxon period in the range of cereals being grown, with hulled barley continuing to be cultivated but with the increased presence of free-threshing wheat and oats, while finds of emmer and spelt become rare (Greig 1991, 315). Cereals during the Saxon period may have been eaten as a gruel or porridge (pottage) or used for bread, with a preference for white leavened bread (Hagan 1994, 60, 125). Both barley and oats may have also been used for fodder. Flax was again tentatively identified; its seeds may have been added to cereal-based pottage and the plant fibres used in the production of cloth. The flax seeds were found in the same area of the Biddenham Loop as spindle whorls and loomweights (CD Section 2; Giorgi).

The replacement of spelt wheat by a free-threshing variety, probably bread-type wheat, is a major change that occurred during this period across the country (Booth *et al.* 2007, 322). Locally it has been observed at Pennyland, Milton Keynes (Jones 1993, 174). There has been a long-running debate over whether this was an abrupt change or if spelt and bread wheat were cultivated alongside each other (Stevens 2004, 81; Murphy 1994, 37). Although the quantities of the charred remains within the study area are low and their preservation poor, it is noticeable that spelt wheat was not identified within settlements SL63 and SL165, where there was no Roman settlement, but that it did occur within SL62, which was situated on the site of a Roman farmstead. Unfortunately, because of the nature of the evidence, it is possible only to speculate over whether this reflects the preference of an incoming population, who occupied the new settlements, or whether it is present in SL62 simply because it is residual Roman material.

Animals in the late Iron Age and Roman periods

The main domestic animals during the late Iron Age and Roman periods were cattle and sheep/goat, with a smaller component of pig and horse.

> Comparing the percentages of cattle, sheep/goat and pig only, it can be seen that cattle contributed the highest NISP [number of individual specimens] counts in most of the assemblages, quite often providing over half of the fragments. At roadside settlement SL155 it can be demonstrated that cattle percentages increased in deposits containing specialist butchery waste. However, there is no real indication that beef consumption was greater at that roadside settlement compared with the farmsteads in the vicinity, with the exception perhaps of SL51/52. The area would have provided good cattle pasture and it seems likely that cattle husbandry was a very important aspect of farming in this region during the prehistoric and historic periods (CD Section 2; Maltby).

The presence of some large cattle was noted mainly from SL155, but smaller numbers came from farmsteads SL51/52 and SL54. Similar occurrences were noted at Marsh Leys (Maltby 2011, 125).

> Many of these may well have been oxen. Six cattle scapulae from SL155 have lipping (extra bone growth) around the glenoid cavity and occasionally other abnormalities. These might be linked with the pressures inflicted by ploughing. Minor lipping and exostoses were found on six proximal first phalanges and three second phalanges from the same pit, again some of them possibly enhance by working. Similar examples were noted on specimens from farmstead SL51 and SL54 (CD Section 2; Maltby).

Roman farmstead SL51/52 contains higher percentages of sheep/goat (in all cases ovicaprid samples are dominated by sheep) than cattle. A similar dominance has been observed at Luton Road, Wilstead, although this may partly reflect a single sheep-rich deposit (Hambleton 2010, 145). 'Sheep are more likely to have been kept in greater numbers on drier land away from the immediate vicinity of the river systems' (CD Section 2; Maltby).

> A consistent feature of the faunal assemblages from both late prehistoric and Roman sites in Bedfordshire is the poor representation of pigs … The percentages of pig bones from roadside settlement SL155 are not significantly higher than from farmsteads SL51/SL52 or SL54, although they are consistently slightly higher than at Marsh Leys, just to the south (Maltby 2011, 126), where pigs are particularly poorly represented (CD Section 2; Maltby).

Horse bones are quite common in most assemblages from rural settlements in Bedfordshire. Comparing the numbers of cattle and horse only, horse often provides more than 10% of the NISP counts of these two species, continuing a trend observed on Iron Age sites in the area (Maltby 2007; 2011). Horses were not exploited as intensively for meat as cattle, as indicated, for example, by the lack of specialist butchery marks on their bones from roadside settlement SL155.

Similarly, the bird bone assemblages are limited in number and diversity, with domestic fowl present within most settlements but only in relatively small numbers. It is clear that dogs were kept and there is no evidence that they were butchered on death. They are presumed to have been primarily work animals, such as sheepdogs. A number of partial skeletons were found and it is likely that these represent the deposition of complete carcasses that were subsequently disturbed. The presence of a dog within the *bustum* burial is particularly unusual and indicates that they were, or became, human companions as well as work animals.

Discussion of more specific evidence for farming practices from the Kempston Church End Roman roadside settlement SL155

This section discusses specific aspects of the evidence, such as agricultural tools, rich charred plant assemblages, animal species and butchery marks. Any significant differences between the roadside settlement and the farmsteads are highlighted.

The layout of the roadside settlement, with large enclosures subdivided into domestic and non-domestic elements, suggests an association with farming and/or horticulture. At least one drying oven is known within the settlement from the sewer investigations (Dawson 2004, 188).

Several rotary querns (*e.g.* OA40 and OA61) were found in the recent excavations and nineteen in the sewer investigations (Wells *et al.* 2004, 376), indicating that grain processing took place within most settlement enclosures. Other evidence for arable farming was found in the form of a fragment of a plough share (OA92) and fragments of reaping hooks (*e.g.* OA58, OA59, OA91, OA92), a tool used primarily for cutting cereals (Manning 1985, 53). In addition, fragments of pruning hooks, such as OA115 (CD Section 2; Duncan, Fig. 7) and OA143, and part of a possible reaping hook, spud or hoe (OA116) (CD Section 2; Duncan, Fig. 7) were also found. A Manning type 2a cleaver OA73 'is one of the commonest forms of cleaver and most are thought to have been used to butcher meat (Manning 1985, 120)' (CD Section 2; Duncan). It is interesting that no agriculture-related tools were found in the sewer investigations, which were situated mainly in the northern part of the settlement. It is tentatively suggested that this part of the settlement was of a higher status (see discussion below, p. 333).

A number of rich samples were recovered from both the early and late Roman phases of the roadside settlement.

> A feature of these assemblages was the general cleanliness of the large grain assemblages in three early Romano-British (Phase 502) samples from enclosures L507 and L519 with virtually no chaff, suggesting the imminent use of these cereals. One of the samples from enclosure L519 also contained a large number of *Vicia*/*Lathyrus* seeds, which may represent the residues of a legume fodder crop (CD Section 2; Giorgi).

There were also two rich charred plant assemblages from Phase 504 samples, 'one suggesting the storage of hulled wheat as spikelets, while the other contained a large amount of cleaned grain (with virtually no chaff) ready for use, and a large number of wild plants/weed seeds from crop-processing activities' (CD Section 2; Giorgi). Giorgi (CD Section 2) suggested that people in this part of the settlement in the early phase were 'dealing only with fully processed cereals ready for immediate use, whereas in the later period there is also evidence to suggest crop-processing activities and the storage of grain as spikelets as well as cleaned grains for immediate use'.

The overall percentages of animals from the identified mammal assemblage are cattle (58%), sheep/goat (31%), pig (5%), horse (4%) and dogs (1%), all by NISP. It is clear that 'pork and bacon were of significantly less importance in the diet than beef, lamb and mutton' (CD Section 2; Maltby). That some pigs were kept within the settlement is indicated by the presence of a neonatal mortality.

> Butchery marks were commonly observed [on cattle bones]. Cleavers, knives and saws were all used. The relative abundance of such marks varied according to the type of bone involved … The most significant discovery in the Roman assemblages is the presence of substantial numbers of split upper limb cattle bones and heavy filleting marks from SL155, revealing the presence of specialist butchers operating at the settlement. The contrast between the frequency of observations of these distinctive marks between SL155 and the other sites where they have been quantified is marked (Table 57). The frequencies are similar to those found on major urban settlements (Maltby 2007). The concentration of split upper limb bones in some deposits indicates that processing was sometimes carried out on a large scale. This has implications regarding the provisioning of beef products at Kempston Church End and supports the notion that this was a substantial settlement where cattle were often processed by trained professionals using cleavers similar to the one found in G5030 (L510, Phase 503, OA73). Similar butchery appears to have been observed in other areas of the settlement (Roberts 2004, 303). Significantly, the assemblage from Ruxox, one of the other large Romano-British settlements in Bedfordshire, also contained relatively large numbers of such bones (Hamilton-Dyer 2004) … The overall stature of the cattle appears to have been quite large by Romano-British standards. All the mean sizes from SL155 are larger than those obtained from large samples from Winchester in the south of England and Caerwent in south-east Wales (CD Section 2; Maltby).

Domestic fowl represent nine of the twelve identified birds, indicating that they formed a small component of the diet. Two of the bones belonged to very immature

birds, 'probably indicating that chickens were kept at the settlement' (CD Section 2; Maltby).

Discussion of the evidence for farming practices within the Roman farmsteads

The layout of some of the enclosures within different farmsteads indicates that they were associated with farming and/or horticulture. They comprise a mix of small and large enclosures often linked by a trackway, with only some containing evidence for domestic activity.

Compared with the Kempston Church End roadside settlement, the non-ceramic artefact assemblages from the farmsteads were meagre. As Duncan (CD Section 2) says: 'this may be due to a difference in economic wealth and the perhaps more rural nature of activity on the Biddenham Loop, but it may also reflect different patterns of deposition'. Quernstones were found, but in small numbers (*e.g.* two from farmstead SL51 (OA147 and OA148) and one from farmstead SL54 (CD Section 2; Duncan, Fig. 11, OA176)). Single fragments of quernstones were also found in the Bovis investigations within farmsteads 10 and 13 (Duncan 2008, 279). Other than knives, the only metal tool found within the farmsteads (during both the recent and the Bovis investigations) was a small turf cutter from farmstead SL51. It might have been used for deturfing or cutting borders, and is perhaps suggestive of small-scale horticulture. Although these items are found on civilian sites they tend to be town and villa sites, not farmsteads (CD Section 2; Duncan).

Most of the charred plant remains from the Biddenham Loop were from the southern farmstead SL54. They were concentrated in the fills of a late Romano-British pottery kiln G3038 (L310, Phase 305) and comprised a mix of grains (mainly hulled wheat) and weeds/wild plant remains, along with smaller amounts of chaff indicative of products and by-products of crop-processing. The material was possibly used as fuel for the kiln or represents debris from the backfilling of the feature. It points to crop-processing activities in the vicinity (CD Section 2; Giorgi). There was evidence only for small-scale crop-cleaning within the other Romano-British farmsteads on the Loop.

With one exception, the range of animal species on the farmsteads was similar to that seen on the roadside settlement SL155. On farmstead SL51/52 the animal bone assemblage was dominated by sheep/goat fragments, which represent 56% of the identified mammal NISP counts. This is in marked contrast to the other farmsteads, including those within the Bovis investigations (Maltby 2008, 283–4) and the roadside settlement (CD Section 2; Maltby).

'There is some evidence of specialised butchery, as encountered at SL155, but it is much less common within the farmsteads' (CD Section 2; Maltby). The more unusual butchery practices included a sheep skull which had been split open to remove the brain and knife cuts on a horse mandible in a position to suggest the removal of the tongue (CD Section 2; Maltby).

Six bird bones were recovered, four of domestic fowl, one of which was from a young bird. An ulna of a mallard-sized duck was recovered from enclosure L2128 (SL52).

Animals in the early Saxon period

Cattle continued to be the dominant species in the faunal assemblages and 'would have continued to have been the mainstay of animal exploitation systems in the area', which is typical of all the Saxon assemblages in and around Bedford (CD Section 2; Maltby). The situation in the Thames valley was more varied, with sheep dominating on some sites and pig being as numerous as cattle on others (Booth *et al.* 2007, 320–21). Within the study area sheep/goat tend to be less well represented than in Roman samples and only in settlement SL63 did sheep/goat provide over 40% of the cattle, sheep/goat and pig total. Generally, pigs are significantly better represented in the Saxon than in the Roman assemblages. 'In some cases they provided over 20% of the NISP counts. This would suggest that more pigs were being bred in the area and that pork and bacon formed a significantly greater proportion of the meat diet than in previous centuries' (CD Section 2; Maltby). This may have involved the introduction of sty husbandry.

> The percentage of horse varied quite substantially in different assemblages. These fluctuations may be linked to areas of the settlements investigated. Horse bones may have tended to have been deposited in areas where less food processing was taking place and in those areas they form a much smaller proportion of the assemblage. They were not found in significant amounts, for example, in the SFBs of settlements SL62 and SL63, where food refuse of the main three domestic species predominated. They were more common in the peripheral area and dispersed settlements of SL165 (CD Section 2; Maltby).

The small number of dog bones recovered, in contrast to the Roman period, may, like horse, be linked to the parts of the settlements investigated, because 'there is ample evidence from the number of gnawed bones that they were resident' (CD Section 2; Maltby). However, a reduction in the number of horses, dogs and cats has been observed in the Thames valley (Booth *et al.* 2007, 321).

> Although there was some consistency in butchery methods (such as the axial splitting of cattle metapodials for marrow), there were none of the very specialised marks created by professional butchers so evident in the Roman assemblage from settlement SL155 (CD Section 2; Maltby).
>
> Mean sizes of the most common measurements from settlement SL62 are consistently 8–9% smaller than those from SL155. This may perhaps reflect the fact that the Saxon sample contained a greater proportion of females than the Roman sample, but in most cases the smallest cattle specimens from SL62 were smaller than those of SL155, and the largest specimens were all from SL155, indicating there was an overall decrease in the stature of cattle on these sites between the two periods … There was also a slight decrease in the average size of sheep in comparisons of most of the Saxon and Roman sheep measurements (CD Section 2; Maltby).

The situation across the country may have been variable because in a detailed survey of animal bone in the south midlands Robinson and Wilson concluded that cattle and sheep were of comparable size, or slightly larger than those in the Roman period (1987, 61).

Roman horticulture

The Roman Conquest resulted in the introduction of exotic food plants in terms of both fruit (*e.g.* plums, apples, cherries) and vegetables (*e.g.* peas, parsnips, celery, carrots). While these were initially imported largely for the army there is evidence that they were soon being cultivated on many rural settlements (presumably for both export and the consumption of the local population). The only charred evidence for these types of plant

from the study area is pea or pea family from farmsteads SL52 and SL54 and the roadside settlement SL155.

> Legumes, including peas, were high in protein and played an important part in the Roman diet, according to historical sources, with pea appearing in the recipes of Apicius (Cool 2006, 127). Pulses may have also been added to soups/stews, or dried, ground up and used with cereal flour (CD Section 2; Giorgi).

Two metallic artefacts from the recent investigation may be related to horticulture. A small pruning hook (OA143) was found in bedding trenches L4509 (SL156) on the periphery of roadside settlement SL155. Although the interpretation is slightly uncertain (CD Section 2; Duncan), its discovery in a bedding trench would appear to be significant. The other artefact was a small turf cutter (OA149) (CD Section 2; Duncan, Fig. 9) from farmstead SL51. The half moon variety of turf cutter is a Roman introduction (Manning 1969) that appears to have spread to civilian sites, in particular villas and towns, fairly quickly (Rees 1979, 331)(CD Section 2; Duncan).

The blocks of bedding trenches found on Land west of Kempston are discussed in detail above (see p. 292). There is no evidence in the form of charred plant remains or pollen to suggest what was grown in the bedding trenches. However, they are similar in dimensions and profile to those at Wollaston, Northants, where grape vine pollen was found, suggesting that they were part of a vineyard (Brown *et al.* 2001, 755). The growing of vines is therefore one possibility for the Land west of Kempston bedding trenches. There is no consistency in their alignment in relation to sunlight, however, so it is equally possible that they were dug for other hedge-type plants, such as apples.

Hunting, gathering and fishing

Late Iron Age and Roman periods

A consistent feature of the bone assemblages from the various late Iron Age and Roman settlements in the study area, as within the Bovis investigations (Maltby 2008, 284), is the paucity of wild animals and fish, suggesting that hunting or fishing were rarely undertaken by the local population. Only at farmstead SL54 do wild mammals, including red deer and a possible wild boar, provide over 1% of the identified mammal assemblage. Within recent investigations of Roman settlements in Bedfordshire this is matched only at Ampthill Road, Shefford (Maltby 2010, 320), where the inhabitants were believed to have been of above average wealth (Luke *et al.* 2010, 336). Butchery marks indicate that red deer at SL54 were exploited for meat, skins and antler (CD Section 2; Maltby).

The charcoal evidence indicates that woodland was available as a source of timber and firewood. Six taxa are represented: oak, hazel, blackthorn, hawthorn group, field maple and ash. Ubiquity analysis shows that scrub/hedgerow taxa such as blackthorn/cherry and hawthorn group are strongly represented, but oak is still important (CD Section 2; Challinor).

> The gathering and consumption of wild foods may also be indicated by the presence of small amounts of hazelnut shell fragments in seven samples and a few *Sambucus* sp. (elder) seeds in one sample. Charred hazelnut shell was also at Marsh Leys (Robinson 2011, 129) and within the sewer investigation at Kempston Church End (Scaife 2004, 272)(CD Section 2; Giorgi).

Despite the proximity of the river Great Ouse and an extensive sieving programme, only two fish bones, including a caudal vertebra of a pike from farmstead SL54 (CD Section 2; Maltby), were recovered from the entire study area. However, the recovery of six possible Roman fishing weights from the Kempston Church End roadside settlement during the sewer investigations (Wells *et al.* 2004, 416) suggests that fishing did take place.

The bird bone assemblage was also very small. It included bones from mallard/domestic duck and raven from the Kempston Church End roadside settlement and domestic fowl and domestic duck/mallard from farmsteads SL52 and SL54 (CD Section 2; Maltby). None exhibited evidence of butchery so it is impossible to know if these species were actually exploited in any way by the occupants of the settlements.

In summary, the results fit the regional pattern whereby wild animal and/or fish bones are either absent or found in small numbers on farmsteads, as at Marsh Leys (Maltby 2011, 127), Great Barford Sites 4 and 8 (Holmes 2007, 358), Haddon (Baxter 2003, 129) and Orton Hall Farm, Cambs. (King 1996, 218). It has been suggested that hunting might have been the preserve of landowners or the higher classes (see below, p. 336). In the case of animals such as deer it is possible that their apparent absence is real and reflects a lack of suitable woodland habitat in the vicinity. It is also possible that they were partly butchered at the kill site, rather than in settlements, for ease of transport. However, this cannot explain the low numbers of fish and birds. It is possible that the majority of the local population considered wild species to be sacred and it was, therefore, taboo to exploit them (see above, p. 322).

Early Saxon period

Wild mammals continue to be present in small numbers during the early Saxon period with red deer, roe deer and hare being identified. However, the percentage of wild mammals present in the assemblage was slightly higher than in the Roman period. For settlement SL62 it was 1.4% in contrast to 0.4% for the Roman farmstead in the same area (SL51/52). The red deer assemblage from SL62 is enhanced by the presence of several worked antler fragments. A larger contrast was observed within settlement SL165, where wild mammals represented 3.6% of the assemblage, in contrast to 0.2% for the adjacent Roman roadside settlement (SL155). Despite this, SL165 produced no evidence for antler/bone working. While there does appear to have been a change, Maltby does not think that it indicates 'significant amounts of hunting' (CD Section 2). Further evidence that at least some people undertook hunting was found in the form of a spearhead or an arrowhead (OA274) within SFB G23243 (SL63). Similar artefacts have been found within other early Saxon settlements in the region: for example, 'four probable spear- or arrowhead fragments were recorded from the Anglo-Saxon settlement at Mucking (Hamerow 1993, 69), and four arrowheads from West Stow (West 1985, 124 and fig. 241 nos 1–4)' (CD Section 2; Duncan).

The only object with a possible association with fishing was a perforated lead weight (CD Section 2; Duncan, Fig. 15, OA255) from SFB G21155 (SL62), which could have served as a fishing line or net sinker (Steane and Foreman 1988, figs 9–10; 15). 'Whether this was originally Roman in date is unclear; it was suggested that the lead objects at Mucking were recycled Roman lead, the

material plundered from the nearby Roman farmstead (Hamerow 1993, 70–71)' (CD Section 2; Duncan). Fish bones were found in small quantities on settlements SL62 (seven fragments including pike and flounder/plaice) and SL63 (four fragments including perch and roach), representing under 1.2% of the identified bone assemblage despite extensive sieving. However, this does appear to represent an increase from the Roman period — only two fish bones were found from the entire study area (within farmstead SL54).

> None of the contemporary deposits from other sites in the Bedford area have produced identified fish bones … The evidence, therefore, is for occasional exploitation of freshwater fish in the vicinity and the even more rare acquisition of preserved fish from the coast (CD Section 2; Maltby).

Nationally, fish bones are often found only in small quantities on Saxon sites. This is sometimes interpreted as indicating that fishing was rarely undertaken, but, as Hey suggested with reference to Yarnton, Oxon (also on a major river), 'their absence may reflect methods of refuse deposition rather than consumption patterns' (2004, 83). This is supported by stable isotope analysis undertaken on human remains from Berinsfield, Oxon, which indicated that animal products including fish were consumed on a regular basis (Privat *et al.* 2002).

In terms of birds there is again a slight increase from the Roman period. Bird bone represented 3.9% of the assemblage from settlement SL62, in contrast to 1.5% for the Roman farmstead (SL51/52) in the same area. For settlement SL165 the figure was 2.5%, in contrast to the 1.5% from the adjacent Roman roadside settlement (SL155). 'As in the Roman samples, domestic fowl were the most frequently identified. Domestic geese were found consistently in small numbers on most sites, indicating they had become more established by this time' (CD Section 2; Maltby). At some early Saxon sites in the Thames valley, such as Barton Court Farm, Oxon, 'domestic fowl and probable domestic geese had become proportionally more than twice as common, and therefore perhaps more important' (Booth *et al.* 2007, 321). Duck, heron and unidentified bones were found within the study area and may be evidence for hunting, although they were found only in tiny quantities.

Craft activities

Some standard rural craft activities are under-represented in the archaeological record because their by-products do not survive and their tools are rarely disposed of or lost. Within the study area, the majority of the evidence for craft activities derives from the other artefact assemblage and particularly from the roadside settlement as opposed to the farmsteads, which are discussed separately below. The working of wood, textile, bone, antler, leather and iron and the manufacture of pottery are all represented, although in no case is the evidence extensive. There was also a samian repair workshop within the roadside settlement.

Kempston Church End roadside settlement

There is clear evidence that the inhabitants of the roadside settlement undertook a range of craft activities. Woodworking would have been a major activity, relating to the construction of buildings and probably furniture. Wooden tools, being smaller items, may have been made elsewhere and imported into the settlement, but local manufacture is clearly possible. A range of metal woodworking tools was recovered: a possible paring chisel (OA138); a mortise chisel (OA84) (CD Section 2; Duncan, Fig. 6); two pyramidal heads (OA85 (CD Section 2; Duncan, Fig. 6) and OA86); either a bow- or strap-drill; and an almost complete frame saw (OA41) (CD Section 2; Duncan, Fig. 4). The majority were found in the vicinity of enclosure L510 (Phase 503), a possible focus of woodworking. A single drill bit and a pivoting knife were also found within the sewer investigations (Wells *et al.* 2004, 387).

Evidence for spinning took the form of a spindle whorl (OA43) from the recent excavations and four from the sewer investigation (Wells *et al.* 2004, 384). Only one sewing needle (OA89) (CD Section 2; Duncan, Fig. 6) was found from the recent excavations, but eight were found within the sewer investigations (Wells *et al.* 2004, 384). Neither investigation produced any evidence of weaving. The baling or couching needle OA103 (CD Section 2; Duncan, Fig. 7) 'is an unusual find from a rural site … Not dissimilar medieval implements are thought to have been used for the couching technique of embroidery or for stitching documents (Biddle and Elmhirst 1990, 807)' (CD Section 2; Duncan). Shears like OA60 'were put to a variety of uses, from cropping cloth to cutting hair and thread, and only rarely can a precise function be assigned' (CD Section 2; Duncan).

As within the sewer investigations, only limited evidence for bone or antler working was recovered. It took the form of antler off-cuts, such as OA56, OA88 and OA136 (CD Section 2; Duncan, Fig. 8), sawn cow horn core OA117 and pin OA50 (CD Section 2; Duncan, Fig. 5), which is likely to have been a product of local manufacture (CD Section 2; Duncan). Leather working was indicated by the presence of awls (*e.g.* OA55 and OA87) (CD Section 2; Duncan, Fig. 6).

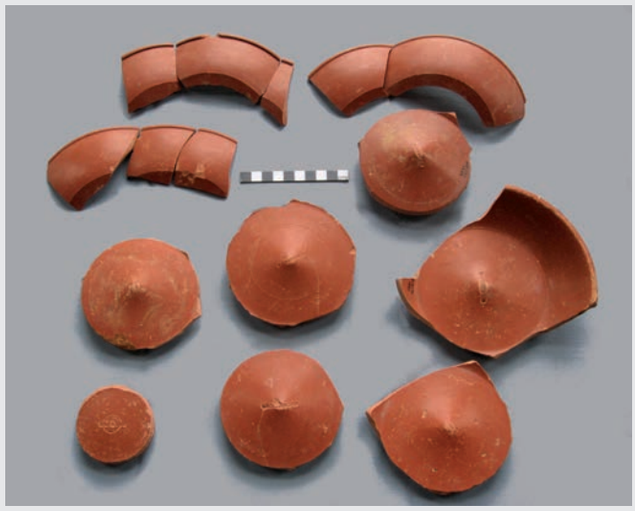
Relatively small assemblages (1.5kg) of ferrous slag, including fragments of hearth bottoms, were found in most phases of occupation within the recent investigations. The evidence hints 'at small-scale smithing somewhere in the vicinity' (CD Section 2; Duncan). The evidence for smithing was better on the sewer investigations, where *c.*19kg of ferrous slag was recovered (Wells *et al.* 2004, 387–9). Its distribution suggested that smithing took place in the same part of the settlement from the early 2nd to the early 4th century (Dawson 2004, 54). The actual scale of iron working undertaken within the settlement is not easily deduced from the quantity of metallurgical residues recovered, especially as some sites in the region are known to have produced considerably larger quantities: 80kg from Hacheston, Suffolk (Starley 2004, 141–3), for example, and 38kg from Marsh Leys, Kempston (Luke 2011, 163). The farmsteads on the Biddenham Loop (Luke 2008, 64), Great Barford Bypass (Poole 2007b, 154) and Luton Road, Wilstead (Luke and Preece 2010, 153) produced either no ferrous slag at all or only very small quantities.

Although there is no firm evidence for copper alloy working, some features of ring OA42 (CD Section 2; Duncan, Fig. 4) could suggest that it was a 'locally made product, discarded due to the casting defect' (CD Section 2; Duncan). There are also hints at the existence of 'a relatively local glass blower, as evidenced by the unusual conical bowl (OA76 from Phase 503 enclosure L510)' (CD Section 2; Duncan), although it cannot be assumed

BOX 24: Romano-British repair and recycling workshop for samian pottery

By Felicity Wild. Photographs by Priscilla Wild

The samian ware shown here is part of an assemblage recovered from a single pit within the Kempston Church End Romano-British roadside settlement. It is interpreted as the debris from a workshop for the repair and recycling of samian pottery. In total, it contained substantial parts of up to about nineteen vessels, all of plain forms, almost all of which showed evidence of repair or reworking.



The craftsperson's speciality appears to have been the trimming of bases, perhaps for use as lids, palettes, or, in the case of form 31, spinning tops. The walls were split off at the junction with the base and the break rubbed down to provide a smooth edge. Also present, demonstrating that the work took place nearby, were groups of joining wall sherds, in one case up to 80% of the rim. It was not possible to associate these with specific bases owing to the polishing of the edges. None of the pieces in the pit showed signs of wear caused by secondary use, suggesting that they had not yet reached the point of sale.

Form 36. An unsuccessful repair? The two circular rivet holes on one half of the primary break have both broken through.

Form 38. Is this perhaps an attempt to produce a pouring spout, or spouts, when the bowl broke in half?

Four vessels showed probable owner's marks: two in the form of notches on the footstand, one an X beneath the base, and another the start of the owner's name on the wall.

The presence of owner stamps suggests that the craftsperson worked for the wider community rather than the needs of their own household. One client was literate but the others, like the majority of the population at that time, were not.

The dating of the workshop to the end of the 2nd, or more probably, the early 3rd century is provided by the potters' stamps. With the exception of the Curle 11 and an East Gaulish form 18/31, all the pieces were from Lezoux. Apart from the two stamps of Littera i, the stamps from the pit all dated to the second half of the 2nd century. By the end of this century, with samian ware becoming increasingly scarce, the locals were clearly anxious to preserve their remaining pieces for as long as possible.

For details of the samian assemblage and more figures see CD Section 2; Wild.

that this person was an inhabitant of the roadside settlement.

Most unusually, there was evidence for the presence of a samian repair workshop, described in detail and discussed by Wild (CD Section 2). In summary, one of the pits within enclosure L510 (Phase 503) contained a large assemblage of samian vessels, almost all of which showed evidence for repair and reworking. 'The craftsman must have been at work at the end of the 2nd century or, more probably, the early 3rd, when fresh supplies from Central Gaul had become scarce or ceased altogether' (CD Section 2; Wild).

No firm evidence for pottery manufacture within the settlement was recovered. However, a possible unfinished pottery kiln (see above, p. 237) was found on the northern edge of the settlement within the Box End Quarry investigations (Luke and Preece forthcoming).

Overall, the evidence from the recent excavations suggests that at least some of the enclosures were occupied by local craftsman trading their wares or services. The enclosures within the Bypass excavation were probably in a 'prime location' because they were adjacent to the probable river crossing. What is less certain is whether the inhabitants were actually full-time craftsmen or, as seems more likely, were still essentially farmers who had diversified into craft-based activities.

Roman farmsteads

The evidence for small-scale craft activities within the farmsteads is very limited. Antler working is represented by a flat plate or plaque (OA145) (CD Section 2; Duncan, Fig. 9) and waste/off-cuts (OA145) from farmstead SL51 and an antler beam (OA172) from farmstead SL54. In addition, an iron awl (OA152) from farmstead SL51 is the only evidence for leather working.

The evidence for pottery manufacture is considerably better. Three kilns were identified on the periphery of their respective farmsteads, including two of late Iron Age/early Roman date within the Bovis investigations (Luke 2008, 201–5 and fig. 9.4). Kiln G3038, on the periphery of farmstead SL54, had the same shape and dimensions as that found in Box End Quarry within the northern part of the Kempston Church End roadside settlement (Luke and Preece forthcoming). 'The pottery recovered from the kiln is generally of 2nd-/3rd-century date' (CD Section 2; Wells, Pottery) and is dominated by greywares.

There is an increasing body of evidence for the presence of a small number of pottery kilns on settlements in this part of the Ouse valley during the Roman period. Upstream they have been found at Bromham (Tilson 1973) and Stagsden bypass (Dawson 2000b, 37–9 and 41–2). Downstream they have been found at Mile Road, Bedford (Dring 1971), Eastcotts, Bedford (Albion 2010c; BCAS 1995; White 1980), and Perkins Road, Bedford (Albion in prep.). Four were found within a single farmstead at Site 8 on A421 Great Barford Bypass (Poole 2007a, 112–14, 120, 122–3, fig. 4.22 and fig. 4.43; Poole 2007b, 143–4). All these sites, like those on the Biddenham Loop, appear to be farmsteads where it is possible that pots were fired as required, during quieter periods in the agricultural year. It is also possible that the potters did not live on the farmsteads but were iterant craftsman, which may explain the similarities between the kiln at Box End Quarry and that on farmstead SL54. There are also many farmsteads in the vicinity where, despite extensive excavations and their position on the Oxford Clay, no evidence for pottery manufacture has been found, such as Marsh Leys (Luke 2011, 163) and Luton Road, Wilstead (Luke and Preece 2010, 153). It is possible that the occupants of some farmsteads specialised in a specific craft — pottery manufacture at Biddenham Loop, blacksmithing at Marsh Leys — with the need for particular goods met through purchase or exchange.

Early Saxon settlements

Objects associated with craft activities were found in small numbers within settlements SL62, SL63 and SL165. The most widely recognised was textile production, specifically spinning and weaving. There was also evidence for antler and bone working, but very limited evidence for leather and metalworking.

Nine of the SFBs within SL62, two of the SFBs within SL63 and one pit within SL165 produced evidence for textile production. The majority came from SL62 but 'the evidence is not plentiful, with generally one textile-related item per SFB' (CD Section 2; Duncan). The objects included loomweights, spindle whorls and pin-beaters. As discussed above, although the fills and artefacts found within SFBs may not have a direct association with the building within which they were found, they will have derived from the settlement in general and some, like the loomweights, are likely to have been used in the buildings (Tipper 2004, 168–9). Although percentages of sheep bones were not as high as those of cattle the presence of mature adults, including two quite elderly individuals, suggests that animals were being kept for their wool. In addition to wool production, flax was also probably grown and its fibres used in the manufacture of cloth. Although the flax seeds were only tentatively identified (CD Section 2; Giorgi), they occurred within SL62, which produced the most objects associated with textile production.

Only two of the five loomweights from SL62 could be assigned to form (OA233 (CD Section 2; Duncan, Fig. 14) and OA234).

> Both these examples were of the annular variety, being made from a ring of clay with a central hole as wide, or wider, than the ring of clay around it (Dunning *et al.* 1959, 23–4). The annular form is thought to date to the early Anglo-Saxon period, being superseded by the intermediate form, made from a pierced disc of clay, in the 7th and 8th centuries (Dunning *et al.* 1959, 23–4) … Anglo-Saxon loomweights can weigh from 100g to 1460g, but most commonly weigh 150g to 500g (Rogers 2009, 293). Both of the measurable weights from SL62 fit comfortably in the middle range; the complete example (OA233) weighing 369g while OA234, with just over half surviving, would not have weighed more than *c.*450g (CD Section 2; Duncan).

Both of the loomweights from SL63 were of the intermediate form and one was unfired (OA270). Comparable unfired loomweights are known from Mucking (Hamerow 1993, 17) and West Stow (West 1985, 138). Tipper believes that loomweights were probably used in an unfired state and simply thrown away and replaced after breakage (2004, 167). As Duncan (CD Section 2) notes,

> … this may well be the explanation for the unfired clay lumps found in the fills of SFB G23241 (11.4kg) and SFB G23243 (1.8kg) (also see CD Section 2; Wells, CBM). These were mainly amorphous pieces but most possessed at least one smoothed surface and in several instances had a slight curvature'.

BOX 25: Early Saxon antler and bone working

By Holly Duncan. Photograph by Adam Williams

A concentration of antler and, to a lesser extent, bone working debris was found within the fills of several early Saxon sunken-featured buildings, in particular SFB G21155 within settlement SL62 on the Biddenham Loop. This does not necessarily mean that objects were manufactured within these particular buildings; once a structure had been abandoned it may simply have become a convenient dumping ground for household and craft waste.

The assemblage of red deer antler can be divided into off-cuts and rough-outs (right upper half of photo). The off-cuts represent different parts of the antler. They include tines — in some cases just the tip, although in other cases the whole tine has been sawn from the beam and discarded without being used (extreme right). Also present are portions of beam, most commonly cross-sectional fragments (upper right). One off-cut may represent the shaving of compact outer tissue (top, third from right). Two possible rough-outs, probably for parts of combs, were identified (centre top).

Bone working is evidenced by an off-cut, a rough-out of a shank or stem and a small decorated triangular bone plate (to the left of the antler rough-outs in the photograph).

Some of the products of these crafts were also found: antler and bone 'pin-beaters', used in weaving (top left, first two); perforated dress pins made from pig fibulae; and antler double- and single-sided combs (bottom).

For further information and figures see CD Section 2; Duncan.

The use of unfired loomweights within the settlements in the study area may explain the relatively small numbers found compared to other sites (Tipper 2004, table 55).

Four spindle whorls were found in settlement SL62, one of lathe-turned shale (CD Section 2; Duncan, Fig. 14, OA229), which may be Roman in origin, and three ceramic.

> The weights of the two near complete clay whorls, 35.7g (OA232), 41.8g (Fig. 14, OA230), and 31g for the incomplete example (OA231), compare well with the clay whorls from Mucking, Essex which ranged from 14g to 60g, most being 25g to 45g (Hamerow 1993, 65)(CD Section 2; Duncan).

A ceramic spindle whorl (OA212) was the only craft-related artefact found in SL165. It derived from a peripheral pit rather than one of the SFBs within the settlement. This may reflect the fact that

> … although the form of the whorl could not be determined from the fragmentary remains, the diameter of the spindle hole measured *c.*11.5mm, appropriate for use with the thicker spindles of the later Anglo-Saxon and medieval periods (Rogers 1997, 1731)(CD Section 2; Duncan).

Only two pin-beaters were found within settlement SL62 (OA235 and OA236 (CD Section 2; Duncan, Fig. 14)), neither in association with a loomweight. Both are of the double-ended 'cigar-shaped' form, commonly encountered in early to middle Anglo-Saxon deposits, but differ both in length and material (CD Section 2; Duncan).

Evidence for antler working, and to a much lesser extent bone working, was limited to five SFBs in settle-

ment SL62. It mainly comprised pieces of waste and rough-outs. The six antler combs from SL62 (see below), may well represent the products of the antler working (CD Section 2; Duncan) and the same may be true of the pin-beaters and perhaps the bone pins. Two whittled fragments of mammal bones 'may have once joined (OA248 Fig. 15 and OA249); they are not dissimilar to an unfinished pin-beater found within the fills of an SFB at Pennylands, Milton Keynes (Waller 1993, fig. 61 no. 66)' (CD Section 2; Duncan). The absence of evidence for antler or bone working from settlement SL165 seems particularly unusual because wild mammals, including red and roe deer, provided 3.6% of the mammal assemblage from this settlement, the highest proportion for any Roman or Saxon settlement within the study area.

Very limited evidence for metalworking was found. The total weight of ferrous slag recovered from SL62 was 142.6g. All pieces were fragmented and small, and in most cases fell into the undiagnostic category of slag, although there was one fayalitic run (10.5g) suggestive of smelting (CD Section 2; Duncan).

Evidence of the working of non-ferrous metals was even more meagre, comprising two lead sheets and a single copper alloy off-cut (CD Section 2; Duncan). The final craft represented is leather working, evidenced by a single iron awl (OA251) from SFB G21169 (CD Section 2; Duncan).

In summary, the early Saxon evidence for craft activities within the study area is better than that for the Roman period. This may reflect the change from late Roman specialist production centres to local manufacturing. Although there is no direct evidence for pottery manufacture from the study area it is likely to have taken place because, with the exception of fabric A25, which originates from Charnwood, Leicestershire, all other fabrics are likely to have been locally manufactured using available clay sources (CD Section 2; Wells, Pottery). This, again, suggests a change to more local manufacture, in contrast to long-distance trade from the pottery production sites of the late Roman period. It is therefore presumed that the communities were largely self-sufficient and that craft production took place at a household or community level. However, some commodities, such as pottery, iron and jewellery, may have reached the communities via a combination of itinerant craftsmen and regional trade or exchange.

Status/wealth of the local population

With the possible exception of the early Saxon period there is no evidence from the study area to suggest that the local population was anything other than of British origin, although it would be difficult to prove otherwise. Some evidence for their status/wealth can be derived from the structural, artefactual and ecofactual data-sets. The following sections discuss separately some of the more significant indicators within the Roman roadside settlement, the Roman farmsteads and the early Saxon settlements. In the Roman period to some extent the evidence available for the status/wealth of individuals is intrinsically linked to their readiness/ability to 'buy into' new fashions and may not necessarily reflect wholesale adoption of all aspects of Roman culture and beliefs.

The inhabitants of the Kempston Church End roadside settlement

Settlement form and components

The layout of the Kempston Church End roadside settlement is similar to that of other roadside settlements in the region, such as Higham Ferrers, Northants (Lawrence and Smith 2009, fig. 7.3). However, the individual enclosures at Kempston Church End were larger than those found at Eastcotts, Bedford, the next largest known settlement in the vicinity (Albion 2010c). Each enclosure presumably represents a family holding divided into domestic areas (closer to the road) and non-domestic plots to the rear. The latter could have been used for cultivation and/or short-term animal coralling.

It has been suggested that the switch from roundhouses in the Iron Age to rectangular buildings in the Roman period could represent 'the desire of individuals or families to acquire symbols of wealth and civilization' (Hingley 1989, 34). On this basis, it may be significant that, except during the late Iron Age/early Roman period (Phase 501), the majority of the buildings within the roadside settlement were rectangular. Roundhouses continued to be built within the Kempston Church End roadside settlement (Dawson 2004, fig. 3.22) and within similar settlements such as Higham Ferrers, Northants (Lawrence and Smith 2009, 325). However, they appear to be the dominant building form in the early Roman period only. Nationally, 'there has been an increasing recognition that the roundhouse was a much more enduring feature of the Romano-British landscape' (Mattingly 2007, 375). The evidence for its continued use within the farmsteads is discussed below (p. 336).

Buildings with more substantial foundations seem to be more common in the northern part of the settlement, within the sewer investigations. Some would have been strong enough to support ceramic tiled roofs, a supposition corroborated by the recovery of large quantities of *tegulae* and *imbrices*. The presence of flue tile suggests that some buildings in this area had heated rooms. Isolated finds indicate that some also featured painted walls and glass windows.

The cess pits within the settlement have already been discussed (see above, p. 241). Their rarity on civilian settlements in Roman Britain may indicate that some of the inhabitants of the Kempston Church End settlement were accustomed to Mediterranean mores, perhaps because they had served in the military or government.

More in the mainstream tradition of Roman towns and cities, the inhabitants, from at least from the 3rd century onwards, were buried in formal cemeteries. Two have so far been identified, both on the periphery of the settlement and both containing an estimated 100 graves (Dawson 2004, 48 and 55–7; Luke and Preece forthcoming). Another standard component of towns and cities is temples/shrines and the existence of at least two within the Kempston Church End settlement has been discussed above (p. 301).

Access to markets/imported goods

Imported goods provide evidence not just of access to markets but also of the wealth of the local population and to some extent their willingness to adopt Roman fashions. Such products were probably purchased from travelling markets or sellers. A wide range of regional,

national and continental products were available during the Roman period as a result of political stability and improved communications within the Empire.

From the earliest Roman phase of the settlement (Phase 502) the *as* of Claudius (CD Section 2; Guest) and the prismatic bottle (CD Section 2; Duncan) indicate access to a market and resources to purchase imported goods. Although some of the metal, wood and leather tools or products may have been made locally most are likely to have been acquired through trade. Numerous other trade links are testified by quernstones from the Welsh borders (*e.g.* OA61 and OA72), Kent/Sussex (*e.g.* OA32) and Germany (*e.g.* OA40 and OA61). The source of the Ostracod limestone from which mixing palette OA51 (CD Section 2; Duncan, Fig. 5) was made was either Dorset or Sussex (Eyers 2009). In terms of glass products, there is evidence to suggest trade links to a glass house in the East Midlands (CD Section 2; Duncan). Access to coastal resources is indicated by the presence of marine oysters. Inevitably localised shelly and greywares

BOX 26: Roman militaria

By Holly Duncan. Photograph by Adam Williams

The presence on civilian settlements of a small number of military fittings, or objects associated with the military, is an increasingly common phenomenon. The roadside settlement at Kempston Church End (SL155) represents another example. These types of finds may indicate that the settlement contained soldiers involved in policing or residents who had once served in the military or government.

The object on the left (OA103) is a baling or 'couching' needle that could be only partially driven through a layer or layers of textile or leather owing to the size of its ornate, perforated head. Other examples have been found on a number of 1st-century AD Roman military sites in England but rarely, as here, on rural sites.

Phallic pendants (top row centre (OA129)) are often found on military sites; they represent virility. A possible second pendant (OA141), which survived in poor condition, can be seen to the right of the phallus. This may depict an animal or it may be an abstract version of the hand (in this instance a clenched fist) and phallus amulets frequently encountered in military contexts. Both objects could date to the 1st century AD.

The iron finger ring (bottom centre (OA28)) is set with a cornelian intaglio depicting a male figure, thought to be Mars, the god of war, standing frontward, his head facing to his right. The figure wears a cloak draped over his right shoulder, possibly with a short belted tunic beneath, and a helmet. In his right hand is a spear; his left hand holds a shield aloft. This ring dates to the second half of the 1st century AD or the early years of the 2nd century. Although the metal of this ring might be 'lowly' (gold rings being reserved for members of the Senatorial or Equestrian orders), it does indicate the presence of a literate individual and, given the subject matter, probably a man with military connections.

The final object (bottom right, side view) is a harness junction, or phalera (OA122). This form has a flat disc at the front, with the loop to accommodate the harness straps concealed behind the disc. It dates to the 1st to early 2nd centuries and probably belonged to cavalry, as opposed to draught, harness.

For further information and figures see CD Section 2; Duncan.

dominate the pottery assemblage. Regional imports were identified from the Bucks./Northants border, Nene Valley, Verulamium, Oxfordshire, London, Mancetter–Hartshill and Dorset industries. Imports from the continent are dominated by samian from Gaul, but are also represented by Rhenish ware from Gaul, amphorae from Spain and Terra Rubra from France/Germany (CD Section 2; Wells, Pottery). A similar range of imported goods was noted within the sewer investigations (Dawson 2004, 58–61).

Military associations

A small number of artefacts hint at 'military' connections for some of the settlement's inhabitants. This is corroborated to a degree by evidence from burials within the two cemeteries.

The artefacts with 'military' connotations comprise an iron intaglio ring depicting Mars (OA28) (CD Section 2; Duncan, Fig. 3), a phallic pendant (OA129) (CD Section 2; Duncan, Fig. 8), a baling or couching needle (OA103) (CD Section 2; Duncan, Fig. 7) and a phalera or harness junction (OA122) (CD Section 2; Duncan, Fig. 7). These all date to the later half of the 1st and perhaps the early 2nd century. In the case of the ring, Duncan (CD Section 2) writes:

> [a]lthough the metal of this ring might be 'lowly' — gold rings were reserved for members of the Senatorial or Equestrian orders (Henig 1978, 36) — it does indicate the presence of a literate individual, perhaps, given the subject matter, a man with military connections.

It is likely to have been seen by the wearer (and others) as an indicator of a particular status. Duncan also states that the baling or couching needle, with its ornate head, is an unusual find from a rural settlement.

> The distribution of baling needles with perforated lobes strongly suggests a 1st-century military connection, with examples found at Wroxeter, Cirencester, Ancaster, Richborough and Castleford, all in military deposits (Cool 1991, 172; Cool 1998, 91–2)(CD Section 2; Duncan).

The phalera or harness junction had a loop concealed behind the disc and probably belonged to cavalry, as opposed to draught, harness (Bishop 1998, 63)(CD Section 2; Duncan). The phallic pendant is of a type often found on military sites (Green 1978, 34–5) and represents virility but, as Duncan says, '[t]here is, however, no reason to suppose that they were not worn by civilians' (Oldenstein 1976, 158–9)' (CD Section 2; Duncan). Also with possible military associations is an item of uncertain identification (OA141) (CD Section 2; Duncan, Fig. 8).

> It may be a zoomorphic terminal, or perhaps, if the curled over end originally formed a suspension loop, a pendant similar in basic form to phallic pendant OA129 … It is just possible that it is an abstract version of the hand (in this instance a clenched fist) and phallus amulets frequently encountered in military contexts and thought to be of 1st-century date (*cf.* Crummy 1983, 139–40)(CD Section 2; Duncan).

The disparity in the later 3rd-century cemetery within the sewer investigations between the sexes and evidence for 'considerable interpersonal violence' suggest 'that the cemetery may have been serving a military community at this time, possibly a group of active or and retired auxiliaries' (Boylston and Roberts 2004, 348). This was the main reason behind Dawson's view that 'the possibility of a military component to the settlement may indicate formal veteran settlement or the return of an indigenous group after military service' (Dawson 2004, 76). This could also explain the empty graves within both cemeteries. However, this suggestion cannot be advanced by the evidence from the study area because the majority of the artefacts with military association are 1st to 2nd century in date.

In summary, it seems likely that some of the residents of the roadside settlement had served in the military or government. Black believes that such service was an important way, especially in the early Roman period, for villa owners to further their ambitions (1994, 109–10). Such a route was not restricted to the more senior members of the British elite because historical sources make it clear that British auxiliaries were in existence from at least AD 69 (*Tacitus Hist.* I. 70.2).

Fashion, dress and personal hygiene

At least some of the settlement's inhabitants displayed a willingness to adopt Roman fashion. Jewellery and dress fittings from the recent investigations comprise brooches (OA31 (CD Section 2; Duncan, Fig. 4), OA63 (CD Section 2; Duncan, Fig. 5), OA101, OA120, OA126 and OA127 (CD Section 2; Duncan, Fig. 7)); an earring (OA39 (CD Section 2; Duncan, Fig. 4)); hairpins (OA35, OA36 (CD Section 2; Duncan, Fig. 4), OA50 (CD Section 2; Duncan, Fig. 5) and OA106 (CD Section 2; Duncan, Fig. 7)); and bracelets (OA52 (CD Section 2; Duncan, Fig. 5), OA130 and OA142 (CD Section 2; Duncan, Fig. 8)). Numerous hobnails indicate that nailed shoes were also worn. A similar range of objects was found within the sewer investigations, albeit in far greater quantities (Wells *et al.* 2004, 416–28). The presence of toiletry spoons (OA79 (CD Section 2; Duncan, Fig. 5) and OA128 (CD Section 2; Duncan, Fig. 7)), nail cleaners (OA80 (CD Section 2; Duncan, Fig. 5) and OA102 (CD Section 2; Duncan, Fig. 7)) and the stem from another toiletry implement (OA118) 'would seem to indicate an awareness of appearance and cleanliness' (CD Section 2; Duncan). Similar items were found within the sewer investigations (Wells *et al.* 2004, 429–32).

The precise function of mixing palette OA51 (CD Section 2; Duncan, Fig. 5) is uncertain; they 'are thought to have been used in preparing cosmetics or medicines (Milne 1970, 171)' (CD Section 2; Duncan). Although more commonly found on villas, as at Gorhambury, Herts. (Neal *et al.* 1990, fig. 146/1051), or in towns, as at Colchester, Essex (Crummy 1983, fig. 61), they are also found on farmsteads, as at Luton Road, Wilstead (Wells 2010b, 143 and fig. 21).

Too few artefacts were recovered to allow detailed analysis. However, their presence does suggest a change in attitudes to personal appearance from the Iron Age. It is noteworthy that some of the objects, including the earring and two of the hairpins, occur in Phase 502 (late 2nd to early 3rd century AD). It is possible that in the early Roman period such items would have marked out the user as being fashionable, although probably less so in the later Roman period.

Diet

The study area did produce some evidence for changes in diet associated with the Roman conquest, albeit less significant than that found in areas such as the Thames valley (Booth *et al.* 2007, 280–84). It is believed that during this period 'the main trends are towards greater variety of diet, with quite widespread indications of the

adoption of a range of vegetables and spices to supplement or enliven the staples of bread and (to a lesser extent) meat' (Booth *et al.* 2007, 152). Some of these changes may be reflected in diversification in the range of vessel types used for storage, preparation, cooking and consumption/display.

Specialist Roman ceramic table and kitchen ware such as amphorae, mortaria, samian, Castor boxes and strainers were found within the settlement. Amphorae and mortaria were found in small quantities from Phase 501 (which probably covers a few decades on either side of the Roman conquest). Much larger quantities of mortaria were found in later phases. However, the continued small quantities of amphorae could suggest that the use of olive oil, wine and fish sauce was either not desired or could not be afforded by the local population. However, it is always possible that the contents of amphorae were transferred to other containers for distribution among rural populations. Mortaria occurred in slightly greater numbers and were predominately from the Verulamium and Oxford industries, including some early products. They were mainly used for the grinding and mixing of foods in a style consistent with Romanised practice, although it has been suggested that other uses were possible, such as cooking (Booth *et al.* 2007, 156).

The presence/absence and overall quantity of continental imports, such as samian ware, on different settlements has sometimes been used to elucidate site status or wealth (Luke 2011, 166). While this may be a valid approach for the 1st century it has less relevance for the 2nd century. Continental imports occur in slightly higher percentages within the roadside settlement — 5% within the sewer investigations (Luke 2011, 166) — than in the farmsteads, where the average was 2.7% (see below). This may be due to a number of factors, such as access to markets and whether or not the inhabitants actually wanted the imports. Samian tableware was clearly valued by its owners, as attested by the presence of a samian repair workshop in the late 2nd/early 3rd century (CD Section 2; Wild). The proportion of decorated samian in the whole assemblage was *c.*11%, which is comparable to the 12% seen on the sewer investigations (Dickinson 2004, 502, table 9.25). These percentages are also similar to those observed on farmsteads in the vicinity (see below).

Tableware was also made out of materials other than pottery, such as glass, pewter and wood. The latter would survive only in waterlogged conditions, which were not present within the Bypass excavation. The two most unusual items were a glass conical bowl (OA76) (CD Section 2; Duncan, Fig. 5) and a pewter bowl (OA77) (CD Section 2; Duncan, Fig. 5).

> Blue/green bowls with fire-rounded rims such as OA76 are not a common find in Romano-British assemblages. Though a rim fragment from a larger shallow bowl similar to this was found in the fortress bath deposit at Caerleon dating to *c.*160–230 (Allen 1986, 107 no. 45, fig. 41), their overall scarcity can be appreciated by the fact that no examples were found in the very large assemblage from Colchester (Cool and Price 1995) (CD Section 2; Cool, in Duncan).

The pewter bowl is unusual because such vessels are better 'known from hoards of the late Roman period (*c.*250–410) (Beagrie 1989, 175)' (CD Section 2; Duncan).

As described above, a consistent feature across all settlements in the study area was the paucity of wild animal and fish bones. Practical and religious reasons for this phenomenon have been discussed above (see p. 328). It has been suggested that hunting might have be the preserve of landowners (Luke 2011, 166) or the higher classes (Mackreth 1996, 225), with the majority of the population having neither the rights nor the time for such activities. Larger numbers of wild animal and fish bones have certainly been found on some villa settlements, such as Gorhambury, Herts. (Locker 1990, 209 and 212). It is, therefore, interesting that of the five possible farmsteads within the Biddenham Loop the one with the highest percentage of wild mammal bones was SL54, for which there is other evidence to suggest that its occupants might have been of a higher status (see below). However, the situation is clearly more complex because some villa settlements, such as Bancroft, Milton Keynes (Levitan 1994, 539) and Newnham, Beds. (Maltby in prep.), have produced only small number of wild species.

Written communication

Evidence for written communication was found in the form of two iron styli (OA81 and OA135). Their presence within the roadside settlement 'signals literate inhabitants, or at least someone keeping accounts' (CD Section 2; Duncan). No such objects were found during the sewer investigations and this was commented upon by Meade (2010, 52).

Summary

The inhabitants of the roadside settlement undertook mixed farming, supplemented in some cases by craft activities, and appear to have been comfortably off. They seem to have been willing to adopt at least the outward trappings of 'being Roman' and had the means to purchase some of the greater range of imported goods that was available. Some may have even have served in the military or government.

The occupants of the Roman farmsteads

There is considerably less evidence about the wealth or status of the inhabitants of the farmsteads. However, there are a number of contrasts to the assemblages from the roadside settlement and a number of significant anomalies that are worth discussing.

The farmsteads comprised multiple enclosures only a minority of which were used for domestic occupation. The others, like the back plots within the roadside settlement, may have been cultivated or used for animal coralling. The possible link between status and the change from roundhouses to rectangular buildings has been briefly discussed above. While it is clear that roundhouses were the dominant building type within the Biddenham Loop prior to the Roman period, the situation after the conquest is less clear-cut owing to the small number of buildings identified. However, a roundhouse on farmstead 14 within the Bovis investigations remained in use throughout the Roman period (Luke 2008, 58). Contemporary roundhouses are also known on other farmsteads in the vicinity, such as Luton Road, Wilstead (Luke and Preece 2010, 153). There may have been reluctance on the part of some families to switch from a perfectly good traditional building to one that may not have been any more comfortable and could have been

more expensive to build and maintain. Mattingly believes that 'roundhouses should not automatically be viewed as low-status or poor dwellings' (2007, 375), while Taylor has also suggested that the straightforward equation of building form and status does not work (2001, 49–50). This is particularly clear in areas of non-villa settlement, such as the central Fenland, where wealth took the form of portable material items rather than 'obvious and overt symbols of status such as winged corridor buildings, courtyard buildings, mosaics, tessellated floors or bath-houses' (Hingley 1989, 159).

That the farmsteads' inhabitants had access to markets is demonstrated by a range of objects similar to that seen on the roadside settlement. However, with the exception of funerary assemblages, the numbers are far lower.

> There is a stark contrast between the quantities of the 'other artefacts' assemblages from Romano-British deposits within the Biddenham Loop and within the Kempston Church End settlement SL155. This may be due to a difference in economic wealth and the perhaps more rural nature of activity on the Biddenham Loop, but it may also reflect different patterns of deposition' (CD Section 2; Duncan).

Specialist Roman table and kitchen ware forms, such as mortaria and amphorae, occurred in all farmsteads, although flagons were absent from SL52 (CD Section 2; Wells, Pottery). Amphorae were found in small quantities on all farmsteads, as were mortaria, although the largest assemblage, from farmstead SL54, was only fifteen sherds. Continental pottery imports represent 2.7% of the overall pottery assemblage from the farmsteads. Similar proportions are known on nearby farmsteads; they represent 2% at Marsh Leys (Luke 2011, 166) and 3% at Luton Road, Wilstead (Wells 2010a, 136). The quantities of decorated samian are too small for reliable statistical analysis. 'The high percentage of 21% for SL51 is clearly distorted by the deposit in … L2114' (CD Section 2; Wild). However, 'at the Marsh Leys farmsteads the figure was 12.9%, suggesting that a proportion in this range may be typical for the area as a whole' (CD Section 2; Wild)

That at least some people wore Roman-style footware is indicated by the presence of hobnails on all farmsteads. The only items associated with dress and accessories found from farmstead SL52 were an annular glass bead (OA153) (CD Section 2; Duncan, Fig. 10), an iron brooch (OA159) and a copper alloy brooch (OA160). All the jewellery and dress accessories from farmstead SL54 derive from the cemeteries. A 'trinket finger ring' (OA185) (CD Section 2; Duncan, Fig. 12) and an earring (OA184) (CD Section 2; Duncan, Fig. 12) were found in graves SG3031 and SG3043 respectively. However, the richest grave by far was SG3033, which contained shoes, necklaces, armlets and bracelets. This assemblage of grave goods, 'although not containing items of precious metal, does suggest that the individual was someone of status' (CD Section 2; Duncan).

A few of the objects from farmstead SL51 — the tweezers (OA151, Fig. 9), the turf cutter (OA149, Fig. 9), the ceramic candlestick and, in particular, the bath flask (OA150, Fig. 9) — 'stand out from the normal profile one might expect on a rural farmstead' (CD Section 2; Duncan) and provide further evidence of inhabitants familiar with Mediterranean-style cultural behavour. The small turf cutter OA149 (CD Section 2; Duncan, Fig. 9) is of a form that was a Roman introduction (CD Section 2; Duncan). Although ceramic candlesticks (CD Section 2; Wells, Fig. 16. P121) were extremely simple items, they have rarely been identified on contemporary sites in Bedfordshire. Perhaps the most unusual discovery from all the farmsteads was a bath flask (OA150) (CD Section 2; Duncan, Fig. 9). This form of vessel was specifically designed for carrying oil for use in a bath house (a Roman introduction and institution). It therefore 'not only suggests that an occupant of the farmstead had an interest in this Roman ritual but also would appear to imply the presence of a bath house at not too great a distance' (CD Section 2; Cool, in Duncan).

Graves SG3169 and SG3189 (cemetery L306, farmstead SL54) contained glass vessels OA182 and OA183 (CD Section 2; Duncan, Fig. 11). This is relatively unusual because they 'were never a particularly common grave good amongst the Romano-British population' (CD Section 2; Cool, in Duncan).

Summary of the Roman evidence

There is sufficient evidence to suggest that some of the local population, especially those within the roadside settlement, were quite well off and had adopted the trappings, at least, of Roman culture, such as clothing, jewellery, hygiene, buildings, table and kitchen ware, diet and so on. There is also a suggestion that some of the inhabitants of the roadside settlement might have served in the military or government.

Evidence for wealth or the adoption of Roman culture is never particularly clear-cut (Taylor 2001, 50; Hingley 1989, 159–61). For example, based on its morphology and the majority of its finds assemblage, farmstead SL51 would appear to be a 'low-status' settlement. However, it was the only farmstead to produce a turf cutter, a ceramic candlestick and a bath flask, which suggests otherwise. The overall finds assemblage from non-funerary deposits within farmstead SL54 was unexceptional. However, this was the only farmstead to contain cemeteries and a cess pit, while its animal bone assemblage contained a higher percentage of wild animals than those of the other farmsteads. It is also the only one which may have contained substantial building, as evidenced by the significant quantities of roof tile, flue tile and brick fragments found mainly during field artefact collection associated with the Bovis investigations (Slowikowski 2008, 279) and recorded in the HER (HER 3663). In addition, it appeared to be set within its own land, within which trackways were created, and was divided from the rest of the Loop by an extensive ditched boundary. Finally, the presence of the grave of a wealthy woman within cemetery L303 supports the idea that farmstead SL54 may have been occupied by people of higher status than those on the other farmsteads within the Biddenham Loop (Luke 2008, 57).

The death of an individual of status is also suggested by the *bustum* burial. Not only was it an intrinsically unusual type of burial, especially as it included a dog, it was also located in the centre of the Biddenham Loop, suggesting that the individual may have been the landowner. He was probably laid on his favourite couch, in itself demonstrating that he had embraced at least some aspects of Roman culture. It is even possible that the individual was the landowner who lived in farmstead SL54.

Taken separately, it is possible to dismiss each of these pieces of evidence; yet, when considered together, they appear to indicate the presence of quite wealthy

individuals within both the roadside settlement and, at the least, farmstead SL54. Of course, the number of wealthy individuals may have been limited to one family and the majority of the local population may have been able to adopt only some, but not all, of the trappings of Roman culture. The precise relationship between the inhabitants of the roadside settlement and those of farmstead SL54 is uncertain. Although separated by the flood plain of the river Great Ouse, they were spatially very close and it is not impossible that the owners of the southern Biddenham Loop owned at one time the land occupied by the roadside settlement. The status of the farmsteads in the northern part of the Loop, to the north of the extensive ditched boundary, is uncertain, but it is possible that they were under a different landowner's control.

Early Saxon

It is very difficult to assess the wealth and even the trade links of the early Saxon communities because very few objects relating to jewellery, dress fittings or other personal use were found. Such finds are often scarce on other contemporary settlements, as at Yarnton, Oxon (Hey 2004, 76), and Pennyland, Milton Keynes (Williams 1993, 102–7). The absence of early Saxon graves from the study area also limits the discussion because these often contain such objects. As seen above, there is good evidence that the communities were self-sufficient in food and textile production, but it is still likely that some commodities were exchanged for surplus agricultural products. Settlements SL62 and SL63 produced a small number of items possibly associated with dress, including pins, strap mounts, jewellery (chain, glass bead) and toiletry items such as combs.

Of the six dress pins found within settlement SL62, five were made of bone and are likely to have been 'locally produced' (CD Section 2; Duncan). 'The only metal pin (Fig. 16, OA260) was found in SFB G21166. This was an iron loop-headed pin of Ross type XVIII dated to the earlier half of the 6th century (Ross 1991, 201–04)' (CD Section 2; Duncan). Two strap mounts were found in settlement SL63. The first 'is a narrow bar-shaped mount with perforated terminal lobes and linear decoration (Fig. 17, OA276)' (CD Section 2; Duncan). The second, OA277 (CD Section 2; Duncan, Fig. 17), is a 'white metal plated strap or belt mount … square in outline with slightly concave bevelled sides; the central circular opening originally held a blue glass setting' (CD Section 2; Duncan). A cast copper alloy stud with domed circular head (CD Section 2; Duncan, Fig. 16, OA262) from settlement SL62 may have been 'a strap mount or decorative stud' (CD Section 2; Duncan).

A single copper alloy wire link in the shape of a figure-of-eight (OA261) was also found in settlement SL62. 'It is possible that this represents a chain, be it a necklace or perhaps linking two pins. Chains are generally scarce in Anglo-Saxon contexts (MacGregor and Bolick 1993, 267) and it could be that this single link derived from the Romano-British activity in the area' (CD Section 2; Duncan). A short portion of curving copper alloy wire (OA275) from settlement SL63 may be from a ring or finger ring (CD Section 2; Duncan). The final item of possible jewellery is a tiny annular bead of natural green glass with a diameter of 1.7mm and a central perforation *c.*0.5mm in diameter recovered from SL62. 'There are many problems dating minute beads such as these, as they have started to be found only with the advent of regular environmental sampling, while, of course, being so small, they can easily be displaced in the soil by worm activity *etc.*' (CD Section 2; Duncan). Therefore, it is unclear whether or not it is of Saxon date: it may be a residual Roman object, although it is smaller than known examples, or it may not be of great antiquity (J. Bayley pers. comm.).

Parts of six antler composite combs, both single-sided and double-sided, were found within settlement SL62 and may be of local manufacture. The side plates of the single-sided comb (CD Section 2; Duncan, Fig. 16, OA263) are decorated with a double ring and dot motif set within a double linear border. OA263 was perhaps slightly 'up-market' in possessing copper alloy, as opposed to iron, rivets (CD Section 2; Duncan). The only other object of personal use was the spearhead or arrowhead (OA274) from SL63.

Evidence for trade comes in the form of a small number of copper alloy objects such as the needle (OA272) from settlement SL63, pottery from Charnwood, Leicestershire and stone objects such as hones and querns. The latter were made from a variety of stone types, such as Old Red Sandstone possibly from the Welsh Borders (OA215, OA221), Lower Greensand possibly from the Lodsworth/West Sussex area (OA222–OA223), Millstone Grit from the Pennines (OA273) and lava (OA214). However, none contained any distinctive chronological traits to indicate whether they were Anglo-Saxon or residual in date. Millstone Grit 'was used in the medieval period and it is possible that trade continued unaffected throughout the Anglo-Saxon period, as excavations in Southampton have produced fragments of Millstone Grit of Saxon date (Addyman and Hill 1969)' (CD Section 2; Duncan). 'As the trade in lava querns declined in the 3rd century and does not appear to have been re-established until the mid-Saxon period (Watts 2002, 33 and 38), these fragments are likely to have originated from the Romano-British activity in SL155' (CD Section 2; Duncan). The sharpening/honing stones from the study area were made of Lower Greensand (OA222, OA223); a primary stone of amphibolite was possibly from Anglesey or Scandinavia (CD Section 2; Duncan, Fig. 15, OA254). Like the quernstone, they are impossible to date accurately and could also be residual.

In summary, there is sufficient evidence to suggest that at least some people wore dress fittings and had jewellery. The small numbers present may not be a reflection of the total number in use but, no doubt, these objects were highly prized processions. Some objects were not made within the local community but had been acquired through regional trade or exchange. However, although there are enigmatic references to Saxon brooches and *sceattas* being found near settlement SL62 (as recorded in the HER), the overall evidence is insufficient to comment on the presence/absence of wealthy individuals or whether there were significant differences between the inhabitants of the different settlements within the study area, as there had been in the Roman period.

6. The beginning of the 'End' (*c.* AD 850–1945)

I. Introduction

Early in this period a major transformation of rural society took place, resulting in significant changes in the landscape. By the time of Domesday Book (1086) manorial centres just beyond the study area at Biddenham and Kempston controlled significant resources; the majority of the other settlements in and near the study area were presumably associated with these manors. They principally comprised dispersed settlements associated with various Ends or hamlets (Carnell *et al.* 1966, 17) such as Church End and Ford End in Biddenham and Box End, Church End, Green End and East End in Kempston. Part of the settlements around The Bury (not far from Kempston Green End) (Fig. 6.1) and at Ford End (Fig. 6.7), originally part of Biddenham but incorporated into Bedford in the early 20th century, also fell within the study area.

All these settlements are likely to have expanded and contracted over time. The Ends were linked by a system of trackways, for which some evidence was found within the study area. Most of the study area during this period was farmland, with pasture or hay meadows on the flood plain. There would also have been woodland, although the exact location of much of it is uncertain. One large area, Kempston Wood, is documented in historical records; it lay *c.*1km to the west of the study area (Wood 1984, 43–4). By the medieval period the majority of the farmland was cultivated under a common-field system. As across much of England, the timing and rationale for the emergence of this way of farming is uncertain. It is likely to be associated with the proliferation of small estates and ultimately the emergence of manorial society, whereby lords controlled estates to which the population were tied by labour services and dues. With its large open fields and more dispersed settlement in the outlying 'Ends', the landscape of the study area would have looked very different to that of the Roman or early Saxon periods.

Settlement around The Bury continued into the post-medieval period, from the 17th to 19th century in the form of a brick-built mansion set in its own grounds. The successor to this mansion still existed at the time of writing (2013). All the 'Ends' also survived, although East End, Up End and Bell End were incorporated into the town of Kempston. Brief mention should be made of the town of Bedford, which originated in the middle to late Saxon period and has, over the last century, merged with the town of Kempston (although they are still administratively separate). The decline of common-field farming within the study area was probably a gradual process, beginning perhaps in the 15th century and continuing until the Parliamentary Enclosure Award of 1804. This transformation was probably linked initially to population decline and the increase in wealth of a number of individuals, including the various owners of The Bury, who wanted more exclusive use of their lands for a variety of social and economic reasons. Major improvements to the road network were undertaken from the early 19th century; existing routes were straightened or abandoned, while new ones were created.

Apart from quarrying, there is very little evidence for non-agricultural activity within the study area. A channel, probably linked to Kempston Mill, was located and historical records suggest that there were at least four mills in the vicinity of the study area; those mentioned in Domesday Book will have originated in the late Saxon period, but their precise locations are uncertain. The nearest churches and cemeteries to the study area are located in Biddenham Church End and Kempston Church End.

II. Dating evidence

This chapter covers the following periods:

- **Late Saxon/Saxo-Norman (*c.*850–1150).** The majority of the recovered pottery is in the St Neots tradition, which 'ranges in date from the mid-9th to the 12th century, peaking during the 10th–11th centuries (CD Section 2; Wells, Pottery). The pottery generally survives in poor condition, with a high incidence of abrasion and leaching, and therefore cannot be more closely dated. A relatively small assemblage of other artefacts was recovered. Most are not closely dated and some are probably residual from Roman activity. Datable items include a T-shaped bolt (OA278) from SL168; two skates (CD Section 2; Duncan, Fig. 19, OA288 and OA289), a knife (CD Section 2; Duncan, Fig. 18, OA283) and two whetstones (CD Section 2; Duncan, Fig. 18, OA284 and OA285) from SL169; and a knife (OA323) from SL202 (CD Section 2; Duncan). For the first time documentary evidence is available, the most significant piece of which is Domesday Book.
- **Medieval (1150–1500).** The majority of the pottery assemblage comprises hand-made and wheel-thrown early medieval unglazed sandy wares of mainly local manufacture and unglazed wheel-thrown shell-tempered vessels likely to derive from production centres on the borders of Bedfordshire, Buckinghamshire and Northamptonshire (CD Section 2; Wells, Pottery). Much of the pottery is fragmented and cannot, therefore, be more closely dated. Of the small other artefacts assemblage, the lava quern (OA293) is made from the 'dominant stone type for querns during the late Saxon into the earlier medieval periods' and, of the two horseshoes (OA294 and OA295), one was of a type not found before the late 13th century (CD Section 2; Duncan). Documentary evidence, particularly for the manors of Kempston, has been summarised by Wood (1984, 34–42).
- **Post-medieval (1500–1750).** The majority of the pottery assemblage comprises 'lead-glazed and iron-glazed earthenware bowls and dishes, likely to be products of the South Northamptonshire industry,

BOX 27: Medieval Biddenham Loop

This reconstruction by Cecily Marshall aims to give an impression of what the Biddenham Loop might have looked like in the medieval period. It is one of a series in this publication showing different chronological periods from the same viewpoint.

By the medieval period a major transformation of rural society had resulted in significant changes in the landscape. The majority of the study area was now farmland, cultivated under a common-field system. It comprised large open arable fields in which all the villagers were allotted scattered, unfenced strips, giving rise to the distinctive pattern shown in this drawing. The fields were controlled by the lord of the manor, to whom the population was tied by labour services and dues.

By the time of Domesday Book (1086) manorial centres located just beyond the study area at Biddenham and Kempston controlled significant resources. The other settlements in and near the study area were presumably all associated with these manors and this may explain why the majority of the dispersed early Saxon farmsteads appear not to have survived into this period (at least not in the same location). The new settlements typically developed into hamlets, known today as 'Ends', such as Biddenham Ford End and Kempston Church End (both shown on this drawing). Just out of view to the south was the settlement around The Bury, which may have been part of Kempston Green End (see Box 29).

With its large open fields and absence of settlement within the Biddenham Loop the landscape in and around the study area would have looked very different to that of the Roman or early Saxon periods.

NOTE. As with previous reconstructions there is no firm evidence for the nature of the flood plain and river channels. However, the locations of the open fields and the strips within them are known from a variety of sources — sub-surface furrows within excavation areas, cropmarks visible on aerial photographs, earthwork headlands within the Biddenham Loop and documentary research by John Wood (1984). The location of the settlements at Kempston Church End and Biddenham Ford End is accurate but their precise layout, including the presence of mills, is largely conjecture.

centred around the villages of Potterspury, Paulerspury and Yardley Gobion (Mynard 1992, 282)' (CD Section 2; Wells, Pottery). Some of the bricks were unfrogged and hand-made, suggesting a 17th-century date; others were frogged and more typical of the 18th and 19th centuries. The presence of the different types has been used to date features where no other evidence was available. Documentary records, including maps, watercolours and photographs, especially for area around The Bury, proliferate during this period (see Wood 1984).

- **Modern (1750–1945).** 'The range of [pottery] fabrics dating mainly from the 18th century onwards includes salt-glazed stoneware, Pearlware, Mocha ware, Creamware and transfer-printed ware' (CD Section 2; Wells, Pottery). The presence of machine-made frogged bricks was used to date features where no other evidence was available. Many more docu-

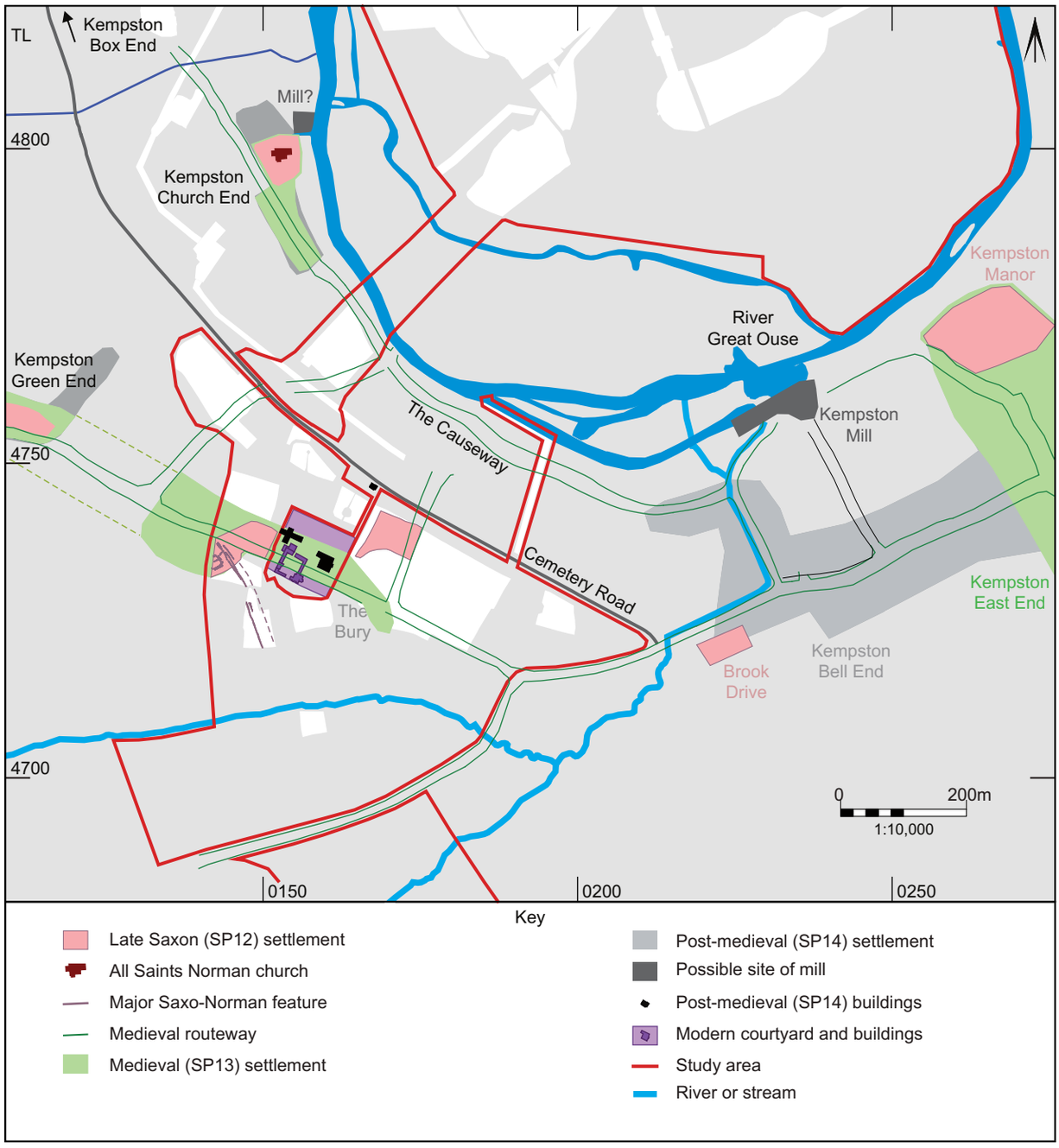


Fig. 6.1 Evolution of the landscape from the late Saxon period to the post-medieval on land west of Kempston. Scale 1:10,000

mentary records are available for this period, with maps proving the most useful for the layout of the landscape within the study area.

III. Environment, plants and animals

Palaeo-environmental study in the flood plain provides limited but useful information on the local environment during this period. 'During the Saxon and early medieval period there is a reduction in woodland, with hazel showing the sharpest fall, although the principal woodland elements continue to remain oak and hazel. The pastoral element of the landscape continues, but there is a significant rise in cereal pollen suggesting expansion of arable, apparently from at least the middle Saxon period, and conceivably a bit earlier. There is little evidence for a change to the flood plain in the pollen data, while the plant macrofossils still indicate a strong aquatic and wetland element, with a rise in the frequency of *Chara* sp. and the presence of caddis larval cases and aquatic molluscs continuing to indicate open water pools in the former palaeochannel. … If this chronological assignment is correct, then the increased flooding might reflect both the wetter climate from the mid-7th century AD onwards and increased run off from further woodland clearance and expansion of arable' (CD Section 2; Rackham *et al.*). In terms of the medieval and post-medieval period, 'the

snail assemblages suggest a progressively drier flood plain to the present day, with a largely grassland environment, with flooding no longer likely to be seasonal or of particularly long duration' (CD Section 2; Rackham *et al.*).

Physical evidence for flooding was identified within the evaluation trenches in the flood plain, where up to 3m of alluvial clays were seen (BCAS 1998, 25). These have not been directly dated but some conclusions can be drawn from their relationships with archaeological features. On the north side of the present-day back channel alluvial clays sealed a surface made of limestone fragments which produced an undated horseshoe (BCAS 1998, 25). To the south of the main channel within the Bypass excavation area alluvial clays (Phase 507) sealed Roman deposits which were in turn truncated by medieval furrows, themselves sealed by further alluvial clays (Phase 509), indicating that flooding was still taking place in some parts of the flood plain. Although the dating evidence for alluviation from the study area is limited, it would appear to fit the pattern seen in the Thames valley, where its onset has been dated to the late Saxon period and is considered to be 'a consequence of arable farming becoming extensive' (Hey 2004, 54). It is believed to have stopped in the late medieval period around the time of the Black Death, presumably because of a decline in farming (Hey 2004, 55).

The precise course of the channels of the river Great Ouse up to 1804 (the date of the enclosure award map) is uncertain. However, the pipe trench investigated adjacent to Cutler Hammer Sportsground exposed part of a channel probably associated with Kempston Mill. This channel was backfilled and moved slightly northwards in the 1980s, when it became the main course of the river (see Fig. 6.1).

IV. Settlements

The beginning of this period saw a possible marked change in the settlement pattern within the Biddenham Loop. It is unfortunate that the settlements concerned were located on the edge of such a large investigation area, as uncertainty still exists as to whether they were completely abandoned or had simply shifted location slightly. The isolated early Saxon settlements SL63 were abandoned and the area of SL62 within the study area was also abandoned. This could be seen as fitting the trend seen throughout England whereby earlier settlements were deserted in favour of new locations during the late 7th and early 8th centuries (Wade 2000, 23; Hamerow 2002, 121–4). Howevever, the 'new' settlement (SL202) at Ford End, to the north-east of the Biddenham Loop, was only *c.*400m from the core of SL62 and only *c.*200m from the nearest isolated SFB (Fig. 6.7). SL202 was certainly in existence in the 9th century but, as there was a large area of unexcavated land between it and SL62, it is possible only to speculate that rather than being a 'new' settlement it was, in fact, part of the same settlement that was shifting location over time. It is clearer that on Land west of Kempston the same area occupied by the early Saxon settlement SL165, adjacent to The Bury, was also occupied by a late Saxon settlement (SL169), although no middle Saxon component was identified. A number of factors are likely to have been behind changes in settlement location — one was certainly wider socio-economic change, as late Saxon lords deliberately concentrated their tenants in fewer, larger settlements. This was undoubtedly a gradual process but one that 'was no doubt considerably encouraged by the Norman Conquest' (Wood 1984, 20).

At Domesday the principal settlements in the vicinity of the study area comprised the various Ends or hamlets (Carnell *et al.* 1966, 17). Of these, Kempston's Church End and Green End are the nearest to the development area and, like Biddenham village, all continued to be occupied, with varying population sizes throughout the medieval and post-medieval periods, and are still in existence today. A similar development history has been established for the settlement around The Bury on Land west of Kempston and is a possibility for the settlement at Ford End, which was only partially examined. Both were in existance in the late Saxon period and survived throughout the medieval and post-medieval periods — in the case of The Bury, ultimately in the form of a modern house and farm buildings. The development history of the settlement around The Bury is better understood because it was more extensively investigated and because there is more documentary evidence. However, its identification as the headquarters of one of Kempston's manors, as suggested by Carnell *et al.* (1966, 23), remains uncertain.

Late Saxon/Saxo-Norman (*c.*850–1150)

This period covers the time when 'the pattern of nucleated villages together with dispersed settlement that we see today was probably largely established' (Edgeworth 2007, 93). Two settlements of this period, dated mainly by pottery, were identified within the study area. Settlement SL168/169 was adjacent to The Bury on Land west of Kempston; it was investigated largely by open area excavation and clearly continued into unexcavated land beyond the study area. Settlement SL202 was located just north-east of the Loop and is believed to be part of Biddenham Ford End. The only evidence for it came from a narrow pipe trench, part of the Bedford Water Main, which represents the first archaeological investigation undertaken in this area. Settlements SL168 and SL202 remained in use through the medieval period and their possible status is, therefore, discussed in more detail below.

The more extensive settlement evidence lies to the west and east of The Bury — SL168 in a previously unoccupied area within the Bypass investigations and SL169 within the David Wilson Homes investigations (described separately below). The two areas of settlement are quite different in nature — SL168, to the west, comprised ditches and small enclosures; while SL169, to the east, was largely unenclosed (see Fig. 6.2) and, therefore, similar to the early Saxon settlement SL165. Although pure speculation, it is possible that SL169, which is more comparable to the early Saxon settlement in this area, is slightly earlier in date than SL168 and possibly middle Saxon. Both SL168 and SL169 contained evidence for possible trackways and buildings. Although *c.*200m apart, it is possible that, rather than representing different landholdings, they are both parts of a larger settlement; the intervening area was not subject to development and was, therefore, not investigated.

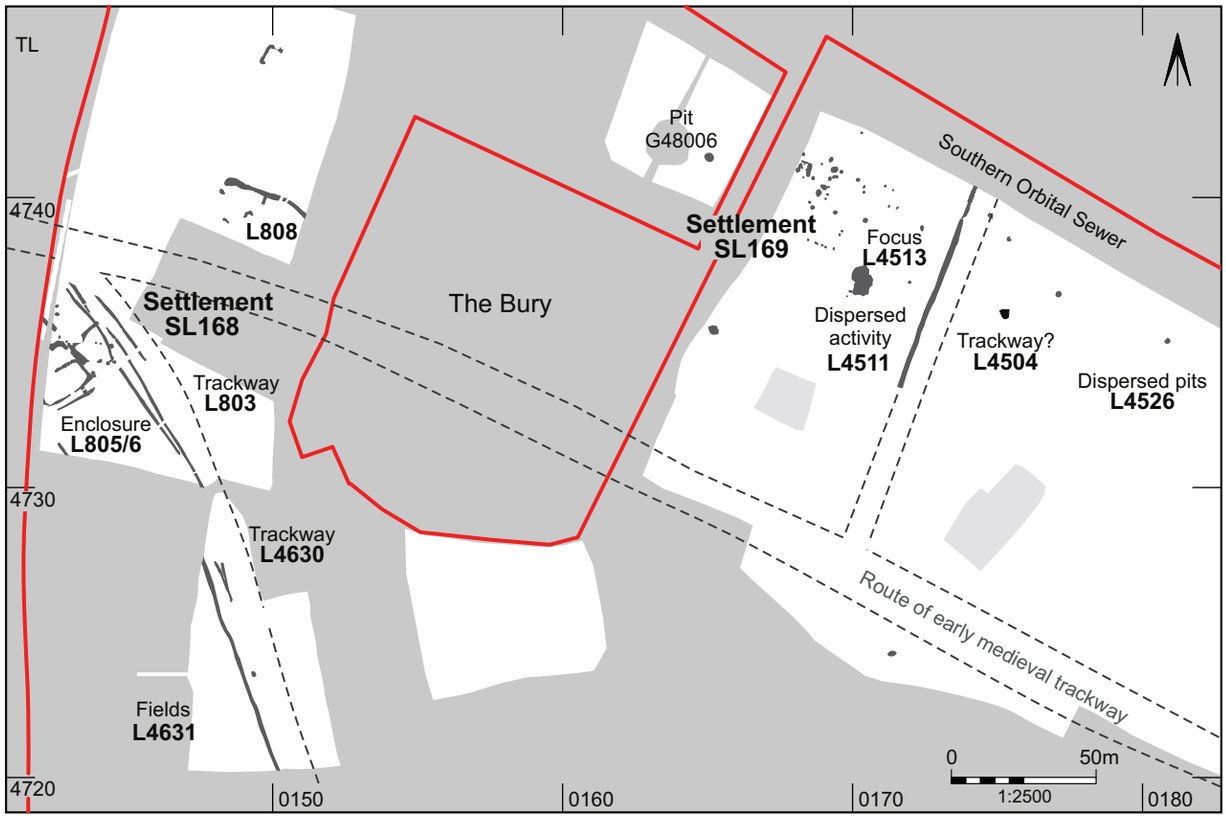


Fig. 6.2 Overall plan of late Saxon/Saxo-Norman settlement SL168/SL169, adjacent to The Bury. Scale 1:2500

Settlement SL168 (west of The Bury)
(Figs 6.2 and 6.3)
'Settlement SL168 yielded [a pottery] assemblage weighing 3.5kg, the majority (2.3kg) associated with the redefinition L806 of domestic enclosure L805' (CD Section 2; Wells, Pottery). Stratigraphic relationships between features within part of SL168 have enabled a basic two-phase sequence of development to be established (Fig. 6.2). The earliest activity (Phase 802) comprised a trackway (L803/L4630) and a series of broadly parallel boundary ditches (L802/L804/L806/L4631) which, with the exception of L802, are probably associated with the trackway. Later activity (Phase 803) provides firmer evidence for settlement in this area. It comprises two small square adjacent enclosures (L805 and L807) established within, and on the same alignment as, the earlier series of ditches. They were attached to the south-west side of the earlier trackway L803, which presumably remained in use. Approximately 60m to the north-east another activity area was evidenced by boundaries L808, which were associated with fields or possibly another enclosure.

Trackway L803/L4630 was aligned south-east–north-west; it ran for 185m, continuing beyond the excavation area to the south (Fig. 6.2). Its defining ditches were modified and redug several times in the vicinity of the settlement. They were usually at least *c.*4m apart, *c.*0.9m wide and often less than 0.3m deep. No evidence for surfacing was found. This trackway probably remained in use throughout the medieval and early post-medieval periods (see p. 367).

Enclosure L805 was *c.*17m square with rounded corners and an entrance *c.*1.8m wide to the north. It was defined by ditches *c.*1.2m wide and <0.4m deep that had been redug on a number of occasions (L806). Within the enclosure an arrangement of gullies (G8088) may define the location of a rectangular building measuring *c.*15m × 7m. No other evidence for activity was found within the enclosure.

A smaller enclosure, L807, which was *c.*11m square, was attached to the north-east side of enclosure L805; it also reused one of the ditches of the earlier trackway L803. The interior contained post-holes and small pits (G8076, G8104 and G8163), the most significant of which was the *c.*1.1m-square pit G8076. Its shape and size are reminiscent of a cess pit, although its profile and the absence of cess-like material make this less likely.

Only two other artefacts — a T-shaped bolt from a barrel padlock (OA278) and an iron wedge (OA279) — were found within this settlement, both from ditch G8035 of possible field/enclosure L808. 'The iron wedge may have been used in wood working or perhaps quarrying' and 'is not dissimilar in dimensions to an example from mid–late 9th- to early 10th-century deposits at Coppergate (Ottaway 1992, fig. 205 no. 2257)' (CD Section 2; Duncan). T-shaped bolts were used in conjunction with barrel padlock cases and 'pre-Conquest examples are known from Winchester' (CD Section 2; Duncan).

Settlement SL169 (east of The Bury)
(Figs 6.2 and 6.4–6.6)
As mentioned above, SL169 and SL168 are likely to be contemporary and may be part of the same settlement. However, they were very different in nature — SL169 was largely unenclosed (Fig. 6.2) and, in that respect, was similar to the early Saxon settlement SL165 in the

Plate 6.1 Saxo-Norman pit G45064 (L4513, settlement SL169) half-sectioned, from the north (0.4m scale)

Plate 6.2 Partly exposed flue of Saxo-Norman drying oven G45068 (L4512, settlement SL169), from the north-west (0.2m scale)

Plate 6.3 Fully exposed flue of Saxo-Norman drying oven G45068 (L4512, settlement SL169), from above (0.4m scale)

Plate 6.4 Saxo-Norman quarry pits G45086 (L4511, settlement SL169), from the south-west (1m scale)

same area (Fig. 5.32). SL169 covered an area of *c.*0.7ha and clearly continued beyond the excavation area. It was bounded to the east by a possible trackway/boundary (L4504), the interpretation of which is hampered by later features on the same alignment. The density and nature of features suggest that L4512/3 represents the settlement core (Fig. 6.4). It contained a possible post-built building (G45065) and two ovens (G45067 and G45068). Pits (L4511 and L1526) were dispersed around this focus.

The evidence for possible building G45065 comprised seventeen post-holes defining a rectangular area with a central hearth-related pit (G45064) (Fig. 6.5). At *c.*23.5m × 9.5m, the building would be quite large for this period. Timber building A at Furnells, Raunds, was only *c.*19m × 6m (Audouy and Chapman 2009, 71 and fig. 5.14), while the total extent of the three elements of timber hall B at Yarnton, Oxon, was *c.*18m × 6.5m (Hey 2004, 139 and fig. 7.3). The post-holes ranged in diameter from 0.2m to 0.4m; only one contained a postpipe, which was *c.*0.2m in diameter. The hearth-related pit was *c.*1.1m in diameter and 0.2m deep (Plate 6.1). No *in situ* burning was visible in the feature, but its relationship with the building and the presence of frequent charcoal flecks and fired clay suggest that it was, at least, associated in some way with a hearth. The post-holes produced one small sherd of late Saxon/Saxo-Norman pottery, but the distribution of the better-dated pits G45071 and G45072 around the building suggests a broad contemporaneity. Quarry pit G45086, *c.*10m to the south-east, produced a wall hook (OA280) of pre-13th-century date that may have derived from the building (CD Section 2; Duncan).

Two ovens, G45067 and G45068, were found immediately to the north-west of the building on the same north-east–south-west alignment (Fig. 6.6). G45067 had a noticeable figure-of-eight shape; it was *c.*3.1m long and 1m wide, narrowing to 0.6m in the middle. G45068 was more rectangular in shape, *c.*4.3m long and 1.35m and 1.05m wide at the ends, narrowing to 0.8m towards the centre. A similarly sized and shaped oven was found at

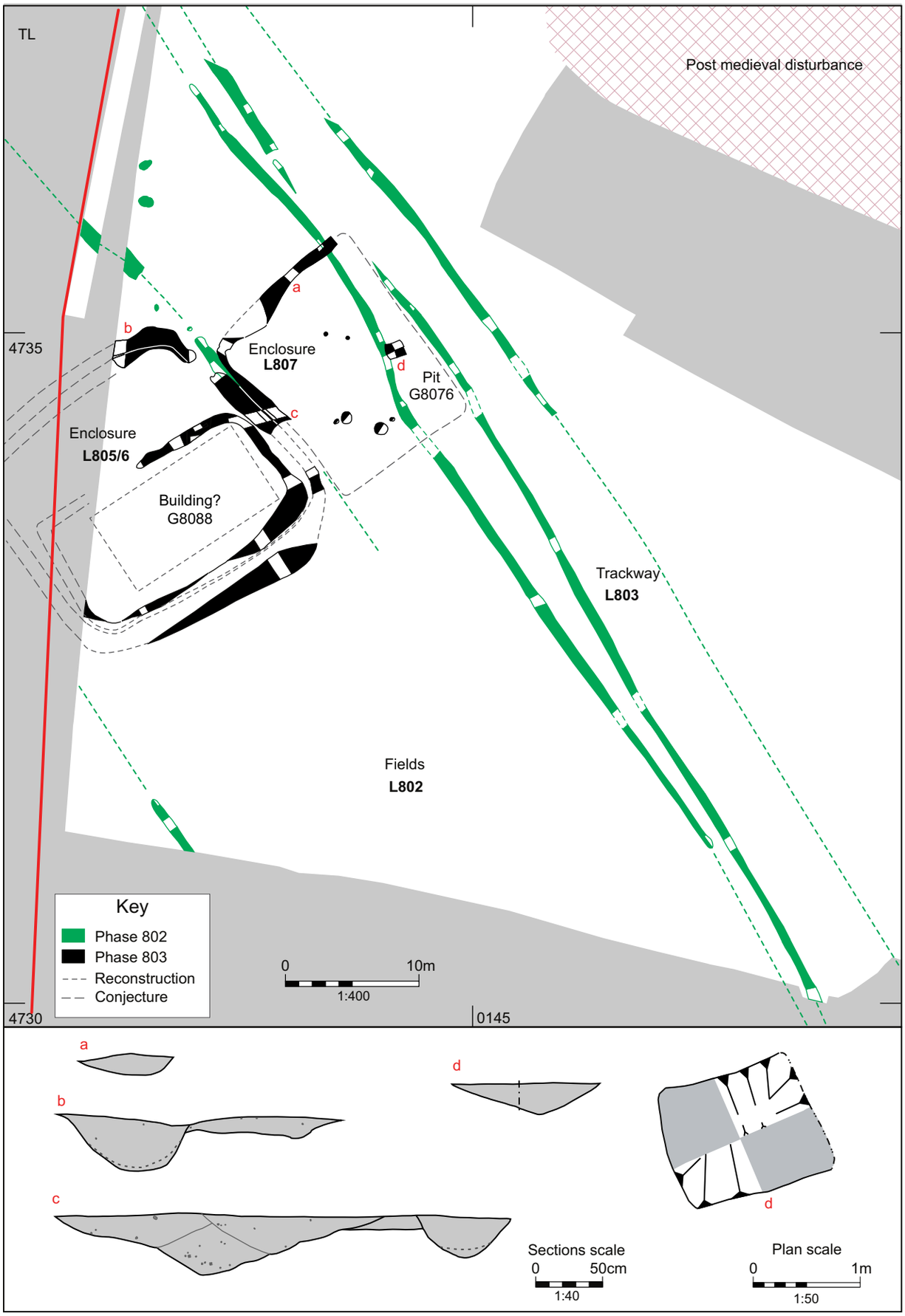


Fig. 6.3 Detailed plan of late Saxon/Saxo-Norman settlement SL168, adjacent to The Bury. Scale 1:400

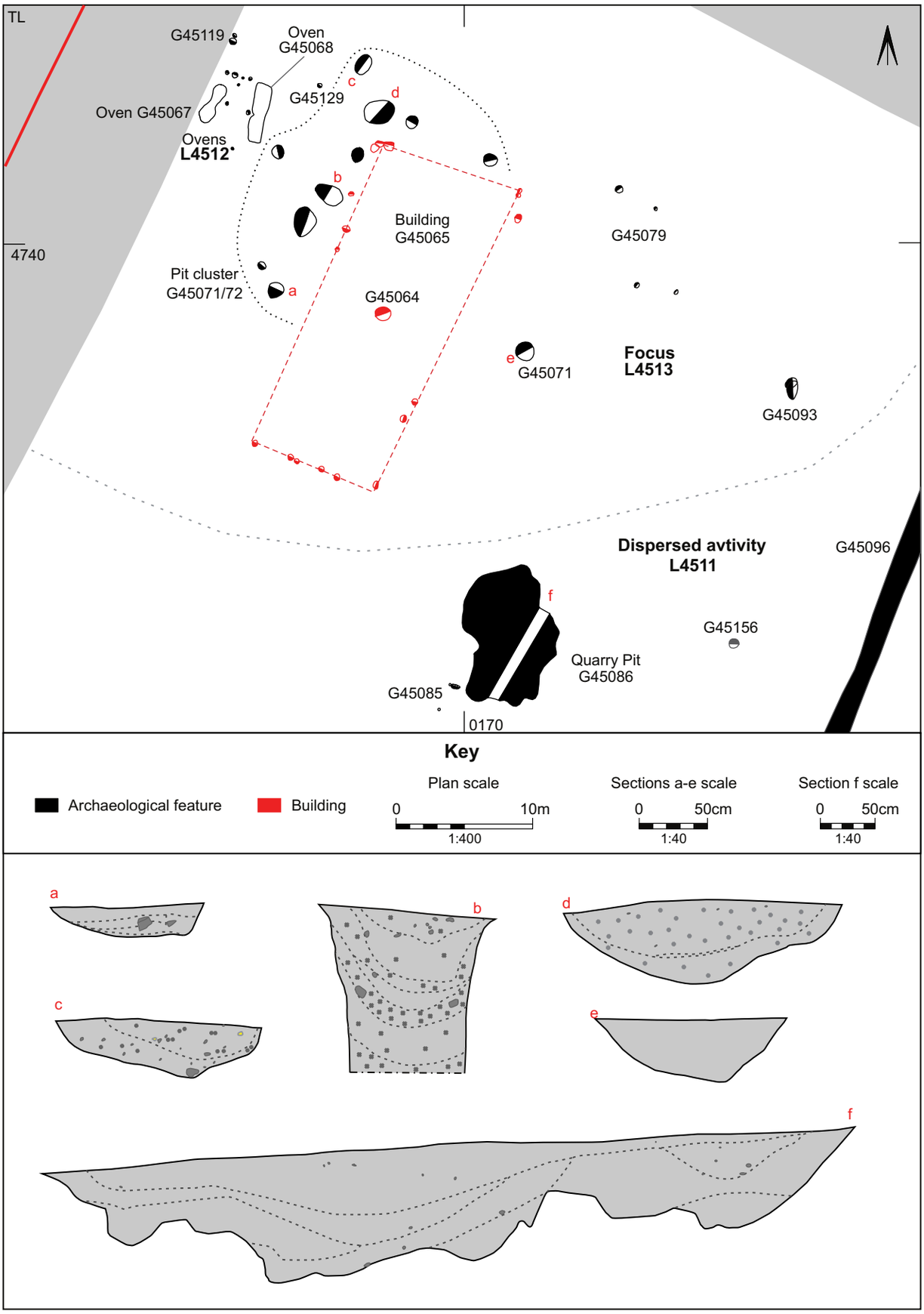


Fig. 6.4 Detailed plan of late Saxon/Saxo-Norman settlement SL169, adjacent to The Bury. Scale 1:400

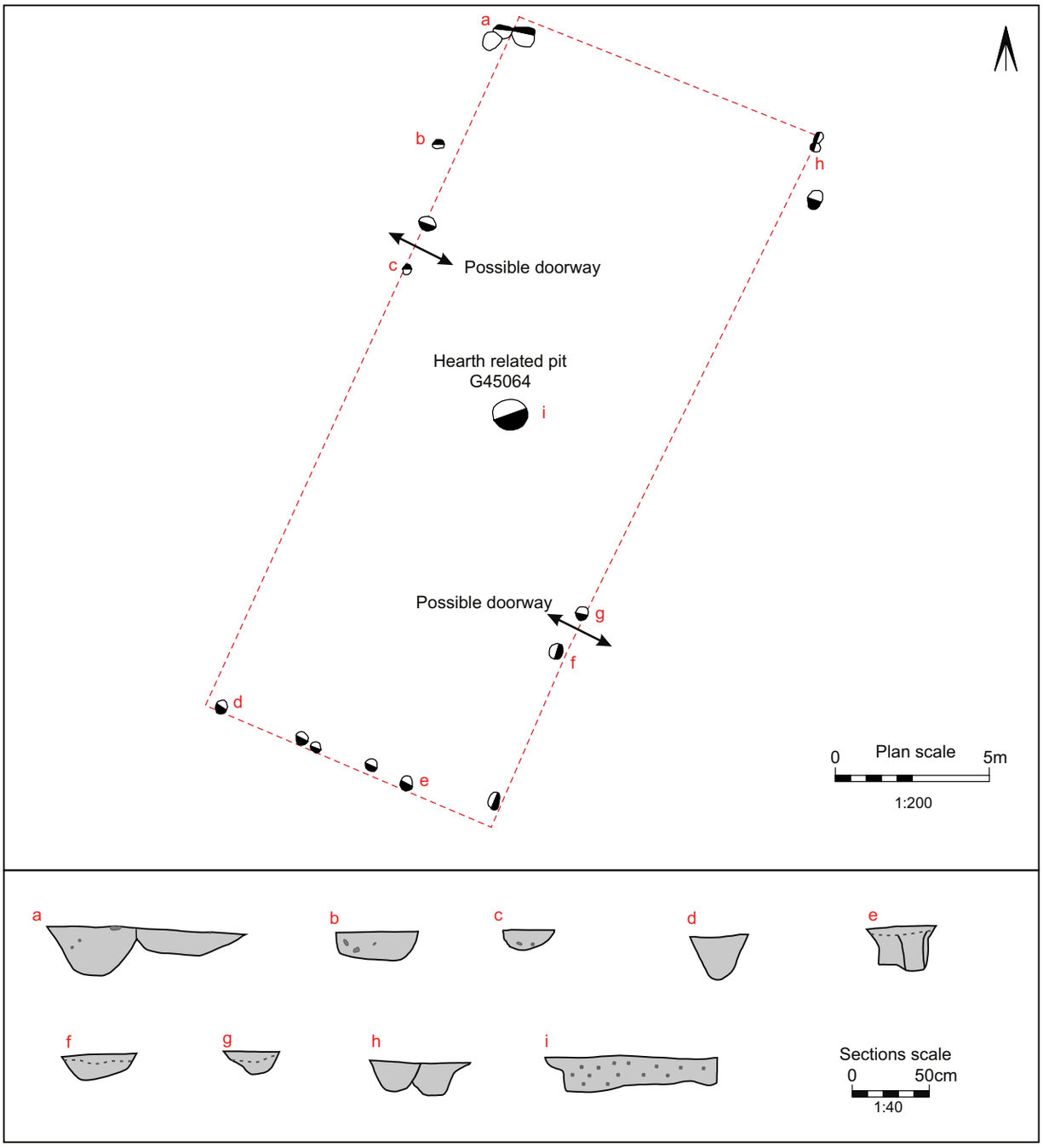


Fig. 6.5 Detailed plan and sections of building L45065 (SL169). Scale 1:200

Furnells, Raunds, albeit dating to the early–middle Saxon period (Audouy and Chapman 2009, 66 and fig. 5.6). The stokehole for both ovens was located to the north-east, evidenced by intense *in situ* burning and a greater quantity of charcoal. Stokeholes are more normally found at the south-west end of ovens, but the downwards slope of the ground surface to the north-east may explain their atypical position in this case. The flue within G45068 survived as a fired clay hollow 0.6m long and 0.3m high (Plates 6.2 and 6.3). Its fills were largely devoid of finds and the absence of fired clay suggests that the superstructure may have been dismantled and removed. Eight post-holes (G45069, G45127 and G45128) found in the vicinity of the ovens are likely to have been part of a surrounding structure. None of these features was firmly dated; the burnt areas of the ovens were too heavily cracked and disturbed by roots for archaeomagnetic dating.

Pit clusters G45071/G45072 were located between the building and the ovens (Fig. 6.4). The majority of the eleven pits formed a row parallel to the building. One, directly outside one of the possible entrances, was probably a well. It was steep-sided with no evidence for a lining and was not bottomed. The pits were generally sub-circular in plan, 1.0–2.0m in diameter and 0.2–0.6m deep. Their fills produced forty sherds of late Saxon/Saxo-Norman pottery, residual Roman pottery, 2.3kg of fired clay and animal bone. One pit in G45071 contained a composite antler comb (CD Section 2; Duncan, Fig. 19,

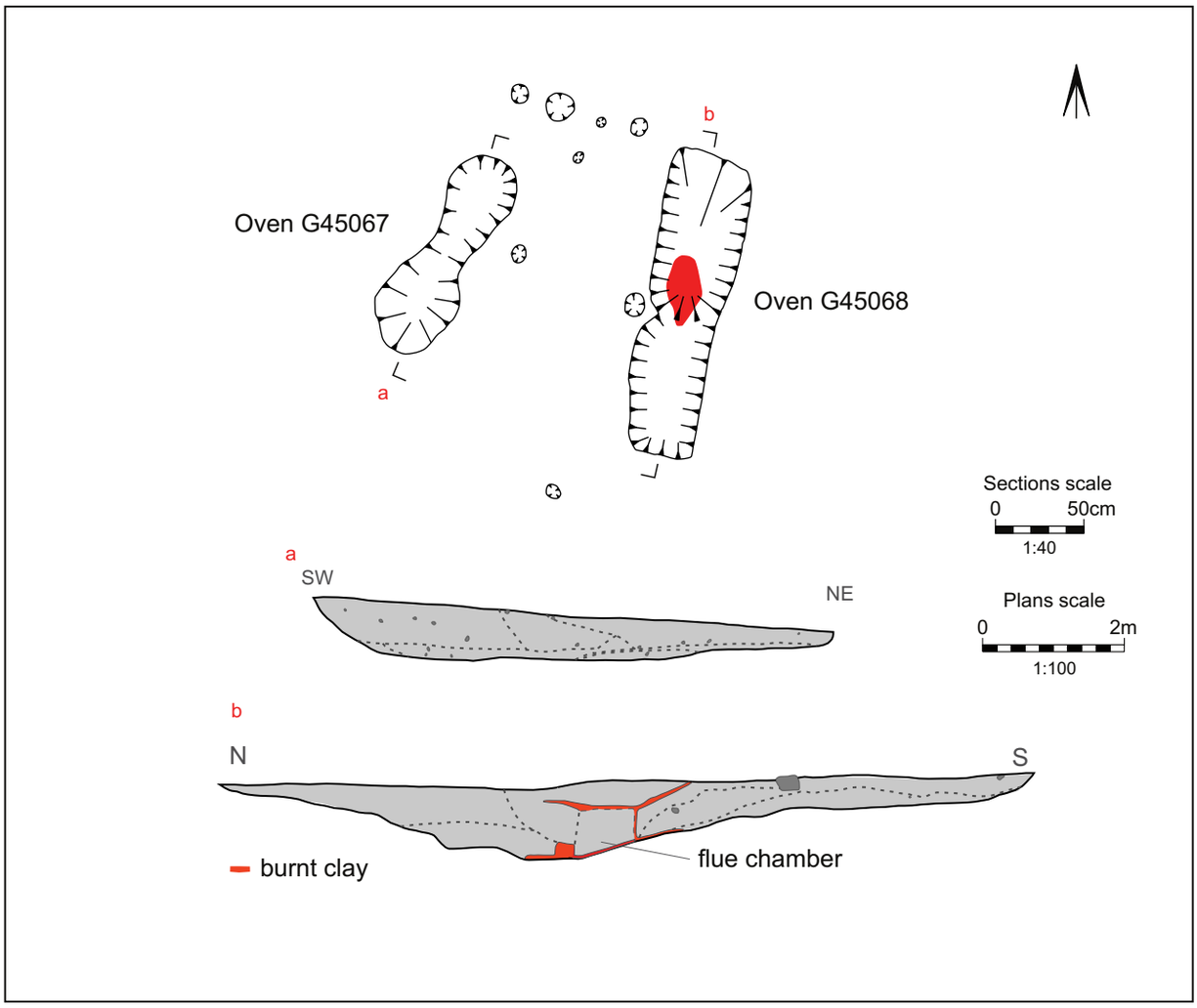


Fig. 6.6 Detailed plans and sections of ovens G45067 and G45068 (L4512, SL169). Scale 1:100

OA291), 'which, although lacking its end plates, is likely to be of Ashby type 7, thought to date from 900–1100' (CD Section 2; Duncan). Many of the fired clay fragments '… retain undulating, finger-smoothed surfaces. They may represent lining or structural fragments associated with [the] nearby ovens' (CD Section 2; Wells, CBM). Rich deposits of charred plant remains in some of the pits suggest that they, and possibly the building, were all associated with the drying ovens. Pits G45093 and G45156 and post-holes G45079 were located to the east of the building.

The most significant of the dispersed features L4511 to the south of the settlement focus was large feature G45086. This measured *c.*10m × 7m × 1.2m; its irregularity suggests that it may have been dug as a quarry in several episodes (Plate 6.4). Its upper fills, in particular, produced a considerable amount of domestic and craft debris, included two bone skates (CD Section 2; Duncan, Fig. 19, OA288 and OA289), the latter possibly discarded in the process of manufacture. 'Although skates have a long history on the continent, most of the examples from the British Isles range in date from the 8th century possibly into the 13th century (MacGregor 1985, 144)' (CD Section 2; Duncan). The pit also contained a dress pin (CD Section 2; Duncan, Fig. 19, OA290), whose

Plate 6.5 Saxo-Norman pit G48006 (L4513, settlement SL169), from the east (1m and 0.4m scales)

'decorative profiling and incised surmounted Xs can be paralleled on a pin from Coppergate from deposits dating to *c.*930–975 (MacGregor *et al.* 1999, fig. 911 cat no. 6904)' (CD Section 2; Duncan).

The settlement probably continued beyond the limit of excavation to the west, beneath The Bury, and

BOX 28: Saxo-Norman ice skate

By Holly Duncan. Photograph by Adam Williams

Two bone ice skates were found within Saxo-Norman settlement SL169 on Land west of Kempston. Other Bedfordshire examples include several from Saxo-Norman to early medieval deposits at Bedford Castle and the rural settlement of Stratton (near Biggleswade).

Although bone skates have a long history on the continent, stretching back to at least the Bronze Age, most of the examples from the British Isles range in date from the 8th to the 13th century. These skates could have been used for long-distance travel or for fishing over ice, as well as for pleasure (MacGregor 1985, 144).

Bone skates were usually made of horse or cattle bone. They can feature strap holes — at the toe or the heel —to aid attachment. However, as with these examples, such holes were not essential, as the skater kept the skates flat on the ice and moved along by pushing between his feet with an iron-shod pole.

Skate OA288 (top) was formed from the left radius of an adult cow and was well worn. The anterior face of the bone formed the sliding surface; it is trimmed, flattened and highly polished. Part of the leading edge has been cut away to give the toe an upswept profile and the 'heel' area has also been trimmed to flatten the sliding surface.

The apparently unused or little-used skate OA289 (bottom) was fashioned from a left horse metacarpal. Although this skate lacks a highly polished surface, it has been modified; the toe is upswept and the heel area trimmed to flatten the surface. A longitudinal crack down the bone may have been the reason for its discard.

For further information and figures see CD Section 2; Duncan.

possibly to the north-east, where its survival will have been affected by the Southern Orbital Sewer, which was constructed in 1991 without archaeological investigation in this area (Fig. 6.2). An isolated pit (G48006) was found within a small excavation area *c.*30m to the north-west. It was *c.*2.5m in diameter and 1.3m deep (Plate 6.5) and produced ten sherds of late Saxon/Saxo-Norman pottery, a lava quern fragment (OA287), stone and metal artefacts, fired clay, a large number of unworked stones and a large assemblage of animal bone. It is noteworthy because it contained a type of knife (CD Section 2; Duncan, Fig. 18, OA283) that 'was in use from the mid-Saxon period to the 11th century' (CD Section 2; Duncan) and two contemporary perforated whetstones (CD Section 2; Duncan, Fig. 18, OA284 and OA285). Unusually, the pit contained the bones of an adult cat and two adult dogs (CD Section 2; Maltby).

Settlement SL202 (Ford End)

(Fig. 6.7)

The Bedford Water Main investigation uncovered the first firm archaeological evidence for settlement in this area. Unfortunately the narrow width of the pipe trench and, with the exception of the Biddenham Loop to the west, the absence of any previous archaeological work in the area mean that the precise nature and extent of the settlement remain uncertain. However, it appears to have originated in the late Saxon period. Two sunken-featured buildings (SFBs) were found; they were *c.*200m from the nearest SFB on the Biddenham Loop (on the periphery of settlement SL62).

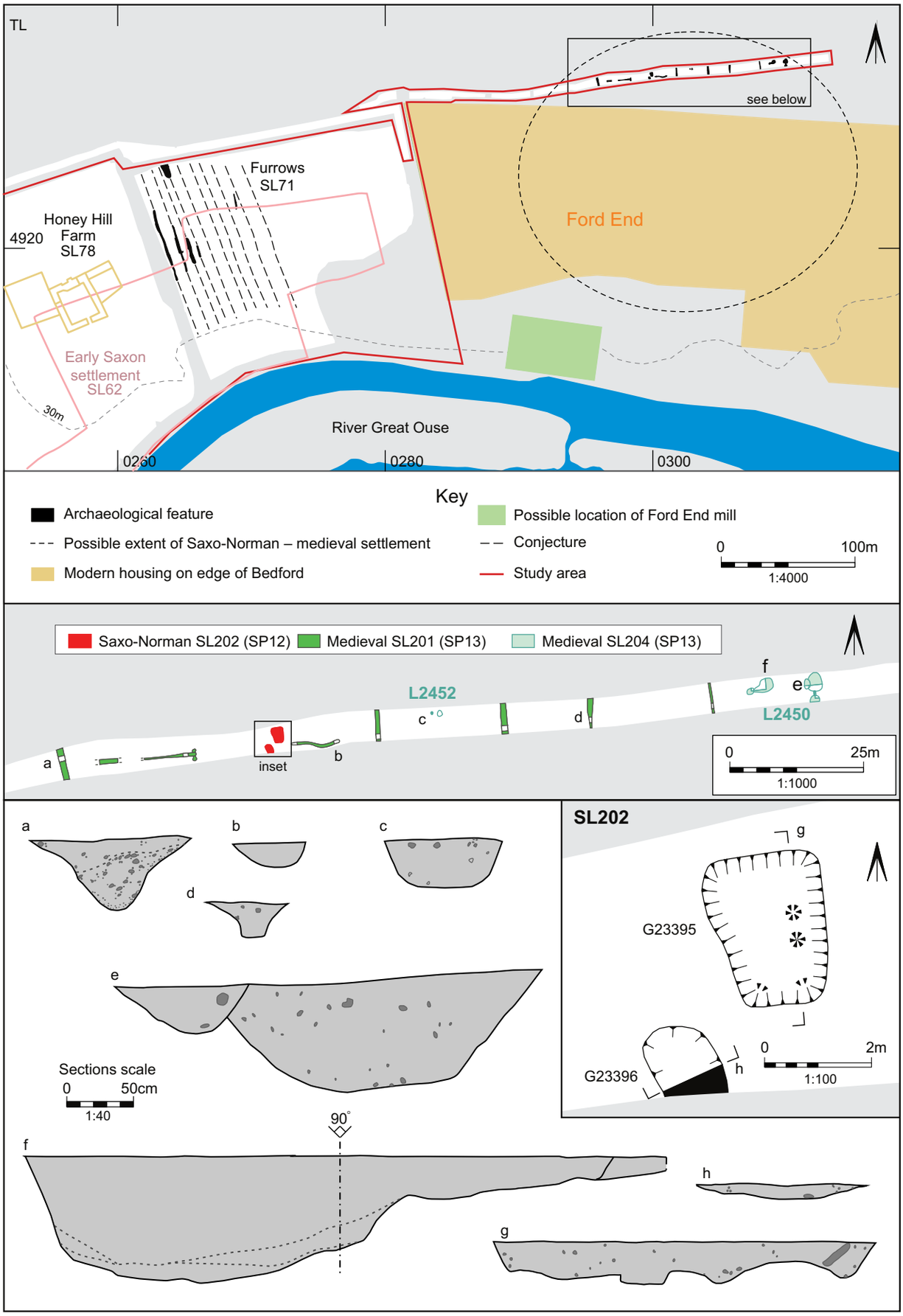


Fig. 6.7 Location and detailed plans and sections of late Saxon/Saxo-Norman settlement SL201/202 and medieval settlement SL204 at Ford End. Scale 1:4000

The sunken area of SFB G23395 was sub-rectangular in plan, 2.8m long, 2.1m wide and 0.3m deep (Plate 6.6). It produced eight sherds of late Saxon/Saxo-Norman pottery and a complete whittle tanged angleback knife (CD Section 2; Duncan, Fig. 21, OA323) datable to the late 8th–11th centuries. A much smaller possible SFB, G23396, *c.*0.8m to the south-west, produced two sherds of late Saxon/Saxo-Norman pottery. The dating evidence suggests that the SFBs were in use in the late Saxon period. Such buildings of this date are not common but examples are known at Yarnton and Shepperton Green, Oxon (Booth *et al.* 2007, 84). Radiocarbon dating of two SFBs at Yarnton (2556 and 2577) suggested that they could have been backfilled as late as the 9th century (Bayliss and Hey 2004, 261 and table 13.3).

Medieval settlement SL172 (1150–1500)

Medieval settlement remains (SL172) were identified within the open area excavation to the west of The Bury on Land west of Kempston and at Biddenham Ford End L204 within the Bedford Water Main. Both are located in the same area as late Saxon/Saxo-Norman settlements. The dating evidence, essentially the presence of hand-made and wheel-thrown unglazed sandy and shelly wares, is not particularly precise (CD Section 2; Wells, Pottery), but there is no evidence for any break in settlement.

Settlement areas SL172/SL175 (The Bury)
(Figs 6.8–6.11)

SL172 comprised a series of enclosures on either side of trackway L819 (Fig. 6.8); they are a small part of a larger settlement which existed to the west, and probably the east, of the Bypass corridor. To the west, fieldwalking in 1985 revealed a spread of medieval pottery (HER 163), which suggests that domestic activity continued for over 80m to the west of the Bypass. Approximately 180m to the east of the Bypass corridor, beyond The Bury and within the housing development excavation, two clusters of small pits and post-holes (L4529 and L4903, assigned to SL175) were found in the vicinity of the continuation of trackway L819. These features formed no discernible pattern and covered an area 30m × 7m close to the limit of excavation. They are assigned to this period on the basis of a moderate assemblage of medieval pottery. They probably represent peripheral, apparently unenclosed, activity on the margins of the open fields adjacent to the trackway.

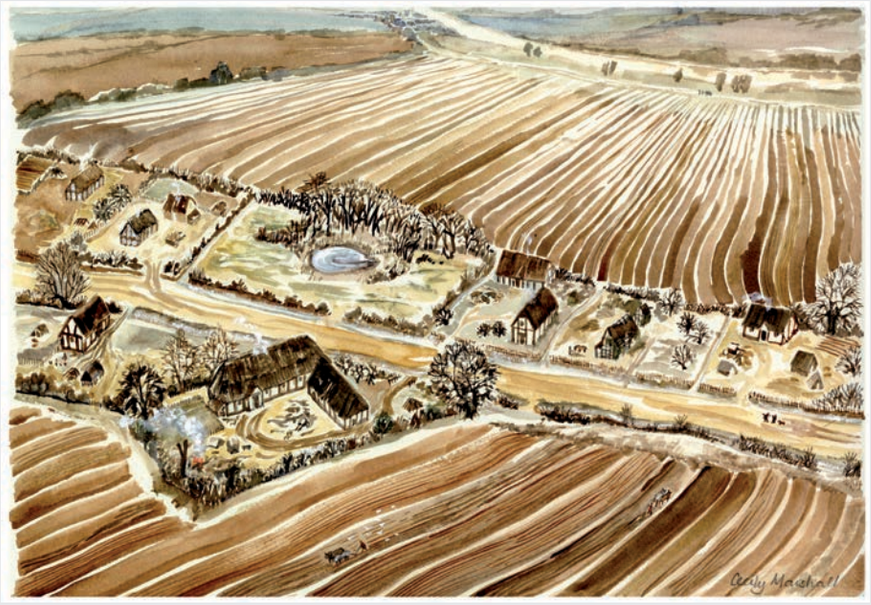
Plate 6.6 Part-excavated late Saxon SFB G23395 (settlement SL202), from the south (1m scale)

On the north side of, and perpendicular to, the trackway within settlement area SL172 were three enclosures (L814, L813 and L812) that abutted the open fields to the north (Fig. 6.8). They were too shallow to conform to the archetypal 'toft and croft' layout. Enclosure L810, to the south of the trackway, was on a slightly different alignment because it reused some of the late Saxon/Saxo-Norman boundary and trackway ditches. All the enclosures contained pits, post-holes and slots suggestive of domestic activity, with the exception of enclosure L814, which contained a large circular feature, possibly a fish pond. 'Contemporary pottery was recovered from all areas of the settlement, in particular enclosures L810 and L813' (CD Section 2; Wells, Pottery).

Trackway L819 was *c.*15m wide and defined on its north side by ditch G8057 and on its south side by enclosure L810. An irregularly shaped cobbled surface (G8056) on a south-east–north-west alignment broadly corresponded with the side ditches (Plate 6.7). Several parallel wheel ruts (G8042) were associated with this surface; some appeared to be sealed by it, perhaps suggesting that the routeway was initially unsurfaced. The northern trackside ditch had been redug (G8059) and there was also evidence for resurfacing (both assigned to Phase 808). The surfaces and the layer sealing them produced a moderate quantity of medieval pottery and a horseshoe fragment (OA295) of possible later medieval date. There is good evidence in the form of cropmarks for the continuation of the trackway to the north-west, as far as the hamlet of Green End, and to the south-east, within the development excavation, as far as Ridge Road (see pp. 366–7 for a fuller discussion).

Enclosure L810 measured 33m × 21m; its surrounding ditch was at least 1.6m wide and <0.4m deep (Fig. 6.10, Plate 6.8). It had been redug on at least one occasion (L811). No entrance was identified; it was presumably located in the unexcavated north-east corner, providing access to the trackway. No buildings were unequivocally identified within the enclosure, although there are at least three possible candidates (see Fig. 6.10). The layout of post-hole structures G8107 and G8109 suggests that they could have been part of a single larger structure. G8109 was almost square. It measured 3.7m × 3.3m and comprised post-holes which were *c.*0.8m in diameter and 0.15m deep. Only the south-west post-hole contained a postpipe, which had a diameter of 0.24m. The adjacent structure, G8107, measured *c.*11m × 4m. It comprised a mix of post-holes (*c.*0.45m diameter) and larger post pits (*c.*0.9m diameter); all were less than 0.15m deep. These structures may have been components of a single rectangular building extending to the north-east and incorporating postpits G8125 and G8068. Such a building would have measured *c.*21m × 7m, and its existence might explain why ditch G8055 terminates where it does. An area of intercutting pits (L834) was

BOX 29: Medieval settlement at The Bury



This reconstruction by Cecily Marshall aims to give an impression of what the settlement near The Bury might have looked like in the medieval period. The Biddenham Loop is just visible in the top right-hand corner of the drawing.

Only part of the settlement was examined within the Bypass corridor, but it is known to extend to the west towards Kempston Green End and probably eastwards beneath The Bury. The settlement comprised a series of enclosures perpendicular to, and on both sides of, a trackway which linked Kempston Green End and Kempston East End. The latter is now subsumed within the built-up area of modern Kempston. In the vicinity of the settlement the trackway was defined by side ditches and a patchy, rutted, cobbled surface, which may originally have been more extensive.

The enclosures on either side of the trackway abutted the open fields (Box 27). They contained buildings and clear evidence for domestic activity but were too 'shallow' to conform to the archetypal 'toft and croft' layout of medieval villages. One of the enclosures contained a large deep circular feature, possibly a fish pond. The enclosure to the south of the trackway was on a slightly different alignment, probably because it originated in the late Saxon period. It appeared to contain slightly larger, more substantial timber buildings in addition to a possible cess pit.

It has frequently been suggested that The Bury represents the location of the manorial complex associated with Kempston Brucebury. However, other than the possible fish pond — an important element of a medieval manorial complex — there is no archaeological evidence for structures or finds to suggest that this was the case. In addition manorial centres in the Great Ouse valley are often located near rivers, sometimes in association with mills and churches.

It should be borne in mind that only that part of the settlement adjacent to The Bury was examined. The latter is known to have been owned by a succession of rich individuals, suggesting that the post-medieval estate was of relatively high status. However, this probably has little bearing on the status of the nearby medieval settlement, although the possible fish pond and the 'shallow' enclosures are intriguing.

located just beyond the south-west corner of structure G8107. Although assigned to Phase 805 because part of it truncated one of the post-holes, some of these pits may be contemporary with the building, perhaps having been dug to extract clay for use in its construction. The north-east part of the enclosure is a second candidate for the location of a building. This area was devoid of features but was adjacent to the possible entrance and separated from the remainder of the enclosure by gulley G8055. The third candidate is an area defined by a number of short gullies (G8083, G8091, G8094, G8095 and even G8096) adjacent to the south-east side of the enclosure but not parallel to it. The gullies were up to 0.9m wide and 0.4m deep. Although all slightly sinuous in plan and, therefore, unlikely to have been dug to hold earth-fast timbers, at least two (G8091 and G8094) had steep sides

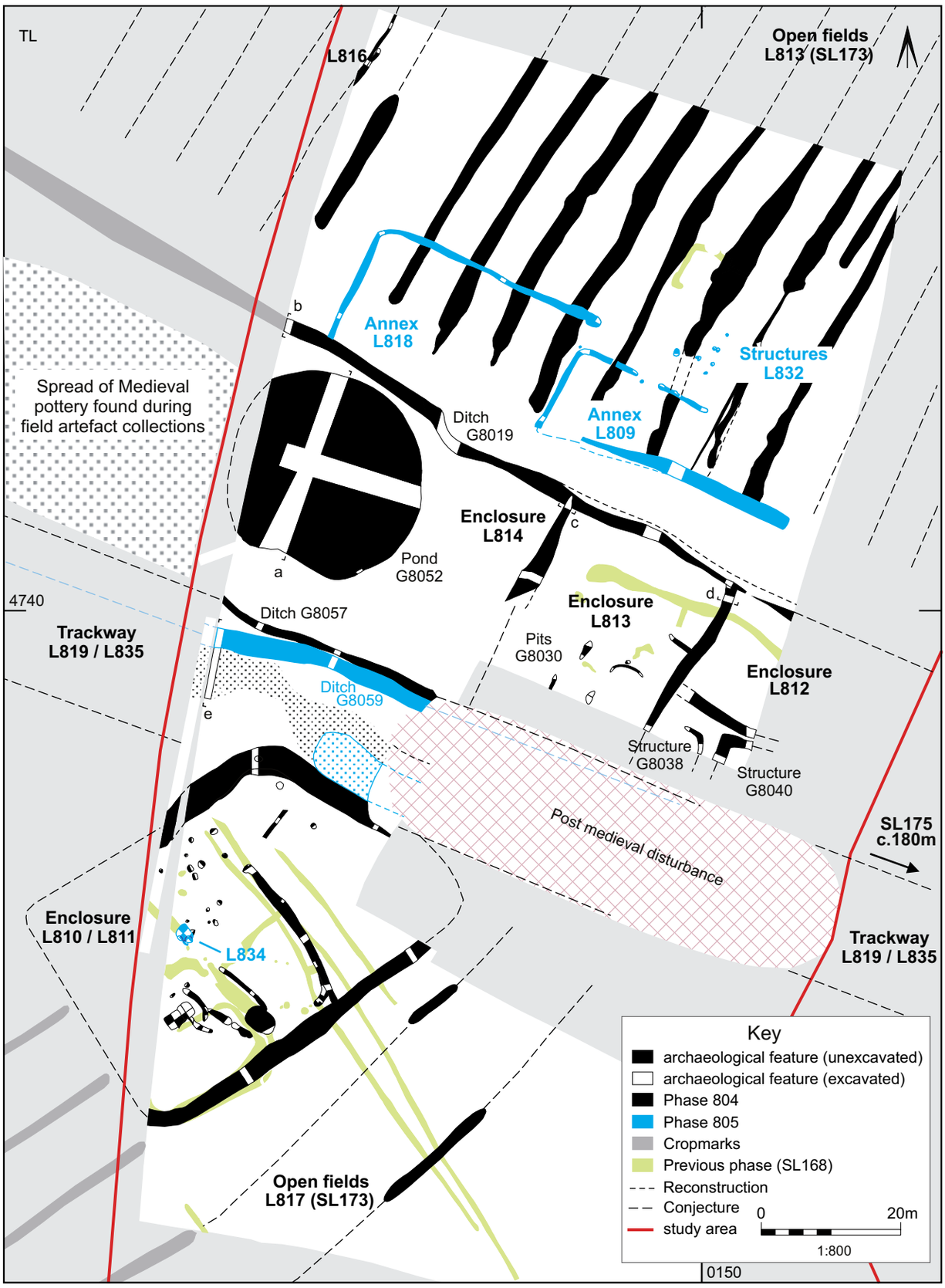


Fig. 6.8 Overall plan of settlement SL172, adjacent to The Bury. Scale 1:800

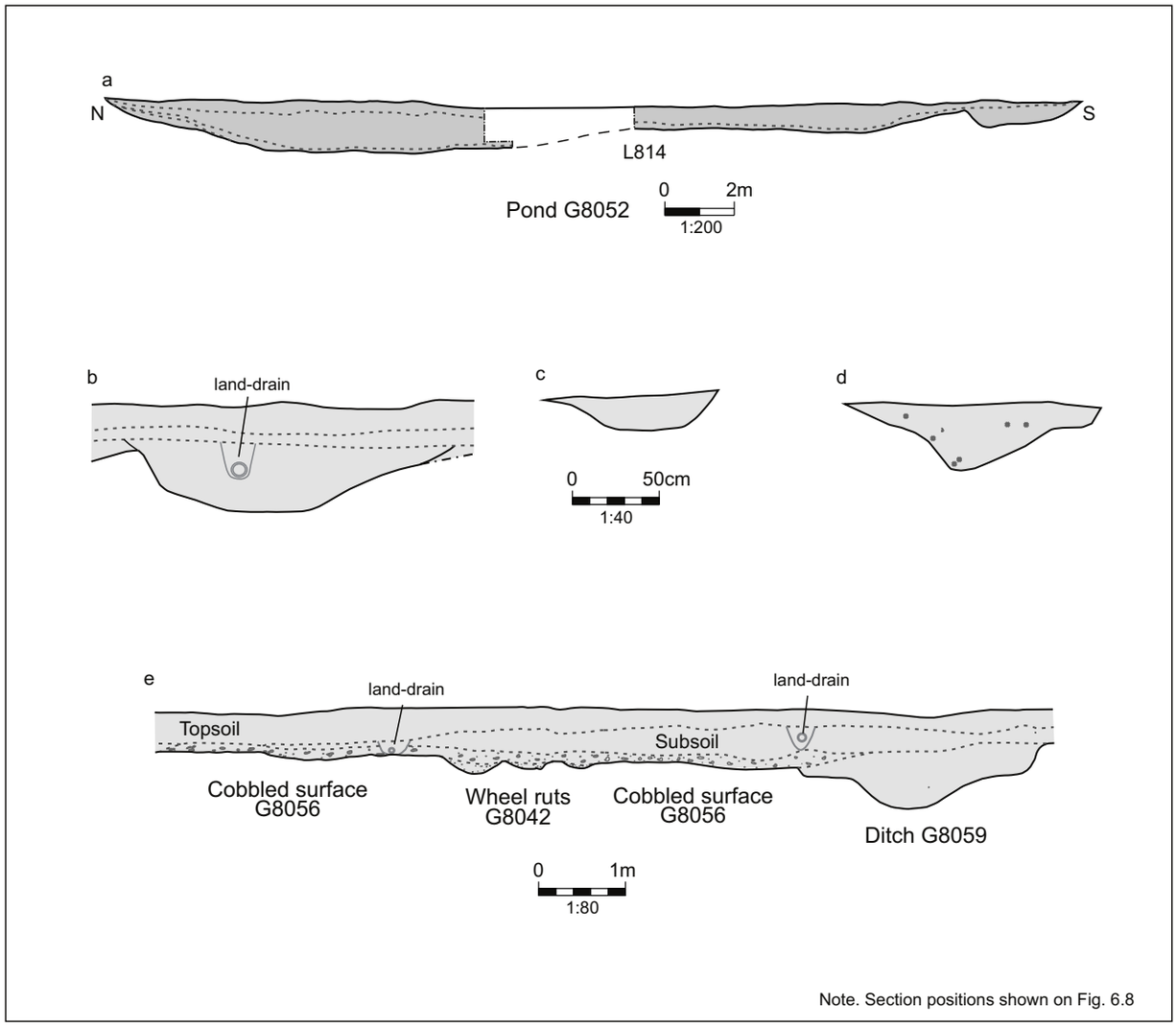


Fig. 6.9 Section drawings associated with settlement SL172, adjacent to The Bury. Scales 1:40 and 1:80

Plate 6.7 Medieval trackway L819/L835 (settlement SL172) with ditches G8057 and G8089 to right, from the south-east (2m scale)

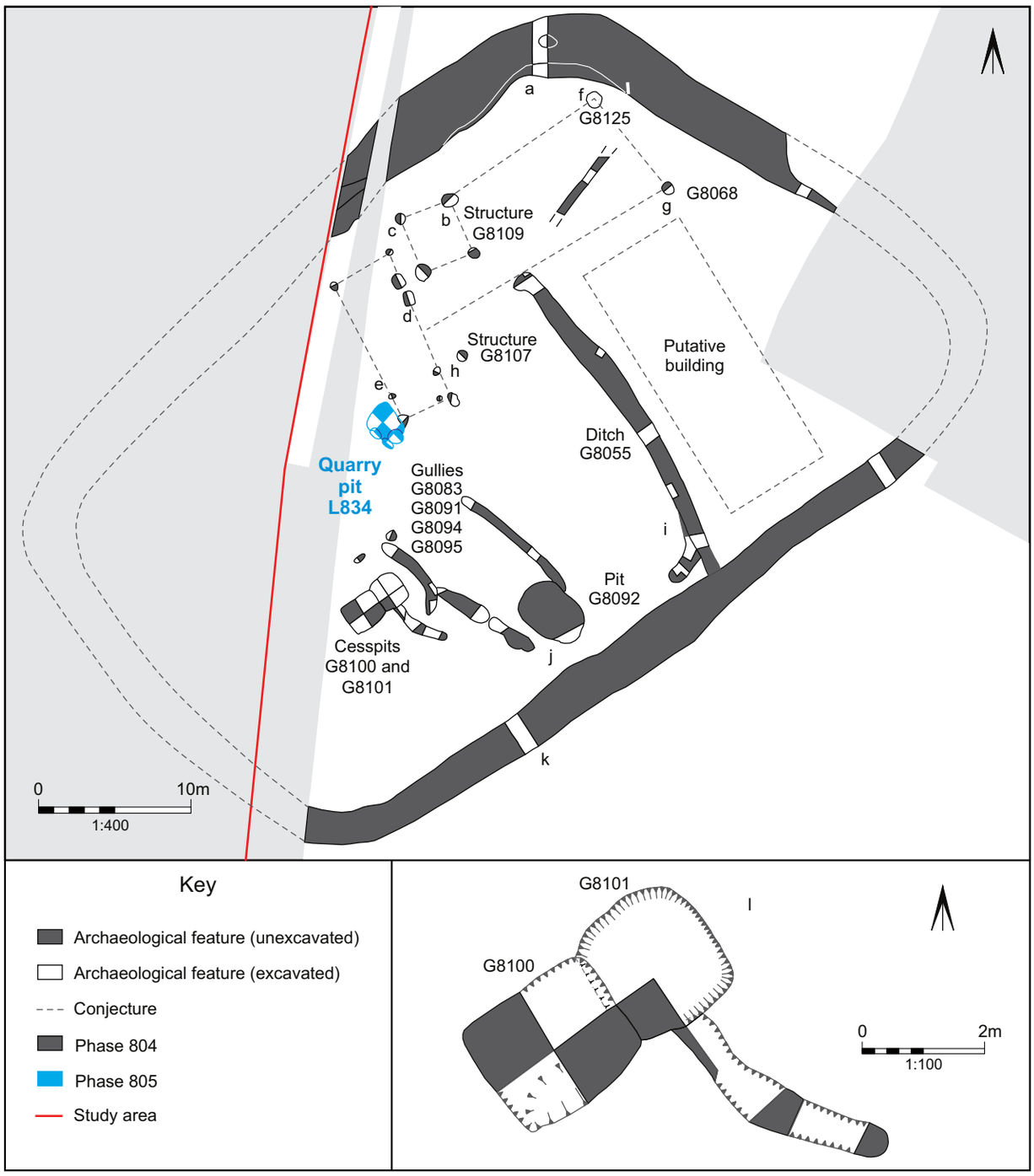


Fig. 6.10 Detailed plan of enclosure L810/811 (SL172). Scale 1:400

and flat bases. As with the post-built structures in the enclosure, a number of pits, such as G8092, G8100 and G8101, were located nearby.

Pits G8100 and G8101 were 2m square and <0.60m deep, with steep sides and relatively flat bases (Fig. 6.10, Plate 6.9). Both contained alternate bands of dark and yellow-green cess-like fills. G8101 is the stratigraphically earlier of the two. These features are interpreted as cess pits on the basis of their shapes and fills, although their position away from the edge of the enclosure would seem unusual.

To the north of the trackway enclosure L814 contained a feature (G8052) which was 32m in diameter and 1.5m deep; it is interpreted as a possible fish pond (Fig. 6.8). It was investigated by two machine-dug segments, one of which was originally partly hand-dug (Plates 6.10 and 6.11). Its primary fill, which was excavated by hand, consisted of a 0.2m-thick sterile mid-greyish brown silty clay. Small quantities of medieval and post-medieval pottery were recovered from the main fill, but the best dating evidence is its juxtaposition with the enclosure ditches, particularly G8019, which appears to change alignment slightly to respect it.

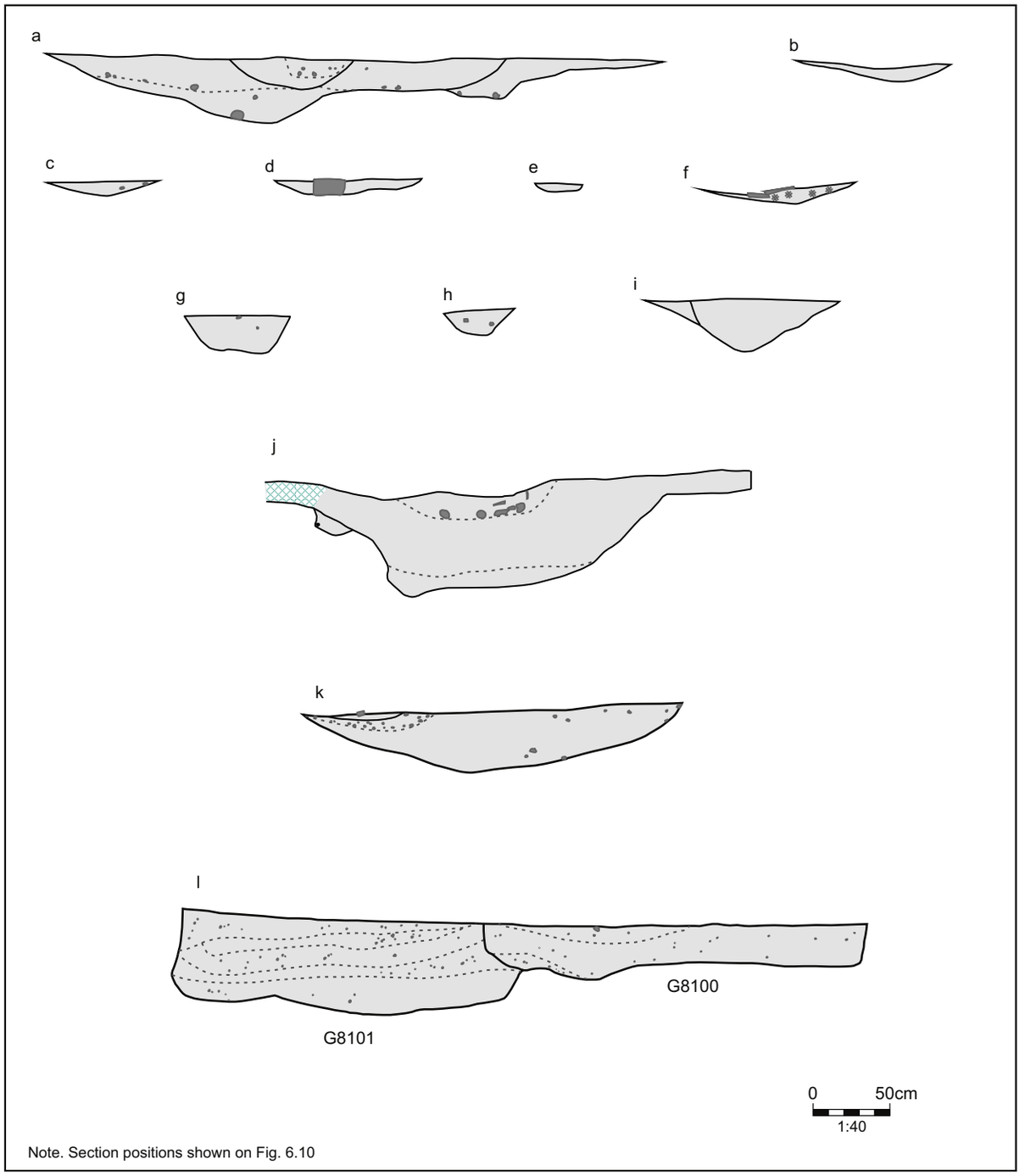


Fig. 6.11 Section drawings associated with enclosure L810/811 (SL172). Scale 1:40

The two other enclosures (L812 and L813) on the north side of the trackway contained a range of features, including pits, gullies and slots (Fig. 6.8). Two adjacent, possibly rectangular, arangements of slots (G8038 and G8040 (in enclosure L812)) are difficult to interpret as they are on the limit of the excavation area and adjacent to an area of post-medieval/modern disturbance. However, they were narrow and steep-sided, suggesting that they may have held earth-fast timbers; their proximity to the trackway would support their interpretation as evidence for timber structures.

At a later date (Phase 805) two small annexes (L809 and L818) were created to the north of the enclosures on the north side of the trackway (Fig. 6.8). They encroached on the open fields, clearly truncating furrows. The arrangement of the ditches and an adjacent cluster of post-holes indicate that there was an entrance on the north side from the open fields. There was little other evidence for development of the settlement beyond the redigging of some of the enclosure and trackway ditches and repairs to the trackway's surface (L835).

Plate 6.8 Aerial view of medieval settlement SL172, from the south-west, with enclosure L810 in the foreground

Plate 6.9 Possible cesspits G8100 and G8101 (enclosure L810/811, settlement SL172), from the south-west

Settlement SL201/SL204 (Biddenham Ford End)
(Fig. 6.7)

A number of ditches (SL201) and pits (SL204), some containing early medieval pottery, were discovered in the Bedford Water Main investigations, suggesting that the late Saxon/Saxo-Norman settlement in this area continued into the medieval period (Fig. 6.7). The majority of the pits and ditches were devoid of datable artefacts and are assigned to this period because of their proximity to features that produced dating evidence. The density of features and finds suggests that the investigation area was located on the periphery of the settlement.

The majority of the pits L2450 lay within an area 14m × 6m to the east of the investigation area. Most were oval in shape (Plate 6.12) but one had an unusual elliptical shape; it produced the largest finds assemblage (although

Plate 6.10 Aerial view of settlement SL172, from the north, with possible pond G8052 in the foreground

Plate 6.11 Archaeological recording within possible pond G8052 (enclosure L814, settlement SL172)

this was still relatively small), including six sherds of early medieval pottery, a roof tile and some animal bone. A cluster of much smaller pits (L2452) was located *c.*60m to the west.

Five parallel north–south ditches and four much smaller east–west gullies (all designated SL201) were also found in this area. None produced dating evidence and, while they could be late Saxon/Saxo-Norman in date, it is perhaps more likely that they are associated with the medieval settlement. The fact that they were not evenly spaced, were on slightly different alignments and were over 0.3m deep makes it unlikely that they were furrows.

Other 'Ends'

Brief mention should be made of the other 'Ends' or hamlets that are known to have existed in the vicinity of the study area by the early medieval period. To the north of the Biddenham Loop is Church End (the western part of the present-day Biddenham village) and to the north-east Ford End, of which SL201/204 was part. In the vicinity of the study area on Land west of Kempston

Plate 6.12 One of the medieval pits in cluster L2450 (settlement SL201/204), from the south (1m scale)

were Box End, Church End, Green End and probably East End. The latter was probably larger than the others and is now subsumed within modern-day Kempston (Wood 1984, 18).

Summary

The settlement pattern in and around the study area, as in much of Bedfordshire, is characterised by a series of inter-connected hamlets or 'Ends'. Some of these may have been created or expanded in times of rising population.

Medieval settlement SL172 at The Bury was clearly the continuation of the Saxo-Norman settlement SL168/9 and perhaps even the early Saxon one. With time it had shifted focus; by the medieval period it lay adjacent to the trackway leading to Green End, surrounded by open 'strip' fields. There is no evidence for furrows underlying the settlement, although, as these do not always survive, this cannot be taken as definitive evidence for it pre-dating the surrounding open fields. In a later phase of development small annexes were created on the edge of the open fields. Green End and The Bury have sometimes been cited as manorial centres (Wood 1984, 36). Although the settlement within the study area appeared to have been planned and contained a possible fish pond, there was no definitive evidence to suggest that it was ever part of a manorial complex (see below, p. 370). Evidence from beyond the study area suggests that the settlement around The Bury is likely to have extended to Green End.

The area of Ford End is likely to be the location of one of the two mills recorded in Domesday Book as belonging to Biddenham manor (Bigmore 1979, 37). Historical documents suggest that a hamlet grew up near the mill on the Biddenham side of the river and that it existed until at least the mid-14th century (Wood 1984, 14). Although the settlement evidence within the Bedford Water Main was located *c.*200m from the present river, it seems likely that it represents the northern periphery of this hamlet.

All the settlements in and adjacent to the study area probably shrank in the 14th century, in keeping with the regional pattern (Wade 1997, 52). However, the evidence from the study area, even when combined with that from the wider locality, does not allow a distinction to be made between settlement shrinkage and shift. Although, nationally, this subject has been well researched from a historical perspective, the changing patterns of expansion and decline, particularly on more marginal lands, are not well understood in archaeological terms.

Post-medieval (1500–1750)

(Fig. 6.12)

The only evidence for settlement within the study area during this period was found in the vicinity of The Bury, on which the following discussion is focused. However, the continued existence of the 'Ends' of Biddenham and

Plate 6.13 Photograph of the brick mansion at The Bury *c.*1850 prior to demolition (BLARS Z257/2/17)

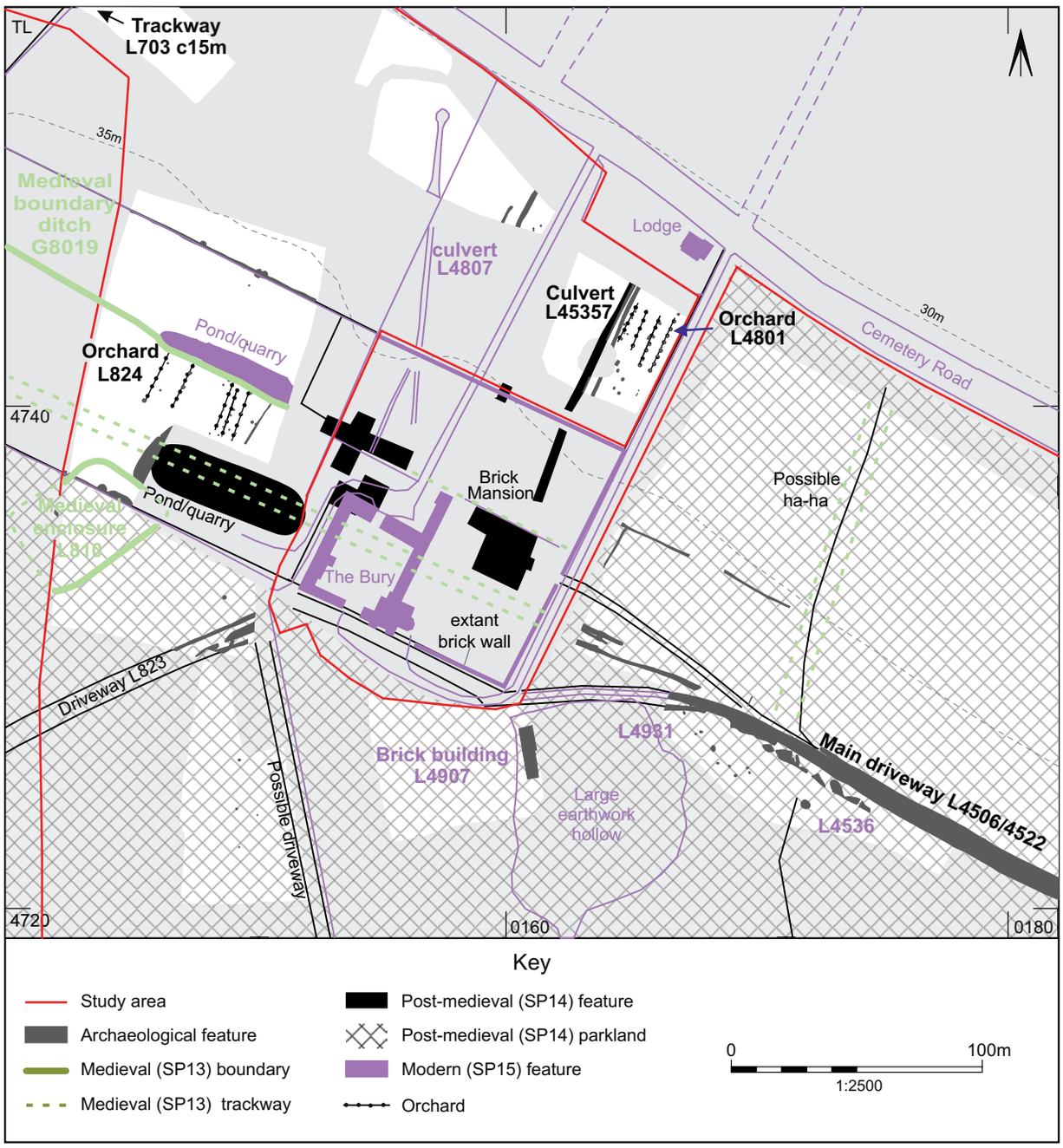


Fig. 6.12 Post-medieval settlement around The Bury. Scale 1:2500

Kempston, just outside the study area, suggests that there was no major population decline.

Introduction

The core of the post-medieval settlement around The Bury shifted slightly eastwards from its medieval location. It is known to underlie the gardens and buildings of the present-day Bury, built in the mid-19th century. Although this was not part of the study area it does require some discussion, given that it represents the latest phase in a long sequence of settlement in this area and that a number of features/structures relating to it were found in the excavation areas. No new studies have been undertaken as part of this publication and most of the following information derives from a desk-based study and non-intrusive evaluation undertaken as part of a separate development proposal for The Bury (Albion 2006) and the parish survey for Kempston (Wood 1984).

The brick mansion

Historical records indicate that a significant house near The Bury was replaced in 1628 by a brick mansion 'a little to the east of the old house' (Wood 1984, 37). Neither building was situated within the study area. The earlier house was not found in either the excavation areas or the 2006 geophysical survey within the curtilage of The Bury (Albion 2006); it may, therefore, underlie the present-day buildings. The location of the brick mansion is shown on historical maps and has been confirmed by geophysical survey undertaken on the lawns to the east

of the present-day house (Albion 2006) (Fig. 6.12). It northern side corresponds to the projected alignment of G8019, the main medieval boundary ditch *c.*30m to the north of trackway L819.

The brick mansion is shown on Gordon's 1736 map of Bedfordshire, where it is sufficiently similar to later representations to suggest that it was actually drawn at the time. The map shows a four-storey building with a central porch, three gables in the roof, two chimneys and a flagpole. It also shows a courtyard area directly in front of the mansion that appears to have been defined by railings. Access to the courtyard was gained through a central gate with two piers, possibly of brick. The presence of the latter may indicate that the railings were set in a low brick wall. Although Jefferys' map of 1765 illustrates a building, it is unlikely to be an accurate representation because it bears little resemblance to a watercolour of *c.*1820 (BLARS Z257/2/16, Box 30). The latter shows a building similar to that illustrated by Gordon's map, although it is clear that the roof had been replaced.

Brick wall

On the *c.*1820 watercolour the early 17th-century mansion is shown surrounded by a brick wall, to the east at least. A gap in the wall, which was defined at each end by brick piers, is filled by railings that incorporate a gate. The presence of railings rather than a continuous wall would have provided direct views both of the mansion's façade from the outside and of the grounds from the mansion itself. The brick piers are very similar to those illustrated by Gordon, although it is unclear if they are the same. Although it is clear that the wall turned westwards on

BOX 30: Post-medieval brick mansion at The Bury

This c.1820 watercolour (BLARS Z257/2/16, Bedfordshire and Luton Archives and Records Service) was painted from a location in the vicinity of the ha ha, to the east. It shows trees in parkland, part of which lay within the study area, and the house itself, which did not. The three-storey building has a central porch, two substantial chimneys and a flagpole. To its front is the brick wall with its central gateway/fence, flanked by two large pillars, all of which survive to the present day.

According to historical records the brick mansion was built by William Cater in 1628 to replace an existing house located to the west. The latter was probably within the linear medieval settlement that was partially investigated within the study area. The trackway to the south-east of the original house remained in use. It was rebuilt as the main driveway to the brick mansion and passed through the parkland shown in this picture.

Associated with the brick mansion was a barrel-vaulted culvert 1.5m wide. It was constructed of unfrogged, hand-made bricks and ran downslope to the north of the building. It is likely to be the source of local stories of a 'secret tunnel' linking The Bury and All Saints Church at Kempston Church End. Two areas of tree holes laid out in neat rows were found within the excavation area adjacent to The Bury; they probably represent orchards.

NOTE. Although the brick mansion was not within the study area, it is significant in that it represents an important element in a long sequence of settlement that began in the early Saxon period. It also helps to explain the presence of a number of features, such as the culvert, found in the adjacent excavation areas.

Plate 6.14 Wall of the brick mansion, visible in the background of this photograph taken in 2003 during evaluation trenching

both sides, its full extent is uncertain. The brick wall (HER 12580) still exists in part to the north and south, with the complete eastern length intact and still incorporating the gap defined by brick walls, and is Grade II listed (Plates 6.14 and 6.15).

Outbuildings and gardens

The 1652 rent roll of Edward Cater mentions a house with gardens, orchards, a malthouse and dovehouse (HER 11679). The 1804 enclosure map and 1847 revised enclosure map show both the house and, for the first time, a number of outbuildings to the west. The latter were located in the unexcavated land around the present-day house.

A small number of ditches were found in the excavation areas to the west and north of the present-day Bury; they presumably defined fields or enclosures. However, while those depicted on historical maps can be broadly dated, it is difficult to know whether the others relate to the brick mansion or the present-day house. The same is true, to a certain extent, of the areas of tree holes, although some, like L4801, are likely to be associated with the brick mansion because they are situated just to the north of the walled area and are perpendicular to it

Plate 6.15 Aerial view taken in 2008 of The Bury, from the south-east, with the (earlier) brick wall visible adjacent to the excavation area on the right side of the photograph

(Fig. 6.12). The tree holes in this area were square and laid out in neat rows and therefore probably represent an orchard. A similar regular arrangement of tree holes (L824) was found to the west of the area of the brick mansion, although in this case the pits were more circular in shape and had been heavily disturbed by later activity associated with the present-day house.

Brick culvert

A north-east–south-west-aligned brick culvert (L4535) was exposed for 50m in the excavation area to the north of the brick mansion, which it presumably served (Fig. 6.12). It was 1.5m wide, barrel-vaulted and constructed of unfrogged, hand-made bricks, presumably similar to those used in the mansion. This culvert is likely to be the source of local stories of a 'secret tunnel' linking The Bury and All Saints Church at Kempston Church End (HER 11542), although the existence of another culvert of slightly later date to the west (see below) has probably further added to this misunderstanding.

Ponds/quarries

Two linear ponds/quarries were found in the excavation area to the west of The Bury. Only the southern one is shown on the enclosure award map of 1804 and is therefore likely to be contemporary with the brick mansion. It may have been dug to extract clay for the manufacture of bricks for use either in the mansion or in associated structures. It was dug in the area of a medieval trackway (Fig. 6.12) and, perhaps, if the side ditches of the latter were still open in the post-medieval period, revealing the presence of natural clay, it is possible this is the reason for the linear nature of the quarry. This remained open as a pond until the construction of the Bypass (Plate 6.17).

The grounds and drives/avenues

As part of a non-intrusive evaluation, earthworks within pasture in the grounds (HER 7030) to the east of the brick mansion were surveyed (Albion 2003, fig. 16). Apart from faint traces of ridge and furrow, the main features were a cambered drive (see below) and a possible ha ha, which was located to the east of the brick mansion, perpendicular to the main drive. The original extent of the grounds is uncertain, but by the time of Bryant's map of 1826 they survived only to the south-east.

The combined evidence of the earthwork survey, excavation and documentary research demonstrates that the driveway was the main access to the brick mansion. It comprised a cambered metalled surface with side ditches that followed the same alignment as a medieval trackway. The original alignment of this driveway led from Ridge Road, where there would have been a gatehouse (shown on the ratings survey map of 1848), directly to the front of the house through the gap in the brick wall (which still survives today). Other drives probably approached the mansion from other directions, such as the south-west. Once Cemetery Road had been constructed to the north in the early part of the 19th century a new driveway was built to connect the mansion to it. However, the original main drive remained in use and is shown as a tree-lined avenue through the grounds on Bryant's map of 1826.

Kempston and the 'Ends'

Box End, Church End and Green End, which existed in the medieval period, continued to be inhabited in the post-medieval period. To the east, within the area of modern Kempston, Bell End and Up End are believed to have originated in the 17th or 18th century (Wood 1984, 19). Bell End, immediately to the east of Cutler Hammer Sportsground, was to the south of Kempston Mill, which may, of course, already have had a small hamlet around it.

Plate 6.16 Modern brick structures, including a well, adjacent to The Bury (0.4m scale)

Modern (1750–1945)

Modern settlement within the study area was restricted to two areas: around The Bury and a part of Biddenham Loop known as Honey Hill.

The Bury

(Fig. 6.12)

By 1851 the brick mansion and its outbuildings had fallen into disrepair and were demolished shortly afterwards (Wood 1984, 37). Thereafter, the present house, known as The Bury (HER 3667), and probably many of the adjacent farm buildings, which formed a courtyard arrangement (HER 12581), were built to the west. The layout of The Bury and its grounds have not change significantly through the 20th century but at the time of writing (2012) there are proposals for a new residential development in this area.

The brick walls and gateway of the earlier brick mansion courtyard were retained (and survive today). The 1882 first edition 25-inch OS map suggests that the area of the former brick mansion and its outbuildings were converted into formal gardens and planted with trees. Although the tree-lined drive from the south-east (L4506/4522) is still shown on the map, it is likely that the main access to The Bury was from Cemetery Road,

Plate 6.17 Modern pond visible as a hollow, from the north-west, looking towards The Bury (2m scale)

where a lodge had been constructed (HER 12579). By the time of the 1901 second edition OS map a track had been created from Cemetery Road which took a more direct route to the farm buildings attached to The Bury.

A number of brick-built structures, including buildings, wells and culverts, were found within the excavation areas and are likely to be of this period (Plate 6.16), although not all were shown on historical maps. To the south-east of The Bury a rectangular brick-built building (L4907) existed within the hollow, which was recorded as part of the earthwork survey; it may be related to brick manufacture. Other brick structures (L4531), including a well, were found to the east of the hollow. Within the excavation area to the north of The Bury a brick culvert and a large circular cistern (L4807) were found. A linear anomaly on the same alignment, showing another branch of the culvert, was detected by geophysical survey to the north of The Bury (Albion 2006). The drain was constructed of modern bricks and was aligned on The Bury and its outbuildings, although it is not impossible that it originally served the outbuildings of the brick mansion. As mentioned above, the local stories of a 'secret tunnel' may relate to this or the earlier culvert to the east. However, on the basis of its grid refer-

Plate 6.18 Foundations of Honey Hill farmhouse (SL78), from the east (1m scale)

ences, culvert L4807, with its circular cistern, is the one recorded as HER 11542.

A further linear pond/quarry was dug to the west of The Bury. In addition, numerous pits were found in the vicinity of The Bury, which, on the basis of their brick content, probably date to this period. Many appear to be too small and irregular to have held trees. Loose clusters of small pits were found to the south-east (L4536) of The Bury, adjacent to the driveway. The proximity of these to the large hollow, which may have been for clay extraction, may suggest that they were associated with this activity in some way.

Honey Hill Farm
(Fig. 6.7)
Honey Hill Farm (SL78) was constructed in the 19th century within one of the extant post-medieval fields on the Biddenham Loop. The farmhouse is clearly shown on the 1882 OS map and is probably visible on a map of 1834. It fell within the excavation area and was clearly constructed over an early Bronze Age circular monument (L2104), although it did not respect the latter's surrounding ditch. Some of the farmhouse walls featured limestone footings, but it was partially rebuilt and extended with brick walls and concrete floors (Plate 6.18). Associated service trenches, drainage channels, rubbish pits and fences were identified. It is also shown on a map of 1926, but is believed to have gone out of use shortly after World War II. A local woman who visited the site during the excavations said she had lived in it as a child during the 1940s.

Kempston and the 'Ends'
While Box End, Church End and Green End survived as isolated hamlets, by the middle of the 19th century Bell End, East End and Up End had all coalesced and been subsumed within the modern urban area of Kempston.

V. Fields, meadows/pasture, trackways, mills and quarries

The majority of the archaeological evidence from the study area for the landscape beyond the settlements relates to fields and, to a lesser extent, trackways, mills and quarries. Historical records, place-names and topographical evidence do add some information but less is known about this area than about better-documented estates.

Fields

Open fields
A variety of sources — sub-surface furrows within excavation areas, earthwork ridge and furrow to the east of The Bury (Albion 2003, fig. 16), earthwork headlands within the Biddenham Loop and research by Wood (1984, map 2) — indicate that the majority of the study area was at one time under open-field cultivation. The exceptions would have been the two settlement areas and probably much of the flood plain. The agricultural regime comprised 'large open arable fields in which all the villagers … had their arable land in scattered unfenced strips in the various furlongs or blocks of strips' (Carnell *et al.* 1966, 17). The strips within the study area will have been farmed principally from Biddenham (Church End and Ford End) and Kempston (Box End, Church End, Green End and East End). The approximate area of fields can be ascertained by identifying the strips within them, often as sub-surface features or earthworks. They may have had a perimeter hedge but this would be virtually impossible to identify archaeologically. The area covered by open fields no doubt fluctuated during the medieval period in line with population levels within the Ends and as post-medieval enclosure got underway.

There is no firm evidence from the study area as to when the open fields were established. 'Open fields seem to have evolved gradually over several centuries and continued to develop and change subsequently' (Wood 1984, 49). The relationship between the open fields and Roman boundaries is varied. Within the area of the Kempston Church End Roman settlement SL155 the furrows do appear to respect the alignment of the enclosures, although not the precise position of the road, trackways and enclosure boundaries. On the Biddenham Loop the open fields did not respect Roman trackway L2376, although a headland does broadly follow the course of trackway L2306, which itself follows middle Bronze Age field boundaries. Finally, to the south of Land west of Kempston near Marsh Leys, although the furrows were on similar alignments to fields SL158 they did not respect the precise position of the Roman trackway or field ditches.

Very few linear late Saxon/Saxo-Norman boundaries were identified; where known they do tend to correspond better with the alignment of furrows. For example, to the south-west of The Bury, the furrows are perpendicular or parallel to the late Saxon trackway L803/L4630 and to the north-east they are parallel to the possible trackway L4516. It is likely, therefore, that the open fields began to be established from the late Saxon period, which would be consistent with the situation in the rest of the country (Edgeworth 2007, 98). It also appears that they were set out in relation to the natural topography, rather than to any boundaries of Roman date that were still in existence. The open fields are likely to have had a long and complex history but for the sake of convenience during post-excavation analysis all furrows were assigned to the medieval period.

Enclosure
Sufficient sub-surface ditches were identified corresponding to boundaries shown on historical maps to demonstrate the change from open fields to enclosure during the post-medieval period. Enclosed fields existed on both the Loop (SL77) and on Land west of Kempston (SL183). 'The importance of enclosed land, as generally understood, lay in its exclusiveness. Enclosure meant it became possible to restrict and eventually extinguish common rights, provided the enclosed area was in individual ownership' (Wood 1984, 53). The date and reasons for the change are still debated (Lewis *et al.* 2001; Williamson 2003), but within the West of Bedford area population decline and the increase in wealth of a number of individuals were probably the key factors. The latter wanted exclusive use of the land, often as pasture for sheep. Around The Bury, as in much of the East Midlands, the enclosure of land had commenced well before the Parliamentary Enclosure Award of 1804 (Wood 1984, 49). The land to the east of The Bury had at

one time been open fields (as indicated by the survival of ridge and furrow earthworks), but during the early post-medieval period it was incorporated into the grounds of the brick mansion (see p. 363). Existing routeways were also amended and new ones built in the course of enclosure.

Meadows/pasture and the flood plain

Domesday Book records meadow for twenty ploughs in Kempston, a relatively large amount which would have been a valuable source of fodder. Most of this presumably lay within the flood plain beside the river Great Ouse. Very little archaeological investigation was undertaken here because there were no significant development impacts. However, it is likely that much of this land was used for hay cultivation and for grazing throughout this period and therefore it would have been provided with adequate drainage to ensure that the soils were productive at certain times of year. The importance of the land between the main river and the back channel is also indicated by the presence of river crossings, including a 17th-century bridge (see below). That grassland also existed to the south of the study area is indicated by the 'marsh' names around the present A421.

Tracks/roads

A system of routeways will have existed in the area from the late Saxon period, connecting the settlements and providing access to their associated fields, pasture and mills. However, the archaeological evidence for them is often slight and variable. With a handful of exceptions, where evaluation trenches or open area excavations crossed routeways shown on historical maps, no physical evidence for their existence was found. The situation post-enclosure, when existing routeways were straightened and some abandoned, is much clearer because these are all shown on historical maps and most survive as roads or public rights of way to the present day.

Biddenham Loop

The only known routeway within the Biddenham Loop is the Denney Way, which is shown on Jefferys' map of 1765 but is first recorded as *Deneway Furlong* in 1327. It is likely to have late Saxon origins, as it connects Church End to Ford End. Part of its route existed as a farm track prior to the Bovis development and it exists as a public right of way at the time of writing (2012). No sub-surface evidence for it was found within any of the excavation areas. It is possible that, for part of this period, as Jefferys' map and a 1794 estate map indicate, it turned eastwards and ran to the Ford End settlement along the northern boundary of the study area.

Land west of Kempston

Extensive networks of pre-enclosure routeways have been proposed by Wood for the Kempston area, mainly based on map regression work (1984, 58 and map 2). Some of these have their origins in the late Saxon or medieval period. Three of these routeways were identified within the study area: one on the ridge between Green End and East End; one parallel to the river between Church End and East End; and possibly one known as 'Portway', to the south near the A421.

There is now good archaeological evidence for the origins and nature of the routeway that ran along the south-east–north-west ridge between Green End and East End via The Bury (Fig. 6.12). It may have originated in the late Saxon/Saxo-Norman period because it respected the alignment of trackways L803/L4630 and L4504 of this period (Fig. 6.2). The only physical evidence for these was their side ditches, although their alignment was preserved in the landscape during the medieval and post-medieval periods. The boundary between two open

Plate 6.19 Driveway L4506/4522, from the south-east, visible as an earthwork during evaluation trenching undertaken in 2003. The brick wall associated with The Bury is visible in the background

Plate 6.20 Driveway L4506/4522, from the south-east, visible during excavations in 2008. The brick wall associated with The Bury is visible in the background

fields to the west of The Bury in the medieval period was parallel to but *c.*15m to the east of trackway L803/L4630. Within medieval settlement SL172 to the west of The Bury trackway L819/L835 had a cobbled surface and was defined by parallel ditches *c.*15m apart. In the excavation area to the south-east of The Bury it (L4507) was defined by ditches and followed the division between open fields. This routeway was probably still in use up to 1628, when the brick mansion was constructed to its north. At this time the length to the south-east was rebuilt as a cambered drive (L4506/L4522) (Plates 6.19 and 6.20), one of many, with a side track leading directly to the front of the brick mansion. It was probably around this time that the alignment of L4504 to the east of The Bury was utilised as a ha ha. By the 18th century cambered drive L4506/L4522 had been diverted to the south of the walled courtyard surrounding the mansion; it probably no longer continued to Green End. Another major change took place in the early 19th century, when Cemetery Road was constructed to the north-east towards the base of the slope (see below). At this point the main access to The Bury was rerouted via Cemetery Road. Probably also around this time, trackway L821 and its continuation or replacement L4806 were also constructed to provide

Plate 6.21 Foundations of Roman road L5305 (left), medieval road (where two people are) and the modern Causeway (to right within fenced corridor)

more informal access to the outbuildings behind The Bury.

Trackway L703, located in excavation areas to the north-west of The Bury adjacent to Cemetery Road, would also have joined the main trackway on the ridge. Prior to excavation it partly survived as a hollow-way but only one side ditch was identified. Within the excavation area it followed, in part, the alignment of Roman trackway L702, to the extent that it was unclear to which period the associated metalled surface was related. At the base of the slope, in the vicinity of the later Cemetery Road, Wood suggested that it deviated from the Roman trackway to join the Church End to East End trackway (1984, map 2). In the early post-medieval period historical maps indicate that it was a field boundary and no longer a routeway.

The main routeway linking Church End and East End via Kempston Mill was located adjacent to the present-day flood plain of the river Great Ouse. It probably existed in the late Saxon period and definitely during the medieval and post-medieval periods. It exists today as a public right of way, known for part of its length as The Causeway. A Roman road associated with the Kempston Church End settlement occupied a similar position (Plate 6.21). It is clear that the precise course of this long-lived routeway varied over time. For example, although the Roman road and possibly its early Saxon successor were found within the Bypass excavation (see above), the medieval and post-medieval trackways, known from historical maps, were not present within the excavation area and must, therefore, have been located to the east. Further south-east within the pipe trench near Cutler Hammer Sportsground at least two phases of road surface were identified just to the south-west of The Causeway. The lower (L5305) was associated with the Roman road; the upper (L5310) was probably medieval in date (Plate 6.21). Cut into the surface of L5310 were wheel ruts (L5314); these, but not the surface itself, produced post-medieval artefacts. It is likely, therefore, that this part of the trackway was still in use during the early post-medieval period.

The Causeway itself was also examined within a narrow pipe trench, just wide enough for the insertion of the pipe, where it was clearly identified as a realignment of the medieval road. It was probably built out of the arisings from the adjacent mill channel L5311 (see p. 369). Its name probably derives from its straight alignment and banked appearance. It may have been a dual purpose routeway and flood barrier. With the construction of Cemetery Road (parallel and *c.*160m to the south-west) in the early 19th century it declined in importance and survives only as a footpath today (2012). For the same reason the continuation of the medieval/post-medieval road to the north of Church End to Box End was also abandoned. The metalled surface and a side ditch of the latter were located in the sewer investigations (Dawson 2004, 63); part of its course is still followed by a public right of way.

To the south of the study area, one of the Bypass excavation areas produced rare sub-surface evidence for two medieval/post-medieval routeways. The position and alignment of the two metalled surfaces L10005 (SL184) (Plate 6.22) correspond with the layout of routeways shown by Wood (1984, map 2). However, even the more extensive north-east–south-west-aligned routeway was only *c.*30m long. It is therefore likely that metalling was limited to this area because it was the junction of two routeways and in an area of wet ground. The latter may also explain why the alignment of the more extensive routeway was not perpendicular to furrows in this area. Wheel ruts were identified beneath the metalling, suggesting that the routeway was originally unsurfaced (Plate 6.23). Neither trackway was bounded by side ditches. Wood suggested that the north-east–south-west-aligned route was known as the 'Portway' (1984, map 2) and was of some significance. By the time of the enclosure award map of 1804 the routeway had gone out of use, but its course is still preserved by a public right of way.

River crossings

Various crossings of the river Great Ouse have been proposed in the vicinity of the study area. However, with the exception of 'Cater's Great Bridge' (HER 11527), to the north of The Bury, there is very little firm evidence. The latter is first depicted on Jefferys' map of 1765 and is still shown on the enclosure award map of 1804. Documentary records indicate the presence of a wooden bridge in 1666, built by Sir John Cater. This corresponds to the period when he is known to have held the estate around The Bury (Wood 1984, 37). The bridge was designed to provide access to the island known as Earl's Holme (Wood 1984, map 3), which until very

Plate 6.22 Post-medieval cobbled/metalled surface of trackway L10005 (SL184) (1m scale)

Plate 6.23 Post-medieval trackway L10005 (SL184), showing earlier wheel ruts (1m scale)

recently was part of Kempston. The bridge, which was just outside the study area to the north-east of the Bypass excavation area, would have been located on the section of river upstream of the mill channel diversion identified in the pipe trench near Cutler Hammer Sportsground. The foundations of the bridge were visible when the river level was low during the second half of the 20th century. These were misinterpreted in the 1950s as a Roman ford (Bagshawe 1957–9, 57–60) and are still scheduled as such (HER 814).

There are also historical references to fords, including one adjacent to Cater's bridge. Other fords have been proposed on the basis of documentary records: Ham Ford, near Ford End (Wood 1984, 14) and fords between Kempston Box End and Biddenham Church End (Wood 1984, 12).

Mills

A number of mills recorded in Domesday Book lie in the vicinity of the study area. Two are recorded under the manor of Biddenham and one under Kempston. It is generally accepted that the Biddenham mills were located at Church End, to the north-west of the study area, and in the vicinity of Ford End (Bigmore 1979, 37), on the eastern edge of the study area. The Ford End mill is mentioned in a document of 1341, along with an adjacent hamlet (Wood 1984, 14). As discussed above, settlement SL201/SL204, within the study area, probably represents the northern periphery of this hamlet (see p. 359).

The location of the mill in Kempston, held by Countess Judith at Domesday, is less certain. The site of the former Kempston Mill, *c.*250m from Kempston Manor to the north of East End, is an obvious candidate. However, Wood commented that it would have been worth more than the five shillings recorded in Domesday Book. He also suggested that the Countess may have held only a lesser mill in Kempston, with the nuns of Elstow holding Kempston Mill, which was, therefore, recorded under Elstow (1984, 63). The candidates for the site of the lesser mill are Box End and Church End. Stonework reported at the latter, near the (old) vicarage, is often interpreted as the remains of a watermill (Wood 1984, 63). Although mills can exist in isolation from settlements, it is quite common for communities to develop around them and this seems to be the case for those in the vicinity of the study area. There is, however, no reason why the 'mills' (which refers merely to a set of grinding stones) could not have been located at a single site.

A backfilled channel (L5311) running parallel to The Causeway was located in the pipe trench adjacent to Cutler Hammer Sportsground. As exposed, the edge of the channel was dead straight, demonstrating that it was man-made and not natural. Its location corresponds with a channel shown on a map of 1804, which also shows another channel to the north; both connect to a mill pool at Kempston Mill, *c.*250m to the south-east of the study area. Kempston Mill ceased operations only around 1950 and the channel was diverted away from it in 1980. The presence of modern textiles within the backfill of channel L5311 corresponds with this date. Kempston Mill has since been demolished and excavations in the vicinity have located Saxo-Norman and medieval settlement but no firm evidence for an early mill (O'Brien 2006). For a fuller discussion of Kempston mills see Wood (1984, 63–6).

Quarries

Historical documents and maps indicate the presence of a large number of small quarries on the Biddenham Loop and Land west of Kempston. These were dug to extract gravel from the terrace of the river Great Ouse, clay further away from the river and possibly limestone where it outcropped near the surface. Generally speaking, the gravel was used to surface roads and the clay was used for wattle and daub walls and later for the manufacture of bricks. Historical records indicate that, although many quarries were active in the 17th and 18th centuries, it was the early 19th century which 'saw a great increase in the commercial exploitation of both gravel and clay in Kempston' (Wood 1984, 68).

Two localised areas of quarrying were identified on the Biddenham Loop: SL76, to the north-east, and SL79, to the west. Both featured numerous large sub-circular quarry pits and were situated adjacent to the river Great Ouse. Although situated in areas where the limestone bedrock was close to the surface it is likely that both limestone and gravel were extracted. The fills of quarry pits SL76 produced five lead bullets (OA315–319); their diameters 'indicate a date of the earlier 17th century or later' (CD Section 2; Duncan). 'Quarry activity in SL79 may have continued for longer than in SL76 as a piece of cast iron, thought to be part of a plough share (OA321) of the late 18th century or later (Fussell 1985, 218–19), was found' (CD Section 2; Duncan). Another area of quarrying was located to the north-west of the Loop within the Bovis investigations (Luke 2008, 2). A map of 1794 depicts quarry pits which would coincide with those investigated on the west side of the Loop. Quarry pits L2154 within SL76, to the north of Honey Hill Farm, were more rectangular in shape and were further from the river, suggesting they may have been associated with the construction and/or use of the farmhouse. These pits are perhaps the likeliest source of the Saxon brooches and *sceattas* recorded in the HER (see p. 321), as they are situated in the vicinity of early Saxon settlement SL62.

Within Land west of Kempston several areas of quarry pits have been identified. To the north of Ridge Road they are visible as cropmarks and their existence was confirmed by evaluation trenches (Albion 2004, 80; BCAS 1997, 56). The enclosure award map of 1804 labels this area as 'allocated for Surveyors of Highways', indicating that the pits here, like many gravel pits, produced material for use in road construction and repairs. A variety of large pits/ponds was found in the vicinity of The Bury; those to the west are described above (p. 363). Another survived prior to the development as an earthwork depression to the south-east of The Bury. Although not closely dated, it cut across the furrows and contained a mature oak tree, suggesting that it had not been worked for the last 200 years. Many of the quarries in this area will have originally been dug to extract clay for the manufacture of bricks. Although no brick kiln was present within the excavation areas it is presumed that one existed and that the majority of the bricks were probably used in the brick mansion, its outbuildings and its walled courtyard, with some perhaps also being sold.

VI. Manors, farming and the lives of the people

The archaeological evidence from the study area for these subjects is limited, but can be supplemented by historical records, in particular for Kempston, to provide a greater insight into people's lives at this time.

Manorial structure

Some settlements occupied by Anglo-Saxon thegns may have continued in use as manorial centres into the medieval period. The former are likely to have featured both churches and cemeteries (Dawson 1999, 117; Wood 1984, 42–3), which may provide some clues as to their locations within Kempston and Biddenham. For example, 'many parish churches grew from proprietary foundations and were not uncommonly situated within or on the edge of the manorial enclosures' (Creighton and Barry 2012, 75).

Kempston

Domesday Book records that Countess Judith, niece of William the Conquer, held Kempston as part of the Honour of Huntingdon. By 1237 the estate had been divided into three manors: Kempston Daubeny, Brucebury and Greys (Wood 1984, 34). We know that Brucebury was further divided into two in 1417 (Wood 1984, 36).

As discussed above, it has frequently been suggested that The Bury represents the location of the manorial complex associated with Kempston Brucebury (Carnell *et al.* 1966, 23; Wood 1984, 36). However, other than the possible fish pond — an important element of a medieval manorial complex (Creighton and Barry 2012, 77) — there is nothing else in terms of archaeological evidence for structures or finds to suggest that this was the case. Manorial centres frequently featured mills and churches, which, while serving practical functions, were also designed to 'impress contemporaries and advertise social status' (Creighton and Barry 2012, 75). Dovecotes are also commonly seen, as at the manors of Furnells and Burystead, Raunds, Northants (Audouy and Chapman 2009, fig. 3.18). It may or may not be significant that in the early post-medieval period there are historical records indicating that a brick mansion with a dovecote replaced the old house (Wood 1984, 37). It should be borne in mind that it was possible to examine only part of the settlement because it continued outside the study area into the area of the present-day buildings of The Bury. The latter has not been subjected to intrusive archaeological investigation, although an isolated inhumation has been found (see below). The land at The Bury is known to have been owned by a succession of rich individuals, including the Cater family from 1624 (Wood 1984, 37). While this suggests that the post-medieval estate was of relatively high status it probably has little bearing on the status of the late Saxon and medieval settlement in the same location.

Other possible sites for manorial centres within Kempston, but outside the study area, have been proposed. On the basis of documentary evidence the two strongest candidates are Kempston Box End, which is associated with Kempston Greys; and Kempston Manor, which lies within *c.*250m of Kempston Mill and which is often associated with Kempston Daubeny (Wood 1984, 34 and 36). Only the latter has been subject to archaeological investigation, which identified buildings and enclosure ditches originating in the 10–11th centuries (Crick and Dawson 1999, 79). They were interpreted as part of the manorial complex, largely on the basis of the presence of the adjacent pre-1825 Manor House, as the 'near absence of finds presents problems of dating and characterisation' (Crick and Dawson 1999, 94). A lead roofing fixture was the only indicator of high-status buildings.

Two other possible manorial sites are located at Kempston Church End and near Brook Lane. As mentioned above, many parish churches were situated within or on the edge of manorial settlements (Creighton and Barry 2012, 75). If an Anglo-Saxon thegn did live at Kempston Church End 'this may explain the siting of All Saints so far from the chief manor-house' (Wood 1984, 43). Although not proven, there is also some evidence for a mill at Kempston Church End (see below). The late 10th-century cemetery at Brook Drive (see below) may also be evidence for another possible manorial site but too little is known of contemporary activity in the vicinity to advance this hypothesis further.

Biddenham

Domesday Book records that Hugh de Beauchamp, William Speke, the Bishop of Lincoln and churches in Bury St Edmunds (Suffolk) and Bedford (St Paul's) held land in Biddenham. The two candidates for the location of a manorial centre are Church End and Ford End. As discussed above, manorial centres often contained churches so perhaps the former, associated with St James' Church, is the more likely candidate, although the earliest parts of the present church building date only to the 12th century.

Summary

In a study of medieval settlement in Bedfordshire and Northamptonshire it was concluded that Domesday manors were typically sited close to the rivers (Lewis *et al.* 1992). Therefore, within Kempston, while The Bury and Brook Drive are only *c.*400m from the river Great Ouse, both Church End and Kempston Manor (situated adjacent to it) appear the more likely candidates. Although pure speculation, it is possible that the sites at The Bury and Brook Drive were secondary manorial establishments to the main ones at Kempston Church End and Kempston Manor. For Biddenham, although Church End is a candidate because of the presence of the parish church, there has been too little archaeological investigation in the vicinity to identify a manorial centre with any confidence.

Churches and cemeteries

No churches or cemeteries of this period fell within the study area, although several are known just outside it. The present-day churches of All Saints at Kempston Church End and St James at Biddenham Church End became parish churches in the medieval period.

Other than the cemeteries associated with the churches, the only known late Saxon burial ground is on the site of a house extension at Brook Drive, Kempston, *c.*100m east of the study area. Here, seven inhumations were found, their layout suggesting that they were part of a much larger and ordered cemetery (Dawson 1999, fig. 2). Three of the skeletons were radiocarbon dated to the late 10th century. While no evidence for a church or

even domestic activity was found in the vicinity of the cemetery (Dawson 1999, 117), the excavation area was small and no archaeological work had been undertaken during the construction of the adjacent housing estate. The Brook Drive cemetery was located *c.*600m from Kempston Manor and *c.*1km from Kempston Church End on the south side of the presumed medieval routeway from Green End, via The Bury, to Kempston East End.

Brief mention should be made of an inhumation found *c.*200 years ago apparently beneath a stone slab outside the north door of the brick mansion at The Bury (HER 11588). At the time, a local doctor judged the remains to be those of a 40-year-old male and, apparently on the basis of the teeth, identified them as John Cater, owner of the mansion in the late 18th century. However, there was no independent dating evidence and a non-churchyard burial at this time would be unusual. In addition, John Cater died in Antigua and there is no record of his body being repatriated (CRT 130/KEM 3). Although it has been assumed that the inhumation was contemporary with the brick mansion, it may be earlier. If its location has been recorded accurately, it would be situated just north of the boundary ditch associated with the medieval settlement.

Farming

All the evidence suggests that the majority of the people who lived in or near the study area were engaged in farming. The Parish Registers confirm this to be the case in the 17th and 18th centuries (Wood 1984, 73). Other than documentary records and archaeological evidence for fields, the main evidence for farming comes from the assemblages of charred plant remains and animal bone recovered from the study area.

Plants

Specialist reports included on CD (Section 2; Giorgi) provide the following information.

> Very large quantities of charred plant remains, mainly cereal grains, were recovered from the Saxo-Norman and medieval periods …, all from Land West of Kempston. Free-threshing wheat was the best represented grain, including hexaploid bread wheat (*Triticum aestivum* s.l.) in both periods and tetraploid free-threshing rivet wheat (*Triticum turgidum*) in the medieval period only, together with smaller amounts of (six-row hulled) barley, rye and oats. These are the four main cereals identified in archaeobotanical assemblages from southern England (including other sites in Bedfordshire) from both Saxon (Greig 1991, 315) and medieval sites (Greig 1991, 321), following a similar pattern to the early Saxon period but with the first evidence to suggest that rye was definitely being cultivated by the Saxo-Norman period. Rivet wheat is found on sites in southern England throughout the medieval period but appears to be less common than bread wheat (Moffet 2006, 49), with the earliest records for rivet wheat in Bedfordshire dating from the late Saxon period, from Stratton (Moffet 1996).
>
> *Vicia faba* (broad bean) was identified for the first time along with pea, while *Vicia sativa* (common vetch) and possibly *Lens culinaris* (lentil) were identified in medieval samples. Some of the large numbers of indeterminate legumes (mainly *Vicia*/*Lathyrus* seeds) may also be the residues of cultivated pulses rather than simply weeds. Both pea and bean have been found in other Saxon and medieval deposits from sites in southern England (Greig 1991, 317, 323) while vetch appears to have become more frequent in the medieval period according to both historical and archaeobotanical evidence (Greig 1991, 323). There are few finds of lentil from other sites, suggesting that it may have only been cultivated on a small scale, sometimes forming part of a mixed crop with spring sown cereals (Wilson 1991, 202).
>
> Grasses were also fairly well represented and, together with a few other potential grassland plants, may indicate the management of grasslands for hay fodder/animal bedding or other purposes. Small amounts of hazelnut shell fragments and in the medieval period traces of elder and *Rubus fruticosus/idaeus* (blackberry/raspberry) seeds may represent the residues of collected and consumed wild fruit.
>
> Wheat and rye were the main bread-making grains in the medieval period, although all the different cereals and mixtures (except for oats on their own) may have been used for making bread, biscuits and cakes or added to pottage (Campbell *et al.* 1993, 25). Barley and oats were also used for animal feed and brewing (as was occasionally wheat). Beans, peas and common vetch were principally grown as fodder but were sometimes used together with cereals for bread especially following poor cereal harvests, while pulses (including lentils) were used in pottage (Wilson 1991, 201–2).
>
> A range of similar potential arable weeds in both periods included the first significant representation of *Anthemis cotula*, a weed indicative of waterlogged loams and clay soils which may represent arable expansion onto heavier (base rich clay) soils, a move facilitated by the introduction of the mouldboard plough in the Saxon period. This may be associated with the cultivation of free-threshing wheat, bread wheat being typically associated with deep clay loams (Jones 1981, 106), while beans also grow best on clay soils (Barker 1985, 46). *Anthemis cotula* was also common in other late Saxon and medieval sites from Bedfordshire, as, for example, in clay soils around Great Barford, where hexaploid wheat was being cultivated in the late Saxon period (Druce 2007, 371). Many of the other weeds (similar to earlier periods), however, suggest the continued exploitation of sandy gravels and alluvial deposits nearer the river. Several weeds also point to the spring and autumn sowing of crops; in the medieval period bread wheat and rye were mainly autumn sown, barley and oats grown in both spring and autumn, and only rivet wheat exclusively winter sown (Moffet 2006, 47). There is tentative evidence in the medieval period for harvesting of cereals by uprooting.
>
> All the Saxo-Norman and medieval charred plant assemblages were from the same area in Land west of Kempston, with both periods containing fairly similar and rich botanical assemblages, suggesting that similar agricultural practices were taking place there during both periods. There were a number of rich (mainly free-threshing wheat) charred grain deposits which may possibly be an indicator of the large-scale production and consumption of cereals. Whether the presence of these rich grain assemblages is a reflection of an organised (manorial) centre receiving grains from outlying areas is impossible to establish, but the predominance of free-threshing wheat grain for the first time, and the large numbers of *Anthemis cotula* seeds, suggests the expansion of cultivation into the clay soils in this area, although with other weed seed evidence to suggest the continued exploitation of lighter alluvial and gravel soils nearer the river.

Animals

Domesday Book records oxen for both Biddenham and Kempston, but only pig in the latter, presumably owing to the presence of woodland. In terms of the animal bone assemblage. Further information is available on CD Section 2, Maltby.

> ... whether the high percentage of pig [within Land west of Kempston] represents a continuation in the increasing importance of this species in the diet, as tentatively suggested for the early Saxon period, is uncertain.
>
> Unfortunately the animal bone assemblage is too small to indicate the range of animals present at this time but it presumably included cattle, sheep and chicken. In addition, the assemblage cannot indicate whether 'any significant changes had taken place in animal exploitation in this area in the late Saxon and early Norman period.
>
> The absence of wild species should perhaps be noted, but they were not always present on sites from [the early Saxon period] either.

Venison, hare, rabbit, pheasant, partridge, geese, swans, pigeons, doves and ducks tended to be the food of the higher classes, so their absence from settlement

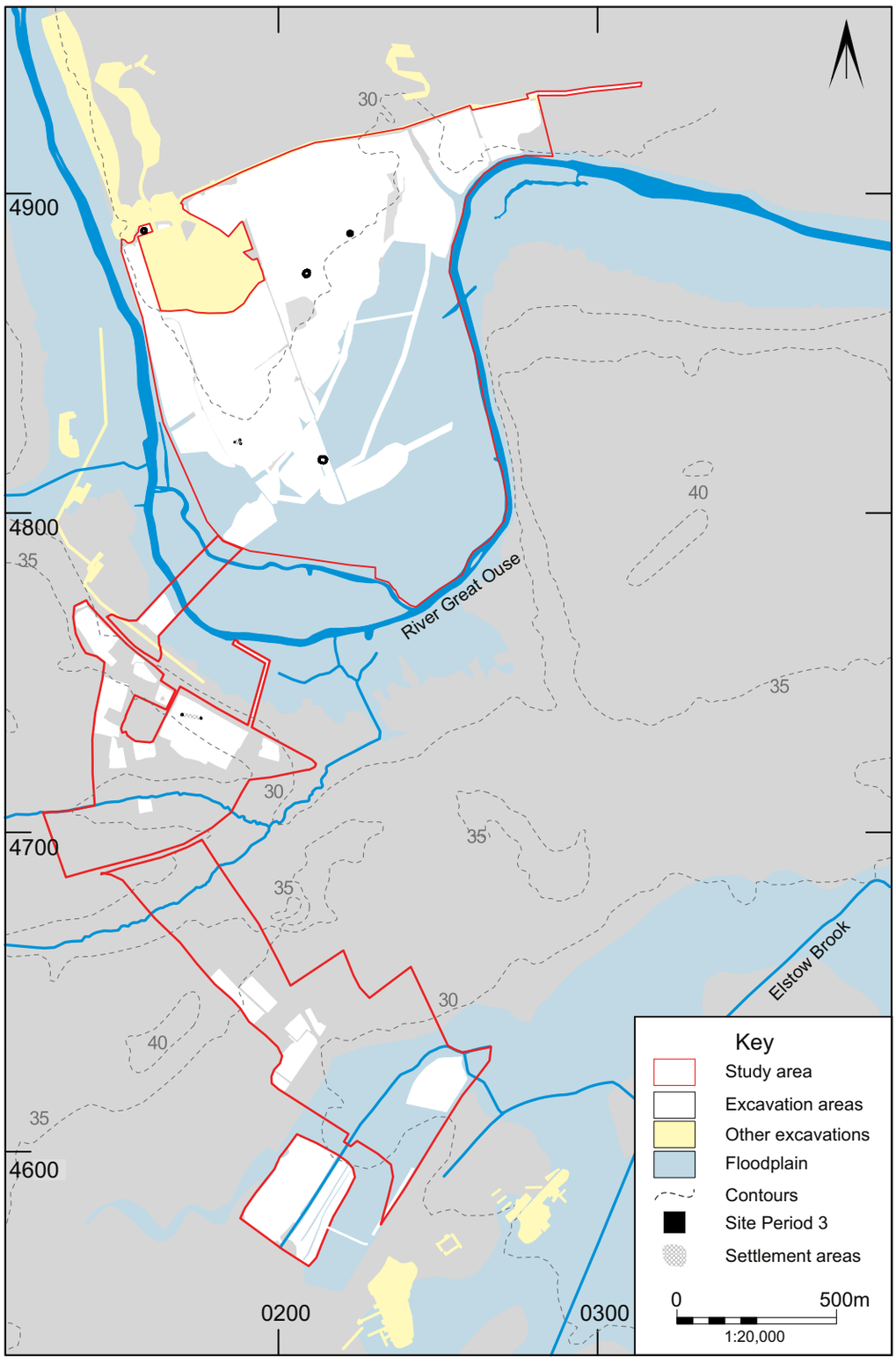
SL172, adjacent to The Bury, which is often proposed as the site of a manorial complex, may be significant.

'The assemblage does show that the carcases of horses, cats and dogs were treated differently to those of the major meat producers' (CD Section 2; Maltby).

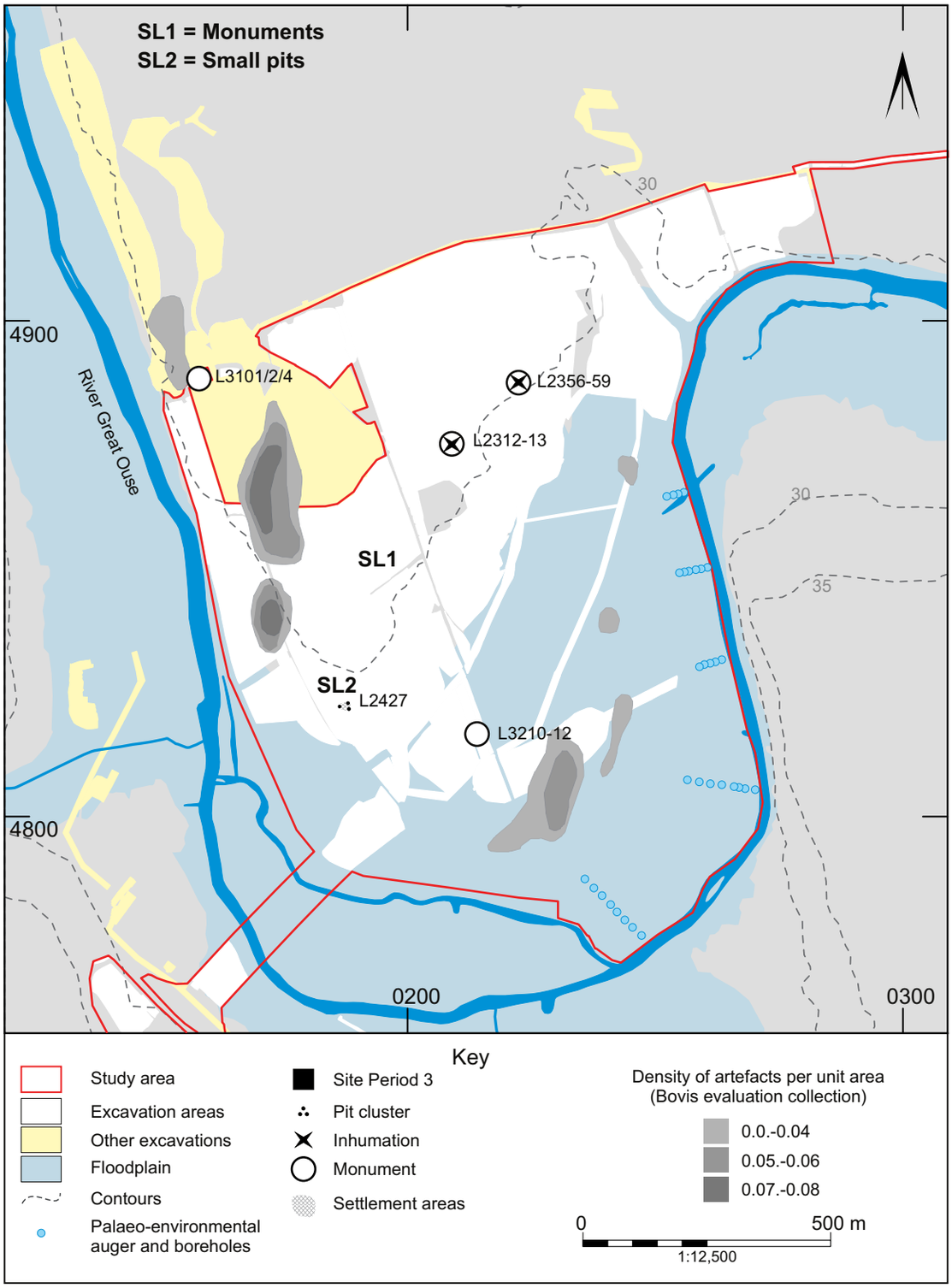
Other occupations

The historical and archaeological evidence from the study area and its vicinity highlights the presence of mills from the late Saxon period and quarries in the post-medieval period, indicating that not all the population was engaged in farming. By the early 18th century the range of occupations had increased to include 'shoemakers, lacemen, maltsters, hempdressers (preparers of hemp for rope-making), grocers and scriveners (clerks). In the second decade of the century, servants and coachmen appear: perhaps they were part of the Cater household' (Wood 1984, 73). John Cater owned the brick mansion at The Bury but, as the archaeological evidence demonstrates, that building was just part of a long line of settlements that had existed in this location since the early Saxon period.

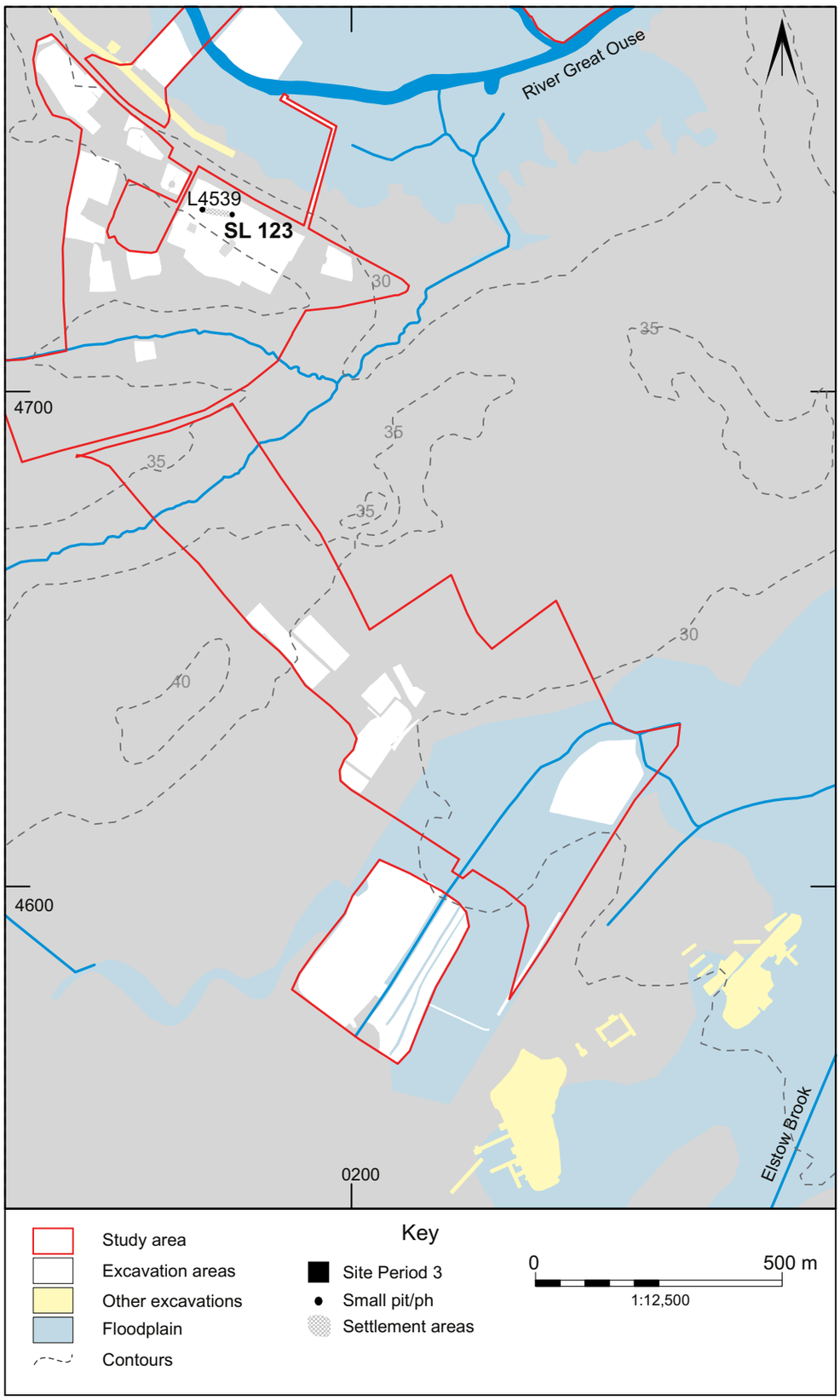
Appendix: Site Period Plans



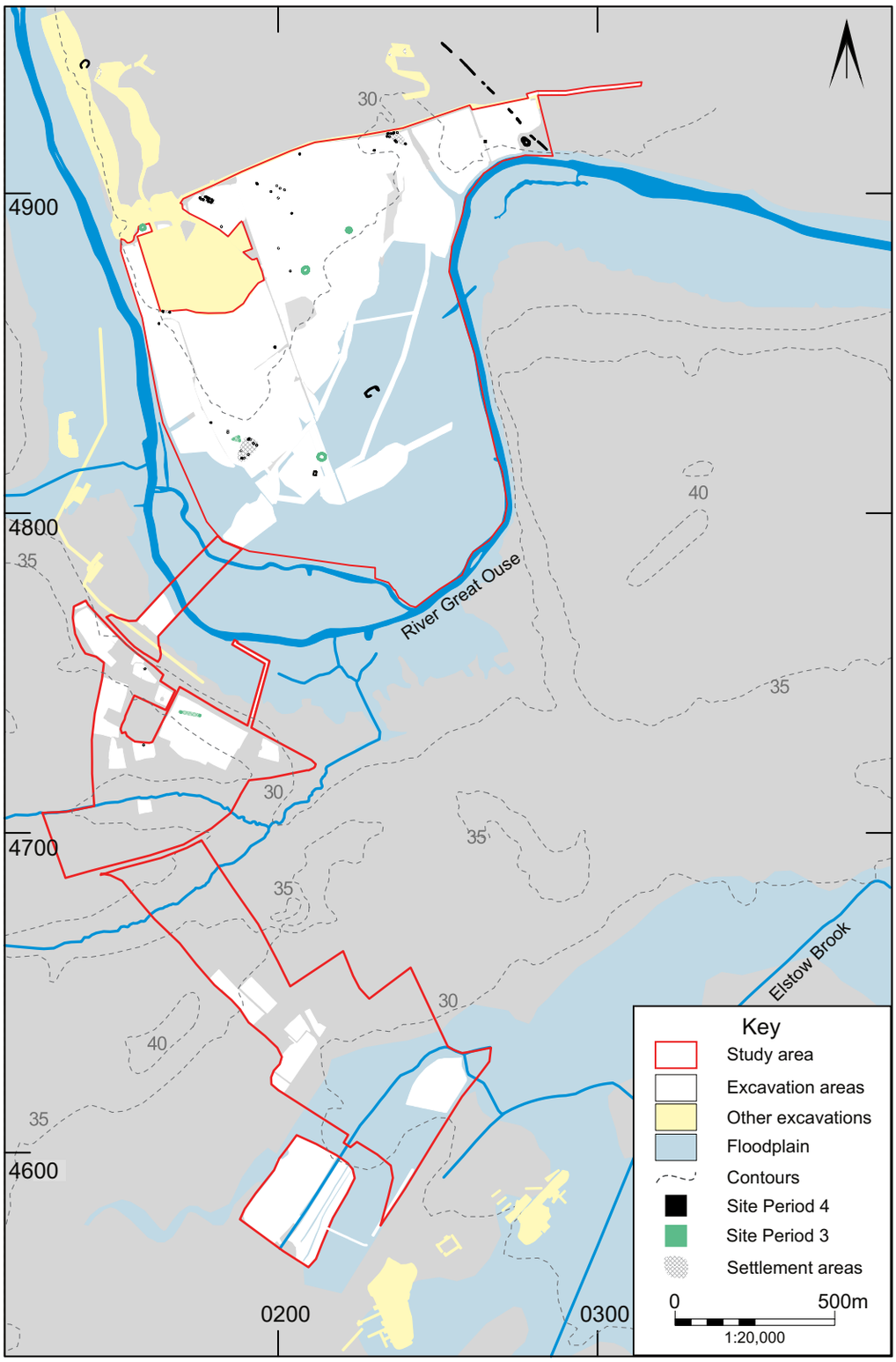
SP3. Early Neolithic



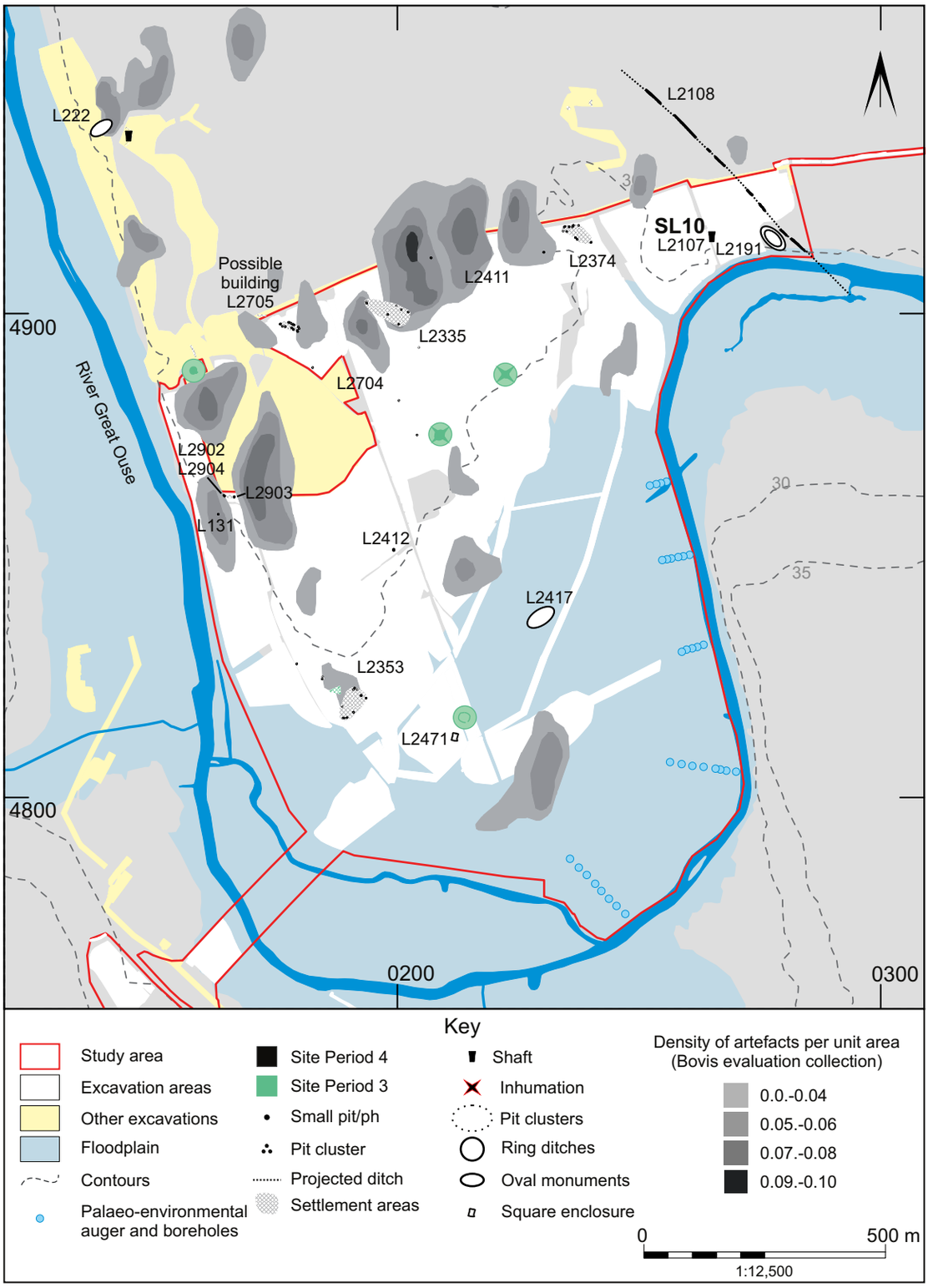
SP3. Early Neolithic Biddenham Loop



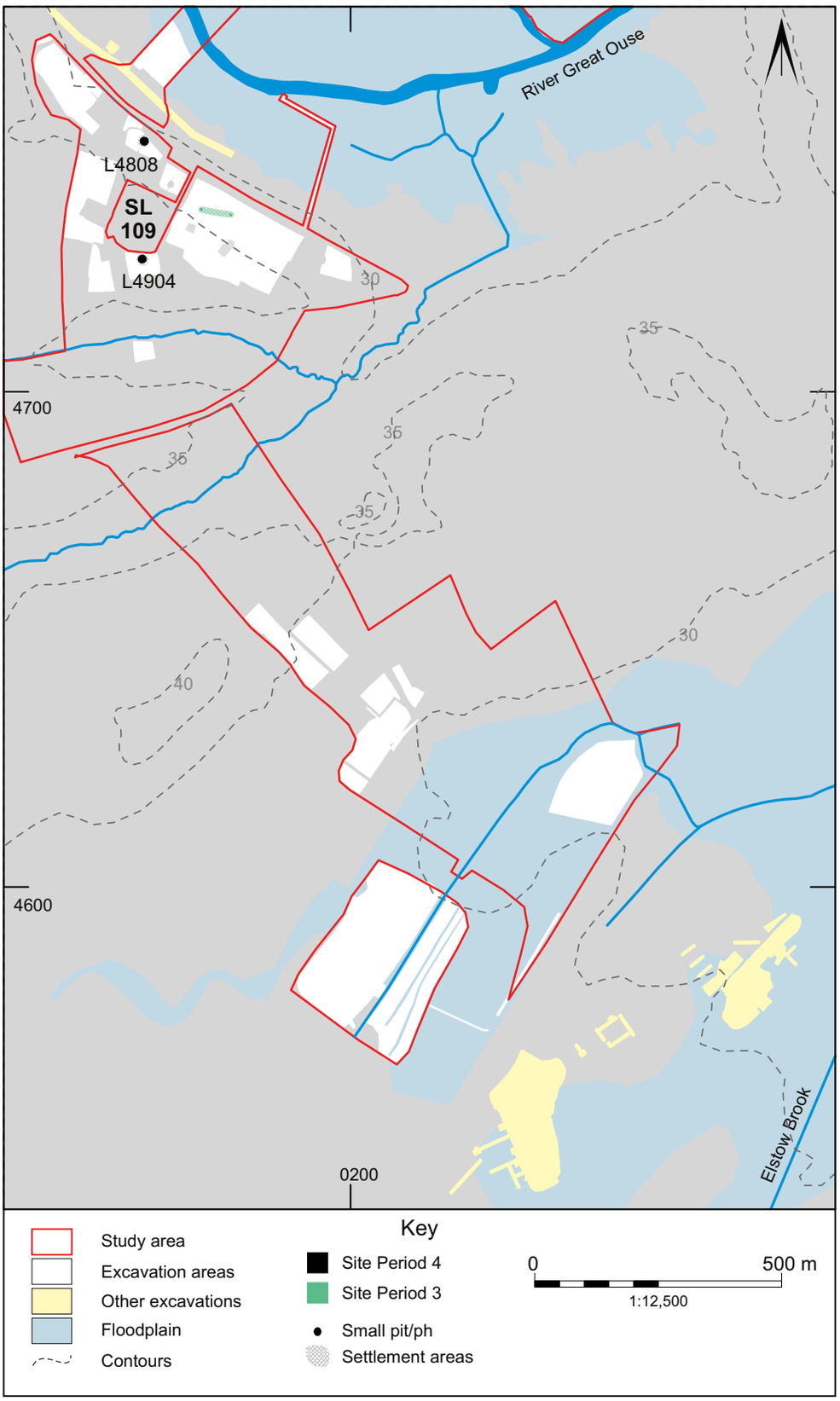
SP3. Early Neolithic Land west of Kempston



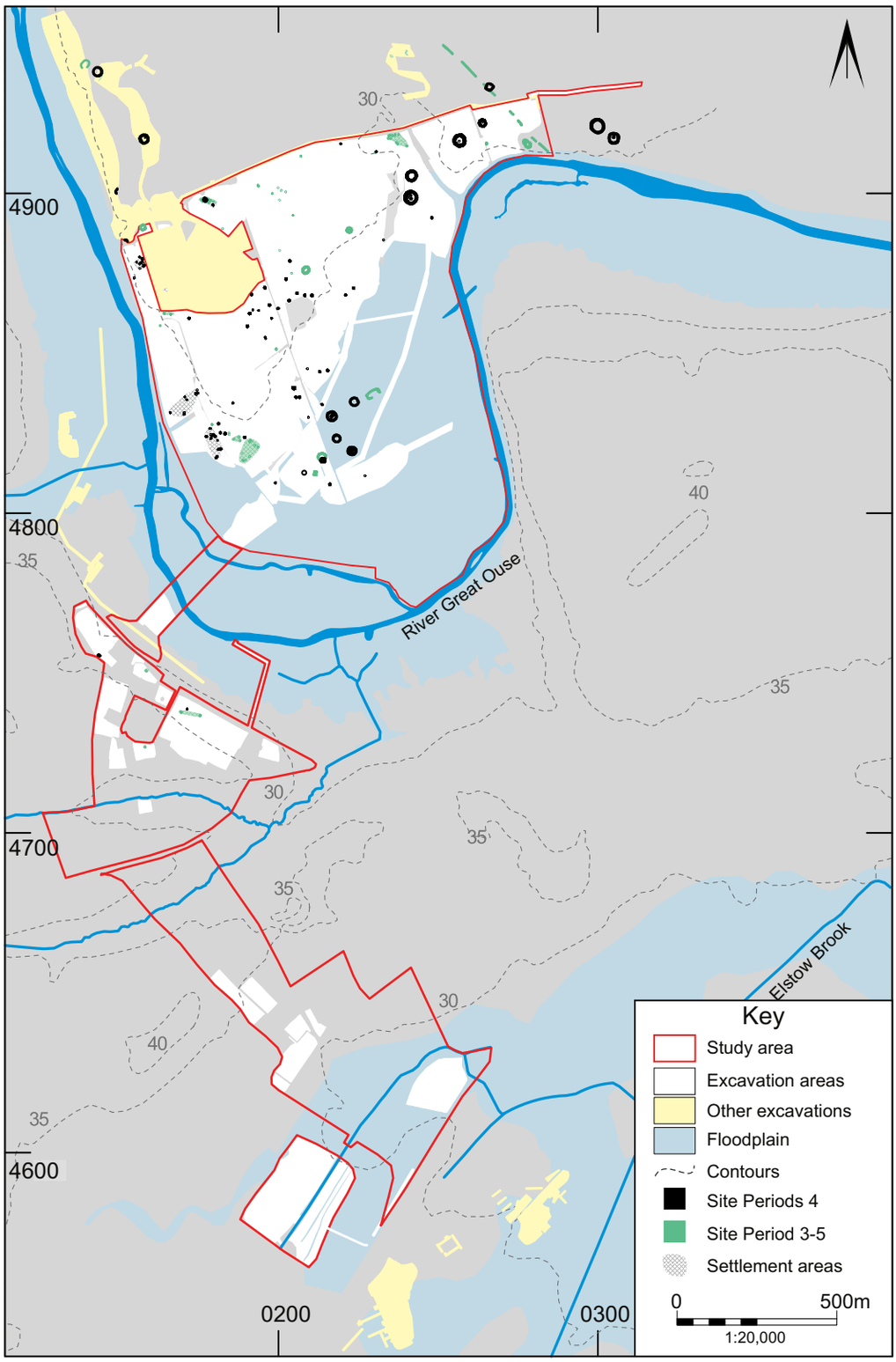
SP4. Later Neolithic



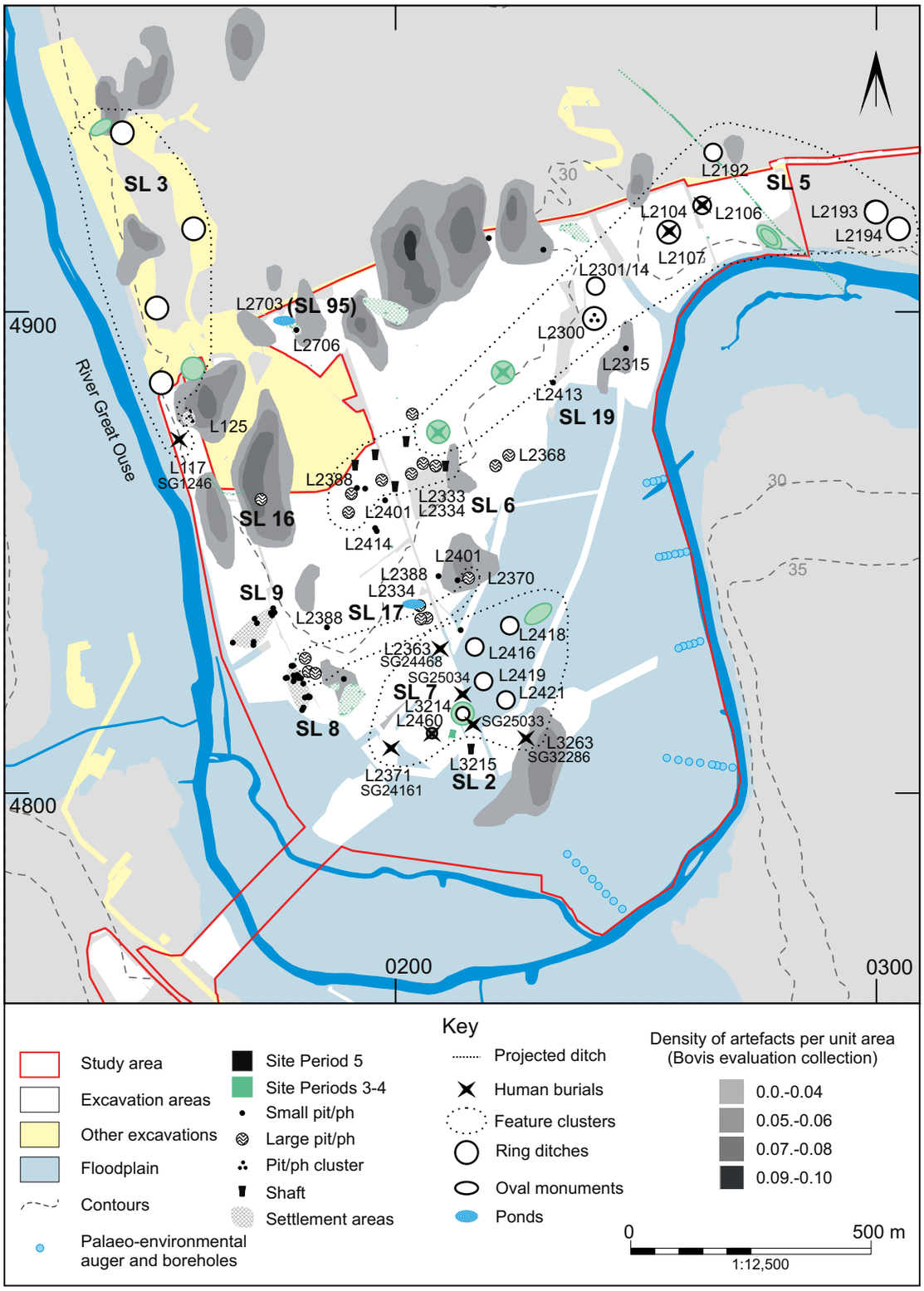
SP4. Later Neolithic Biddenham Loop



SP4. Later Neolithic Land west of Kempston



SP5. Early Bronze Age



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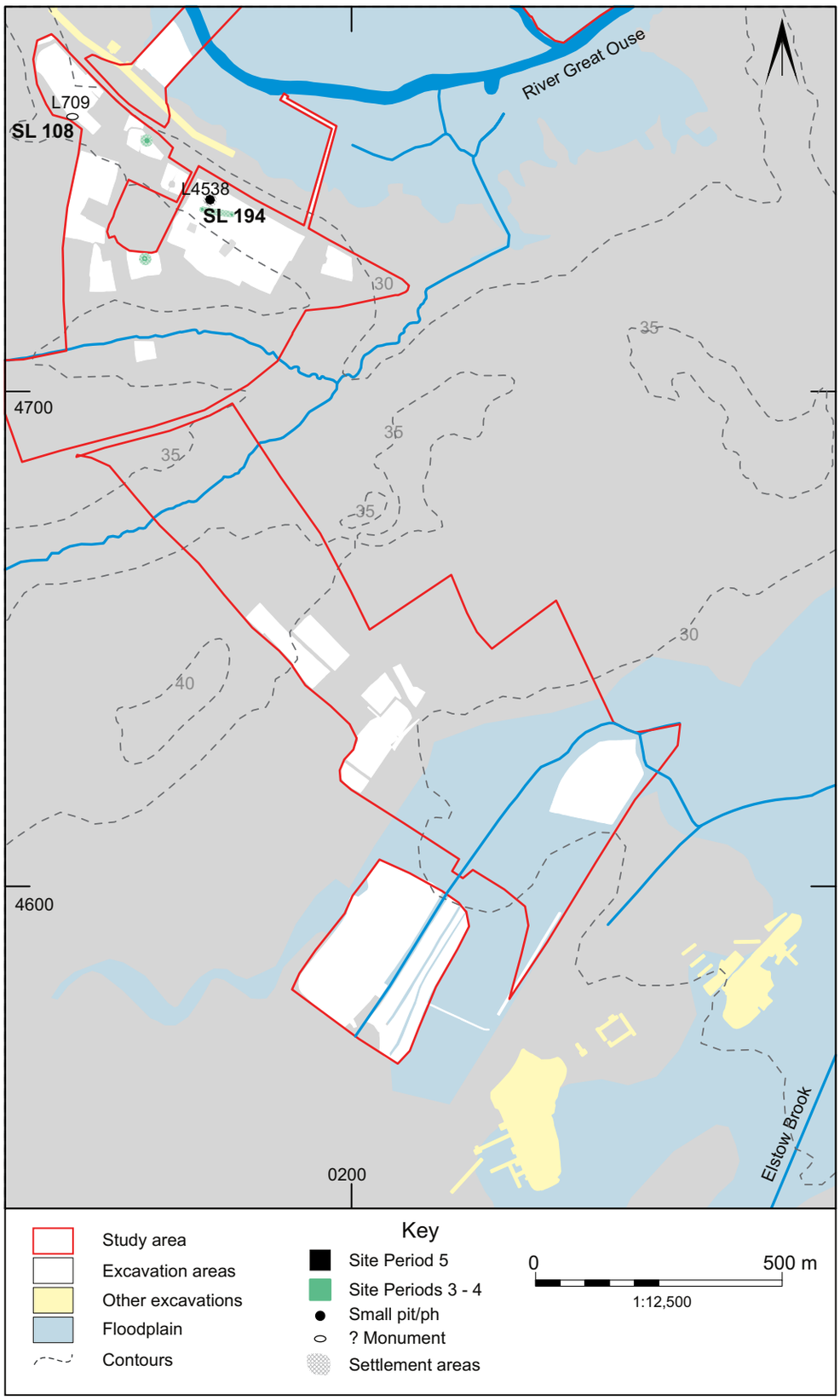

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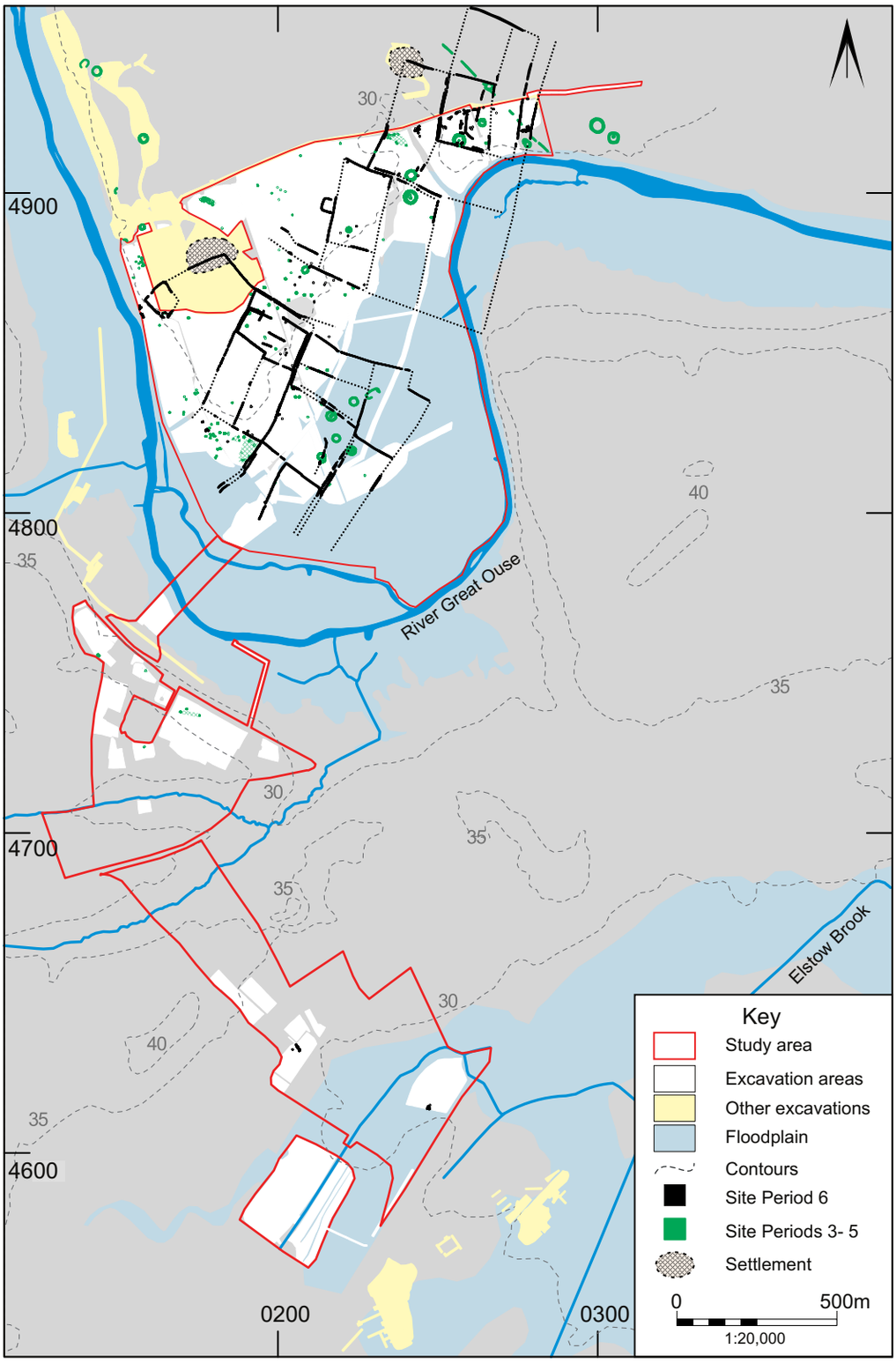
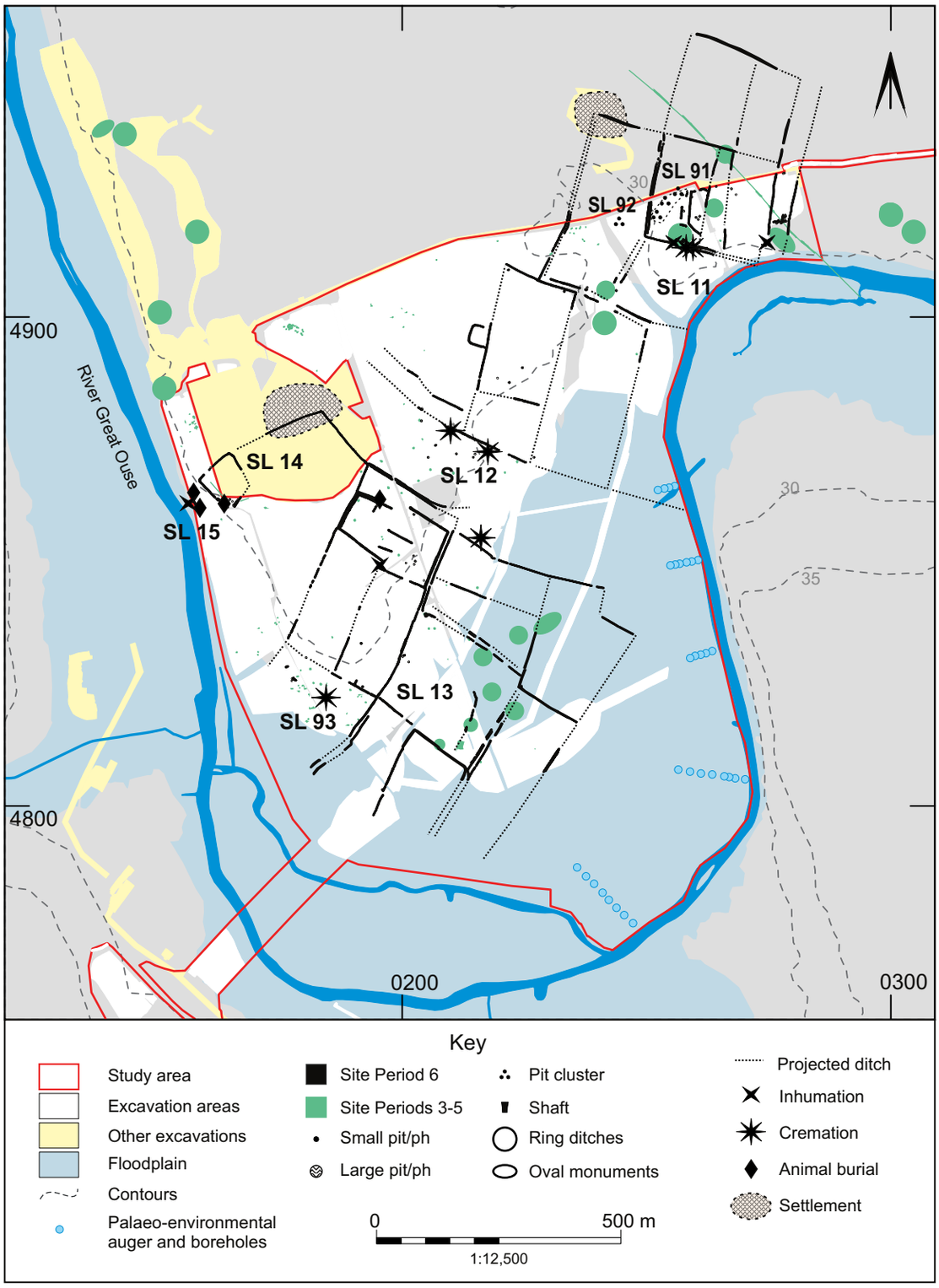


SP6. Middle Bronze Age



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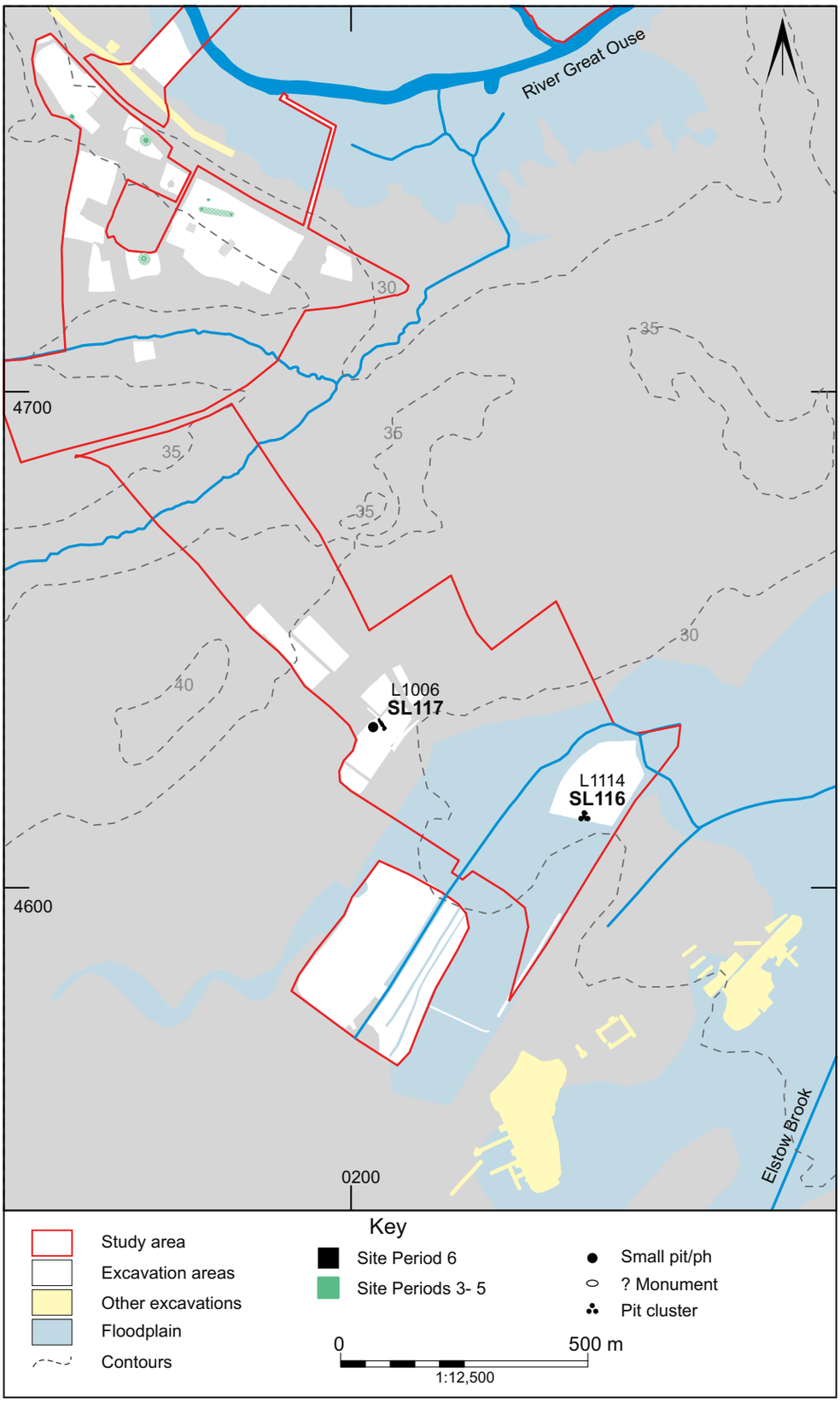

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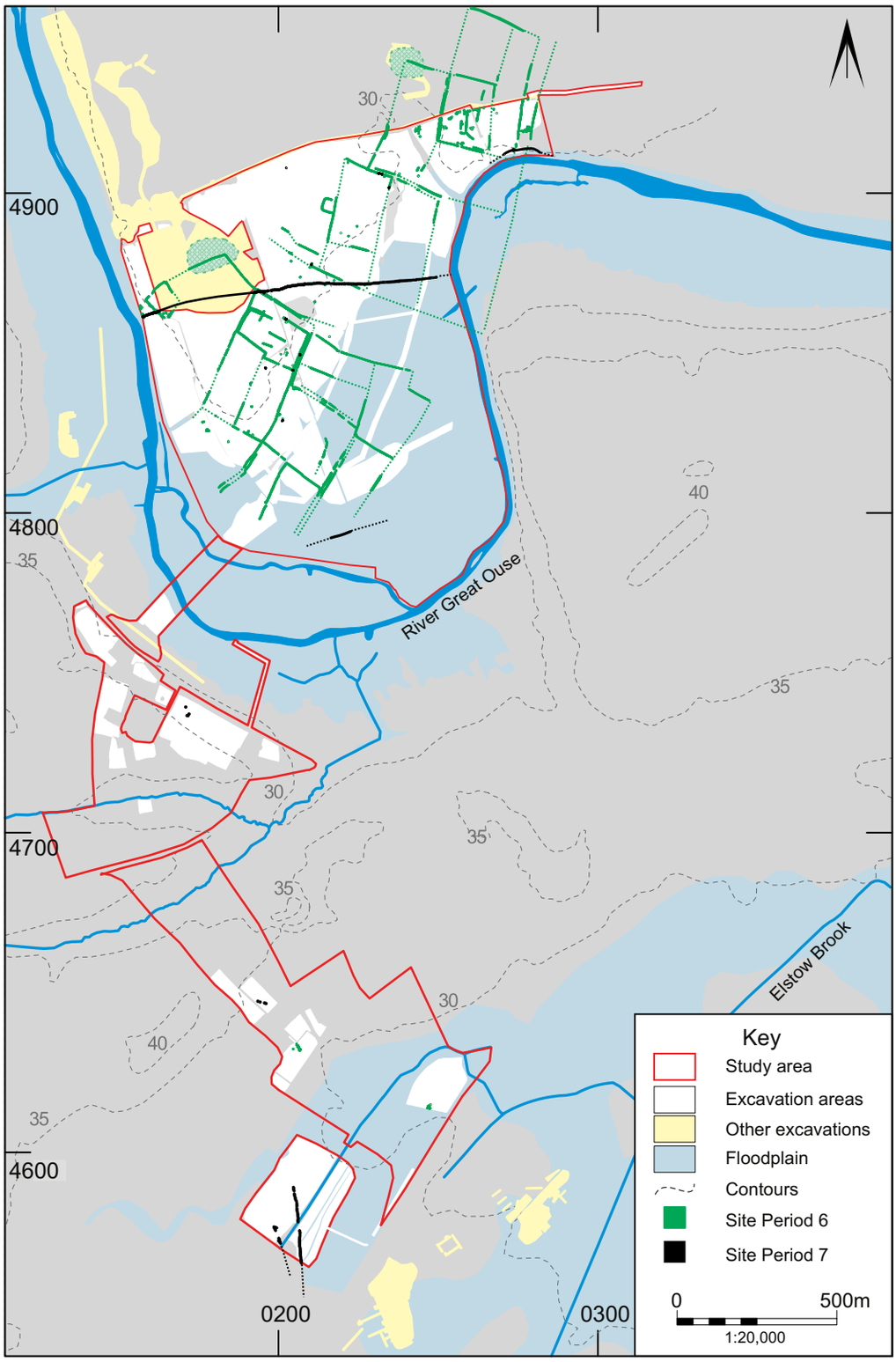
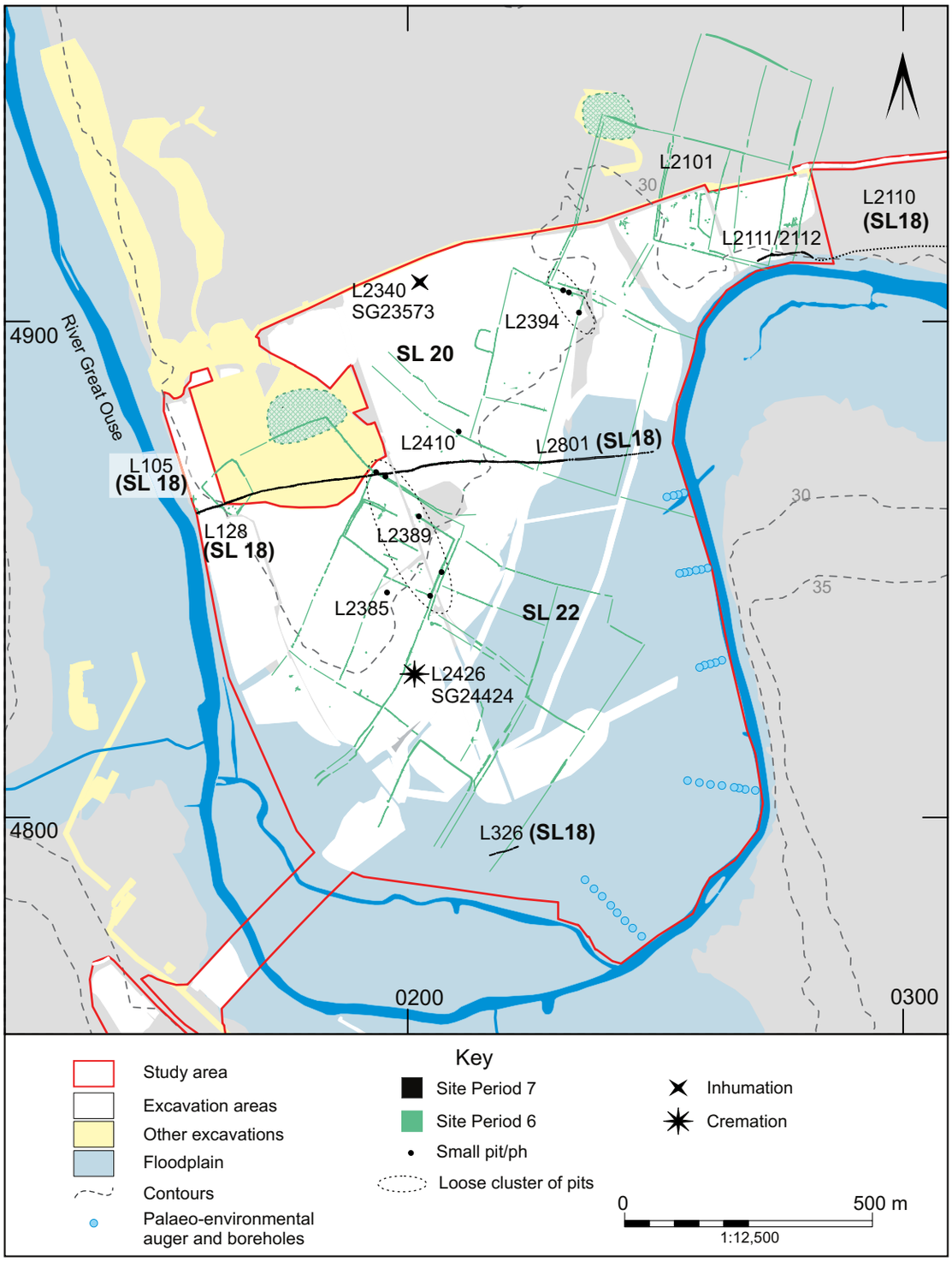


SP7. Late Bronze Age/early Iron Age



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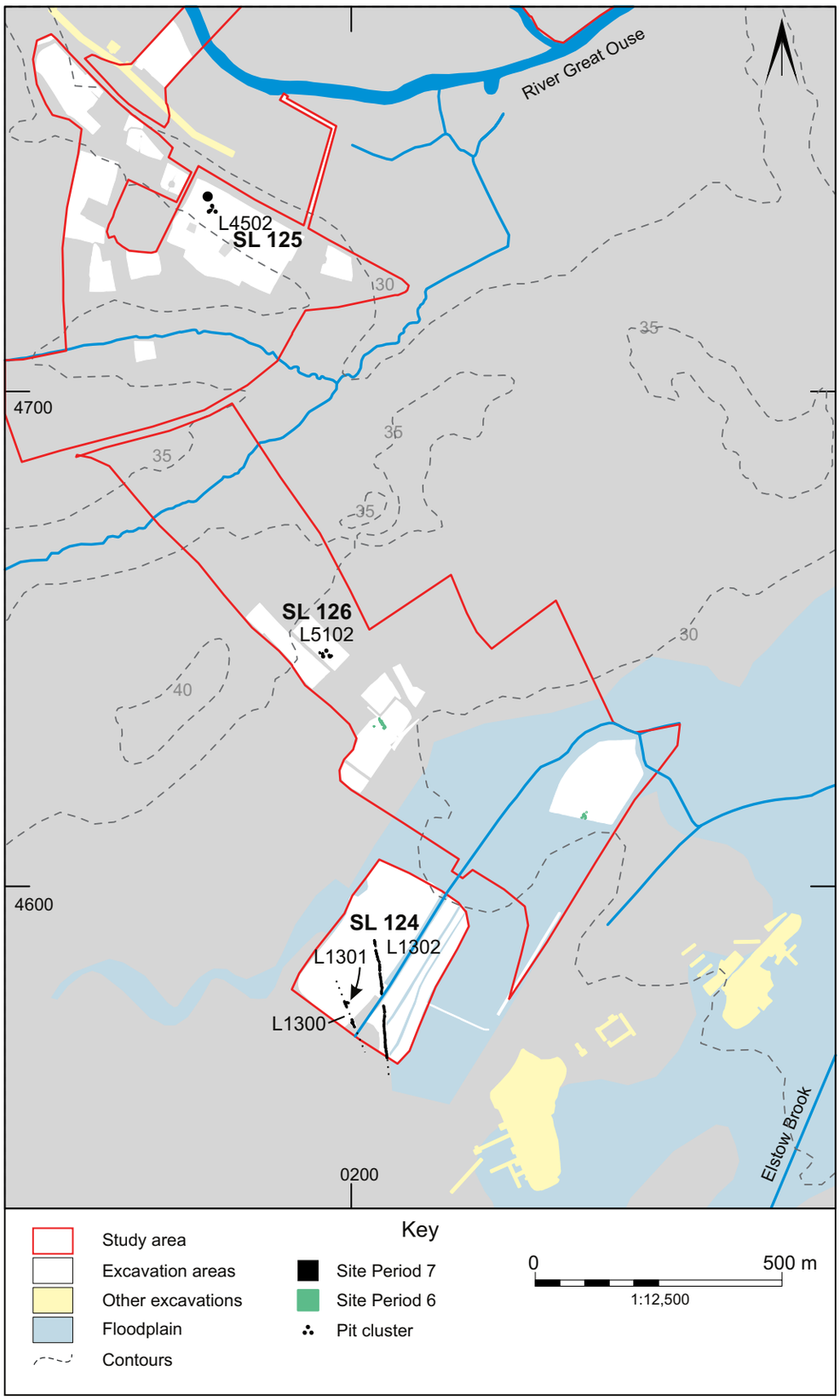

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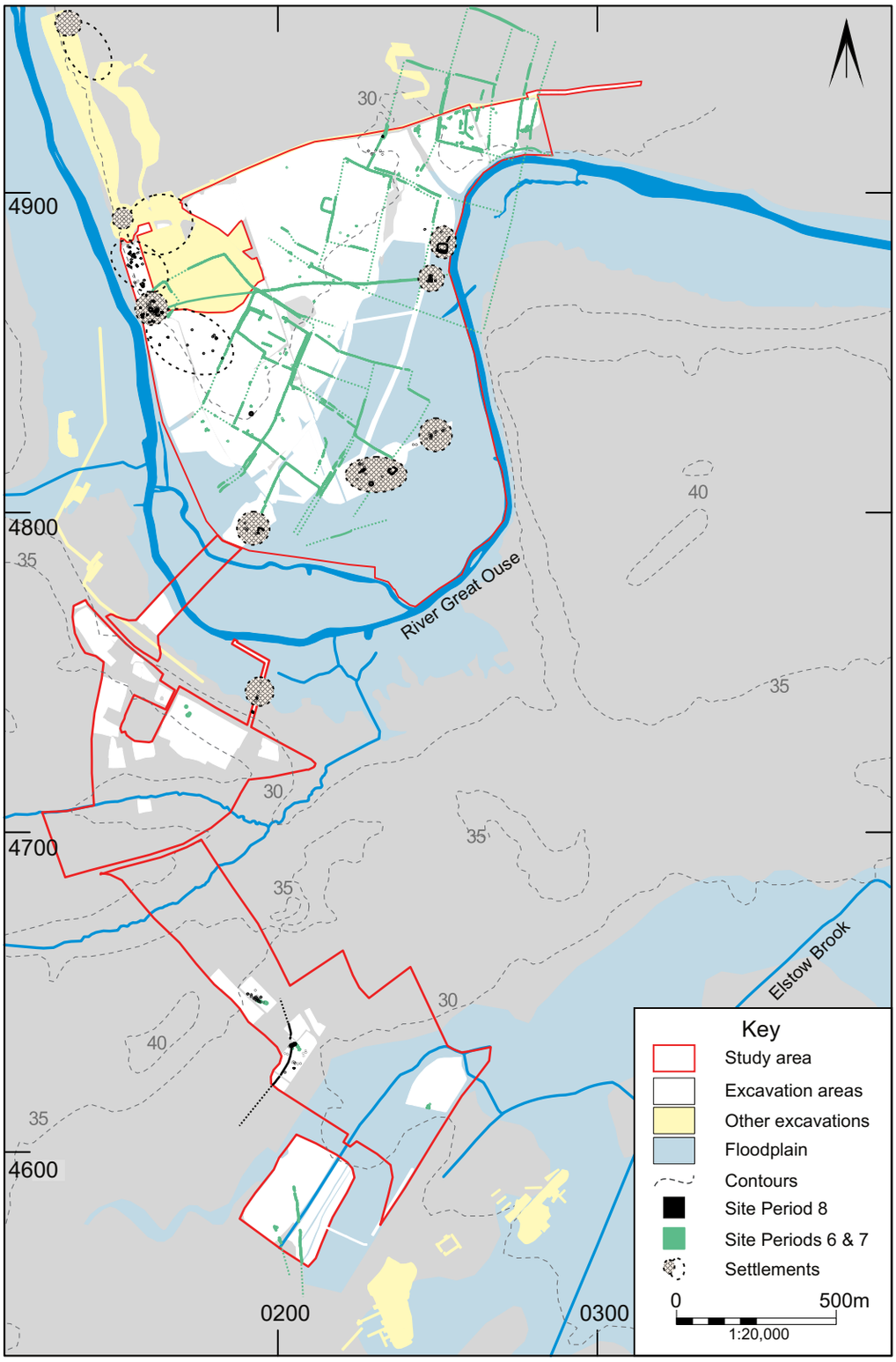
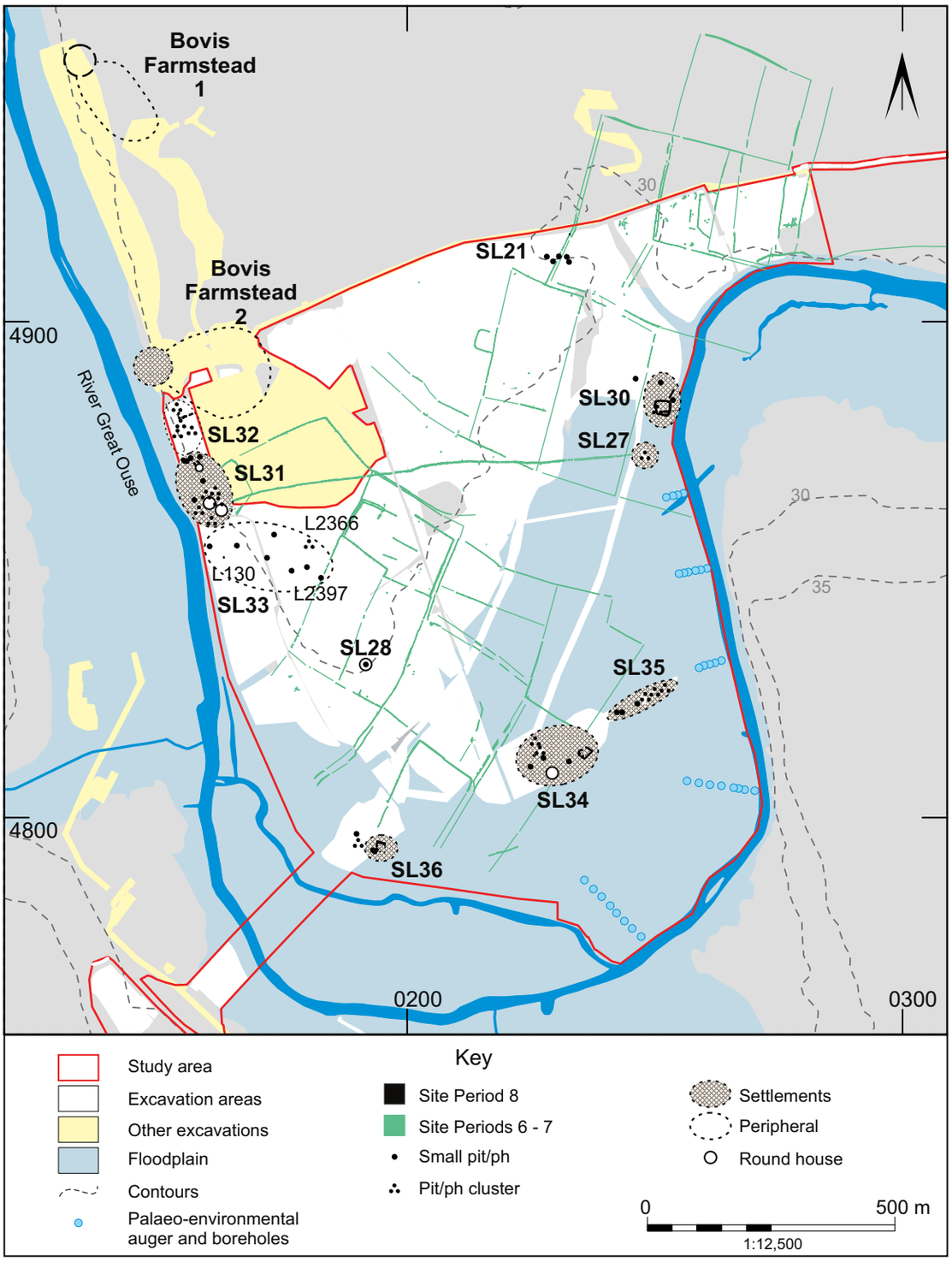


SP8. Middle Iron Age



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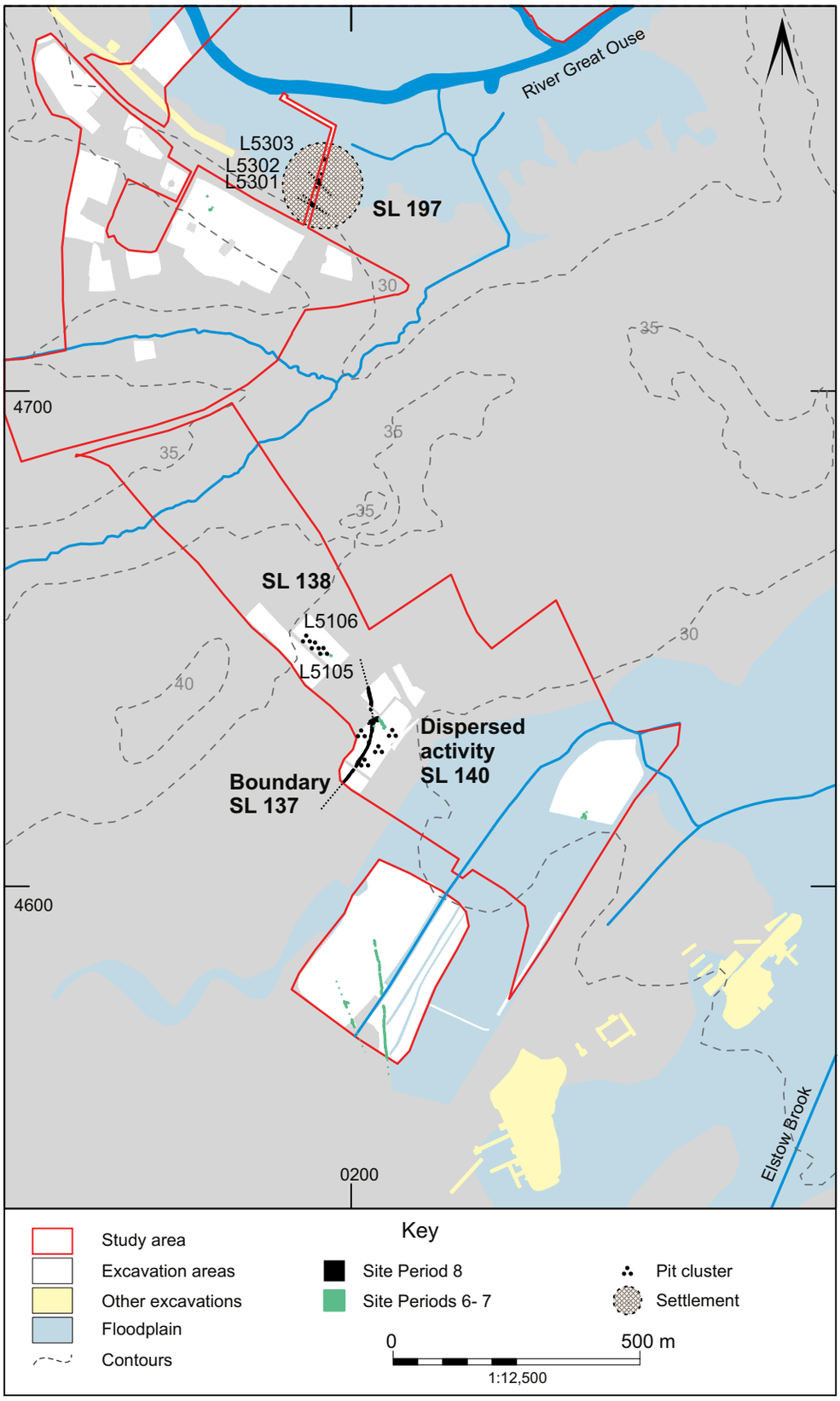

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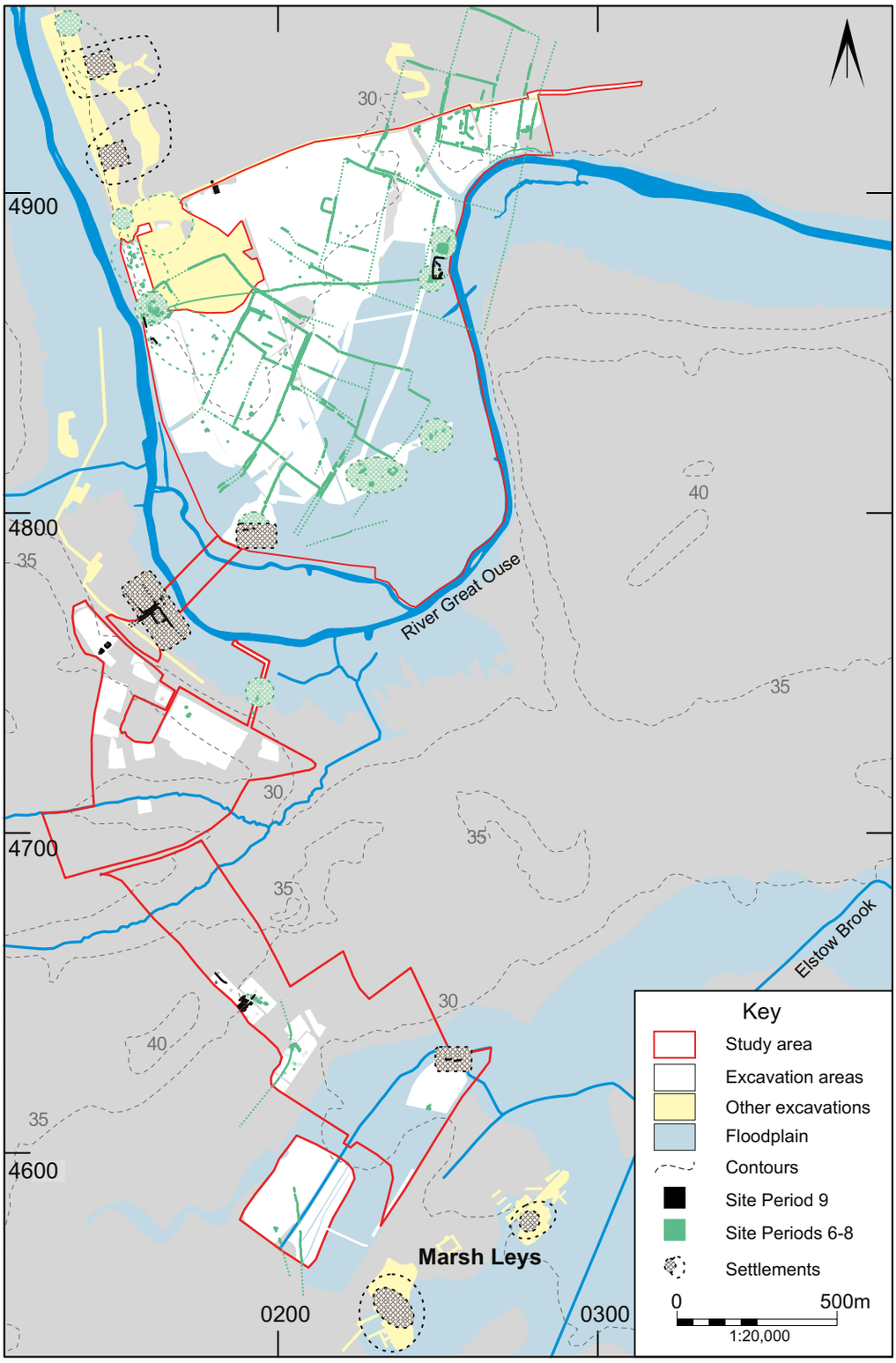
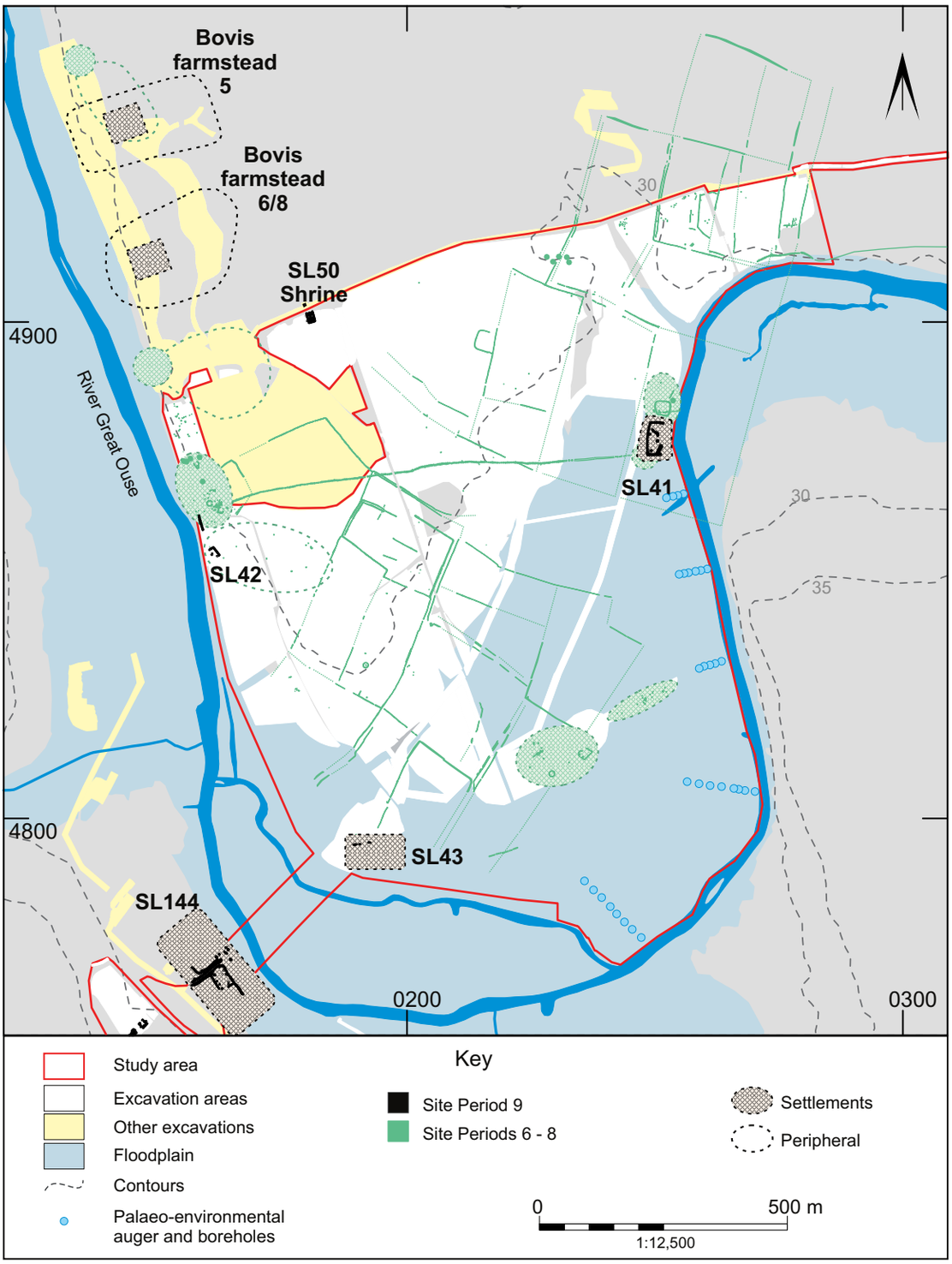


SP9. Late Iron Age/early Romano-British



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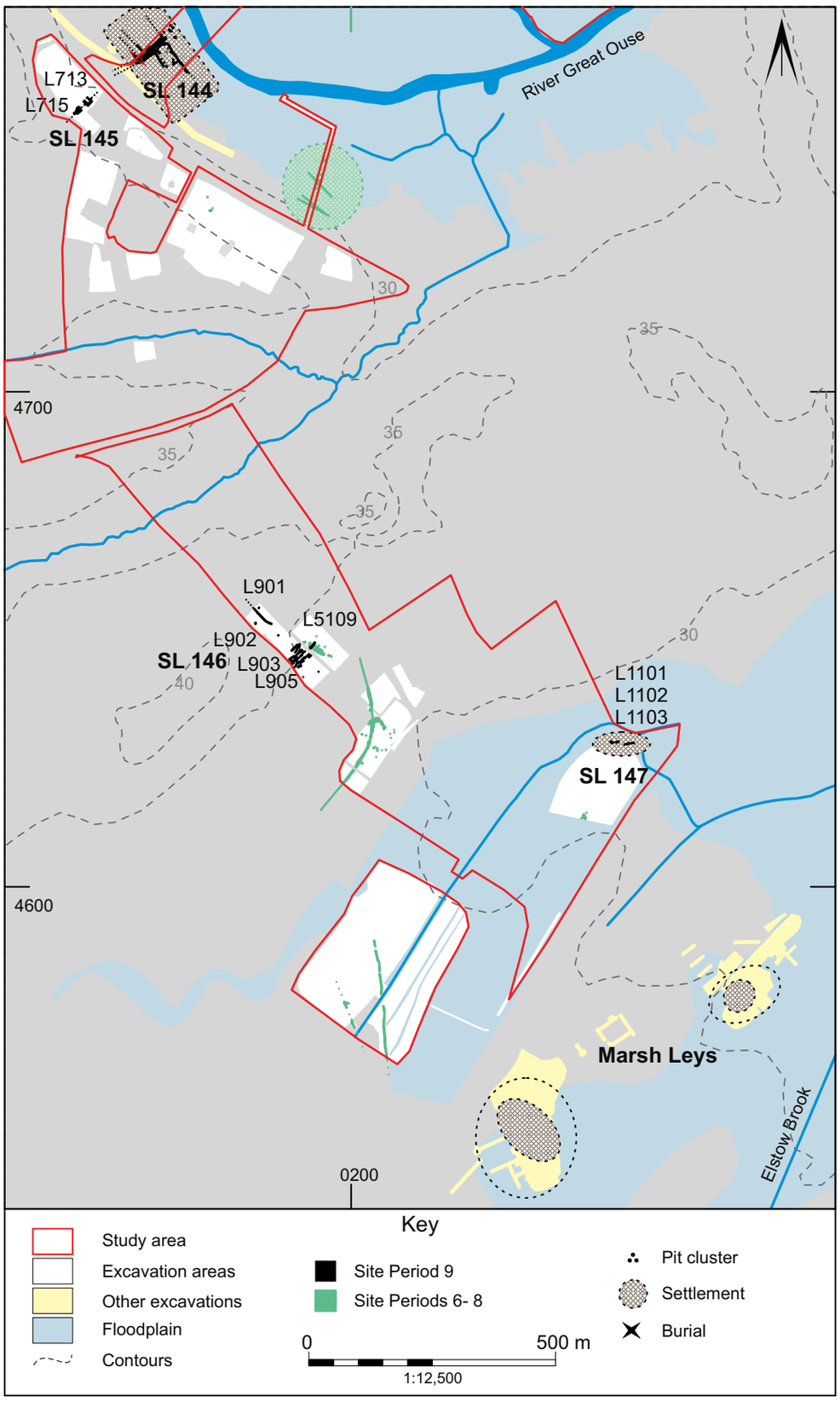

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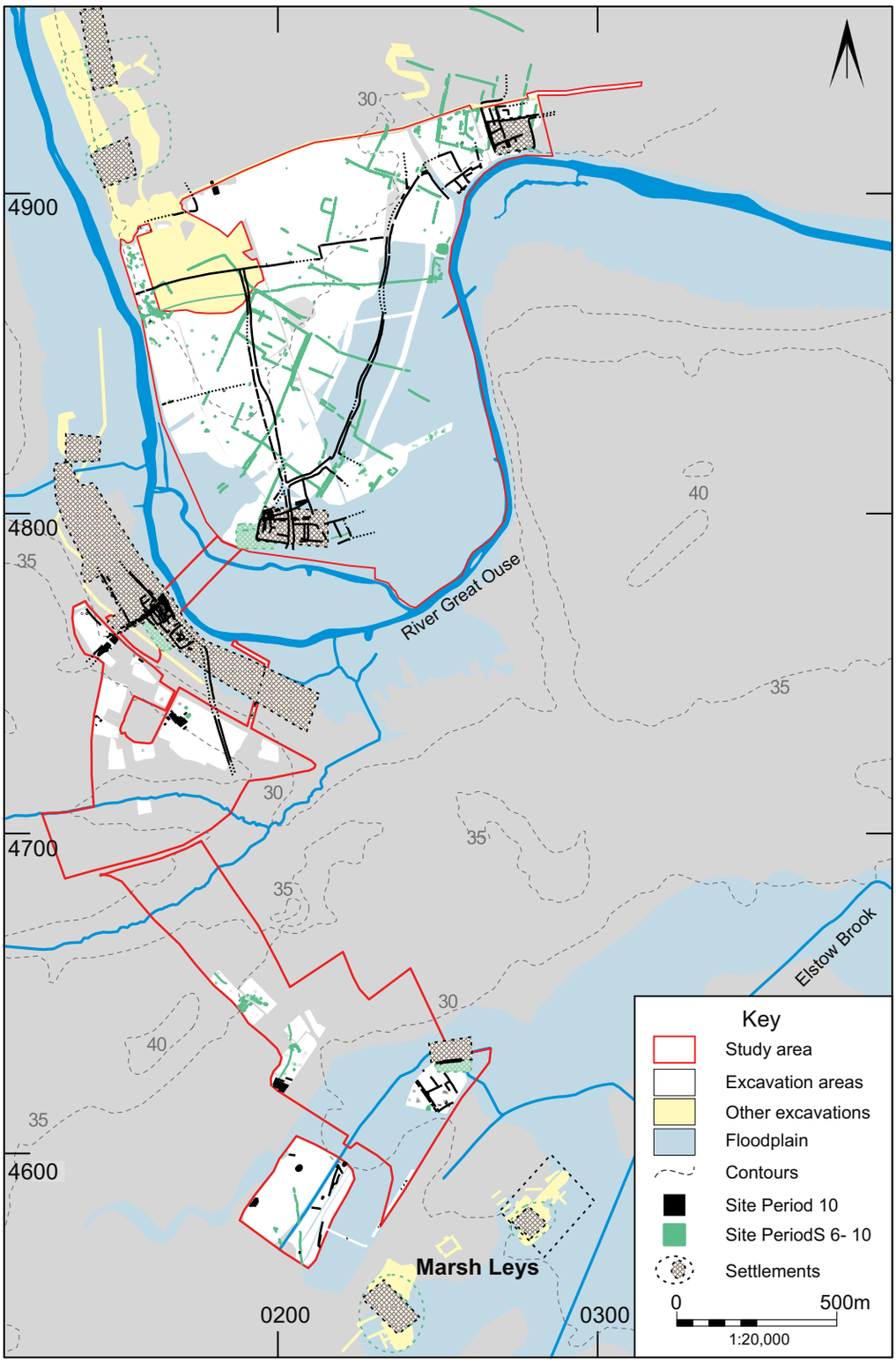
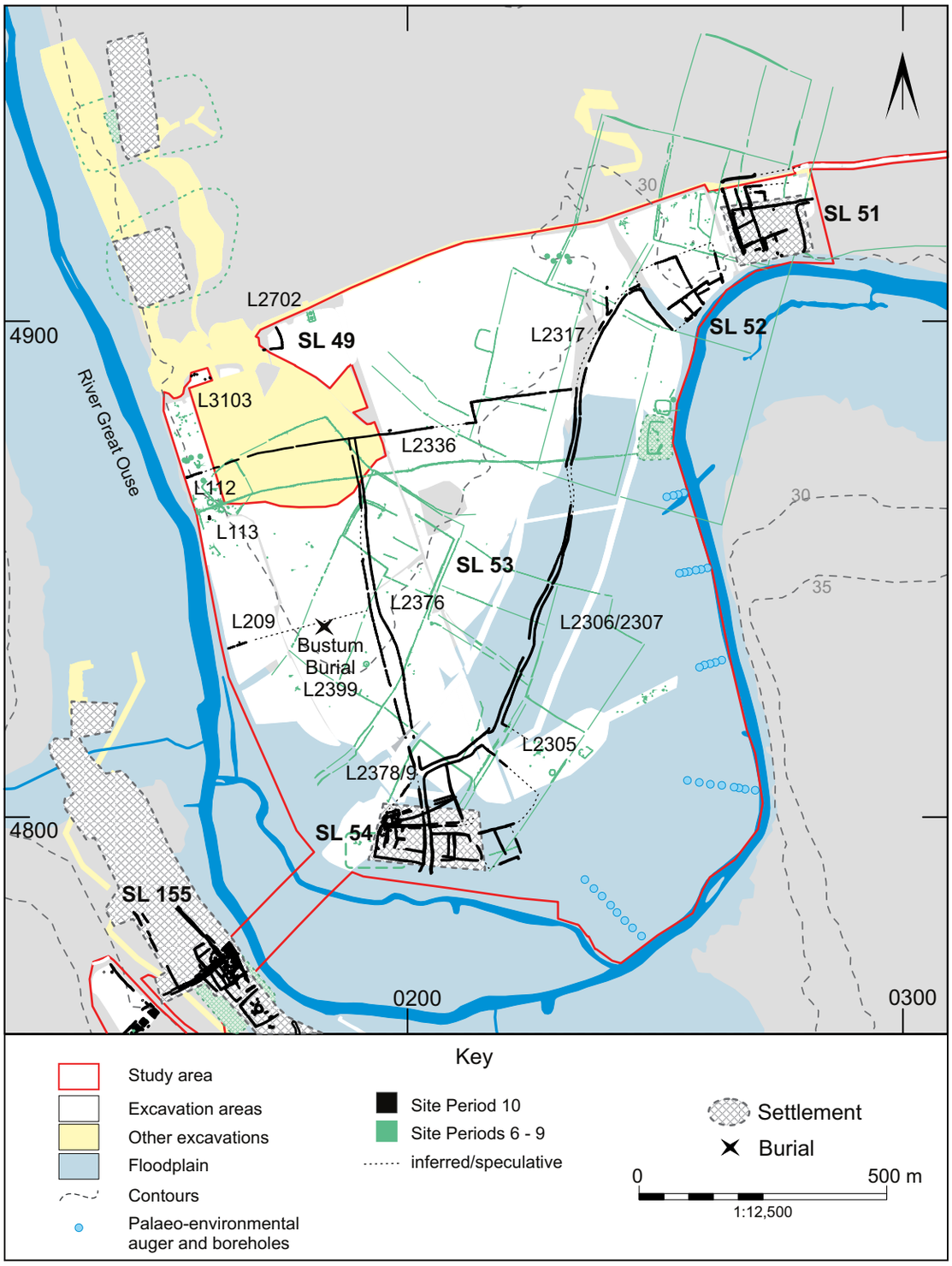


SP10. Romano-British



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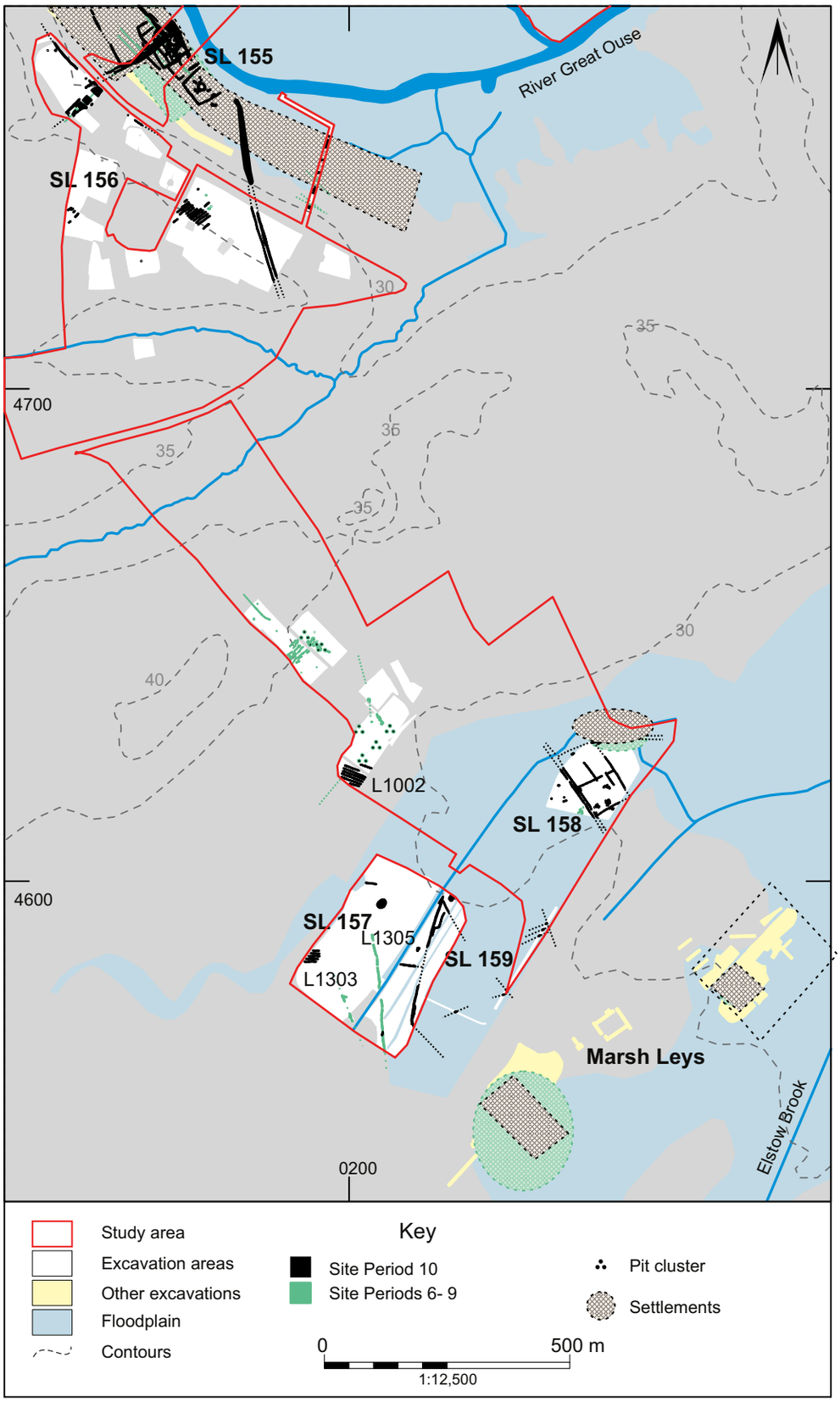

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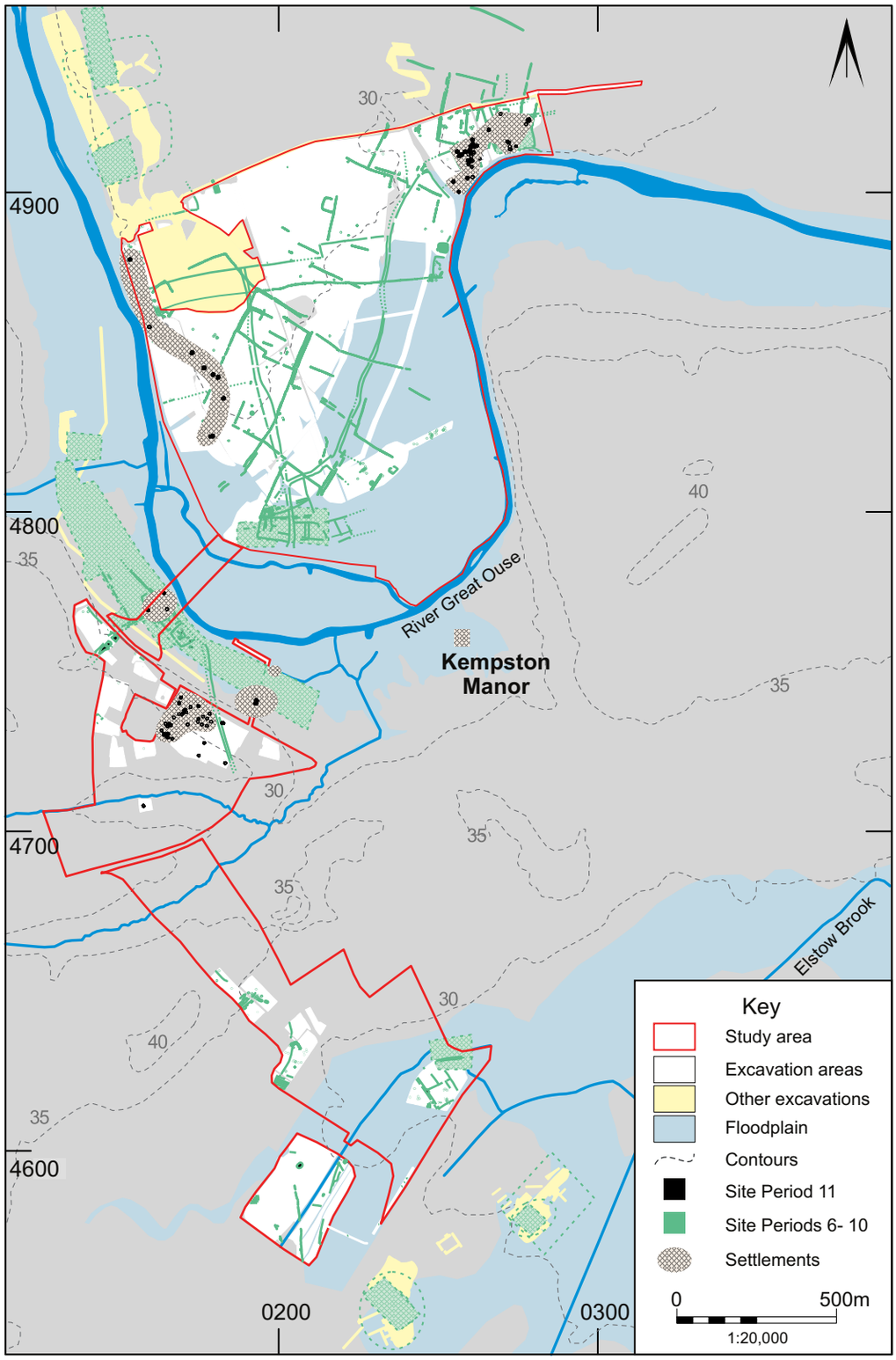
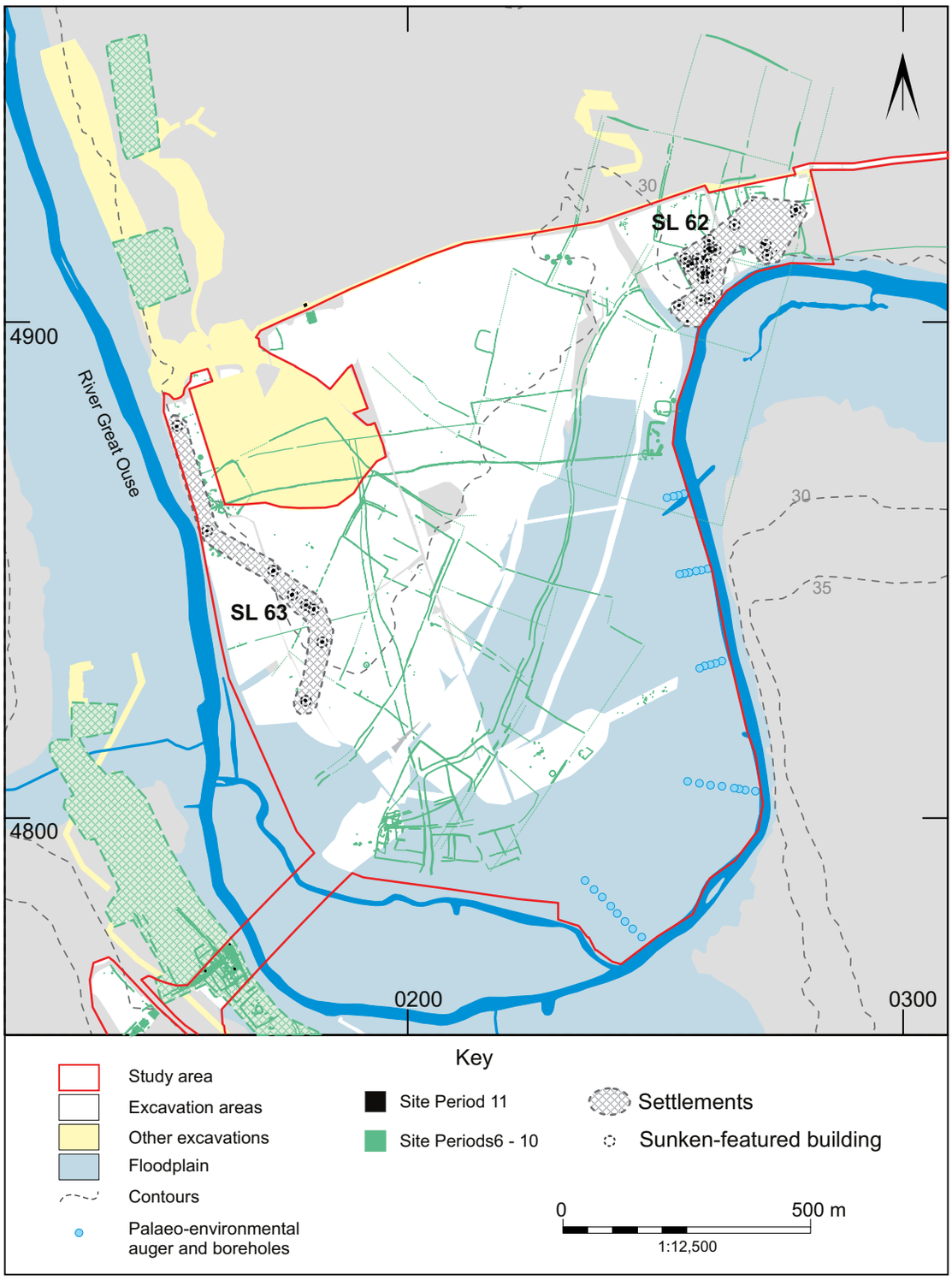
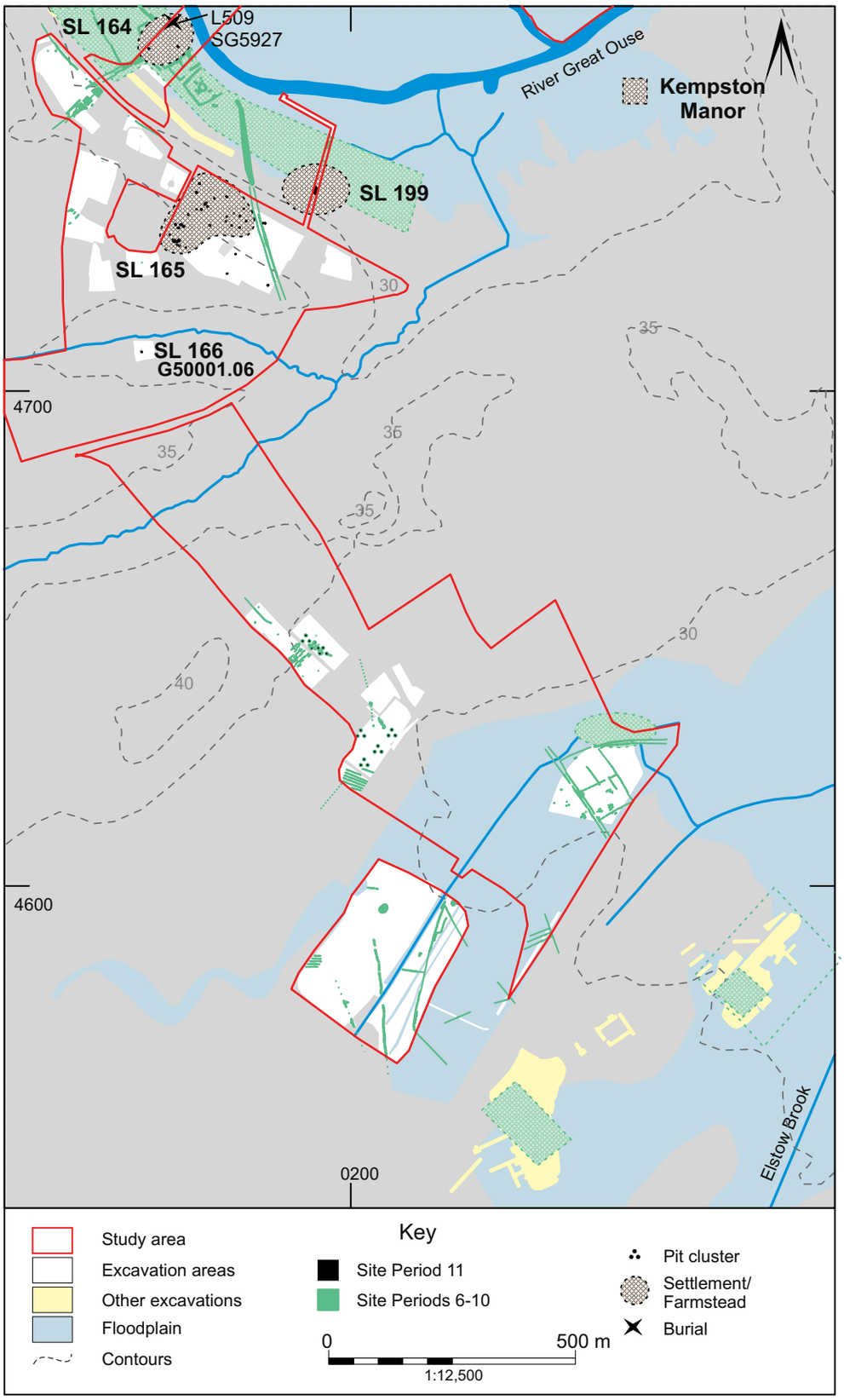


SP11. Early Saxon



SP11. Early Saxon Biddenham Loop



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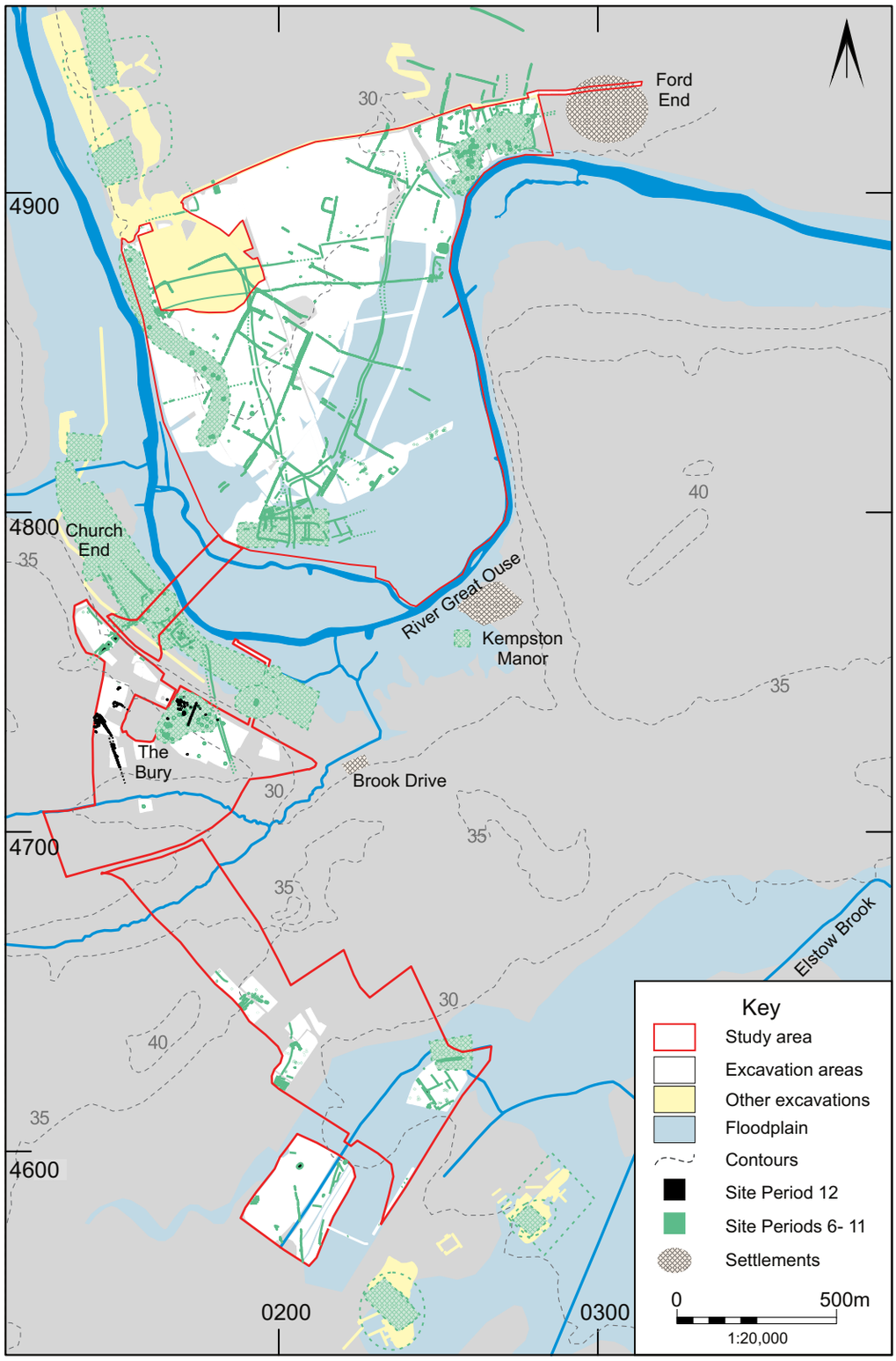
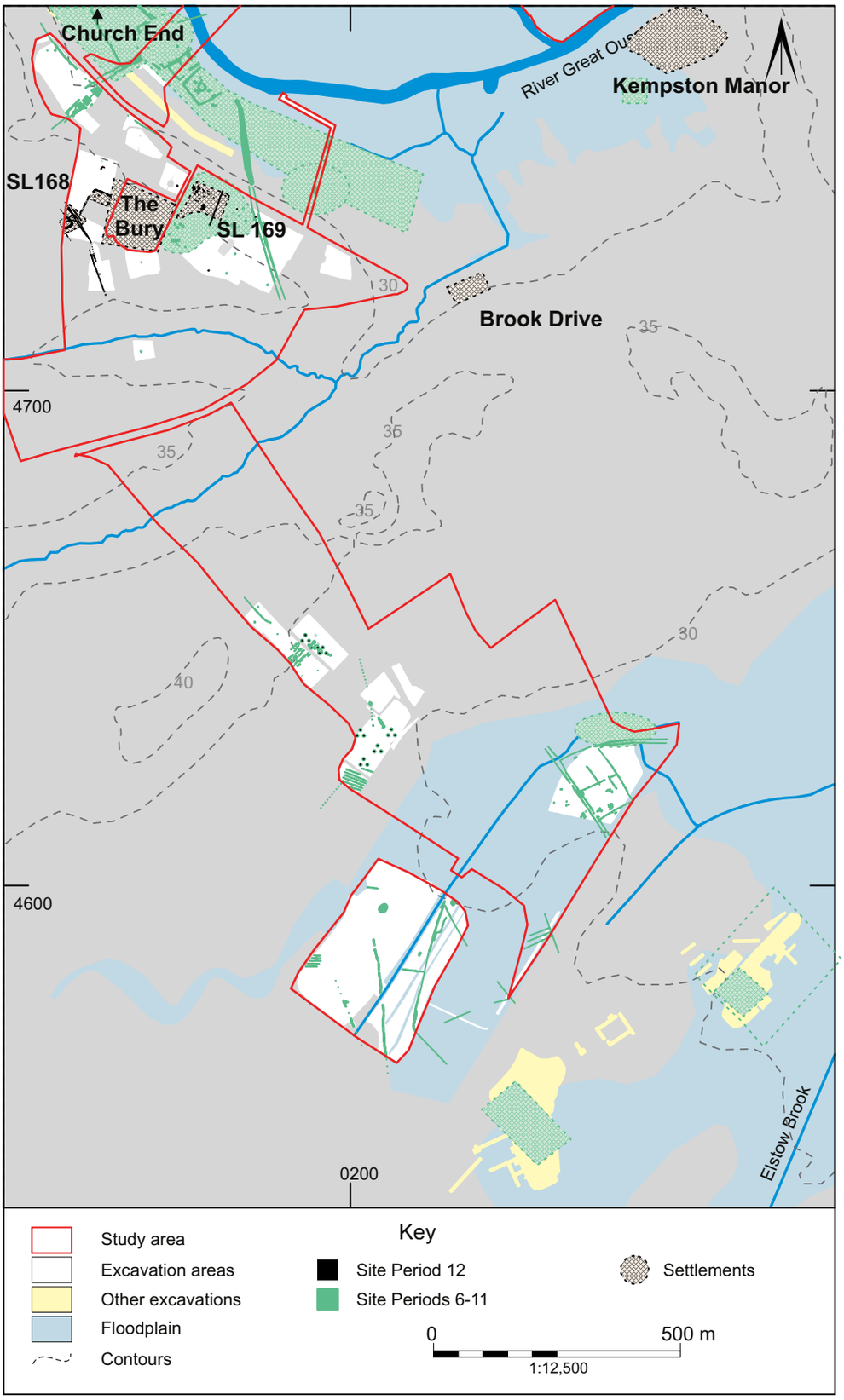


SP12. Late Saxon /Saxo-Norman



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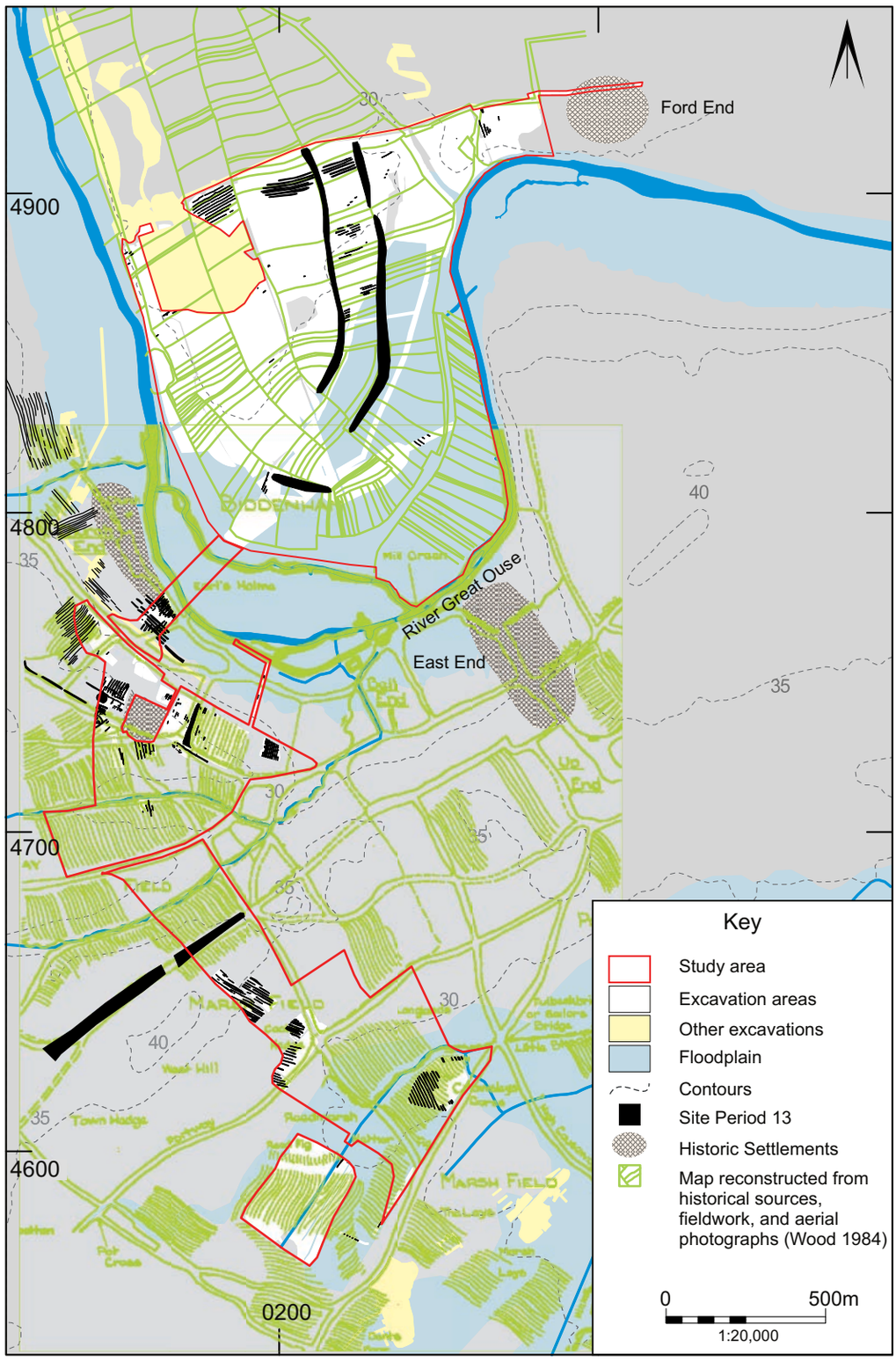
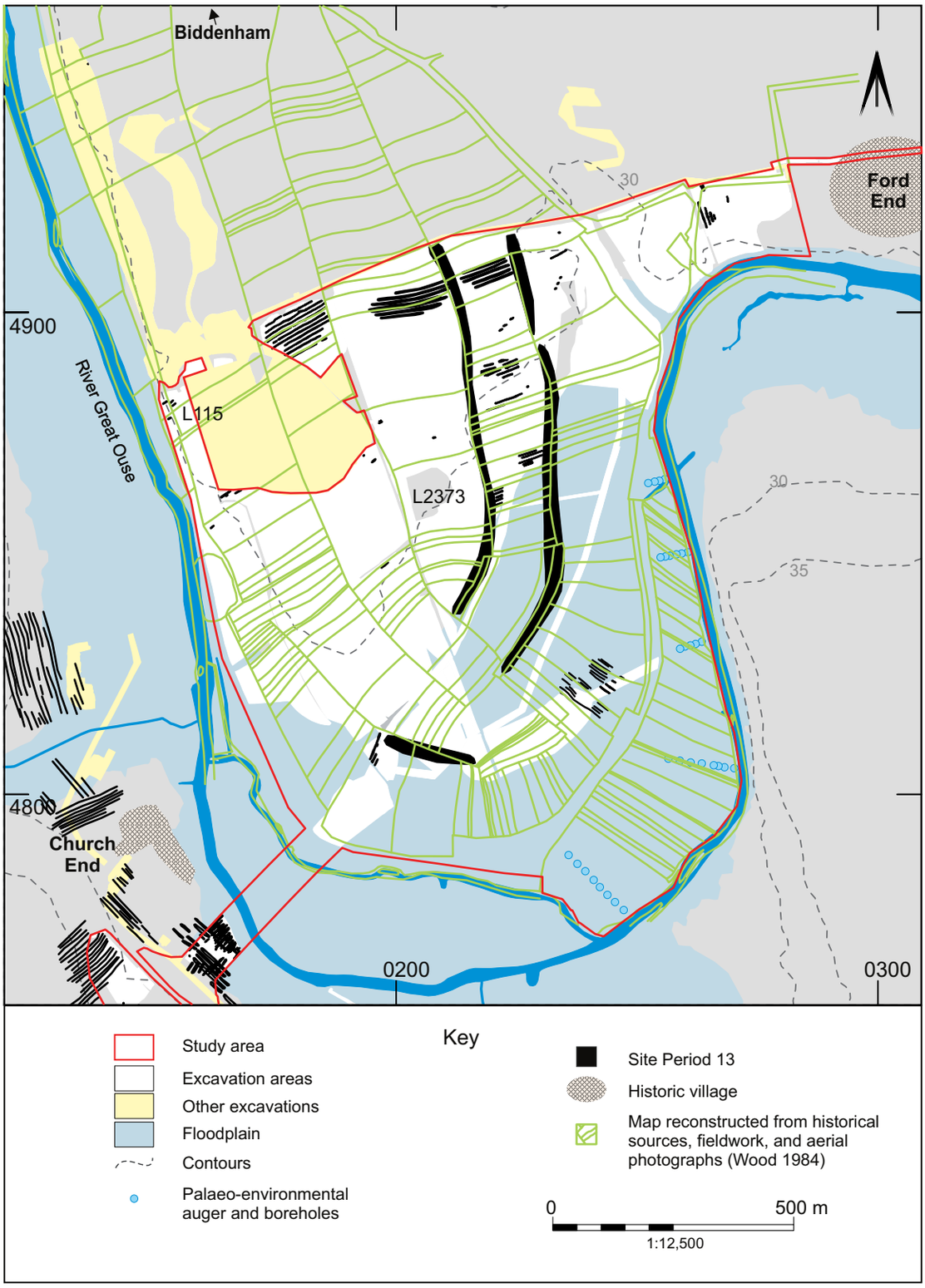
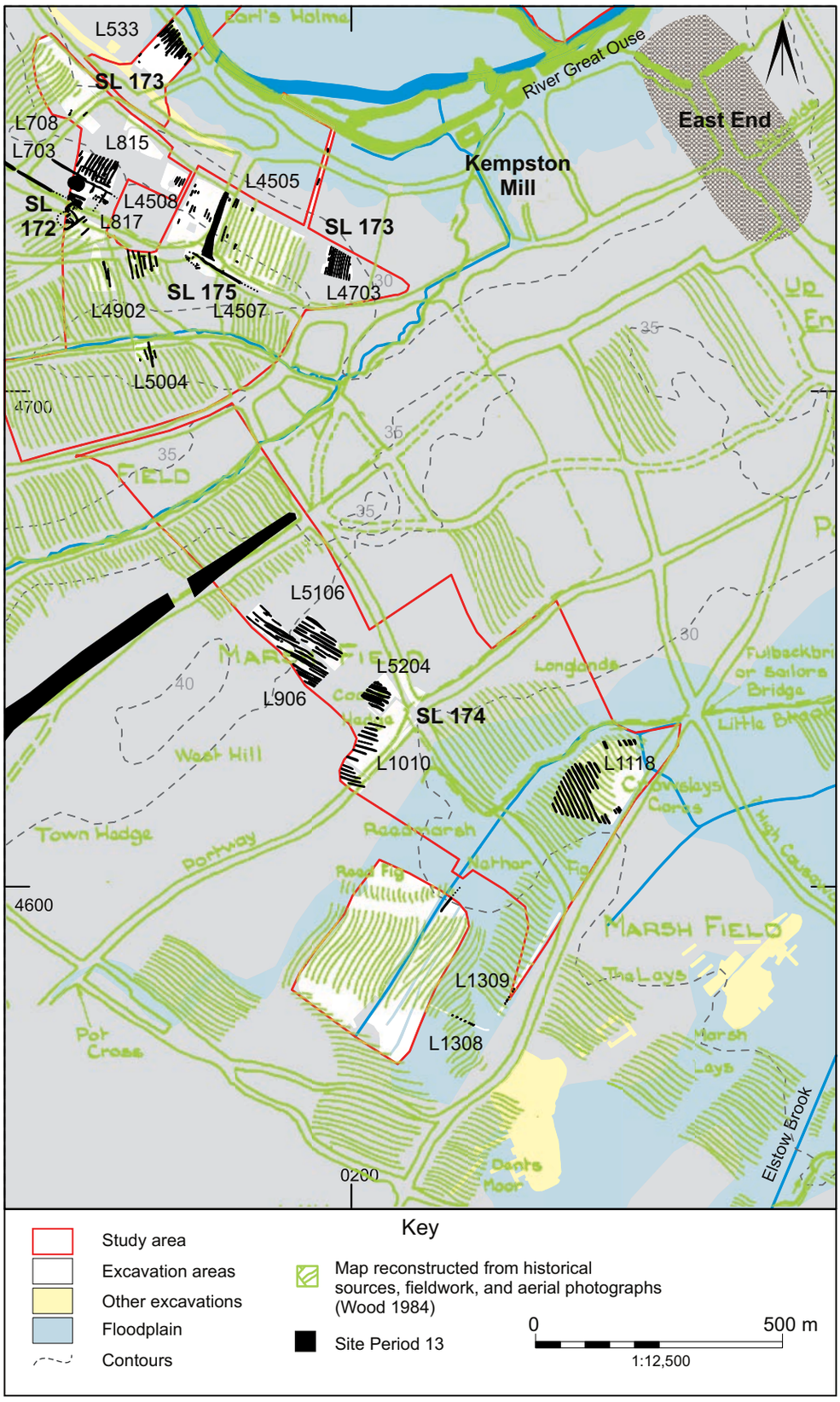


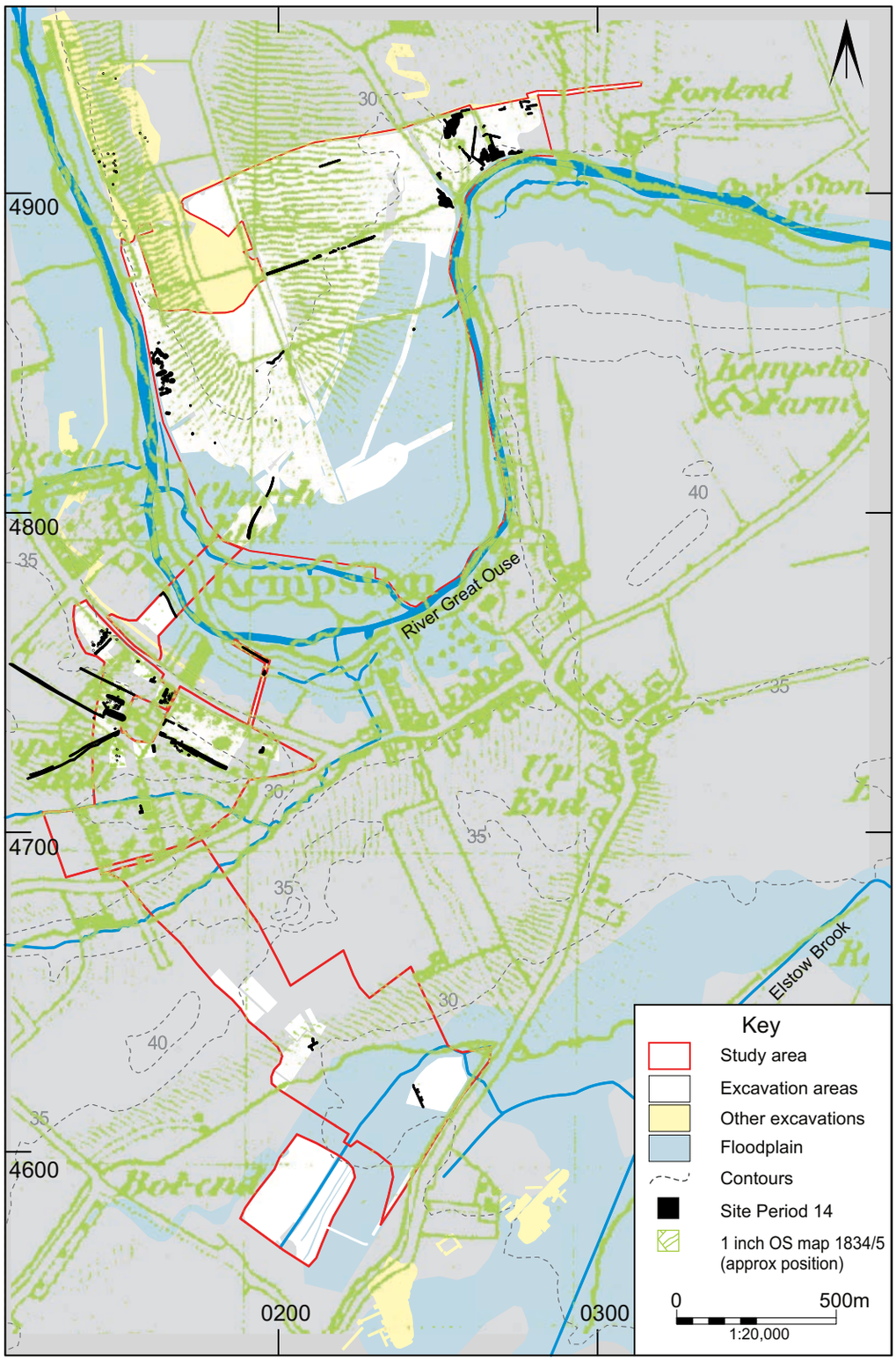
SP13. Medieval



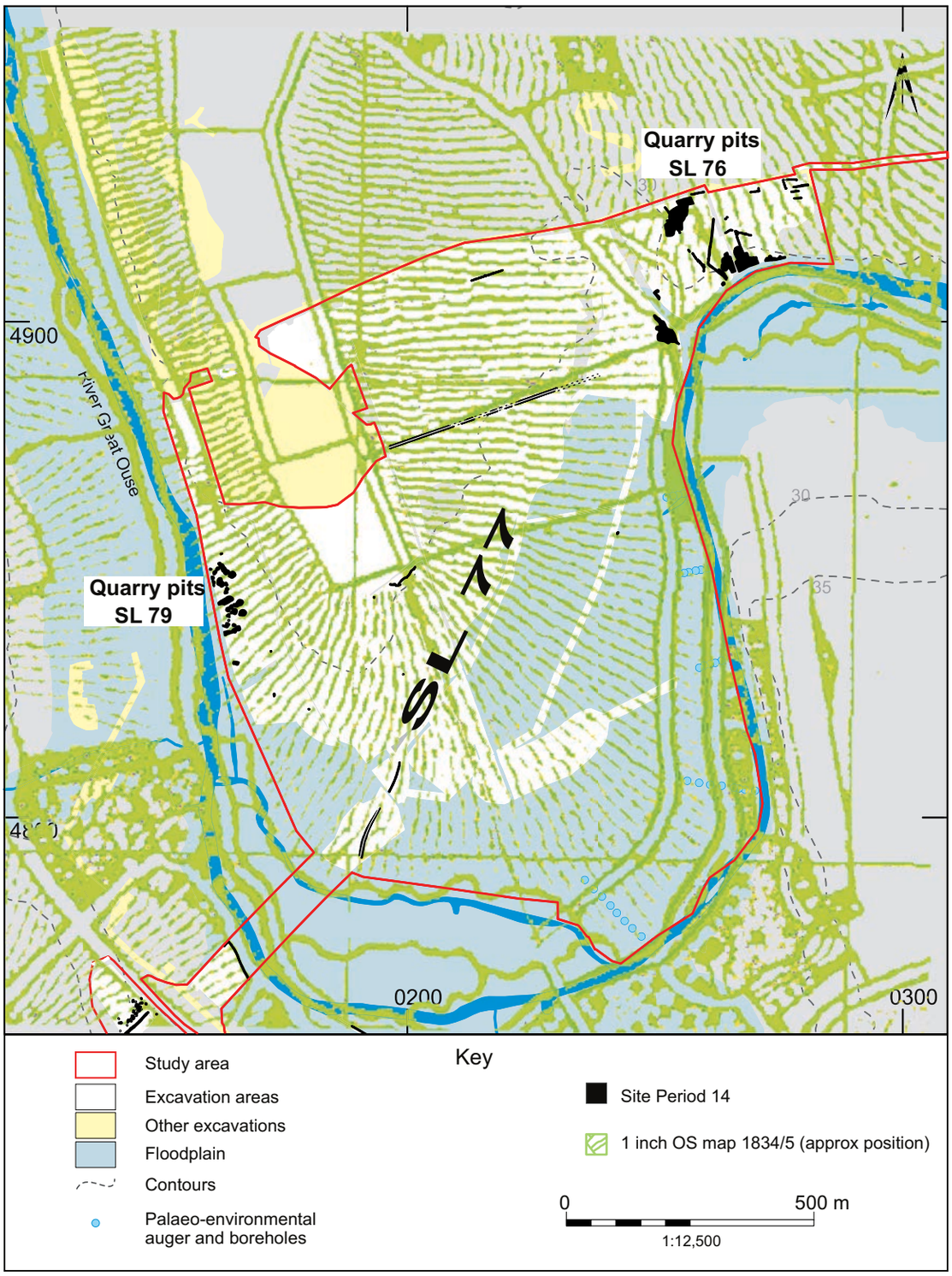
SP13. Medieval Biddenham Loop



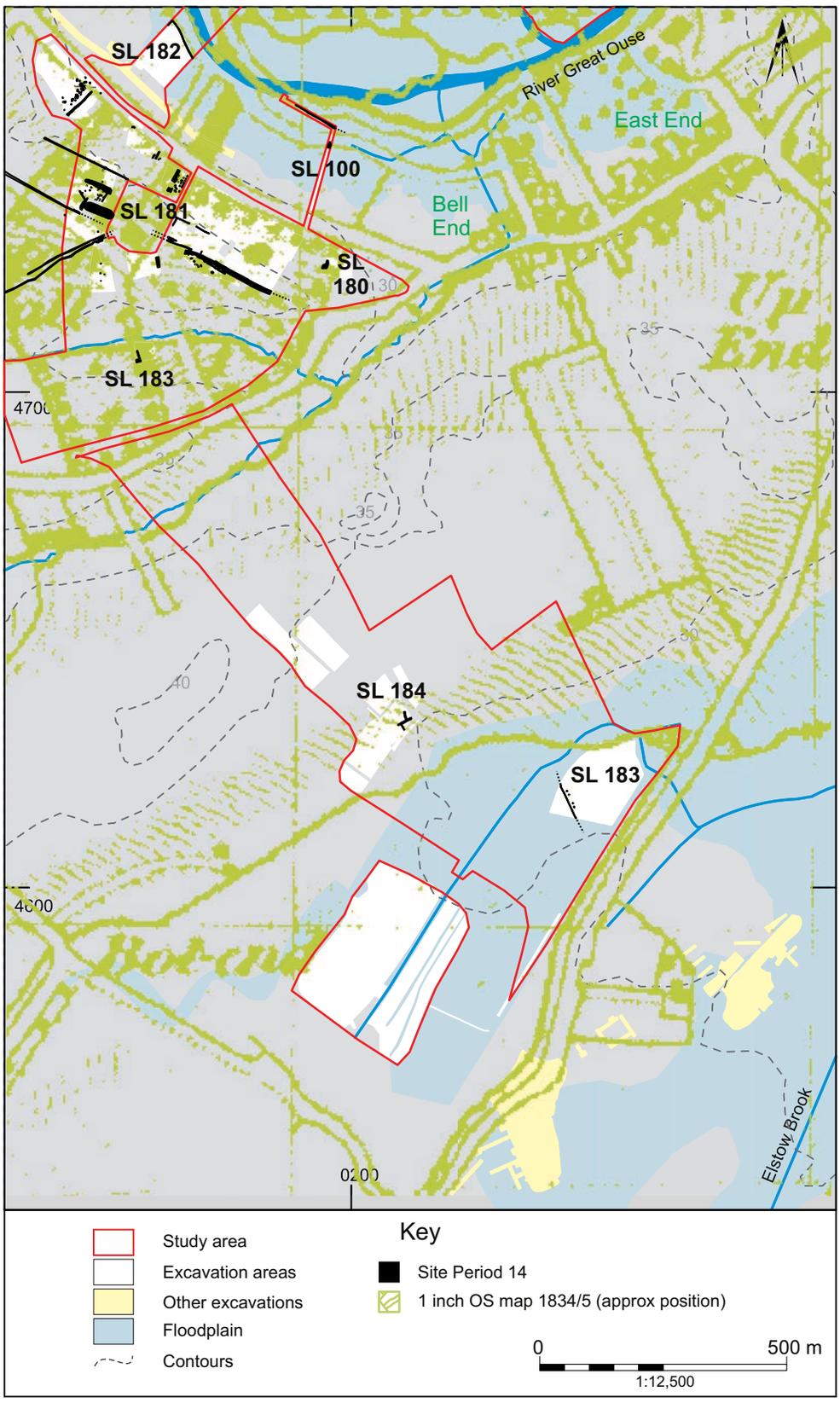
SP13. Medieval Land west of Kempston



SP14. Post-medieval



SP14. Post-medieval Biddenham Loop



SP14. Post-medieval Land west of Kempston

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