Imperial College Sports Ground and RMC Land, Harlington

The development of prehistoric and later communities in the Colne Valley and on the Heathrow Terrace

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An impression of the Middle Neolithic landscape at Imperial College Sports Ground, by Karen Nichols

Back cover
Neolithic Mortlake Ware bowls

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Foreword

HENRY STREETER is very pleased to be associated with the publication of these important sites. Occasioned by the requirements of the planning process they represent a major contribution to the understanding of human activity and the development of the Heathrow Terrace. Fascinating glimpses of life, death and ritual – a rich tapestry from the Neolithic monuments and burials of the 4th and 3rd millennium BC, through the wholesale organisation of the landscape in the Middle Bronze Age *c.* 1500–1200 BC, to Iron Age, Roman and early Anglo-Saxon activity and the mid-late Saxon origins of Harlington. The amount of post-excavation work required in sifting, translating and analysing the site records, numerous finds and environmental evidence into an intelligible, meaningful and accurate account is formidable and Wessex Archaeology and all concerned are to be congratulated on bringing this fascinating story of the area into the public domain and on the achievement which this volume clearly represents. For over 50 years HENRY STREETER has been committed to providing aggregate to Surrey and the West London community and it is satisfying to know that the Company has been able to assist in the recording of the cultural heritage of the area which now, through this publication, will achieve regional significance and reach a much wider audience. The fact that a 'once and for all record', which would otherwise have been lost forever, has been brought to successful completion for the benefit of the local community and wider scholarship is particularly rewarding.

HENRY STREETER(Sand & Ballast) Ltd

CEMEX is pleased to partner this important work and to support the initiative of a joint publication on the archaeology of the Heathrow area. As much of our work focuses on building a better future for Greater London and Britain as a whole, it is rewarding to know that we are also helping today's society have a better understanding of past communities. RMC, and since 2005 CEMEX, have provided a significant opportunity to record archaeology extending back nearly 6000 years and the publication of these results with those from the adjacent site of Imperial College Sports Ground have added much detail to how this landscape evolved. Not least the discovery of the Saxon settlement, a likely precursor to the present settlement of Harlington, with further traces of the substantial Bronze Age field system that underlies much of modern Heathrow and the adjacent villages. Older still are the Neolithic remains, the traces of the first farmers that inhabited the landscape over 5000 years ago. These people were the builders of Britain's first monuments, evidence of which is presented in the publication. CEMEX (formerly RMC) has served the UK construction industry for over 80 years and through programmes like this one, have built a legacy supporting archaeology as part of the planning process. This publication is just one of the many successful outcomes and contributions the Company has made towards Britain's heritage. Wessex Archaeology and all those involved in making the project a success are to be commended.

CEMEX UK Operations Ltd

Acknowledgements

Our sincere thanks go to Rodney Cruse, John Nicol, and Nigel Barker, Directors of Henry Streeter (Sand and Ballast) Limited (HSL), and former Director Paul Stockden for originally commissioning the fieldwork at Imperial College Sports Ground (ICSG), RMC Land and Land East of Wall Garden Farm (LEWGF), and latterly Phil Essex (Operations Director), and to various RMC Group Managers – Gordon Aitken (Senior Development and Estates), Richard Marshall (Estates and Development) and Lance Higgs (Area Operations) – and subsequent CEMEX UK Managers – Ron Brunt (Area Operations) and Andy Scott (Development and Estates – Southern) – for continuing the commission on the RMC Land site. The contribution of the landowners, Imperial College London and CEMEX UK, are duly acknowledged.

Thanks are also due to Simon Collcutt of Oxford Archaeological Associates (OAA), who acted as archaeological adviser to HSL for ICSG and RMC Land (extraction phase 1) fieldwork stages of the projects, and to Adrian Havercroft of The Guildhouse Consultancy (TGC) who acted for both HSL and CEMEX UK for all other phases of the fieldwork. This publication has arisen through the successful merging of the two independent large-scale fieldwork projects (ICSG and RMC) to which the much smaller LEWGF was added in 2010. In total the combined Updated Project Design and Publication Proposal was based on an accumulative ten-year programme of post-excavation assessment reporting.

In making this initiative possible we would like to thank the Directors of HSL for providing substantial additional funding over and above what was initially agreed at the time of the fieldwork, and Adrian Havercroft who reviewed and argued the need for these funds to permit the full analysis and publication of the ICSG results long after the post-excavation works had stalled. Our sincerest thanks go to the Directors of HSL who then generously funded these post-excavation works and those of LEWGF. We also extend these thanks to CEMEX UK who, by prior arrangement with HSL, funded not only extraction phases 2–5 but also all of the post-excavation works on RMC Land. In making this joint project possible we would like to thank Paul Stockden and the other Directors of HSL and Andy Scott of CEMEX UK for supporting this approach. By so doing they provided the opportunity to place the combined sites in their wider landscape context, which further enhanced the archaeological understanding of this area of the Heathrow Terrace.

Throughout the various stages of work, from design through to publication, monitoring on behalf of the Local Planning Authority (LPA) was undertaken by Kim Stabler, Robert Whytehead, and latterly Sandy Kidd (Greater London Archaeological Advisory Service – GLAAS), all of whom provided useful comments, observations and support. The post-excavation work was monitored on behalf of HSL and CEMEX UK by Adrian Havercroft, and we would like to thank him for his steadfast support and advice.

Large-scale projects such as these often require the skills of a great number of people and we duly thank the various site staff at the quarries for their support and assistance, together with the various fieldwork and office based teams over nearly ten years of excavation. In particular, the unfailing day to day support of Paul Stockden (Production Manager), Jon Wyatt (Quarry Manager) and Graham Ford (Earthmoving Manager) at HSL Harlington Quarry, and for RMC Land Graham Finbow (then Manager) and Bill Morris (now assistant manager at Kingsmead Quarry, Horton); their endeavours greatly eased the task of excavation, not least the provision of plant and welfare, over numerous seasons and the successful completion of phases of work.

The fieldwork at Imperial College Sports Ground was managed by Jonathan Nowell, and directed by Andrew Crockett with the assistance of Adrian Chadwick, Bob Davis, Chris Ellis, Isca Howell, Phil Harding and Dave Godden. RMC Land was managed in the field first by Mark Roberts and then by Paul McCulloch with the fieldwork directed by Kev Ritchie, Caroline Budd and Jon Martin with the assistance of Jon Smith. We would also like to acknowledge the various fieldwork teams for their contribution to the excavation and for creating an archive without which no analysis and publication would be possible.

In producing the integrated Updated Project Design for the two sites we received help from many colleagues from the Specialist Service team at Wessex Archaeology. Prior to this Frances Healy deserves credit for her help and assistance in bringing all the assessment reports for Imperial College Sports Ground together into a single overarching document with work on the original assessments undertaken by Andrew Crockett, Linda Coleman, Lorraine Mepham, Emma Loader, Mike Allen and Sarah Wyles. In bringing the various project strands together much support, advice and encouragement was provided by Sue Davis, Jonathan Nowell, Paul McCulloch, John Dillon, and Karen Walker. During the analysis work advice on radiocarbon dating was provided by Peter Marshall and Frances Healy. Fiona Roe very kindly advised on the cataloguing and writing of the worked stone. We would also like to thank Cath Maloney on behalf of MoLA for making the Imperial College Sports Ground evaluation available so that the results could be incorporated into the publication.

Conservation of the log ladder was undertaken by Phil Parkes (conservator, Cardiff University). The medieval wooden bucket was conserved by Andrew Wilson (then of the Wiltshire Conservation Lab) and Liz Barham (then of MoLAS). We would like to thank Caroline Earwood for her useful comments on the bucket. All other conservation work including the X-raying, cleaning of selected metal objects, and freeze-drying of the wooden lid were carried out by Kelly Abbot (now Deakin) and Beth Werrett of the Wiltshire Conservation Laboratory. Phil Jones and Lyn Blackmore (MoLA) provided very useful comments on the post-Roman pottery. Lorrain Higbee provided useful editorial comments on the animal bone report. Elaine Wakefield and Karen Nichols are thanked for photographing selected objects.

The post-excavation stage of the project was managed by Alistair Barclay assisted by Andrew Powell, Lorraine Mepham and Chris Stevens. Richard Bradley, Phil Jones and Pippa Bradley kindly agreed to read and comment on sections of the publication text. Finally, Pippa Bradley, Rob Goller and Kenneth Lymer are thanked for all their help in making the production of this volume possible.

Abstract

This volume brings together the results from three programmes of excavation undertaken by Wessex Archaeology from 1996 to 2009 on two blocks of land proposed for mineral extraction to the north of Heathrow Airport, between the villages of Harlington and Sipson in the London Borough of Hillingdon. Fieldwork was commissioned by Henry Streeter (Sand and Ballast) Ltd on the former ‘Imperial College Sports Ground’ and ‘Land East of Wall Garden Farm’ sites and jointly with RMC Ltd – now CEMEX UK on ‘RMC Land’. The post-excavation analyses were combined further into a joint publication proposal by the Guildhouse Consultancy acting on behalf of both clients.

Occupation during the Early to Middle Neolithic period was demonstrated by the recovery of assemblages of Plain Bowl and Peterborough Ware-style pottery, a rectangular ditched enclosure and numerous pit deposits. A possible dispersed monument complex including two penannular ditched enclosures and one double ring ditch associated with rare and important remains of cremation burials is of contemporaneous Middle Neolithic date. There is less evidence for activity in the Late Neolithic and Early Bronze Age other than a small number of pit and burial deposits. This is in stark contrast to the Middle to Late Bronze Age when a formalised landscape of extensive rectangular fields, enclosures, wells and pits was established, possibly across both sites. A small Iron Age nucleated settlement was established with associated enclosures flanking a trackway. This settlement continued in use into the Romano-British period. There were wayside inhumation and cremation burials, as well as middens and more widely dispersed wells and quarries. In the early Saxon period there was rather less activity, with settlement represented by two possible sunken-featured buildings. There was also a small cemetery. Subsequently, a middle Saxon to medieval field system of small enclosures and wells was established.

Résumé

Ce compte rendu présente les résultats de trois programmes de fouilles menées par Wessex Archaeology de 1996 à 2009 sur deux sites proposés pour l'extraction minière au nord de l'aéroport d'Heathrow, entre les villages de Harlington et Sipson, dans l'arrondissement londonien de Hillingdon. Le travail de terrain a été effectué par Henry Streeter Ltd (sable et ballast) sur les sites de l'ancien « Imperial College Sports Ground » et du « Land East of Wall Garden Farm », et conjointement avec RMC Ltd (aujourd'hui CEMEX UK) à « RMC Land ». Les analyses de post-fouille ont été regroupées pour proposer une publication conjointe par le bureau de consultants Guildhouse Consultancy, agissant au nom de deux clients.

Une occupation du néolithique ancien et moyen a été mise en évidence grâce à des assemblages céramiques des styles « Plain Bowl » et « Peterborough Ware », à un enclos de fossé rectangulaire et à de nombreux dépôts de fosse. Un possible complexe monumental dispersé, avec des dates contemporaines du néolithique moyen, inclut deux enclos pénannulairs et un double fossé associés à des restes de sépultures à incinération, rares mais significatifs. Il y a moins d'indices d'activité au néolithique final et au début de l'âge du Bronze, à part un petit nombre de dépôts (fosses et sépultures). Cette situation forme un contraste frappant avec l'âge du Bronze moyen et final, quand un paysage formalisé de vastes champs, d'enclos rectangulaires, de puits et de fosses est installé, s'étendant – peut-être – le long les deux sites. Un petit noyau d'habitat de l'âge du Fer fait son apparition, avec des enclos associés flanquant un chemin. Cet habitat continue à être utilisé pendant la période romaine. Au bord du chemin, on trouve des sépultures à inhumation et à incinération, ainsi que des dépotoirs, des puits et des carrières plus largement dispersés. Au début de la période saxonne il y a plutôt moins d'activité, avec une habitation représentée par deux possibles maisons excavées. Un petit cimetière y est associé. Par la suite, aux époques saxonne moyenne et médiévale, on établit à proximité un système de petits enclos et de puits.

Traduction : Jörn Schuster avec Michel Feugère

Zusammenfassung

Dieser Band fasst die Ergebnisse von drei Ausgrabungsprogrammen zusammen, die von Wessex Archaeology zwischen 1996 und 2009 im Bereich von zwei für Kiesabbau ausgewiesenen Landparzellen durchgeführt wurden, die nördlich des Flughafens Heathrow im Londoner Stadtbezirk Hillingdon zwischen den Ortschaften Harlington und Sipson liegen. Die Grabungsarbeiten wurden durch Henry Streeter (Sand and Ballast) Ltd für die Grabungsbereiche des ehemaligen 'Imperial College Sports Ground' und 'Land East of Wall Garden Farm', sowie in verbindung mit RMC Ltd (mittlerweile CEMEX UK) für 'RMC Land' in Auftrag gegeben. Die gemeinsame Auswertung der Grabungsergebnisse wurde von Guildhouse Consultancy, die im Auftrag beider Kunden handelte, in einem kombinierten Publikationsprogramm vorgeschlagen.

Besiedlung im Zeitraum der früh- und mittelneolithischen Perioden ließ sich anhand von Keramikensembles mit Tonwaren im Stil der Plain Bowl und Peterborough Ware, einer Rechteckgraben-Anlage und zahlreichen Grubendeponierungen nachweisen. Ebenfalls mittelneolithischer Zeitstellung ist ein möglicher Komplex vereinzelter Befunde, darunter u.a. zwei offene Ringgrabenanlagen und ein doppelter Ringgraben, die mit seltenen und wichtigen Brandbestattungsresten vergesellschaftet sind. Abgesehen von einer kleinen Anzahl von Gruben- und Bestattungsdeponierungen fanden sich nur wenige Hinweise auf spätneolithische oder frühbronzezeitliche Aktivitäten. Dies stellt einen deutlichen Unterschied zur Situation während der mittleren bis späten Bronzezeit dar, als die Landschaft durch die Anlage von ausgedehnten rechteckigen Feldern, Einfriedungen, Brunnen und Gruben organisiert wurde, was sich wahrscheinlich über beide Grabungsbereiche erstreckte. Entlang eines Weges wurde eine kleine, geschlossene, eisenzeitliche Siedlung mit dazugehörigen Einfriedungen angelegt. Diese Siedlung blieb bis in die romano-britische Periode bestehen. Entlang des Weges wurden Körper- und Brandbestattungen sowie Abfallgruben und weiter verstreut liegende Brunnen und Erdentnahmegruben gefunden. Mit lediglich zwei möglichen Grubenhäusern ist für die frühsächsische Zeit weniger Siedlungsaktivität zu verzeichnen. Es fand sich außerdem ein kleiner Bestattungsplatz. In der Folge wurde dann ein mittelsächsisches und mittelalterliches Flursystem mit kleinen Einfriedungen bis Brunnen angelegt.

Übersetzung: Jörn Schuster

Chapter 1
Introduction

by Alistair J. Barclay, Andrew B. Powell, Chris J. Stevens and Philippa Bradley

Between 1996 and 2009, programmes of excavation were undertaken by Wessex Archaeology on two large blocks of land proposed for mineral extraction to the north of Heathrow Airport, lying between the villages of Harlington and Sipson in the London Borough of Hillingdon (Fig. 1.1). The southern block, the former Imperial College Sports Ground (ICSG), covered 23.6 ha centred on NGR 50800 17770. The northern block comprised two sites covering 13.3 ha centred on NGR 50840 17825, one on land formerly owned by Ready Mixed Concrete Ltd (RMC Land), the other, to its immediate east, referred to as Land East of Wall Garden Farm (LEWGF) (Fig. 1.2).

The excavations uncovered evidence for Neolithic, Bronze Age, Iron Age, Romano-British, Saxon and medieval activity, adding significant new information to our understanding of the development of what previous extensive excavations in the area have shown to be the archaeologically rich landscape of the Middle Thames Valley.

Background to the Project

ICSG

In August 1990, the Minerals Planning Authority (MPA), the London Borough of Hillingdon, granted Henry Streeter (Sand and Ballast) Ltd (HSL) conditional planning permission for mineral extraction in the central and eastern parts of the site (then referred to as ICSG East) (Fig. 1.2). One of the conditions of the planning permission was that the results of an archaeological evaluation, including a mitigation strategy, be submitted to and approved by the MPA.

The evaluation (site code IMP 96), comprising 97 trenches, was carried out by the Museum of London Archaeology Service (MoLAS) in 1996 and revealed a range of archaeological features concentrated towards the east of the site, spanning the Neolithic to the late Romano-British period, including enclosures, cremation burials, ditches, pits and postholes (MoLAS 1996). Subsequently, the MPA also granted conditional permission for extraction in a westward extension to the quarry (ICSG West), resulting in a further archaeological evaluation comprising 20 trenches, undertaken by Wessex Archaeology in 1999 (Wessex Archaeology 1999).

On the basis of the results of the evaluations, the MPA required the full archaeological excavation of the quarry area (site code IMC 96). This work was undertaken between September 1996 and July 2001 (Wessex Archaeology 2004a). Interim reports on the results from Phases 1–5 (see *Methods*, below) were published in *The London Archaeologist* (Crockett 2001; 2002).

RMC Land

RMC Land is operated by HSL in partnership with CEMEX UK Materials Ltd. In May 2002 the MPA granted them planning permission for gravel extraction at the site, conditional upon the implementation of a programme of archaeological work in accordance with a Written Scheme of Investigation approved by the MPA and their archaeological advisor English Heritage (Greater London Archaeological Advisory Service – GLAAS).

An archaeological evaluation of the northern part of the site, comprising 53 trenches, was undertaken in September 2000, revealing features of Neolithic, Bronze Age, Saxon and medieval date (Wessex Archaeology 2001) (Fig. 1.2). The southern part of the site could not be evaluated, but was considered to have similar archaeological potential. On the basis of the evaluation the MPA required that a full programme of archaeological excavation be undertaken (site code SIE 00). This was carried out between August 2002 and September 2006 (Wessex Archaeology 2003; 2005; 2007a).

Land East of Wall Garden Farm

In December 2008, HSL was granted planning permission for mineral extraction on Land East of Wall Garden Farm (LEWGF), immediately to the east of RMC Land. This followed an evaluation in 2007, comprising a further 10 trenches (Wessex Archaeology 2007b) (site code WGA 07) (Fig. 1.2). The excavation was carried out between June and September 2009 (Wessex Archaeology 2009a). For the sake of simplicity, this site is treated below as part of RMC Land, and is shown as such in the figures.

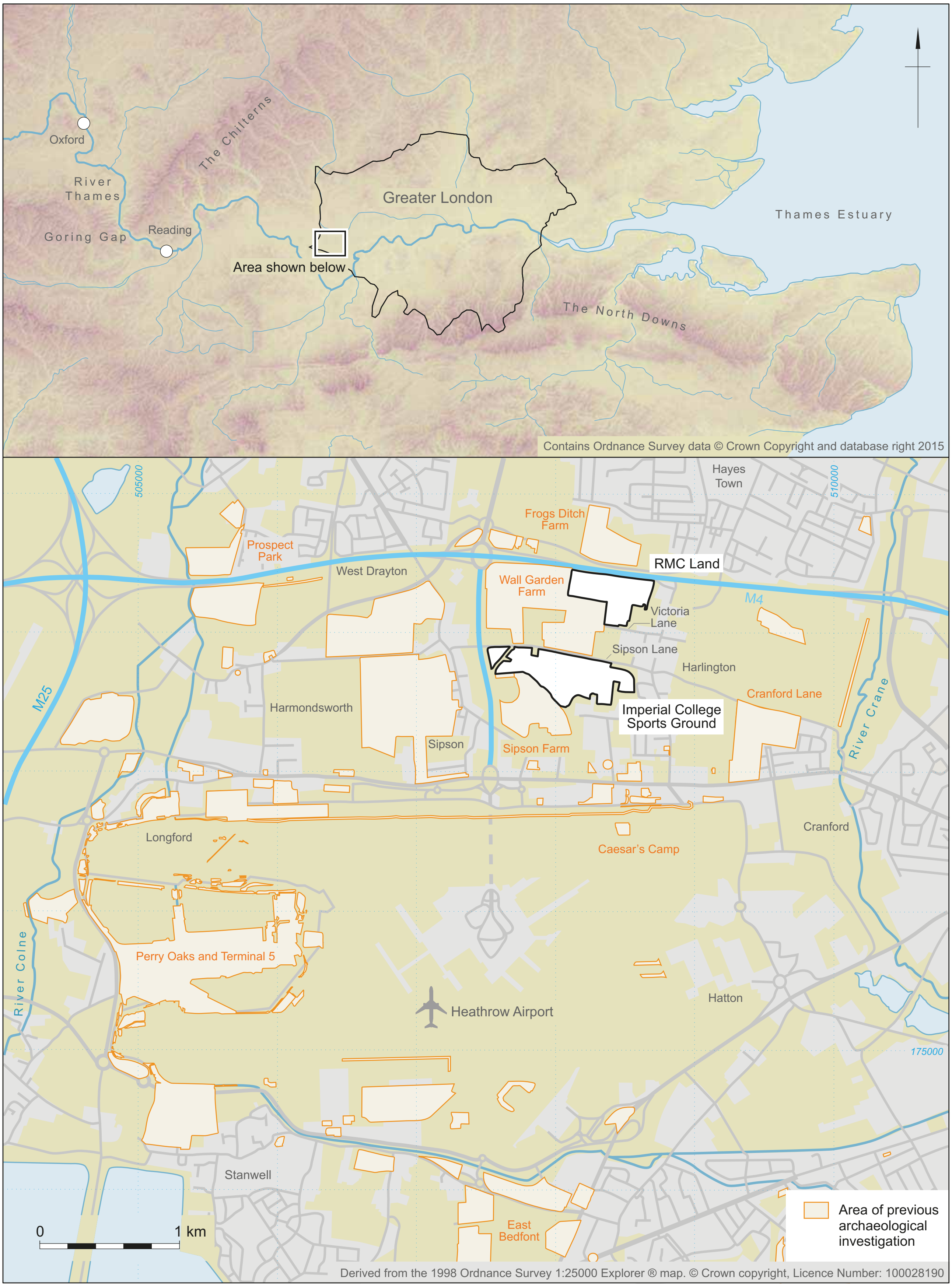

Figure 1.1 Locations of sites and other archaeological investigations in the Heathrow area and the Middle Thames Valley

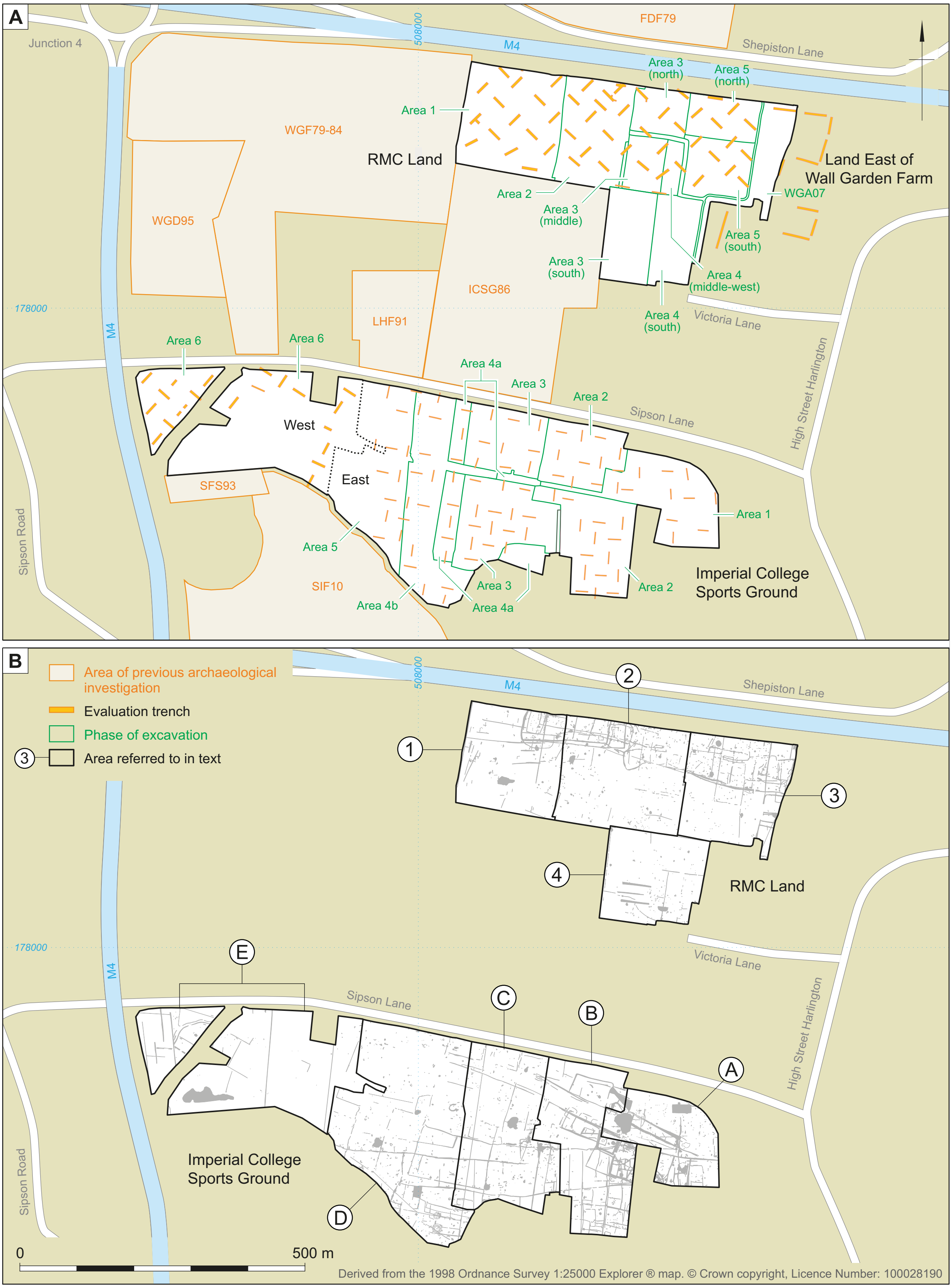

Figure 1.2 Imperial College Sports Ground (ICSG), RMC Land and LEWGF, showing areas of archaeological investigations, area notation used in the report and adjacent archaeological sites

Site Location, Topography and Geology

ICSG is bounded to the north by Sipson Lane, to the south and south-east by the village of Harlington, to the south-west by open fields, and to the west by the M4 Heathrow Spur. RMC Land, which lies 250 m to the north of ICSG, is bounded to the north by the M4, to the south by a sports ground and Victoria Lane, and to the west by open fields (Fig. 1.2).

The sites are situated on fairly level topography, between 25.5–26.0 m above Ordnance Datum (aOD) at ICSG and 26.5 m aOD at RMC Land, approximately midway between two south-flowing tributaries of the River Thames – the River Colne to the west and the River Crane to the east (Fig. 1.1). They are situated on the north side of the Middle Thames Valley, which in this area comprises a series of broad, flat gravel terraces stepping down gently from north to south, generally referred to as the Heathrow Terrace.

The basal solid geology is London Clay. The underlying drift geology is Taplow Gravel (189,000–128,000 BP, Oxygen Isotope stage 6: Bridgland 1994), one of the Pleistocene gravel terraces formed through a series of erosional and depositional episodes associated with the post-diversionary phase of the River Thames (BGS 1981). Overlying the gravel is a deposit of yellowish brown silty sand identified as the Langley Silt Complex (Brickearth), a complex deposit of probable Late Devensian date (19,000–13,000 BP) derived from a combination of wind-borne and water-borne deposition (Rose 1999, 56).

Table 1.1 Concordance of site Areas referred to in the text, and previous extraction/excavation Phases

Site	*Area*	*Extraction and excavation Phase*
ICSG	A	Phase 1
	B	Phase 2 (plus Phase 1 haul road)
	C	Phase 3 (plus Phase 4a haul road and part of 4b haul road)
	D	Phase 4b and Phase 5 (plus part of Phase 6 haul road)
	E	Phase 6
RMC Land/ LEWGF	1	Phase 1
	2	Phase 2, Phase 3 north, Phase 3 middle, Phase 4 middle-west
	3	Phase 5 north, Phase 5 south, LEWGF
	4	Phase 3 south, Phase 4 south (plus SW extension to LEWGF)

Methods

Excavation Areas and Context Numbering

At ICSG, the archaeological works were undertaken from east to west, from each of the six areas of the site to be quarried (previously referred to as Phases 1–6, following the extraction phases). At RMC Land, the work proceeded from west to east across the five extraction areas (Phases 1–5). During the excavations at both sites, however, these areas were further subdivided – into 12 blocks at ICSG (Phases 1, 2 (three blocks), 3 (two blocks), 4a (three blocks) and 4b, 5, and 6 (four blocks); and nine blocks at RMC Land (Phases 1, 2, 3 (north, middle and south – five blocks), 4 (middle-west and south – two blocks) and 5 (north and south – two blocks)). Wall Garden Farm (LEWGF) to the east formed the tenth block (Fig.1.2a).

In order to simplify references in the text to the different parts of the two sites, the sites have been broken down into Areas – five at ICSG (Areas A–E) and four at RMC Land/LEWGF (Areas 1–4) (Fig. 1.2b), which correspond broadly to the earlier divisions but which are easier to follow (Table 1.1).

Because ICSG and RMC Land were initially unrelated projects, each was recorded as a separate entity with its own context numbering sequence. Consequently, there is some duplication of numbers between the two sites, although care has been taken to ensure that it is clear in the text to which site any context relates. The context sequence for LEWGF is a continuation of that for RMC Land. At ICSG, the group number sequence duplicates the context number sequence; consequently group numbers from that site (but not RMC Land) have a ‘G’ prefix. Contexts from the evaluation phases of both sites have an ‘EV’ prefix.

Field Methods

At both sites, the topsoil and subsoil overburden were removed by HSL using 360° tracked excavators under archaeological supervision to the surface of undisturbed geological deposits or the level at which archaeological features could be identified. Generally this level equated to the surface of the undisturbed brickearth 0.5 m below modern ground surface.

The site and archaeological features were tied to the Ordnance Survey National Grid initially using nearby available OS triangulation points, and in the later phases of work using a GPS unit. All survey, plan and contour data was collected using an on-site Total Station, for production of digitised mapping and plotting via AutoCAD.

All archaeological features and deposits were recorded using Wessex Archaeology’s *pro forma* recording system. All site plans were drawn at a minimum scale of 1:100, detail plans at 1:20, and sections at 1:10 (Pl. 1.1). A full photographic record

Plate 1.1 Land East of Wall Garden Farm during excavation

was maintained using colour transparencies, black and white negatives (on 35 mm film) and digital format.

Although dependant on many factors, the percentage of archaeological features to be excavated averaged 10% of all linear features (ie, ditches, gullies etc.) and 50% of discrete features (ie, pits, postholes etc.). In general, these percentages were considered as a minimum response, with a more detailed investigation undertaken of significant deposits (ie, structures, burials etc.). However, following discussions with English Heritage, the 10% level of formal excavation (ie, scaled plans and sections, detailed photographs and comprehensive context recording) was reduced at ICSG for linear features considered to represent field boundaries or other such features beyond settlement centres. This reduction was offset by an increase in rapid excavation of narrow slots through such features to chart artefact (and where possible ecofact) assemblage compositions and distributions. As a minimum response, each rapid 'slot' was uniquely identified and 3D recorded.

Targeted environmental sampling strategies were employed, comprising bulk samples of up to 30 litres from most sealed and dated deposits, ensuring that an appropriate range of feature types was sampled for each period. Additional samples were also taken from either sealed or dated deposits to establish the nature and/or date of such deposits. Where appropriate, soil monoliths, mollusc columns, artefact samples and magnetic susceptibility readings were also obtained.

As each phase of each excavation progressed, land parcels were 'released' to HSL, subject to the agreement of English Heritage. On release, each area was stripped of all remaining brickearth, to the top of the gravel, which was then commercially extracted. An intermittent monitoring of Pleistocene deposits was undertaken during the gravel extraction from ICSG Area A, in order to assess the potential for Palaeolithic material within the gravels and the brickearth/gravel interface. This was not repeated in subsequent phases, or at RMC Land.

Topographic Analysis

Topographic analysis of approximately 20 square kilometres of the Heathrow landscape was undertaken by Framework Archaeology (2006) using the results of a detailed contour survey, conducted in the closing stages of World War II before most of the area was developed. The survey of the site of the future London Airport, undertaken by Italian prisoners of war for the Air Ministry, extended north to Sipson Lane, and so included the ICSG site but not RMC Land.

The survey data were recorded in imperial measurements (feet and inches) on a 1943 Ordnance Survey map, with elevations measurements taken every 30 m. These data were scanned, georeferenced and digitised, and given X, Y and Z coordinates in AutoCad. They were then processed using Surfer to produce a 3D contour map, as well as colour models to highlight minor topographic variations. This confirmed the predominantly flat nature of the land at ICSG, and revealed no traces of the Neolithic monuments recorded during the excavation (below). Given the extensive late prehistoric and medieval field systems on the site it is likely that these had already been plough-levelled prior to post-medieval and modern (pre-World War II) cultivation. The only features on the site revealed by the topographic analysis were modern field boundary ditches.

Archaeological Background

Much of the landscape immediately surrounding the sites has been subject to archaeological intervention during the last twenty years (Fig. 1.1), principally in advance of, and during, gravel extraction. Archaeological sites include Frogs Ditch Farm (FDF 79) to the north, Wall Garden Farm (WGF 79–84 and WGD 95) and Little Harlington Fields (LHF 91) at the north-west, and Cranford Lane (CLH 89, CFL 94) to the east of Harlington.

The land between ICSG and RMC Land was subject to a watching brief during gravel extraction in 1986 (ICSG 86), during which a number of north–south aligned gullies were recorded, along with a scoop containing burnt flint, and a large oval feature containing fragments of wood from its lower fills and

Table 1.2 Main archaeological periods represented

Period	*General date range*	*Subdivision*	*Specific date range*
Neolithic	4000–2200 BC	Early Neolithic	4000–3350 BC
		Middle Neolithic	3350–2850 BC
		Late Neolithic	2850–2200 BC
Bronze Age	2200–700 BC	Early Bronze Age	2200–1600 BC
		Middle Bronze Age	1600–1100 BC
		Late Bronze Age	1100–700 BC
Iron Age	700 BC – AD 43	Early Iron Age	700–400 BC
		Middle Iron Age	400–100 BC
		Late Iron Age	100 BC – AD 43
Romano-British	AD 43–410	early Romano-British	AD 43–120/130
		middle Romano-British	AD 120/130–250
		late Romano-British	AD 250–410
Anglo-Saxon	AD 410–1066	early Saxon	AD 410–650
		middle Saxon	AD 650–850
		late Saxon	AD 850–1066
Medieval	1066–1500	earlier medieval	11th–13th centuries
		later medieval	14th–15th centuries
Post-medieval	1500–1800	-	-
Modern	1800–present	-	-

possibly Late Bronze Age pottery from its upper fills (MoLAS 1993, 31).

More recently, extensive excavations have been undertaken in advance of development at and around Heathrow Airport, at Perry Oaks (Framework Archaeology 2006) and Terminal 5 (Framework Archaeology 2010), where the recorded deposits include Neolithic monuments, Bronze Age to post-medieval field systems, Iron Age and Romano-British settlements and Bronze Age and Romano-British inhumation and cremation burials.

Together these investigations have revealed an archaeologically rich landscape, with evidence for nearly continuous occupation and settlement from at least the Neolithic to the medieval period (Table 1.2). The archaeology of the Heathrow area is also considered in various papers in Cotton and Field (2004) (in particular Lewis and Welsh 2004; Bradley 2004; Cotton 2004; Jones and Ayres 2004).

Pre-Neolithic

The earliest archaeology from the immediate area is of Lower and Middle Palaeolithic date, and comprises mostly artefacts recorded as part of The English Rivers Palaeolithic Survey (TERPS) (Wessex Archaeology 1996a; Wymer 1999). The majority of these objects have been recovered from the Lynch Hill Gravel to the north of the two sites (eg, 426 hand-axes were recovered from Bowyers Pit, Hillingdon off Stockley Road). A much smaller number, in a more rolled condition, have been recovered from the Taplow Gravel that underlies the sites, perhaps indicating that this deposit is reworked Lynch Hill Gravel (Phil Harding pers. comm.). Two Middle Palaeolithic find spots on the Taplow Terrace in the vicinity of the sites, comprising two hand axes and two Levallois flakes, are likely to be derived from the Langley Silts and the Lynch Hill Terrace, where *in situ* Levallois flints have been recorded (eg, at Creffield Road). Much later Late Upper Palaeolithic material, comprising *in situ* flint scatters and animal bones, was excavated within Colne Valley Silts at Three Ways Wharf, Uxbridge, some 8 km to the north-west of the site (Lewis 1991; Lewis with Rackham 2011). Investigations at Kingsmead Quarry, Horton have produced a redeposited collection of similar material (Chaffey *et al.* forthcoming).

In situ Mesolithic finds have been recorded mainly in association with river valley silts, such as the scatter of flints and animal bones representing a probable butchery site close to the Upper Palaeolithic occupation at Three Ways Wharf (Lewis 1991; Lewis with Rackham 2011). It is likely that there was comparable activity at other locations along the valleys of the Colne and Crane. Recent work at Perry Oaks suggests Mesolithic activity pre-dating the Stanwell bank barrow (or cursus) (Framework Archaeology 2005; 2006).

Neolithic to Early Bronze Age

The initial phase of the Neolithic (*c.* 4000–3650 BC) is well represented in the surrounding area and includes the remains of timber long-houses at

Kingsmead Quarry, Horton and Cranford Lane (Chaffey and Brook 2012; Nick Elsden pers. comm.) and various pit and midden deposits from sites along the adjacent stretch of the River Thames (eg, the Eton Rowing Course and Cannon Hill, Maidenhead: Allen *et al.* 2004; Allen *et al.* 2013; Bradley *et al.* 1975–6).

During the Neolithic a number of substantial monuments were constructed in this part of the Middle Thames Valley, identifying this area as a major centre of ceremonial and ritual activity to rival other complexes found upriver at Dorchester-on-Thames and Avebury (Whittle *et al.* 1992; Whittle 1993). Four causewayed enclosures are known from the surrounding area; the nearest was excavated at Yeoveney Lodge, Staines, and another possible one has been identified at East Bedfont (Robertson-Mackay 1987; Oswald *et al.* 2001, 112 and 152), while two further examples are known from near Eton (Allen *et al.* 2004). A number of U-shaped enclosures and an oval barrow are known from the Colne Valley terraces (eg, Perry Oaks and Horton: Framework Archaeology 2005; 2006; Preston 2003). At Staines Road, Shepperton a small penannular ditched enclosure was associated with human and animal remains, worked flint, redeposited Carinated Bowl and Mortlake ware (Jones 2008).

The most impressive monument is the Stanwell bank barrow, which is aligned approximately north–south and extends for a distance of some 3.5 km along the east side of the Colne Valley, delineating for much of its length the Taplow Terrace/Colne Valley boundary. It has recently been excavated at Perry Oaks, to the west of Heathrow Airport (Fig. 1.1), where it postdates an earlier 'avenue' of timber posts (Framework Archaeology 2010, 53–4). Other monuments, interpreted variously as long barrows or subsidiary cursus monuments, have been recorded as cropmarks adjacent to it (Field and Cotton 1987, fig. 4.5), two of which have been partially excavated (Framework Archaeology 2010, 67–9 and fig. 2.23).

While such sites imply Neolithic settlement in the area, direct evidence for settlement and domestic activity is less easy to identify. The strongest indications come from Runnymede Bridge to the south-west, where flint and pottery characteristic of Neolithic domestic settlements were associated with hearths and post-built structures (Stuart Needham pers. comm.) and from Kingsmead Quarry, Horton and Cranford Lane (see above).

Isolated pits, many containing mixed assemblages of diagnostic finds, such as flint tools, waste flakes and fragments of stone axes, are relatively common in the area (Holgate 1988, map 17). Many contained Peterborough Ware (3500–2850 BC), but have tended to occur in small numbers, as at Heathrow (Grimes 1960) or Sipson Lane, Harmondsworth (Cotton *et al.* 1986, 36). Grooved Ware (2900–2400 BC) is locally, and to some extent regionally, much rarer (Barclay 1999). The main finds have been at Prospect Park, near Harmondsworth to the west (Laidlaw and Mepham 1996), Holloway Lane in the same parish (Cotton *et al.* 1986, 37) and from the Framework Archaeology excavations at Heathrow (Matt Leivers pers. comm.; Framework Archaeology 2010, 40).

There is other less tangible evidence for human habitation of the area, including river finds (axe and mace-heads, pottery, animal and human bone), surface scatters of lithic material and stray finds (eg, stone axes) (Holgate 1988; Allen *et al.* 2004; Barclay 2011).

Early Bronze Age remains, including Beaker pottery (*c.* 2450–1700 BC), are scarce in the area, with the notable exception of a large pit containing the dismembered body of an aurochs (wild ox), associated with six barbed and tanged flint arrowheads, on Holloway Lane, Harmondsworth (Brown and Cotton 2000, 86). Another significant find is that of a flat axe of bronze from Harlington (Cotton *et al.* 1986, fig. 30). Elsewhere scatters of pottery and flintwork have been found preserved beneath alluvium at Runnymede (Needham and Spence 1996) and the Eton Rowing Course Project (Allen *et al.* 2004; Allen *et al.* 2013). There are also important Beaker finds from the river Thames (Barclay 2011; Jon Cotton pers. comm.).

A number of ring ditches visible as cropmarks may represent the remains of Early Bronze Age round barrows (although some may date to the Neolithic). It is argued that an array of ring ditches running east from the south end of the Stanwell bank barrow may be an Early Bronze Age barrow cemetery (Cotton *et al.* 1986, fig. 28). Where Early Bronze Age burials occur, they are almost invariably cremations, with little trace of the sometimes elaborately furnished inhumations which characterise the period in much of Britain (MoLAS 2000, 85–6). In the Middle Thames Valley barrows tend to occur either as isolated monuments or in small clusters, which contrasts with the Upper Thames where large cemeteries containing over 20 monuments are quite common (Garwood with Hey and Barclay 2011, fig. 14.24).

Middle–Late Bronze Age and Iron Age

In contrast, the Middle Bronze Age is characterised by evidence for domestic as well as burial activity. Excavations close to the sites within the A4/M4 corridor have revealed pits and postholes containing assemblages of domestic material, including Deverel-Rimbury pottery, daub, loomweights and flints. Contemporary ditches and enclosures have been interpreted as stock enclosures and field boundaries. A number of urned cremation burials have been dated to this period.

There is evidence for a consolidation of settlement in the area during the Late Bronze Age. This includes high status centres like Runnymede Bridge (Needham 1987) and smaller undefended settlements characterised by huts and associated field systems, such as those found at Cranford Lane (Nick Elsden pers. comm.).

The settlement and development of landscape in the Iron Age represents a broad continuation of patterns established in the Late Bronze Age, with both defended enclosures and unenclosed settlements recorded in the area. Undefended settlements, such as the one at Mayfield Farm, comprised roundhouses, pits and field boundaries.

Caesar's Camp, an earthwork that was surveyed by William Stukeley in 1723 and subsequently excavated by Professor W. F. Grimes in the 1940s (before the construction of Heathrow Runway 1), revealed a defended enclosure and at least 11 Middle Iron Age (400–100 BC) roundhouses. Some of the roundhouses were overlain by the enclosing bank, suggesting that the site had originally been an undefended, and more dispersed, settlement. Within the enclosure there were numerous four-post structures, a characteristic feature of the period thought to represent grain stores and/or driers, as well as a square shrine (Grimes and Close-Brooks 1993). Other similar enclosures have been recorded in the area (eg, Fern Hill and Staines Moor).

Over the years extensive Iron Age settlement has been recorded at Perry Oaks, Terminal 5 and Heathrow (Canham 1978; Framework Archaeology 2005; 2006). There is evidence for the re-use and development of the earlier field system, for the maintenance of old and the creation of new waterholes, and for a shift in settlement focus. There would appear to be a shift in agricultural regime, from arable- to pastoral-based. By the Middle Iron Age the field system was no longer maintained. In the Late Iron Age there was a notable reduction in the level of activity, although these sites were not totally abandoned.

Romano-British to Medieval

There is evidence for two broad categories of Romano-British activity within the wider area. One comprises the semi-urban roadside settlements or posting stations discovered at Staines and Brentford, some 6 km away, that occur on one of the principal roads (running west to Silchester, Bath and Exeter) that radiate out from *Londinium* (Bird 1987). Both these sites were situated on the River Thames near what were important river crossings. Away to the north-east of Harlington is the similar settlement of Brockley Hill, again placed on a major route leading out of *Londinium*. The other encompasses the more widespread evidence for small-scale rural settlements and farmsteads on the fringes of *Londinium*. Their pattern and distribution in the early Romano-British period appear to represent a continuation of the Late Iron Age pattern of undefended settlements. Evidence is generally in the form of field boundaries, pits, droveways and wells. Structural and burial evidence, however, are seldom recorded, possibly because these were relatively ephemeral and hence did not survive the post-Roman agricultural impact on the landscape.

Evidence for this rural and agricultural landscape has been found at Wall Garden Farm and Holloway Lane. At Wall Garden Farm, on the north side of Sipson Lane, a pair of Romano-British corn-driers and a timber-lined well were discovered along with associated features and finds (MoLAS 1993). The remains were predominantly 1st century AD, although the well was infilled in the 3rd century.

Romano-British settlement in the area is concentrated either within the 1st and early 2nd centuries, or within the 3rd and 4th centuries. There was an apparent break in occupation, with little evidence for continuity between the two periods, possibly reflecting a general economic decline in the province during the 2nd and early 3rd centuries.

No villas are know from the immediate area, although possible buildings have been found at Manor Farm, Harmondsworth, and further afield at Rickmansworth and Ruislip (Bird 1987, 66).

Archaeological and documentary evidence indicates Saxon settlement centres at both Sipson and Harmondsworth, the archaeological evidence consisting mainly of buildings and structures. There are few indications of the associated rural settlement, and again burial evidence is scarce. However, the place names Harlington, Hayes and Harmondsworth all feature in charters of 8th–10th-century date.

At Prospect Park, near Harmondsworth, a group of at least 11 sunken-featured buildings was recorded, probably associated with a rectilinear post-built structure with an 'apsidal' end, of middle Saxon (AD 650–850) date. A number of ditches and gullies, and cereal residues, provide limited evidence for associated agricultural activity (Farwell *et al.* 1999).

Excavation evidence suggests that these settlements probably shifted, with buildings being gradually abandoned and new ones built. It is likely that the middle Saxon settlement around Harmondsworth formed the origins of the later manor.

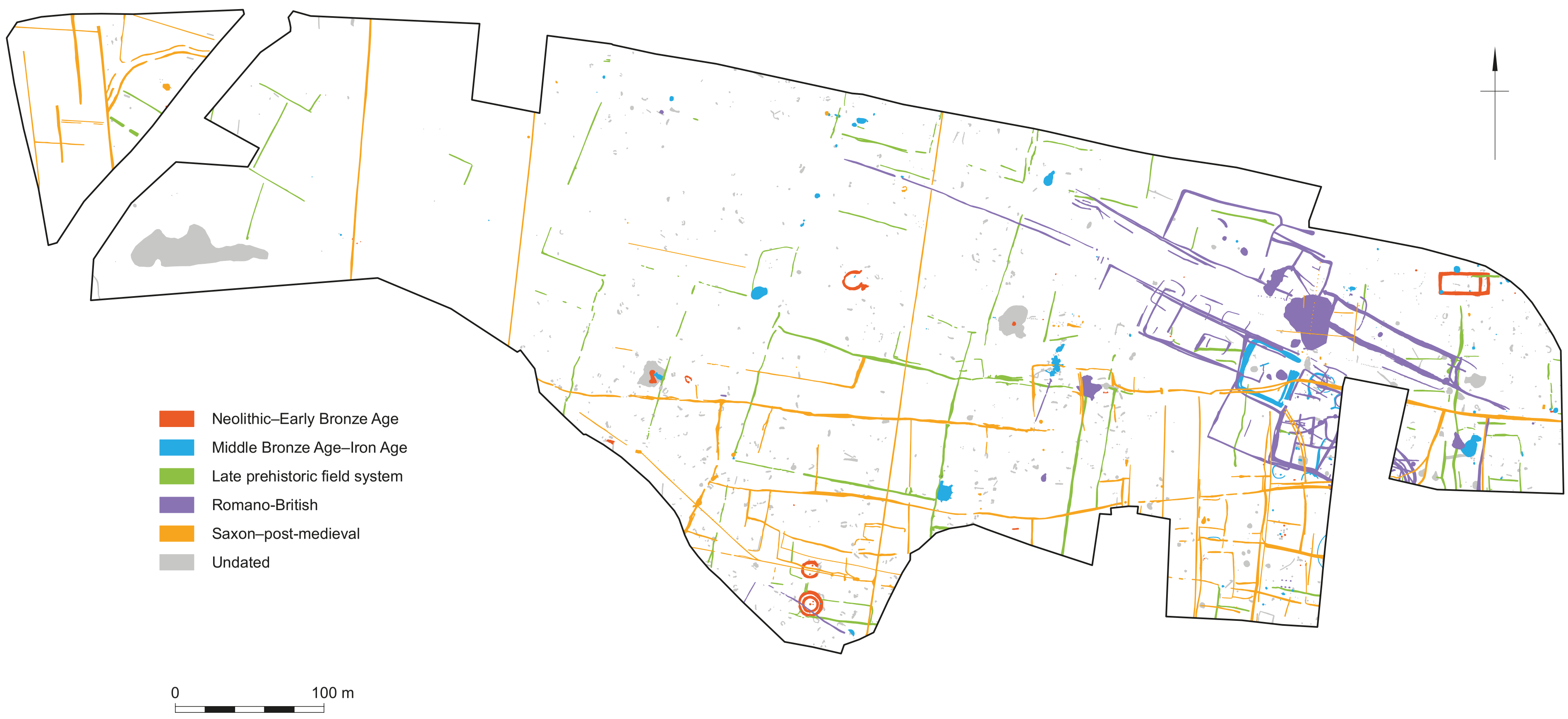

Figure 1.3 Imperial College Sports Ground (ICSG), principal phases of activity

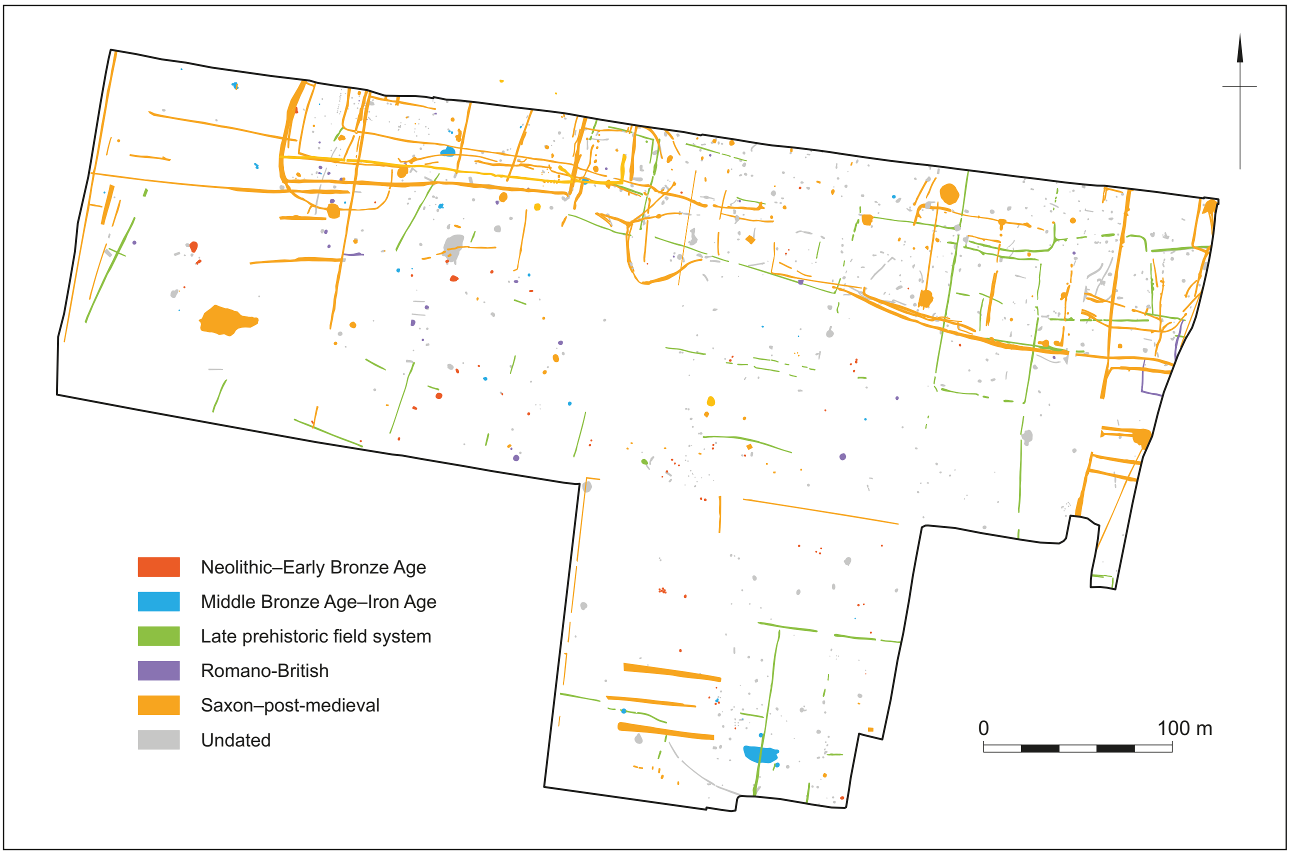

Figure 1.4 RMC Land, principal phases of activity

Medieval settlement in the area is clearly shown by a number of existing villages of late Saxon and medieval origin, such as Harlington, Harmondsworth and Sipson. These small, nucleated villages situated on the roads leading west from London indicate the apparently prosperous agricultural settlement of the capital's rural hinterland. Fieldwalking at Harlington has recovered large quantities of medieval pottery, though as yet no direct evidence for settlement. Manors are known from both Harlington and Harmondsworth.

Post-Medieval and Modern

The pattern of settlement and agricultural landuse appears to have changed little during the post-medieval period and the area remained very much the rural hinterland of urban London. The area became subject to Parliamentary inclosure in the early 19th century. The high grade/high yield status of the soil for market gardening purposes has long been recognised, with the area latterly referred to by planning authorities as the 'A4/M4 Horticultural Belt'.

Even with the onset of the Industrial Revolution, with the construction of canals and railways and the industrialisation of rivers such as the Crane, the area remained predominantly rural in character. It escaped the urbanisation experienced by much of London during the Victorian period, and it was only with the growth in post-World War II housing, the construction of Heathrow Airport and the increasing demand for sand and gravel to supply the construction industry, that the area was widely developed. Even so, villages like Sipson, Harlington and Harmondsworth remain more or less discrete settlements, reflecting their early origins.

Project Research Themes

A number of broad research themes, based on prior knowledge of the West London area, were defined for both sites (Wessex Archaeology 1996b, 11–3; 2004b, 9–12), to be addressed by the excavations and the subsequent analyses. Although no significant evidence relevant to the Palaeolithic or Mesolithic was recovered, the excavations made substantial contributions to three themes relating to the development of the landscape from the Neolithic to the post-medieval period (Figs 1.3–4), leading to the formulation in the updated project design of a series of research questions to be addressed by the analysis (Wessex Archaeology 2008). These questions guided and structured the post-excavation analysis and culminated in the present publication:

- How far can the vegetation and landuse of the sites and their surroundings at different periods be characterised, and the subsistence of their occupants defined?
- What relation was there between the topography and the human use of what is superficially a flat terrain?
- What was the spatial organisation of the ICSG and the RMC Land sites in successive periods, and to what extent did new elements relate to pre-existing monuments and other structures?
- What was the timespan of the cremation burials on both sites, in particular, when did they start to be made? How far did they extend into the Late Bronze Age? What can the accompanying charred pyre material and tinder tell us about cremation practices, both within periods and over time?
- How do the routeways across the site, especially the Iron Age and Romano-British trackway, relate to wider patterns of communication?

Radiocarbon Dating

Radiocarbon measurements have been calculated using the calibration curve of Reimer *et al.* (2009), and the computer program OxCal v4.2 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited in the text are those for 95% confidence and are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges quoted in italics are posterior density estimates derived from mathematical modelling of given archaeological problems (see below). The ranges in plain type have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

Location of Archives

The finds and archives for ICSG, RMC Land and LEWGF will be deposited with the London Archaeological Archive Research Centre (LAARC) under the project codes IMC 96, SIE 00 and WGA 07 respectively.

Chapter 2
Hunters, Herders and First Farmers

by Alistair J. Barclay, Andrew B. Powell, Chris J. Stevens and Philippa Bradley

Introduction

Prior to the widespread organisation of the landscape in the Middle Bronze Age, with its extensive field system, trackways and waterholes pointing to agricultural production as a dominant social concern (see below), evidence for the economic basis for Mesolithic, Neolithic and Early Bronze Age society is much harder to discern. In fact, the varied evidence from these periods suggests, at least at face value, that other, non-subsistence aspects of life were as, if not more, important.

Such a conclusion ignores the fact that Neolithic agriculture, based perhaps on a mobile, pastoral way of life, is likely to have low archaeological visibility (see Stevens below). Nonetheless, the varied, widespread and substantial evidence for activity during the Neolithic, particularly the Middle Neolithic, is characterised almost exclusively by the construction of monuments, some containing cremation burials, and the excavation of pits for purposes that remain unclear but which cannot be simply equated with domestic or economic activity.

The Middle Thames Valley, stretching from the Goring Gap to the present tidal reaches of the Thames at Teddington, is recognised as a core area of Early Neolithic activity. This area is centred on the lower reaches of the Colne Valley (Figs 1.1, 2.1), although other foci have been found further upriver between Eton and Maidenhead and at Sonning near Reading. The lower Colne Valley sits adjacent to, and east of, an area rich in Late Mesolithic sites (Holgate 1988; Barclay 2007, 333 and fig. 15.1). The earliest evidence for the change to a Neolithic lifestyle comes from a number of midden, pit and house sites that are often associated with assemblages of Carinated Bowl pottery. One of the earliest sites is that of Kingsmead Quarry, Horton where four possible buildings have been excavated (Chaffey *et al.* forthcoming). However, despite the apparent rarity of such structures in southern England, no less than six have been identified in or close to the Colne Valley. A structure very similar to some of the ones at Horton is known from the excavations at Cranford Lane (Nick Elsden pers. comm.) just outside the watershed of the Colne, while another structure was identified at Gorhambury in the upper reaches of the valley (Neal *et al.* 1990). These structures are likely to have been built during the early centuries of the 4th millennium BC (Barclay 2007; Hey and Barclay 2007). Of slightly later date is a series of monuments, including the Staines causewayed enclosure and a second possible site at East Bedfont, the Heathrow (Stanwell) bank barrow monument complex and a series of mortuary monuments of a variety of forms.

The same area has a wealth of pit deposits that span most of the Neolithic period (Holgate 1988; Cotton 2004; Lamdin-Whymark 2008). Early Neolithic pits are generally rare in comparison to ones associated with Peterborough Ware, in particular in the Mortlake substyle. Many pits associated with Grooved Ware have been found in the last 20 years and in certain areas they are more frequent than those associated with Peterborough Ware (eg, Kingsmead Quarry, Horton: Chaffey *et al.* forthcoming). This may reflect that different areas of the landscape were used at certain times, perhaps as areas of settlement shifted. With the notable exception of the Stanwell bank barrow, monument building was not widespread and may have been all but absent during the 3rd millennium BC as there appears to be no classic henge tradition in the Middle Thames Valley (Bradley 1984, 65 and fig. 3.6). This could indicate that society had a different structure to that of the adjacent regions of the Upper Thames Valley and Wessex.

In the later part of the 3rd millennium BC the evidence for the adoption of Beaker culture and values is rare. For whatever reasons the rite of single inhumation burial did not emerge and likewise the practice of pit digging with the discard of occupation material did not continue. Why these practices did not follow the same trajectory as other regions is a moot point. However, their absence may simply equate to a discontinuity in practice rather than a real absence of people. Beaker material has been found in small quantities, and some significant finds including pots, metalwork, worked stone and flint daggers have been recovered from the River Thames (Barclay 2011). For whatever reasons the practice of monument building was abandoned in the earlier 3rd millennium BC and this could have made the need for selective formal burial in the later centuries unnecessary.

Some barrows are known from the area although their numbers are relatively small when compared to areas of the Upper Thames and the Upper Kennet (in particular around Avebury) (Garwood with Hey and Barclay 2011, fig. 14.24). Isolated barrows are

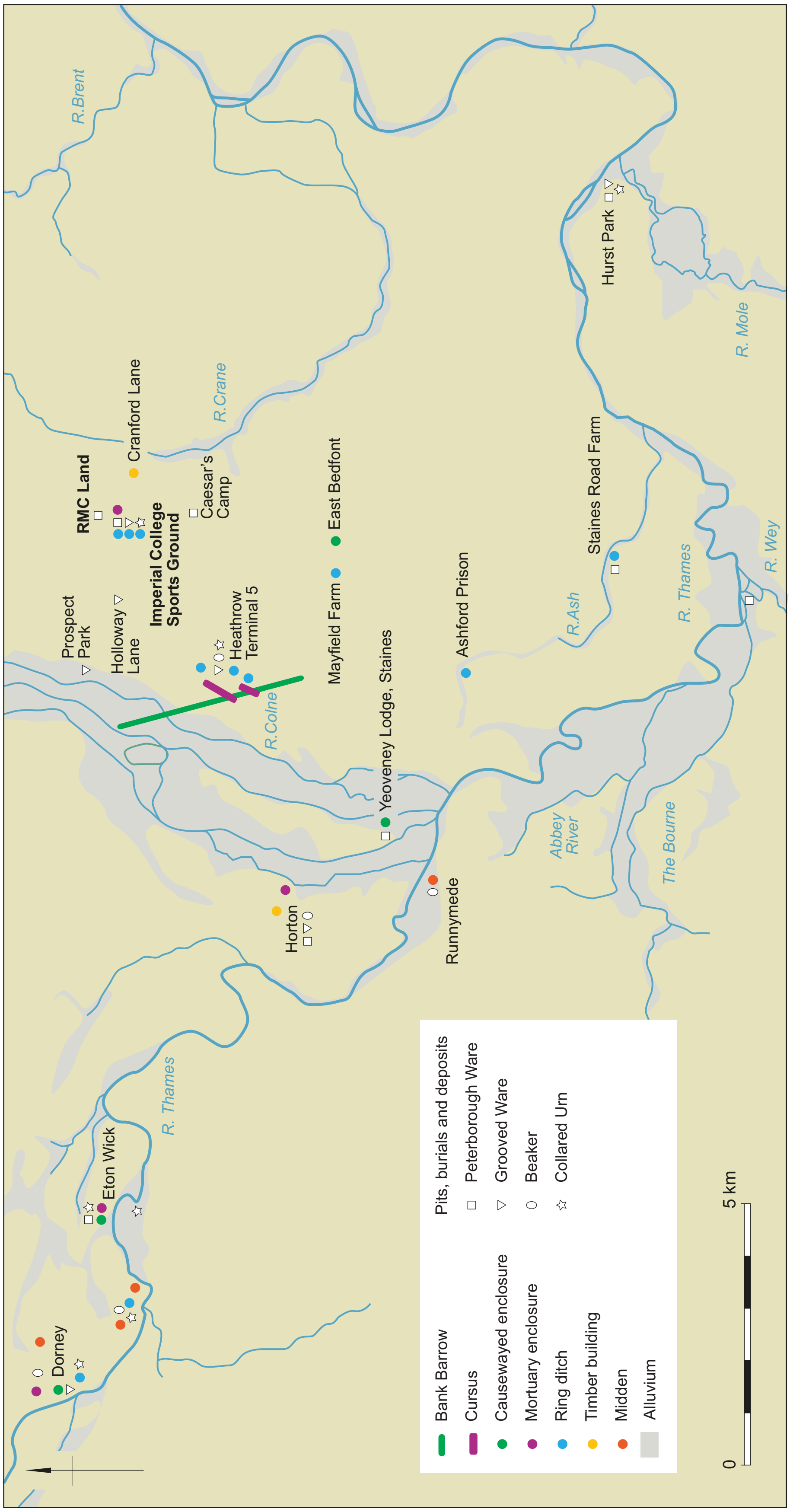

Figure 2.1 Neolithic and Early Bronze Age sites referred to in the text

generally common, while barrow cemeteries are generally rare, small and seldom comprise more than about four or five monuments. Where these do occur they are often associated with Collared Urn pottery. As well as burial contexts this type of pottery has been recovered from pits and occupation deposits, as at Kingsmead Quarry (Chaffey *et al.* forthcoming), the Eton Rowing Course (Allen *et al.* 2013), Taplow (Allen *et al.* 2009) and Cippenham (Ford and Taylor 2004). There is little in the way of more tangible evidence for permanent settlement before about 1600 cal BC generally.

Environment and Landscape
by Chris J. Stevens

Work from the wider area suggests that during the Late Mesolithic the dominant vegetation was a mixed woodland of oak, elm and lime, with alder-willow carr and reed marsh along the floodplain of the Thames and its tributaries (Scaife 2000; Keith-Lucas 2000; Branch and Green 2004).

Pollen data from a single pit at Perry Oaks suggests a similarly wooded landscape in the Early or Middle Neolithic, consisting of oak and hazel with some pine, birch, ash, lime and elm (Lewis and Brown 2006), although it seems likely that some significant clearance, including that associated with the Stanwell bank barrow, had taken place in the Early Neolithic (Framework Archaeology 2010, 59). The Thames floodplain itself was shown to be dominated by alder, with small clearances in which Rosaceae shrub (hawthorn, sloe, bramble etc) was able to establish itself, along with grasses and other weed flora (Wiltshire 2006).

At ICSG/RMC Land the small quantities of environmental information for the landscape prior to the Middle Bronze Age come mainly from the assemblages of wood charcoal and charred plant remains. Analysis of the charcoal reveals a similar picture of the Middle Neolithic woodland, with oak dominating, but with hazel and the hawthorn group (which includes other species such as bramble and sloe, as well as hawthorn) being reasonably well represented (Challinor, Chapter 10). There is also evidence for hazel in the charred plant remains, with the shells of hazelnuts, collected from the wild, dominating many of the samples.

The extent of such woodland is more difficult to ascertain. The Middle Neolithic monuments uncovered at ICSG (see below) are likely to have been constructed, at the very least, in relatively large clearings, as suggested in the reconstruction of the site at this time (see Cover). Further, if a tuber of onion-couch grass (*Arrhenatherum elatius* subsp. *bulbosus*), recovered from a deposit of possible pyre debris in the double ring ditch monument, is associated with the creation of a firebreak around a pyre in long grassland (Stevens, Chapter 10), this would suggest the existence of reasonably extensive areas of long grassland in the area by this time.

Pollen analysis covering the Neolithic to the Early Bronze Age in and around London has frequently indicated localised patches of clearance followed by regeneration of secondary woodland (Scaife 2000, 112–3). Similarly, the relatively high numbers of hawthorn-type charcoal in the assemblages from ICSG and RMC Land (Challinor, Chapter 10) also suggests the presence of thorny scrub either at the edge of woodland or regenerating within previously cleared areas. The charcoal assemblage from an Early Bronze Age cremation grave at ICSG points to long, wet rough grassland possibly in relict woodland, with some indication of patches of overgrown shrub, probably brambles and/or dog rose; the grave contained no oak charcoal, but had a predominance of hazel and hawthorn type/group.

Economy
by Chris J. Stevens

The environmental evidence for the economy in this period is sparse. No charred material was recovered from Early Neolithic features, but the Middle Neolithic features did produce ample evidence for hazelnuts, along with a single sloe, these probably representing only a fraction of a much wider range of wild foods that were collected.

Although cereal agriculture is at least demonstrated for the Early Neolithic from Kingsmead Quarry Horton only 8 km to the west (Chaffey and Brook 2012; Pelling forthcoming), there is still no conclusive evidence, despite the many environmental samples taken from ICSG and RMC Land (and also from Heathrow Terminal 5: Framework Archaeology 2010), for cereal agriculture in the immediate area during the Middle Neolithic to Early Bronze Age. While several Early and Middle Neolithic features did produce cereal remains, the fact that these were of hulled barley and free-threshing wheat suggested that the remains were intrusive and of more recent date, a suspicion confirmed by radiocarbon dating (Barclay and Stevens, Chapter 11: NZA-32684 from the long enclosure G3001, NZA-32687 and NZA-36738 from pits 5783 (Group I) and 11024 (Group Q)). None of the cereal remains, therefore, can be attributed safely to the Middle or Late Neolithic, and there is no secure evidence for cereals until the Early to Middle Bronze Age transition (*c.* 1600 BC).

Animal bone was similarly sparse (Grimm, Chapter 9). A single rib of cattle was recorded from

Plate 2.1 The excavation of feature G2004, viewed from the south-east

an Early Neolithic feature at ICSG, while only a few fragments of cattle, along with a single metapodial of sheep/goat and two pig teeth came from Middle Neolithic pits spread across both sites. A pit or shaft of possible Early Bronze Age date contained both antler and a cattle horncore (of either domesticated cattle or aurochs), and a few other features of Late Neolithic to Early Bronze Age date also contained some remains of cattle. This pattern reflects the generally poor representation and preservation of animal bone in most of the surrounding sites; for example, only a few remains of cattle and possibly red deer were recorded from the Heathrow Terminal 5 excavations (Knight 2006).

Pre-Neolithic

There is very little evidence for human habitation prior to the first recorded traces of Neolithic activity on the two sites. The earliest evidence consists of two Palaeolithic flakes (ONs 13046 and 13049) that were recovered from the natural gravel (10810) on ICSG. Palaeolithic material has been recovered from the vicinity of the site (Wymer 1999) both from the Lynch Hill and Taplow Gravels (see Bradley, Chapter 7). Similarly, very little diagnostic Mesolithic flintwork was identified from either site. A microburin from a tree-throw hole on ICSG (10313), which also contained 10 flakes together with later pottery, and three microliths from RMC Land (tree-throw hole 3872; Late Bronze Age/Early Iron Age pit 2266; and 1100, a flint scatter of apparently mixed date). The microliths, two of simple edge-blunted type and the third a geometric type, are of Late Mesolithic date (Fig. 7.1, 1–3). A small number of blades and blade-like flakes recovered from both sites may also be contemporary. Other probable Mesolithic flintwork was recovered as redeposited material mostly from RMC Land.

The Late Mesolithic flintwork indicates at the very least that people were passing through the area during the 8th–5th millennia BC. It is possible that any contemporaneous occupation sites are situated closer to the River Colne. Holgate noted that sites of broad Late Mesolithic date tend to cluster further up the Colne Valley catchment or just outside its lower western reaches close to the River Thames (1988, 99–104 and map 9).

Early Neolithic

Within the overall distribution of Neolithic features in ICSG/RMC Land (Fig. 2.2), the evidence for Early Neolithic activity is concentrated in the southern part of ICSG (Areas C–D) (Fig. 2.3), where three features (G2004) within an area 15 m across produced 317 sherds (4496 g) of Early Neolithic pottery, amounting to 96% (by weight) of all the Early Neolithic pottery from both sites. It is possible that some of this evidence belongs to an early phase of the Neolithic (before *c.* 3650 BC) when farming practices were first introduced to Britain (Barclay 2007, 333 and table 15.1).

Feature G2004

Most of the pottery (255 sherds, 4089 g) came from a large irregular feature (G2004) measuring up to 4.5 m by 8.8 m wide, and up to 1.7 m deep (Fig. 2.4). This feature, which was located within an area of more widely disturbed ground that contained a number of tree-throw holes and other possibly natural features, comprised a sequence of cuts and recuts. These were excavated in a series of 2 m wide slots through the disturbed ground (Pl. 2.1).

It is clear that the two cuts that contained the bulk of the Early Neolithic finds (30064 and 30666) had

Figure 2.2 Distribution of Neolithic and Early Bronze Age features at ICSG and RMC Land

cut through the fills of earlier features whose form it was possible to only partly determine. At the southern end of G2004, features 30080 and 30081, possibly a single feature up to 8 m long and 0.7–1.1 m deep with irregular sides and an uneven base (possibly a hollow left from a fallen tree trunk), contained a series of lower (gravel-rich) and upper (brickearth-derived) fills, one of the latter producing a single Early Neolithic sherd (3 g). These fills were cut by feature 30064, which was at least 4.2 m long and of similarly irregular profile, but cutting no deeper into the underlying natural than the earlier features. It contained a series of fills with varying quantities of brickearth and gravel components resulting largely from collapse of the sides and natural silting. Together these produced 255 sherds (2912 g) of Early Neolithic pottery representing at least three vessels (Fig. 6.1, 1–3). Most of the sherds came from the basal fill, the rest being distributed throughout the profile. From an upper fill, were also recovered six pieces of struck flint, and burnt flint (20 g).

There was a similar sequence at the northern end of G2004, where feature 30666 also appears to have cut through an earlier, sterile feature (30681, visible in section). Feature 30666 was at least 3 m wide and 1.7 m deep, and produced 208 sherds (3641 g) of Early Neolithic pottery, eight pieces of struck flint and a small quantity of cattle bone (5 g). Here too the pottery was distributed through the fill sequence, although most of it (2727 g) came from a layer of backfilled gravel (30661) in the upper half of the profile.

The function of these cuts is unclear, and there must be some uncertainty as to their date. Their size and irregular form are similar to Middle Bronze Age feature 30814 (see below) which cut the eastern edge of feature 30666, and which contained 29 sherds (181 g) of Middle Bronze Age pottery (as well as a further 24 Early Neolithic sherds (129 g), presumably redeposited). Feature 30814 was cut in turn by a ditch (G2198) of the later prehistoric field system, which also defines the eastern edge of the area of disturbed ground. While it is possible that G2004 is also of Middle Bronze Age date, with the Early Neolithic pottery deriving from an earlier feature that it cut, possibly a tree-throw hole similar to a nearby feature (G2005) which contained further sherds (see below), the relatively high quantity of Early Neolithic

Figure 2.3 Neolithic and Early Bronze Age features and pit groups at ICSG

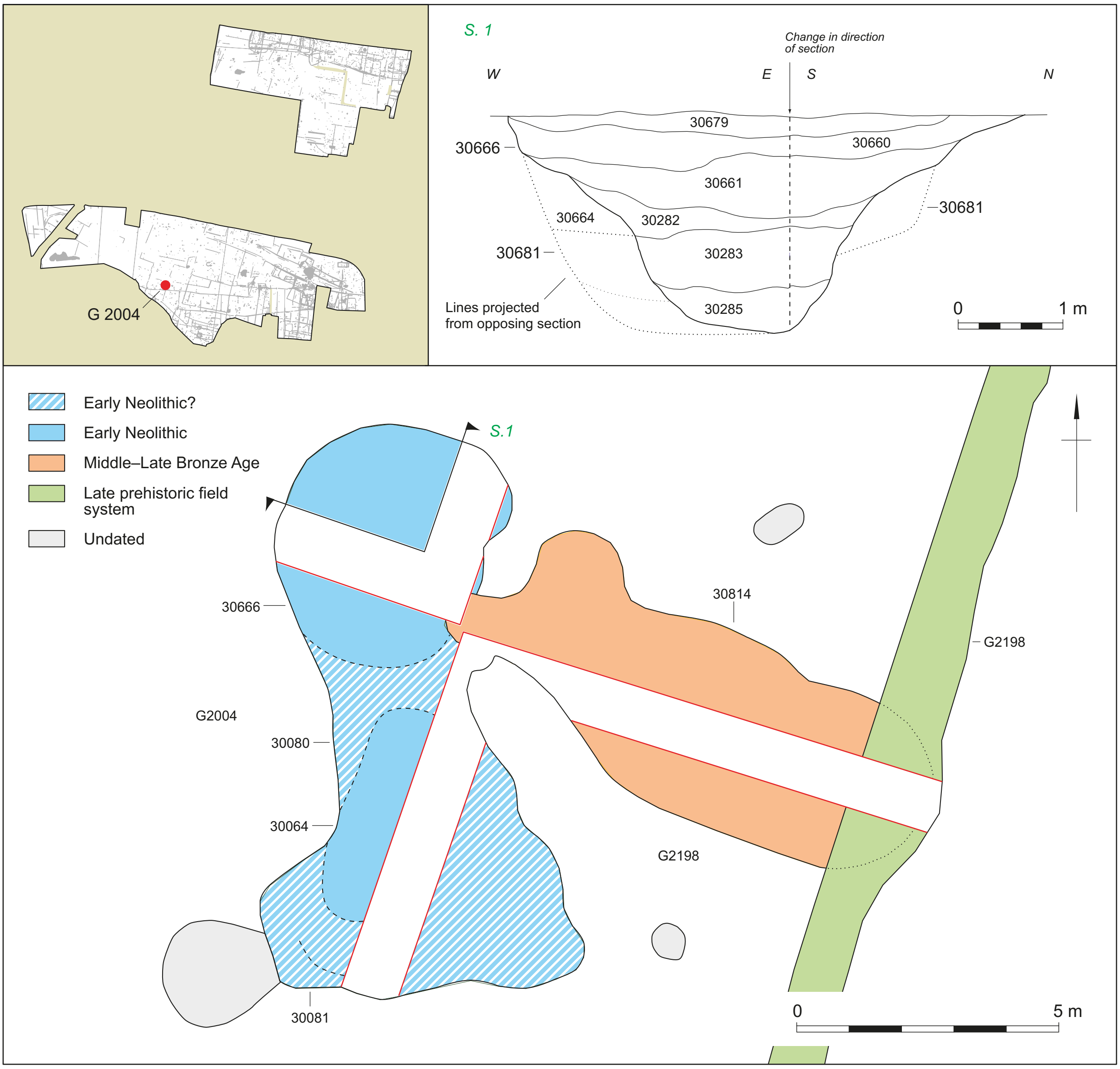

Figure 2.4 Feature G2004 (ICSG): plan, and section of feature 30666

pottery from this feature makes it stand out, and a Neolithic date, therefore, cannot be ruled out.

Tree-throw Holes

A tree-throw hole (G2005) 46 m south of feature G2004 (Fig. 2.3) produced 42 sherds (132 g) of Early Neolithic pottery, 58 struck flints and burnt flint (14 g), with a further five sherds (5 g) from the fill of a ditch terminal that cut it. A single sherd (2 g) and burnt flint (64 g) were also recovered from a sample from tree-throw hole G3067, 20 m to the east of G2004 (Fig. 2.3). A tree-throw hole (17072) on the southern edge of Area C contained a further 15 sherds (86 g), and nine pieces of struck flint including flakes from a polished implement made of a grey, very cherty flint distinct from many of the polished axe fragments found in the Middle Neolithic pits (Bradley, Chapter 7).

A further 11 sherds (32 g) of Early Neolithic pottery were recovered from two features associated with a penannular ditched monument (G3002, see below) in the centre of the site (Fig. 2.3). Seven of the sherds (along with 37 sherds of Late Bronze Age/Early Iron Age (LBA/EIA) pottery) were recovered from the monument's ditch (G152) (see Fig. 2.8), although this has been tentatively assigned a Middle Neolithic date on the basis of its similarity to monument G2008 (see below). The ditch was cut by an irregular feature (G151), measuring 3.4 m by 5.4 m and 0.5 m deep, possibly another tree-throw hole, from which a further four Early Neolithic sherds were recovered (as well as nine LBA/EIA sherds from the upper of its three fills).

At RMC Land a single Early Neolithic sherd (13 g) was recovered from tree-throw hole 4478, which lay within the four Middle Neolithic pits of pit group C (below, Fig. 2.18).

As with the Late Mesolithic, little can be said about the earliest Neolithic activity on the two sites other than to note its presence, which appears to indicate that this was an area where people passed through, rather than one they occupied for any length of time. The pottery recovered from the features that comprise G2004 is likely to derive from a small temporary settlement, and is of a type that should belong to the 38th or 37th centuries BC (see Barclay 2007, 335 and table 15.1). Similar pottery comes from the ring ditch at Staines Road Farm, Shepperton (Jones 2008), where it was probably redeposited, and from a timber-built house at Kingsmead Quarry, Horton (Chaffey *et al.* forthcoming). It is probably not as early as assemblages from a natural shaft at Cannon Hill, Maidenhead (Bradley *et al.* 1975–6), perhaps of 40th or 39th-century BC date, and from the earliest deposits at the Eton Rowing Course (Barclay 2013; Allen *et al.* 2004; Allen *et al.* 2013). However, combined with the evidence from Shepperton and Horton it could indicate that farming practices spread across the Colne Valley catchment, probably with the movement of people, from the 38th century BC onwards. The similarity in ground plan between the house structures at Horton and Cranford Lane (Chaffey *et al.* forthcoming; Nick Elsden pers. comm.) can be taken to suggest a similar date. The actual location of the Cranford Lane house site is only 1 km east of the activity at ICSG.

Early to Middle Neolithic

Introduction

There are three main elements to the archaeology in this period (Figs 2.2 and 2.3). The first is a rectangular ditched enclosure (G3001) located at the north-east of ICSG (Area A) (Pl. 2.2). The ditch produced a small quantity of Middle Neolithic Peterborough Ware pottery, and comparison with similar monuments in the region suggests a mid- or late 4th millennium BC date (below). The second element comprises three circular monuments arranged in a north–south line in ICSG (Area D). The most southerly (G2007), a double ring ditch with a central cremation burial and further burials from within the ditches, produced a series of close radiocarbon dates from the end of the 4th millennium BC. Comparable dates were obtained from two further burials within a penannular ditched monument (G2008) to its immediate north. A second penannular ditched monument (G3002) lay some 200 m to the north, but contained no evidence for burials. The third element consists of some 90 pits, most containing varying quantities of Peterborough Ware and struck flint. These occurred both in groups and as isolated features, the greatest concentration being found in the central areas of RMC Land, but with a significant number also at ICSG (Area B), possibly forming a broad north–south band spanning both sites (Fig. 2.2).

Plate 2.2 Neolithic long enclosure G3001 before excavation, viewed from the north-east

In addition, a single isolated feature (40413) at ICSG (Area E) (Fig. 2.3), measuring 0.3 m in diameter, contained some form of cremation-related deposit, producing 6 g of cremated bone from an individual aged over 25 years. The bone provided a radiocarbon date of 3120–2930 cal BC (NZA-32693, 4399±50 BP at 95% probability). It is possible that some of the other undated features containing cremation burials or cremated-related deposits, identified on both sites, also belong to this phase (see McKinley, Chapter 9).

Monuments

Rectangular monument G3001

The rectangular monument (Pl. 2.2), which measured externally 34 m east–west by 15 m north–south, was defined by a substantial ditch with a U-shaped profile (G496) averaging over 2 m wide and 0.9 m deep (Fig. 2.5). An internal, north–south cross-ditch of similar dimensions (G503), 3.5 m from its eastern end, divided the monument into two parts, their internal areas having a ratio of 1:8. A small number of features were recorded within the monument but none could be definitely associated with it.

The ditches produced a small assemblage of finds comprising 24 sherds (47 g) of Middle Neolithic

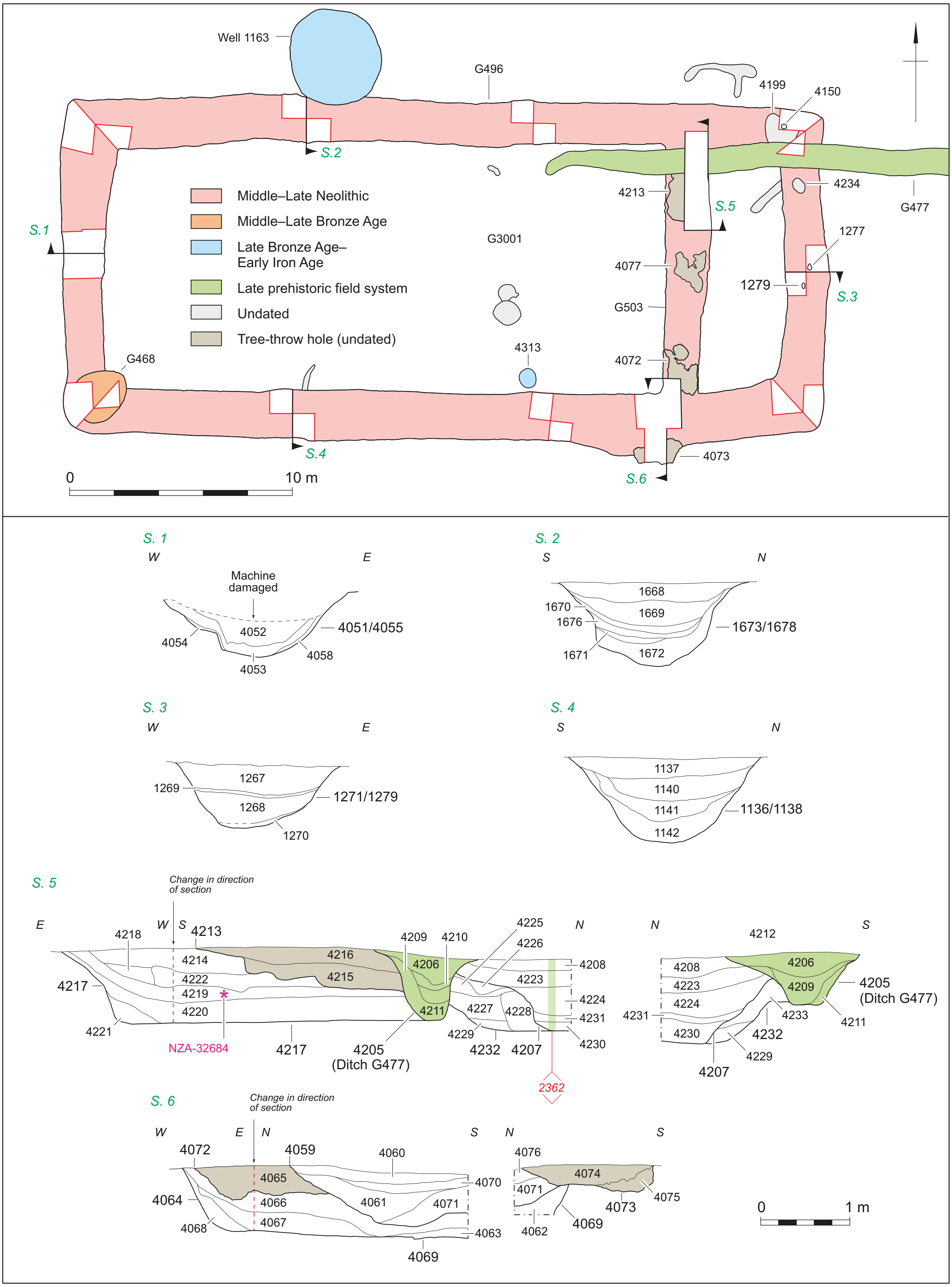

Figure 2.5 Neolithic rectangular monument G3001 (ICSG): plan and ditch sections

Peterborough Ware pottery (and later sherds from upper fills), small quantities of struck flint and fired clay and a single fragment of animal bone. The only sample suitable for radiocarbon dating, comprising charred cereal from the internal cross-ditch, produced a date in the early medieval period (see Chapter 11), indicating that the material was intrusive. The finds provide no clues as to the monument's function, although magnetic susceptibility readings obtained from the interior were very high compared to those obtained from outside, possibly indicating burning within the interior.

Although it is clear that this monument was constructed in more than one phase, its exact sequence of development is not entirely clear. There are indications that the outer ditch may have been recut, although evidence for this (cut 4232 and recut 4207) was only observed on the northern side at its intersection with the cross-ditch (cut 4217) (Fig. 2.5, section 5). Nor is the relationship clear between the outer ditch and the cross-ditch. On the north side, it appears that the cross-ditch (cut 4217) terminated at the inner edge of the outer ditch (cut 4232), but their relationship is obscured by a tree-throw hole (4213) and late prehistoric ditch G477 (cut 4205). On the south side, however, it appears that cross-ditch (cut 4064) terminated at the outer edge of the monument, and, when it had largely silted up, its fills were cut first by a tree-throw hole (4072) and then by a slightly shallower cut (4059) of the outer ditch (Fig. 2.5, section 6).

One interpretation of these relationships is that the cross-ditch may have originally formed the eastern end of the monument. When the monument ditch had almost fully silted, and had at least one tree (4072) growing in it near its south-east corner, as well as possibly another (4213) at the north-east corner and a third (4077) between them, the ditch was completely recut along the north, west and south sides, leaving almost no traces of its earlier fills. At the same time it was extended eastwards by 5 m, by cutting a new ditch at the east end. The fact that this extension narrows slightly (by 1 m) towards the eastern end supports the interpretation for two phases of construction. One possibility is that the monument was extended in order to incorporate the trees growing at its eastern end as a feature within the remodelled monument. This type of monument enlargement is far from unique and can be paralleled elsewhere (see *Discussion*, below).

The sequence of fills in ditch G503 varied slightly between its north and south ends. At the north (cut 4217), where it had a convex eastern side and a flat base, it had initially silted up with redeposited grey-brown brickearth to a depth of 0.25 m (4221), before being overlain by a layer of very dark grey clayey silt (4220), then a layer of grey silt containing flecks of burnt clay (4219). Following a further layer of redeposited brickearth (4222), the ditch's uppermost fill was a dark organic-rich silty clay (4214). The fills of the tree-throw hole (4213) which cut these upper fills contained rare flecks of charcoal. At the ditch's south end (4069), where its west side and base were concave in profile (and where it may have turned to the west as an original cut of the outer ditch), there was a primary fill of redeposited brickearth (4068) lying largely against the side, but also covering part of the base where it contained moderate charcoal flecks. This was overlain by a darker grey layer (4067), containing lenses of very dark grey, and reddish brown, silty clay. The uppermost surviving layer (4066), cut by both tree-throw hole 4072 and the (re)cut of the outer ditch (4059), was a very dark grey clayey silt.

If these fill sequences relate to the initial period of the monument's use, they give few clues as to its function, the small quantities of charcoal and burnt clay recovered from some of the fills appearing to be more characteristic of background activity than of deliberate burning within the interior of the monument, despite the high magnetic susceptibility readings.

The sequence of fills in the outer ditch, including the possible eastward extension, is largely consistent around the monument's circuit (Fig. 2.5, sections 1–4), and again gives few clues as to its function. They included a basal fill of redeposited brickearth often containing distinct lenses of darker soil, and occasionally with flecks of charcoal and possibly burnt clay. The overlying secondary fills were generally darker in colour but again apparently the result of natural silting, while the uppermost fills were generally dark and organic-rich. While in some sections the fills appear to show preferential silting from one side or the other, this is insufficiently consistent to indicate the erosion of either an internal mound or an external bank. No deliberate deposits of any kind were noted in the ditch and all the finds came from the upper fills.

Discussion

The final form of the monument is comparable with that of a number of uninvestigated features of similar plan identified from air photographs near the Stanwell bank barrow to the south-west (Field and Cotton 1987, fig. 4.5). Its rectangular shape, the absence of any entrance and paucity of finds are echoed in the elongated monuments found in many of the river valleys of eastern and central England (Loveday 2006, 54–7 and fig. 28), as at Dorchester-on-Thames and Yarnton, both in Oxfordshire, higher up the Thames Valley (Whittle *et al.* 1992, fig. 4; Hey 1997, fig. 10.5), at Rivenhall, Essex (Buckley *et al.* 1988), or on the Great Ouse near Bedford (Malim

2000, fig. 8.13). Dating evidence for these monuments is generally slight, but some show a spatial relationship to cursus monuments, as at Dorchester-on-Thames, Stanwell and Bedford, and others have yielded Neolithic Bowl pottery, as at Rivenhall (Buckley *et al.* 1988, 90) and Radley (Barclay and Halpin 1999, 19), or Peterborough Ware, as at Dorchester (Whittle *et al.* 1992, 148) and Yarnton (Gill Hey pers. comm.). A mid- or late 4th millennium date seems likely, although at present the dating for this type of monument remains imprecise (see Barclay and Bayliss 1999, 26–7).

As with many of the excavated long enclosure sites (Loveday 2006), the monument at ICSG contained little in the way of artefactual evidence other than a few scraps of pottery, some worked flint, burnt clay and a single animal bone fragment. Unlike the nearby sites of Manor Farm, Horton (Ford and Pine 2003) and Staines Road Farm, Shepperton (Jones 2008), none of this material can be considered to have been placed with any formality and it is more likely, therefore, that it simply represents an incidental accumulation of rubbish. The assumed mortuary function of such enclosures is actually based on little recovered evidence and may have been overstated. The ICSG enclosure provided no direct evidence for the disposal of human remains, although it must be noted that the site was only partially excavated and that bone preservation on the site was often very poor.

The regular rectilinear ground plan with right-angled layout of the ditch can be found in a number of other sites in the Thames Valley, most notably the excavated sites of Radley (Bradley 1992) and Yarnton (Loveday 2006, fig. 57) but also the cropmark sites of Stadhampton (Barclay and Brereton 2003, 232, pl. 10.2 and fig. 10.7) and Stanton Harcourt (Barclay 1995, 101). With the exception of Yarnton none of these sites appears to have clearly defined entrances. In this respect this type of enclosure bears some similarity, albeit in miniature form, to the precise layout of some square-ended cursuses (eg, Barford, Warwickshire; Lechlade, Gloucester and Springfield, Essex: Loveday 2006, 28, figs 14 and 33). Other mortuary enclosures in the Middle and Upper Thames occur in a variety of shapes and sizes in comparison to the one at ICSG and not all are of rectilinear plan as some appear elongated and oval. Of the ones with more rectilinear ground plans, some like Radley are quite small (20 x 10 m), others are proportionally much longer (Dorchester-on-Thames) and others more square-like (Sonning) (Fig. 2.6).

It is unclear whether the ICSG site originally had earthworks as no extant banks or mound had survived and nothing could be deduced with any certainty from the ditch fills. The relatively broad and substantial surrounding ditch would certainly have produced sufficient earth to make at least a bank if

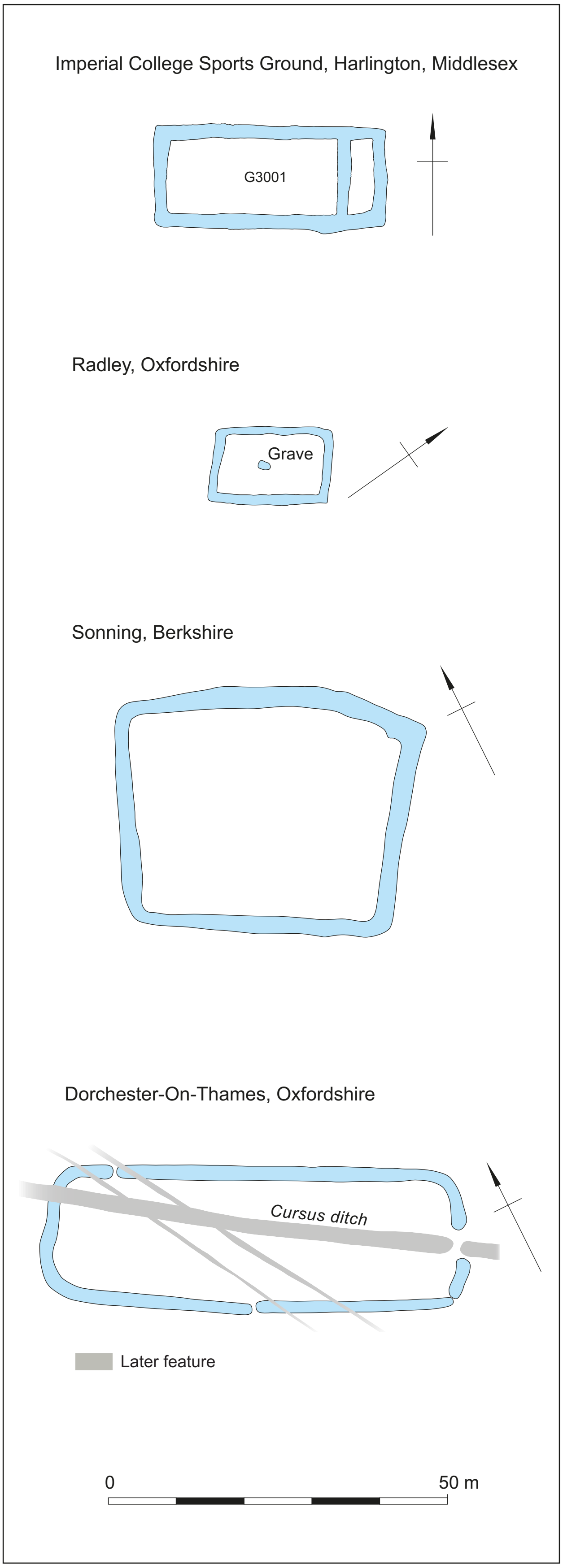

Figure 2.6 Comparative plans of long mortuary enclosures from the Thames Valley

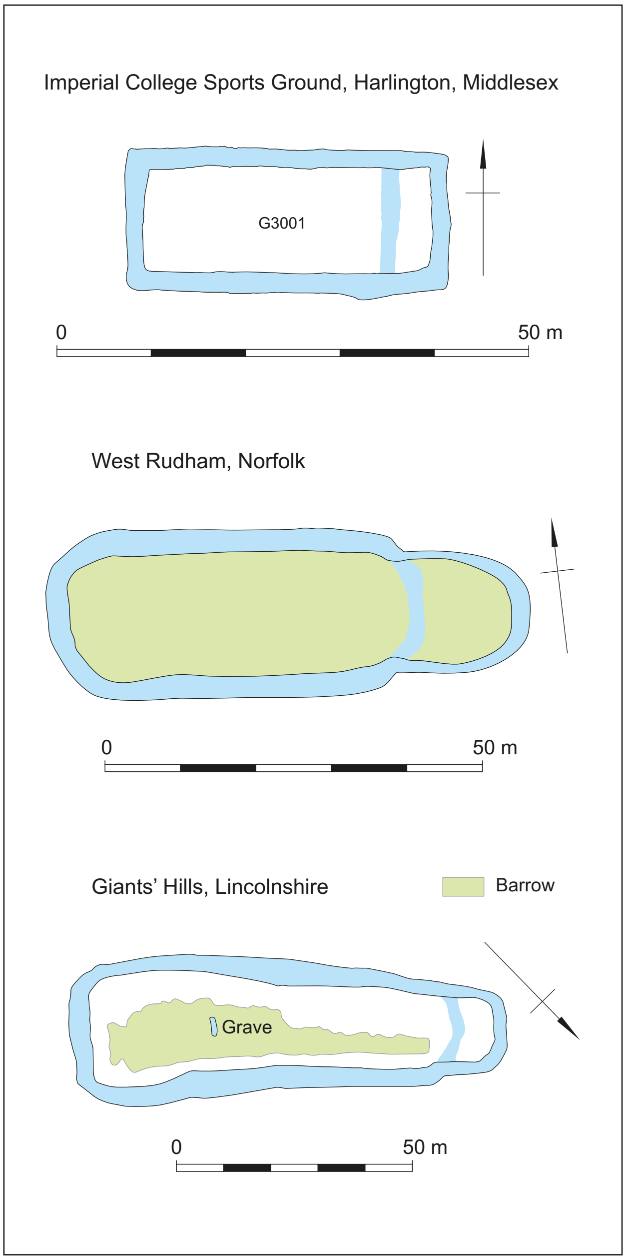

Figure 2.7 Comparative plans of long mortuary monuments with terminal extensions

not a central mound as both possibilities are recorded elsewhere (Loveday 2006, 56). A comparison can be made with the ditch at Site VIII, Dorchester-on-Thames (Fig. 2.6), which is of similar proportions. However, at this site the cutting of the central area by a cursus ditch almost certainly argues against the former presence of a central mound (see Whittle *et al.* 1992, 152).

The recutting and extension to the ICSG ditch are features shared with other monuments, although this practice was not a common one at long enclosures. The modification and transformation of sites occurred elsewhere, the best and most complex example of this being Radley, where a similar rectilinear enclosure was eventually transformed into an oval barrow (Bradley 1992). The slight elongation of the ICSG site is difficult to parallel amongst other similar types of enclosures, although it is strikingly similar, at least in plan, to the long mounds of Giants' Hill 2, Skendleby, Lincolnshire and West Rudham, Norfolk (Fig. 2.7) (Kinnes 1992, 195–6). This practice may be akin to the enlargement of circular barrows and the elongation of other long monuments. However, as explained above the circumstance for this alteration may have been for entirely practical reasons with the incorporation of a small number of trees.

The purpose of this particular monument in the absence of hard evidence can only be a matter of speculation, although it almost certainly belonged with a series of monuments of a variety of forms, two of which contained a small number of human burials. The continuous ditch of the secondary phase would suggest an act of closing off the interior, which if coupled with a possible interior or exterior bank would make this area inaccessible. It is possible that such areas were reserved for the temporary storage of corpses as suggested by Kinnes (1992), although again such a practice would be almost impossible to substantiate. Another possibility is that the interior was used as a site for cremation pyres but again the evidence is inconclusive.

Loveday (2006, 126) amongst others has noted the similarity in plan at least between some long enclosures and houses. The possibility that the form is an attempt to represent the collapsed remains of older structures is intriguing, in particular given that houses are thought to have disappeared from the archaeological record before the first enclosures were constructed (Barclay 2007, 338 and table 15.1). If there is a connection, then the apparent absence of domestic waste from such sites (including ICSG) would suggest that they did not serve as places of everyday residence, but may have been used instead as enclosed arenas or sanctuaries for restricted and ritual activity.

It is unclear what, if any, significance the long enclosure's east–west alignment may have had, although it can be noted that two of the three other monuments at ICSG had entrances that opened towards the east (see Figs 2.8 and 2.11). It is also observed that the long enclosure aligns approximately on the northern end of the Stanwell bank barrow (Fig. 2.1), a relationship it shares with the U-shaped enclosure at Horton (see Lamdin-Whymark 2008, 161 and fig. 53); while such long-distance linearity in the organisation of monuments is a common feature of the 4th millennium BC, it may only have worked in a relatively cleared landscape. It is possible that such an alignment came about by chance rather than design, as it is possible that there was already an east–

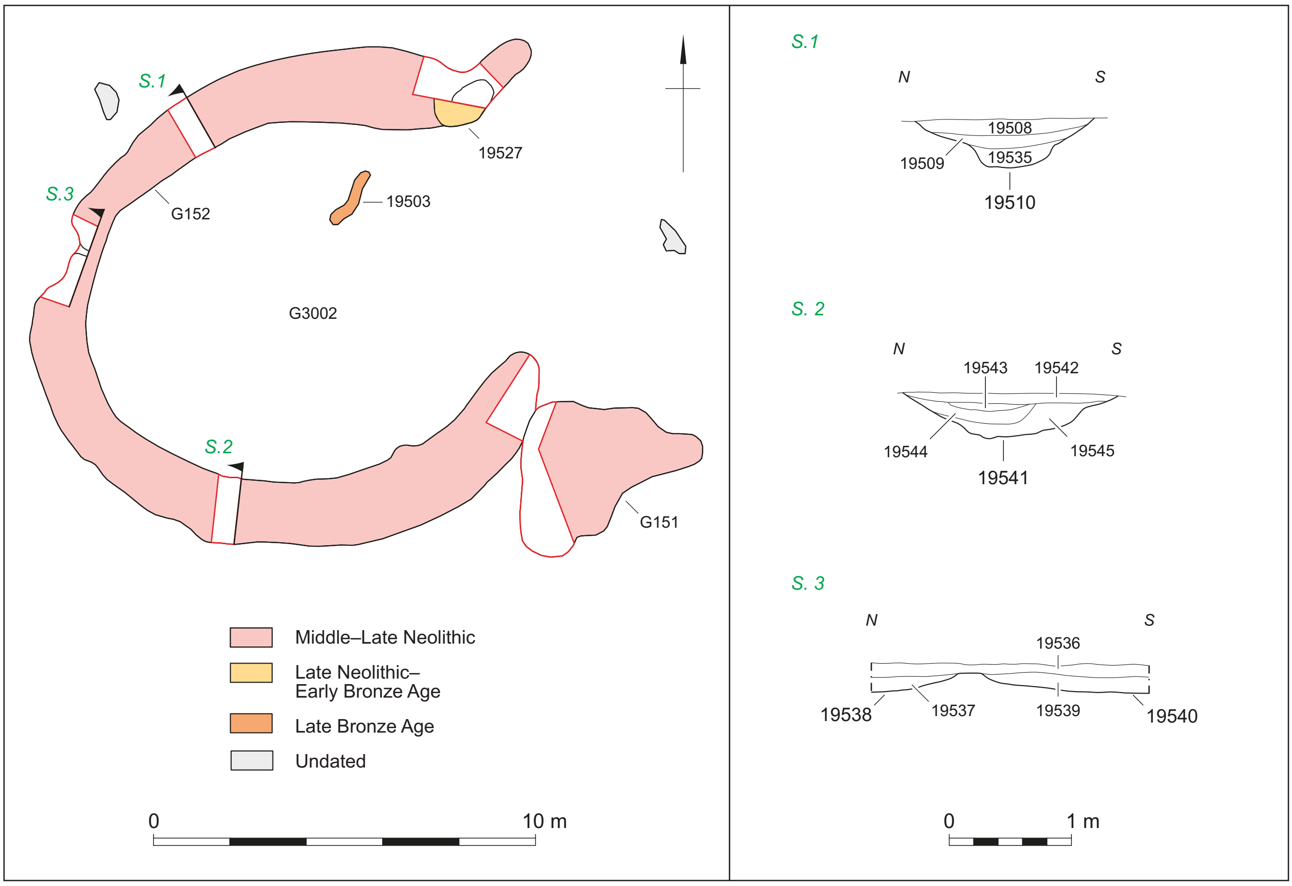

Figure 2.8 Penannular ditch G3002 (ICSG): plan and ditch sections

west route, across the relatively flat terrace, connecting the nearest points of the rivers Colne and Crane (Fig. 2.1). At ICSG this east–west axis may have subsequently become fossilised in the landscape as other, much later burials were made between and beyond the two Neolithic monuments in both the Early and Middle Bronze Age.

Ring ditches G3002, G2008 and G2007

Penannular ditch G3002

A penannular monument (G3002), more ovoid in shape than G2008 which lay 185 m to the south (see below), and with no evidence for cremation or mortuary activity, lay some 400 m west of the long enclosure (G3001) (Fig. 2.3). The penannular monument (G3002) was defined by ditch G152, and measured internally 9.5 m wide and at least 11 m long, with a 6 m wide entrance facing just north of east (Fig. 2.8). The northern ditch terminal had a short outward turning extension, and within it there was an oval pit or posthole (19527), 0.8 m by 1.1 m extending up to 0.2 m below the base of the ditch, although the relationship between the ditch and the pit is unclear. There was no similar arrangement at the simple, rounded, southern terminal.

Around most of its circuit the ditch was largely uniform in size, 1.4–2 m wide and 0.22–0.36 m deep (Fig. 2.8, sections 1–2), although slightly larger towards the terminals. However, there was a distinct narrowing to 0.6 m at the west where there was a narrow causeway, 0.15 m deep, between shallow terminals visible in the base of the ditch (Fig. 2.8, section 3), suggesting that the ditch had initially been dug as two segments – a shorter one to the north and a longer one to the south. No other segments were identified around the ditch circuit. The ditch, which contained between two or four fills, exhibited no indication of any internal or external earthwork, and the only internal feature was a short irregular linear feature (19503) that produced five small sherds (7 g) of possible LBA/EIA pottery.

As mentioned above, the ditch fills contained pottery of both Early Neolithic (7 sherds, 19 g) and LBA/EIA (37 sherds, 168 g) date, as did an irregular feature (G151) immediately outside its southern terminal. The LBA/EIA sherds were recovered in roughly equal quantities from the lower and upper ditch fills. Other finds include 11 pieces of worked flint, including an end and side scraper of possible Late Neolithic or Early Bronze Age date, two pieces of fired clay and single pieces of burnt flint and stone. The finds, therefore, provide apparently conflicting evidence as to the date of this feature, which unfortunately provided no material suitable for

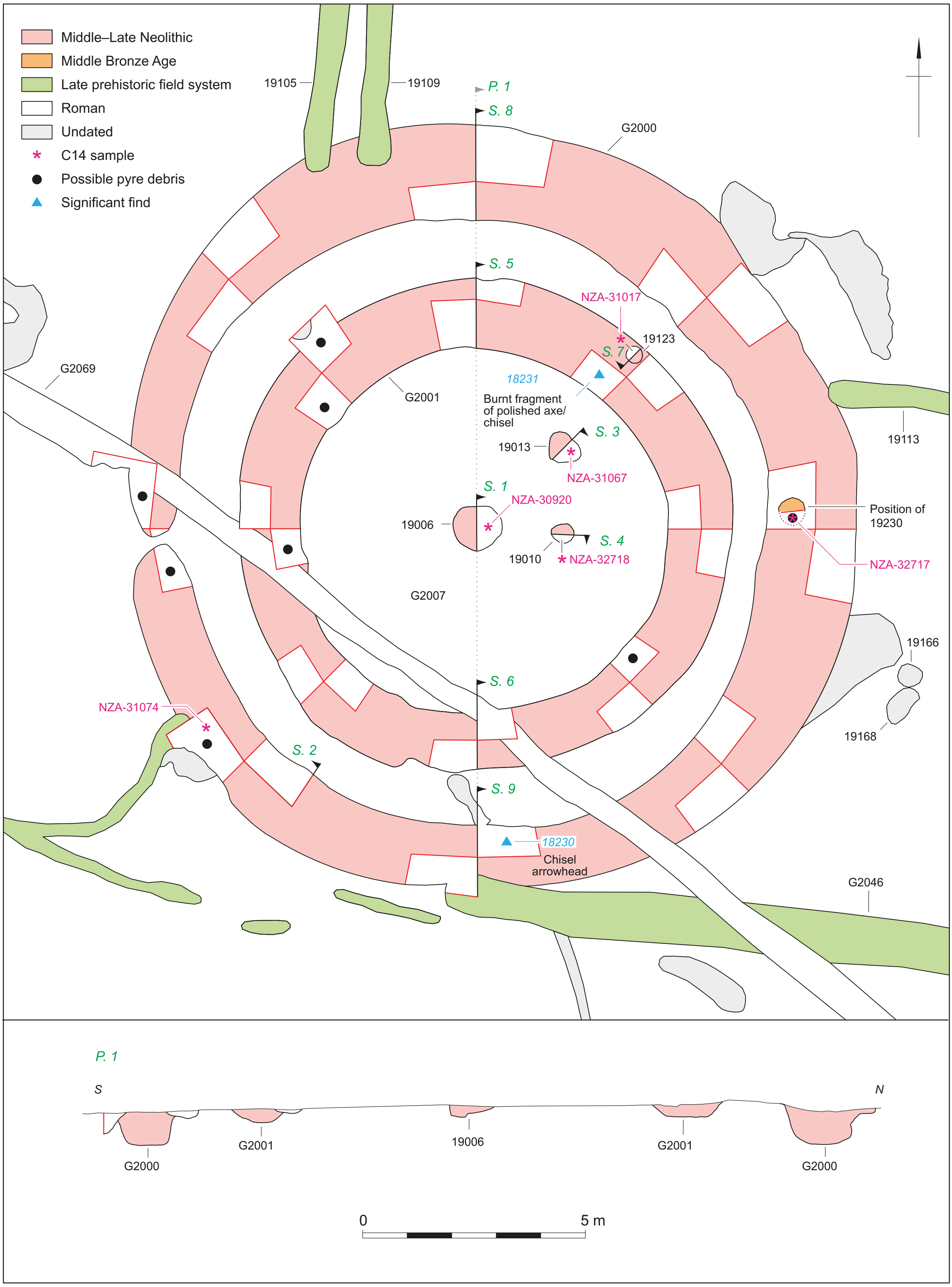

Figure 2.9 Double ring ditch monument G2007 (ICSG): plan and north–south profile

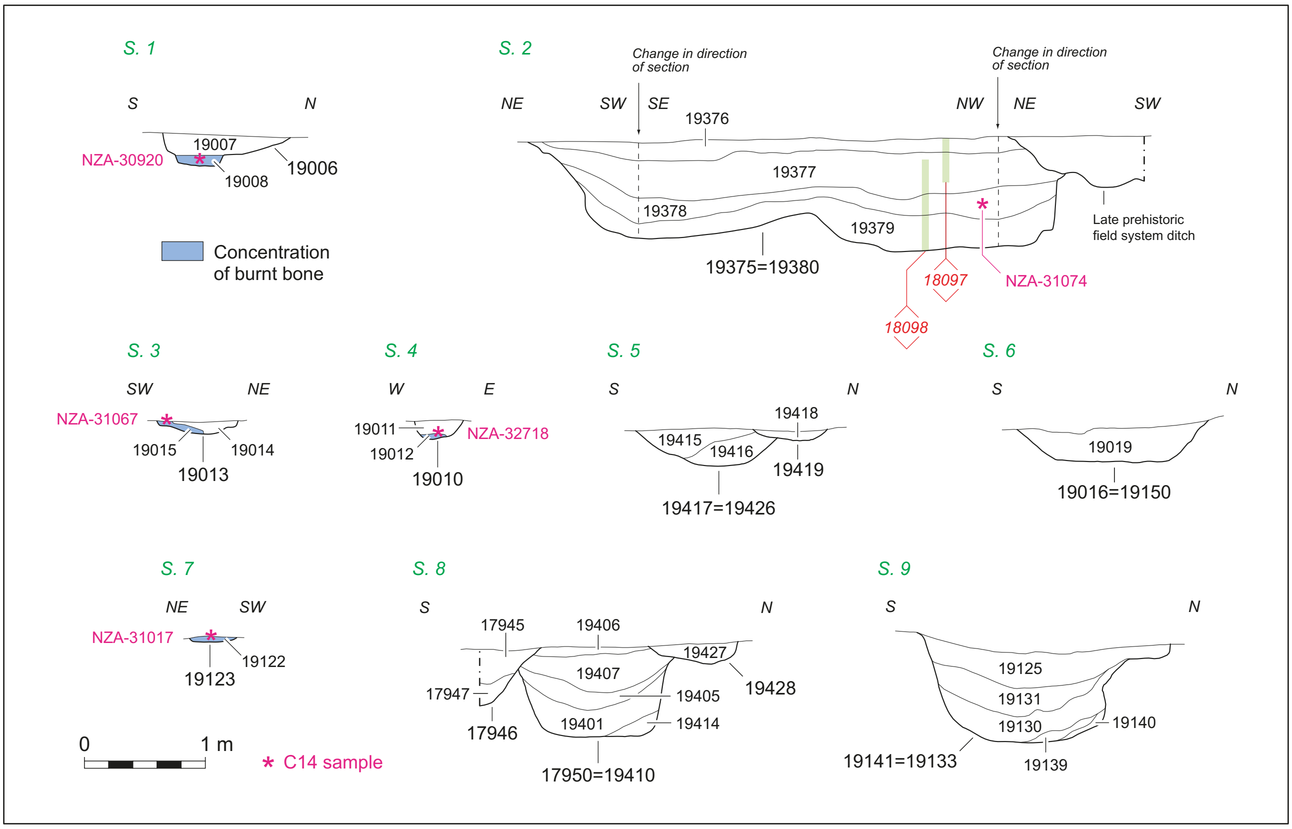

Figure 2.10 Double ring ditch monument G2007 (ICSG): ditch and grave sections

Plate 2.3 Neolithic double-ditched round barrow with central cremation grave, viewed from the south-east, with Middle Bronze Age pit 19230 cutting the outer ditch

radiocarbon dating. The ditch's relative proximity to penannular ditch G2008, and its similarity in form (Fig. 2.14), suggests a comparable Middle Neolithic date although, in the absence of any human remains, perhaps not a similar function. The spatial relationship between G3002 and the other three monuments can also be noted (Fig. 2.3). The centre of G3002 sits close to a line projected through the east–west long axis of long enclosure G3001 and is almost directly north of G2007 and G2008.

Double ring ditch monument G2007

A double ring ditch monument at the south of Area D (Figs 2.3 and 2.9, Pl.2.3) had a central grave (19006) containing the unurned cremation burial of a possible female aged 25–35 and a child aged 3–6 years. The cremated bone (1097 g) had been placed in the western part of the grave, which was 1 m in diameter and up to 0.25 m deep with moderately steep sides and an uneven base (Fig. 2.10, section 1). A sample of the cremated bone from the female produced a radiocarbon date of *3240–3010 cal BC (at 95% probability)* (NZA-30920, 4485±30 BP). No finds were recovered from the grave, but its central position within the monument suggests it was contemporary with the construction of one or both of the ring ditches. This is supported by a radiocarbon date of *3130–2930 cal BC (at 95% probability)* (NZA-31074, 4427±40 BP) obtained from charred onion couch grass tuber recovered from a deposit of possible pyre debris in the second of four fills (19373) in the south-west quadrant of the outer ditch (Fig. 2.10, section 2) and by the date of *3260–2930 cal BC (at 95% probability)* (NZA-31017, 4447±40 BP) obtained from the cremated bone from grave 19123 that cut the uppermost fill of the inner ditch.

Two other unurned cremation graves lay within the circuit of the inner ring ditch. One (19013), to the north-east of the central grave, was 0.7 m in diameter and 0.1 m deep, and contained an individual aged

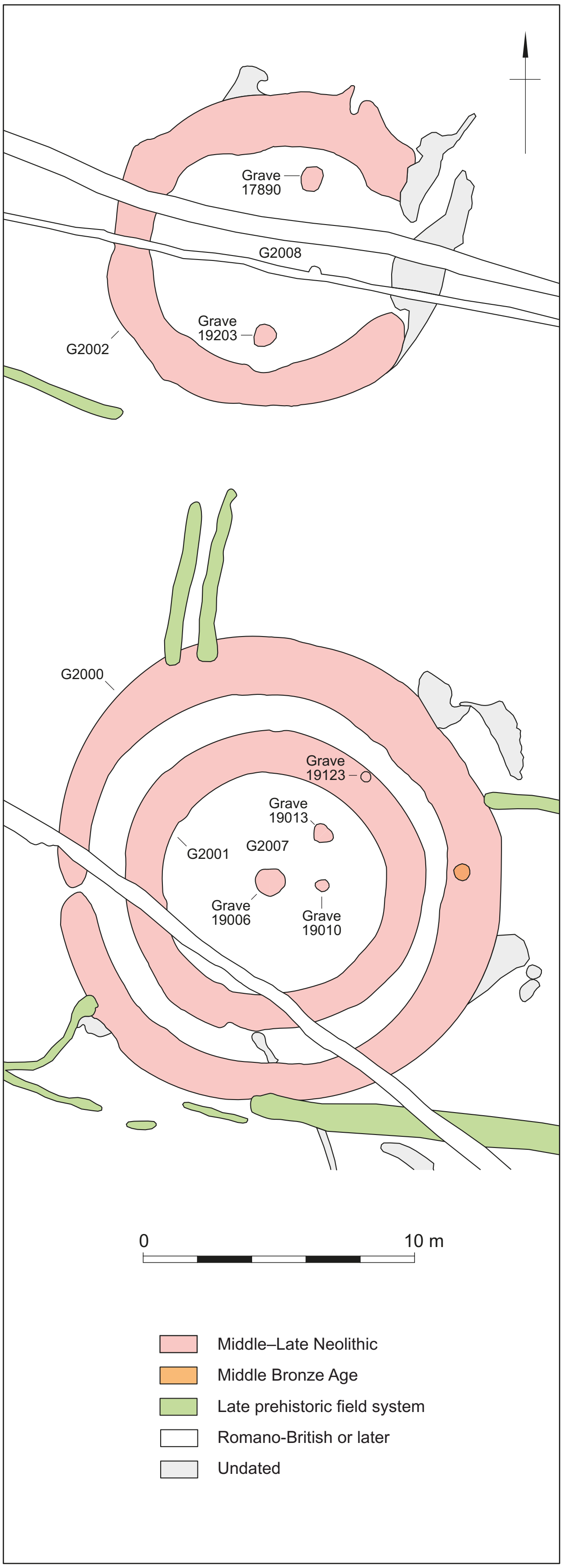

Figure 2.11 Plan showing proximity of monuments G2007 and G2008 (ICSG)

30–45 (Fig. 2.10, section 3). Cremated bone from the burial produced a radiocarbon date of *3180–2930 cal BC (at 95% probability)* (NZA-31067, 4435±40 BP). The other (19010), east of the central burial, was 0.4 m in diameter and 0.16 m deep and contained the remains of a child aged 5–8 years (Fig. 2.10, section 4). Cremated bone from this grave provided a slightly later radiocarbon date of *3100–2920 cal BC (at 95% probability)* (NZA-32718, 4330±45 BP).

The inner ring ditch (G2001) had an internal diameter of 8.2 m, and averaged 1.4 m wide and 0.4 m deep, with generally shallow sides and a flat or concave base (Fig. 2.10, sections 5–6). In most excavated sections two fills were recorded, although in the deeper sections there were up to four. It appears to have silted up entirely through natural processes and the generally symmetrical fill profiles give no indication of an internal mound or external bank. The only pottery from the ditch was one small flint-tempered sherd from the lower fill on the eastern side; other finds comprised four flints and two fragments of fired clay.

The flints included a burnt chisel or axe fragment (Fig. 7.1, 7), possibly a pyre good, and a blade, both of which came from the upper fill on the north-east side, close to a cremation grave (19123). The grave, measuring 0.3 m by 0.4 m and 0.05 m deep (Fig. 2.10, section 7), cut the ditch's upper fill, and cremated human bone from it, from a possible male aged 15–20, produced a radiocarbon date of *3260–2930 cal BC (at 95% probability)* (NZA-31017, 4447±40 BP).

There was a gap of 0.7–1.5 m between the inner and outer ditches, although given the level of truncation this may originally have been considerably less. The outer ditch (G2000) was a slightly less regular circle, being 13.1–13.9 m in internal diameter and not quite concentric with the inner ditch. In addition, there was possible evidence, particularly at the west, that at least part of the ditch had been dug as distinct but largely conjoined segments, with a number of shallow undulations in the base possibly representing segment terminals (Fig. 2.10, section 2). In addition, there was a 0.2 m wide gap between two terminals on the west side that could mark a possible entrance.

The outer ditch was 1.3–2.1 m wide and 0.7–1.1 m deep, being generally narrower and shallower at the south and west (Fig. 2.10, sections 2 and 8–9). An average of six fills were recorded in its excavated sections, and these appear, as with the inner ditch, to have accumulated through natural silting, with some dark, organic-rich layers possibly representing stabilisation layers. The ditch produced a significantly larger assemblage of finds than the inner ditch, comprising five sherds (11 g) of Peterborough Ware and two sherds (8 g) of Late Bronze Age pottery, as well as 65 pieces of struck flint (including a chisel arrowhead (Fig. 7.1, 8), two serrated blades and a scraper), 32 pieces of burnt flint (368 g), nine pieces of fired clay (42 g) and a single fragment of redeposited cremated human bone (from an individual aged over 18 years). However, only a few pieces of worked flint came from the primary or lower secondary fills, and the majority of finds came from the ditch's upper fills, the largest quantity being recovered from the section at the north. On the eastern side, the uppermost fill was cut by a Middle Bronze Age pit (19230, see Chapter 3), which contained debris that had been redeposited from a pyre, including cremated human bone, charcoal, struck and burnt flint, and possible urn sherds (1420–1130 cal BC at 95% confidence, NZA-32717, 3045±40 BP).

The Middle Neolithic date for the ring ditch and its associated cremation burials makes this an early monument of its type. Although the differences in form and content between its two ditches might indicate that it was constructed in more than one phase this is not borne out by the highly consistent radiocarbon dates. Because only a 25% sample of each ditch was excavated, it is unclear whether the possible evidence for segmented construction of the outer ditch was localised at the west or occurred more consistently around its full circuit. The reason for a narrow causeway being left unexcavated is also unclear, although such features are not uncommon at monuments of this general date. The apparent absence of dumped deposits in either ditch might indicate that both are contemporary, but the possibilities remain either that the central grave, covered by a small mound of material derived from the inner ditch, was located within a pre-existing segmented ring (or penannular) ditch, or that the central barrow was subsequently enlarged by the construction of the outer ditch.

Penannular ditched monument G2008

Immediately north of the double ring ditch there was a penannular ditched monument with two internal cremation graves (Figs 2.11–12). The ditch (G2002) was 8.5 m in internal diameter and with a 4 m wide opening at the east. It was of variable width and depth, 1.2–1.9 m and 0.22–0.4 m respectively, with a shallow rounded profile (Fig. 2.12, sections 1–3), and therefore similar in scale and profile to the inner ditch of the double ring ditch, possibility indicating that the two were contemporaneous. For most of its circuit the ditch had only a single fill, and there was no evidence for an internal mound or external bank. It produced a small finds assemblage, comprising pottery of Neolithic (nine sherds, 34 g), Late Bronze Age (1 sherd, 11 g), Romano-British (eight sherds, 32 g) and uncertain (six sherds) date, five pieces of

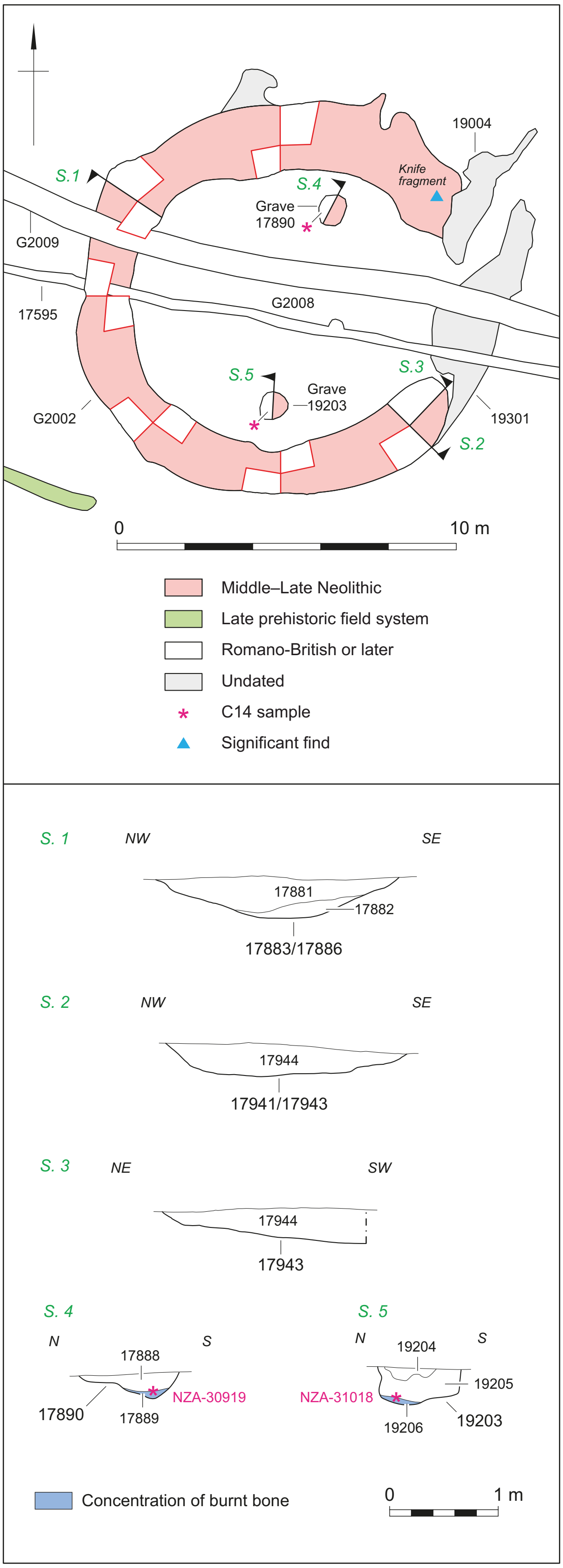

Figure 2.12 Penannular ditched monument G2008 (ICSG): plan and ditch and grave sections

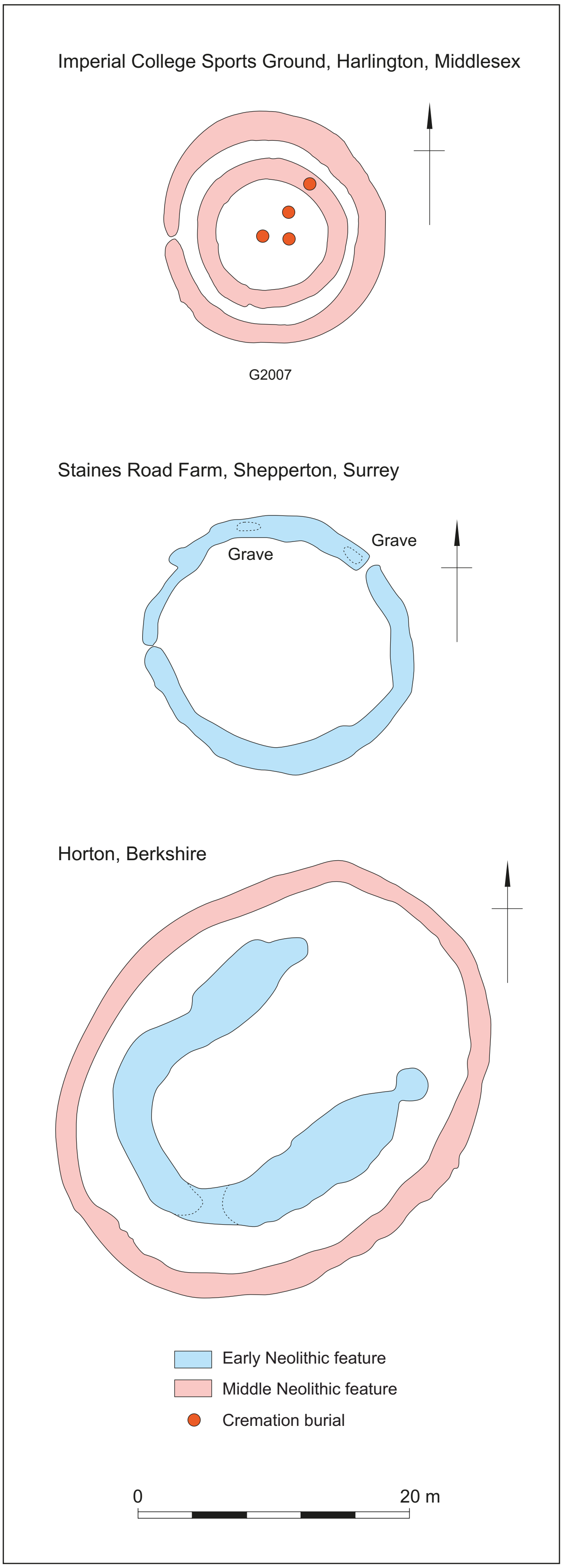

Figure 2.13 Comparative plans of local Early–Middle Neolithic mortuary monuments

flint (including a broken core tool, and a roughly worked piercer, Fig. 7.5, 63), and two pieces of burnt flint.

Two unurned cremation graves were located just inside the ditch. At the north, grave (17890), 0.9 m in diameter and 0.2 m deep (Fig. 2.12, section 4), contained the remains of an individual aged 8–14 years, the bone producing a radiocarbon date of *3270–2960 cal BC (at 95% probability)* (NZA-30919, 4460±35 BP). At the south, grave 19203, 0.8 m in diameter and 0.3 m deep, contained the remains of an individual aged 13–16 years, and a single sherd of Middle Neolithic pottery (Fig. 2.12, section 5); the bone produced a radiocarbon date of *3100–2940 cal BC (at 95% probability)* (NZA-31018, 4367±40 BP).

Discussion

On the basis of their forms, construction technique and associated finds all three ring ditches could be of Middle Neolithic date (broadly 34th–29th centuries cal BC). Modelling of the available radiocarbon measurements from the two sites indicate that activity at G2007 could have lasted for up to *130 years (68% probability) and possibly 310 years (95% probability)* and could have been slightly earlier or contemporaneous with G2008 (see Chapter 11). At both sites funerary activity could have started in the 33rd or 31st century BC and ended in the 30th century BC.

There is a concentration of Neolithic ring ditches of various forms in the lower Colne Valley and on the West London gravel terraces (Fig. 2.1). Given the presence of the Stanwell bank barrow that runs for some 3.6 km, the Staines causewayed enclosure and a second possible enclosure at East Bedfont, this is not surprising and the area can be recognised as a regional centre perhaps of a similar standing to Avebury and Dorchester-on-Thames. The four monuments investigated at ICSG can be described as a monument complex, which is of a type that is frequently encountered on the river gravels of central southern England (Loveday 1989 and 2006; Barclay *et al.* 2003). However, in the immediate area such complexes are rare, although other sites may await discovery. On a much larger scale is the bank barrow and cursus complex at Stanwell (Framework Archaeology 2010), where a complex of smaller monuments was intersected by the line of the Stanwell bank barrow.

Ring ditches and related monuments in the Heathrow area exhibit a variety of forms (Fig. 2.13). At Staines Road Farm, Shepperton, Surrey (Jones 2008), a ring ditch with two entrances, one to the west like G2007 (Fig. 2.13), was associated with human burials and placed animal bone deposits of Early Neolithic date (36th–34th centuries BC). The ditch was later recut and possibly lined with white clay, an episode of activity that was associated with placed deposits of animal bone and antler, and Peterborough Ware pottery. At Horton a U-shaped ditch, again of similar Early Neolithic date, was associated with placed deposits of occupation-like material (Chaffey *et al.* forthcoming) (Fig. 2.13). This monument was later enclosed by a continuous oval ditch. As with the monument at Shepperton the ditch was associated with placed deposits, consisting of bark containers, antler and a single Fengate Ware bowl (Ford and Pine 2003).

What have been described as formative henge monuments (Atkinson's class I 1951, 82) are defined as having an inner bank and usually only a single entranceway, and they comprise an eclectic group of monuments that include the more massive Stonehenge earthwork enclosure, Flagstones and Llandegai Site A (Harding 2003, 13), which belong to the later centuries of the 4th and start of the 3rd millennium BC. The Shepperton ring ditch, although much smaller, would certainly fit within this group. It is earlier in date than the above sites (Shepperton phase 1, modelled as *first 3530–3400 cal BC to last 3420–3370 cal BC, 68% probability)*, although this could reflect the limited number of currently available radiocarbon dates. Whether the original site was conceived as a henge and belongs to a wider tradition, or represents local developments, is a moot point. In both its primary and secondary phases (before and after the 34th century BC) its ditches were used for a series of votive deposits (Jones 2008). The form of its ditch is certainly similar in design to that of the outer ditch of ICSG G2007 and both monuments could be expressions of similar ideas. That this tradition of single entrance henges had a long duration is confirmed by a probable third site at Kingsmead Quarry, Horton (Chaffey *et al.* forthcoming). Again votive deposits, in this case involving animal bone, were made in the ditch, although on this occasion the site is much later in date, probably Early Bronze Age, as the ditch produced sherds of Collared Urn. Further afield but related to this type of monument is the ring ditch at Linch Hill, Stanton Harcourt (Oxfordshire) (Grimes 1960), where a possible henge was probably enclosed and enlarged by a later more substantial and continuous ditch. At its centre was a single inhumation of a young adult placed with an edge-polished flint knife and a jet belt slider. The monument as a whole shares some similarity with ICSG G2007. The precise date of the inhumation is uncertain, although based on other recently dated single graves it is likely to fall either in the 35th to 33rd centuries BC, or possibly slightly later. The important difference is the contrast in burial rite. One possibility is that the rite of inhumation burial was replaced by that of cremation at monument centres by the 33rd or 31st century BC, although another scenario is that the two burial rites co-existed in adjacent regions.

The two ICSG penannular ditched enclosures are both slightly oval with single, relatively wide entrances. They may be related to a group of monuments that are commonly referred to as U-shaped enclosures (Loveday 2006; Bradley and Holgate 1984) and which could also be precursors to single-entrance henges. Both types of monument are found on the Thames and Midland gravel terraces, either as isolated sites or in close association with mortuary enclosures or cursus monuments (Loveday 1989; Case 1982; Bradley 1992). A similar enclosure was found at Perry Oaks (Framework Archaeology 2006, 72) and another at Manor Farm, Horton (Fig. 2.13). A monument, similar in form to G3002, which also lacked any evidence for mortuary activity, was recorded at Mayfield Farm, East Bedfont (MoLAS 1993, 19, fig. 5).

Of the two penannular ditched enclosures at ICSG only one was associated with cremation burials, indicating that this type of site may have had more than one purpose, and/or that the cremation graves are slightly later additions. Unfortunately the dating evidence from monument G3002 is ambiguous. At the Eton Rowing Course, some 20 km upriver from the Colne Valley, a penannular ring ditch with a wide entrance of suggested Early Neolithic date, has been excavated adjacent to an extensive midden deposit (Allen *et al.* 2004, 97 and fig. 9.4; Allen *et al.* 2013). A similar enclosure, 12 m in diameter with a 7 m wide entrance, has been investigated at Thrupp Farm, Radley in the Upper Thames (Harding with Lee 1987, 259). Both suggest that this form of monument had a distribution that encompassed both the Upper and Middle Thames Valley.

The occurrence of cremation burials at ICSG is of significance as often such features are associated with major monuments (eg, Duggleby Howe and Stonehenge) or monument complexes (eg, Dorchester-on-Thames) (Atkinson *et al.* 1951; Whittle *et al.* 1992). They tend to be interpreted as cemeteries and, although dating evidence is limited, they are generally considered to be a Late Neolithic (mid-3rd millennium BC) phenomenon. At ICSG those that are associated with the monuments G2007 and G2008, as well as the outlier 40413, are all of 33rd/31st–30th century BC in date, and may pre-date many of the better known sites (see Parker Pearson *et al.* 2009). However, the date and origin of these cremation cemeteries are still poorly understood. This is certainly true of Dorchester-on-Thames, only 50 km west of ICSG, which contains both the highest number of discrete cemeteries (seven) in southern Britain and also the greatest number of individual cremation deposits (156) (see Loveday 2006, 146–8). The 12 radiocarbon dates available for the site as a

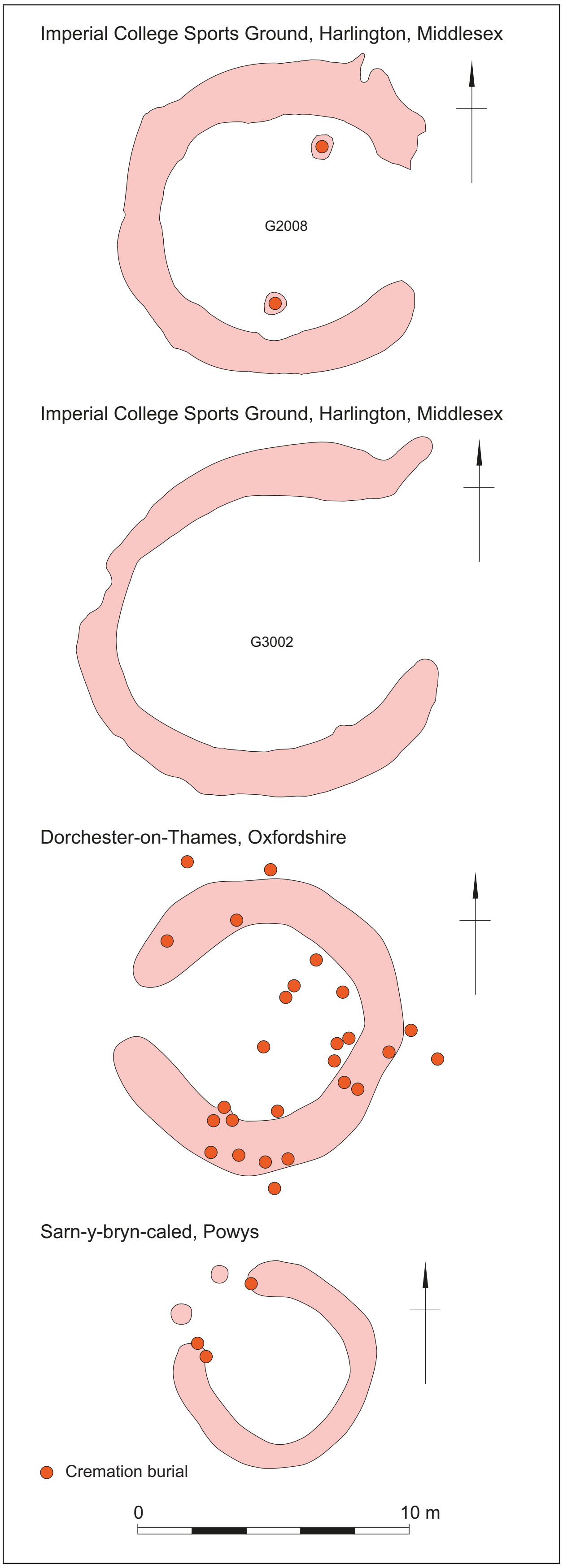

Figure 2.14 Comparative plans of U-shaped enclosures showing associated mortuary deposits

whole do present the basis from which an outline sequence can be drawn (Whittle *et al.* 1992, 196–8; Bradley and Chambers 1988), but this important work needs to be revised, especially now that cremated bone can be directly dated.

At Dorchester-on-Thames cremation burials were associated with a variety of monument types that included segmented ring ditches, single-entrance henges (Fig. 2.14) and pit and post-circles. Most of the sites (I–II, IV–VI and XI) cluster around a much earlier long mortuary enclosure (Site VIII), but also emphasise and reference the long axis of a cursus (Site III). Only two sites with cremated remains (XI and 2) have radiocarbon dates, and in both cases the cemetery phase is unlikely to date before the 30th century BC (see Chapter 11 for a discussion of the evidence). None of the other sites can be precisely dated without a further programme of radiocarbon dating. However, an early 3rd millennium BC date would appear most likely for many of them, with the possible exception of Site I. It could be that all or most of the Dorchester sites are later than the two from ICSG.

There is at least one further site from the Upper Thames that could be comparable – New Wintles Farm, Eynsham just west of Oxford, which is interpreted as a possible timber mortuary structure enclosed by a segmented ditch (Kenward 1982). The dating evidence consists of a few Early Neolithic bowl sherds including two refitting sherds from a decorated rim. Burnt bone was recovered from five pits. The pottery would suggest an early cremation cemetery site of mid-4th millennium BC date. As with other monuments in the Thames Valley, it is possible that an Early Neolithic mortuary structure was enclosed by a later oval ditch, which then became the focus for a cremation cemetery. Other possible sites include Barford 83A, Warwickshire, a multi-phased enclosure (Oswald 1969), and Sarn-y-bryn-caled (Site 2) (see Fig. 2.14), Powys, cremated bone from which has now been directly dated and falls no earlier than the 30th century BC (Gibson 2010). On present evidence the two ICSG monuments stand out as amongst the earliest cremation cemeteries within southern Britain, and potentially fill a gap within the 33rd–31st centuries BC between single grave inhumation (eg, Mount Farm, Radley and Linch Hill in the Upper Thames Valley – see Hey *et al.* 2011), that arguably belong to the 36th–34th centuries BC, and the much later sites associated with Dorchester-on-Thames.

There is a strong probability that other ring ditch enclosures with cremation cemeteries exist at the numerous cursus sites in the Upper Thames Valley as many monuments of this form are known from aerial photographs (see Barclay and Brereton 2003) but await investigation. One site in particular is North Stoke where a short bank barrow is surrounded by a cluster of ring ditches (Case 1982). In addition, other isolated cremation burials and deposits of pyre debris, like ICSG 40413 and cremation grave 137027 found at Heathrow (Perry Oaks) (Framework Archaeology 2006, 31), may have been overlooked.

Pits

Around 76 Middle Neolithic pits were identified across RMC Land (Fig. 2.15), and a further 23 at ICSG (Fig. 2.16) (Tables 2.1–2). Some were in identifiable groups (Groups A–M at RMC Land and N–R at ICSG) while other were more isolated. The pits are characterised in most cases by a broad similarity in form and the recovery from them of sherds of Peterborough Ware, with other finds including struck and burnt flints, fired clay, animal bone and non-local stone (summarised in Tables 2.1 and 2.2).

Form, identification and distribution

The majority of pits were approximately circular, although a few more oval or irregular forms were also noted. They range from 0.3 m to 2.5 m in diameter, although the majority are in the 0.5–1.3 m diameter range, the average being 0.9 m at RMC Land and 0.7 m at ICSG. It is clear that most had been truncated to some degree as they ranged in depth from just 0.05 m up to 1 m, averaging 0.28 m at RMC Land and 0.18 m at ICSG. Most of the pits had sloping sides and slightly concave bases, and the close correlation between size and depth probably reflects the different degrees to which they had been truncated as much as any variations in their original forms.

There are, however, a number of problems in the identification and definition of the pits. Those that occurred in groups were usually the easiest to identify, but there is a higher level of uncertainty about the identification of the more isolated features, which on average were slightly larger. Firstly, many pits contained only small quantities of Peterborough Ware (and other finds) and it is likely that in some cases this material is residual in later features; similar (and sometimes larger) quantities of residual Neolithic finds were found in features that are clearly of later date, resulting probably from the relative intensity of Neolithic activity on both sites. Moreover, a small number of pits contained flints (and other materials) but no pottery, and while in some cases, such as pit 4239 at ICSG (see below), the flints can be assigned to the Middle Neolithic with some confidence, in others (eg, pits 17588 and 40252 in Areas D and E at ICSG: Fig. 2.15) they are only of general Neolithic appearance; however, they are included here on account of the overall similarity of the pits.

Plate 2.4 Excavated section of possible Neolithic pit 5380

The form and scale of a number of the features containing Peterborough Ware sherds, but no later finds, fall well outside the normal pit range, increasing the likelihood that these features are later in date, and the pottery within them residual. A large hollow (719, Area 1) (Fig. 2.15) measuring 4.4 m by 5 m and 0.4 m deep towards the west end of RMC Land, for example, produced 10 sherds (98 g) of Peterborough Ware, seven struck flints and a small quantity of burnt flint from the upper part of its single fill. The feature, which is of unknown function, lies within an otherwise isolated cluster of smaller features, most of them undated and containing no finds, but two, including two adjacent pits (733 and 1118), containing further comparable finds. It is possible that the material in the hollow is residual, deriving from activity at this location. Near the north-west corner of the same site (Fig. 2.15), feature 753, which was 1.6 m long and 0.7 m deep but cut by a later ditch, was interpreted as a number of intercutting quarry pits; it contained four sherds (9 g) of Peterborough Ware, 38 struck flints and burnt flint (65 g).

Of particular note among these larger features was a group of four oval pits close to each other in a rough west–east line in RMC Land/LEWGF (Area 4, Fig. 2.15). Pit 5380, measuring 1.9 m by 2.6 m and 2 m deep (and recut to a depth of 1.3 m by 5442), contained 13 sherds of Peterborough Ware (51 g) and 10 flints (including a broken scraper) (Fig. 2.17; Pl. 2.4); pit 5313, measuring 1.5 m by 2.7 m and 0.9 m deep, contained four sherds (9 g) and five struck flints; pit 5391, measuring 1.2 m by 2.8 m and 1.7 m deep contained four sherds (21 g) and five flints (including a backed knife); and pit 7177, measuring 1.4 m by 2.1 m and 1.2 m deep, contained four sherds (12 g) and a serrated flint flake.

The absence of identifiably later material in these features means that they could be Neolithic in date, indicating some other form of Neolithic activity to

Figure 2.15 Neolithic pits and pit groups at RMC Land

Figure 2.16 Neolithic pits at ICSG

Table 2.1 Summary of Neolithic pits RMC Land

Group	Feature	W (m)	L (m)	D (m)	Fills (no. from base)	Pottery (g)	Fired clay (g)	Struck flint (no.)	Stone (g)	Burnt flint (g)	Animal bone (g)	Hazelnut shells
RMC Area 1												
A	719	4.4	5.0	0.40	720 (1 of 1)	98	-	7	-	9	-	-
A	733	0.5	0.5	0.25	734 (1 of 1)	167	12	24	-	131	-	-
A	1118	1.5	1.9	0.60	714 (3 of 3)	102	9	17	-	68	-	-
-	683	1.0	1.0	0.20	685 (1 of 1)	3	-	-	-	3	-	-
-	753	1.4	1.6	0.70	752 (1 of 1)	9	-	38	-	65	-	-
-	1153	0.7	0.8	0.15	735 (1 of 1)	215	-	12	-	-	-	-
-	2003	0.7	0.7	0.10	2002 (1 of 1)	105	-	1	-	-	-	-
-	2026	0.6	1.5	0.20	2025 (1 of 1)	8	-	3	-	-	-	-
-	Ev605	0.3	0.3	0.05	EV604 (1 of 1)	98	-	2	-	-	-	-
RMC Area 2												
B	2752	0.7	0.7	0.40	2753 (upper spit)	4060	66	37	-	1108	4	365
					2754 (lower spit)	769	54	85	1312	82	20	-
B	2817	1.0	1.0	0.60	2814 (4 of 4)	635	9	13	-	12	-	-
					2815 (3 of 4)	850	-	31	-	9	1	260
					2816 (2 of 4)	206	-	7	262	69	3	-
					2863 (1 of 1)	77	-	26	-	-	8	-
C	4400	0.8	0.8	0.20	4401 (1 of 1)	230	-	1	-	-	-	255
C	4411	0.6	0.6	0.20	4414 (2 of 4)	1369	21	4	-	11	5	-
C	4422	0.9	0.9	0.50	4424 (1 of 2)	832	-	50	7713	10	8	-
C	4476	0.6	0.6	0.06	4477 (1 of 1)	27	-	2	-	-	-	-
C	4534	0.4	0.4	0.08	4535 (1 of 1)	-	-	6	-	-	-	-
D	4425	0.6	0.6	0.06	4426 (1 of 1)	26	-	1	-	-	-	-
D	4428	1.3	1.3	0.15	4431 (1 0f 3)	65	-	2	-	18	-	-
E	4471	0.8	0.8	0.10	4472 (1 0f 2)	12	-	-	-	-	-	-
E	4481	0.7	0.8	0.45	4484 (3 of 3)	30	-	6	-	-	-	-
					4483 (2 of 3) on base	64	-	13	-	107	1	195
I	5763	0.5	0.5	0.20	5764 (1 of 1)	-	-	12	-	1	-	-
I	5783	0.5	0.6	0.20	5784 (1 of 1)	1587	-	9	-	127	1	544
-	5616	1.0	1.0	0.20	5617 (1 of 1)	31	538	2	-	15	-	9
-	2158	1.3	2.2	0.60	2156 (4 of 6)	9	-	8	-	9	-	-
-	2162	0.3	0.5	0.10	2161 (1 of 1)	2	-	4	-	-	-	-
-	2164	1.1	1.3	0.20	2163 (1 of 1)	2	-	-	-	-	-	-
-	2169	0.9	2.1	0.50	2167 (2 0f 2)	26	-	4	-	-	-	-
-	2184	0.8	0.9	0.30	2183 (1 of 1)	1	-	1	-	8	-	-
-	2187	2.4	2.7	1.00	2188 (4 of 4)	842	-	8	-	-	-	1000+
-	2199	1.2	2.3	0.50	2197 (2 of 3)	3	-	6	-	10	-	-
-	2253	1.3	1.5	0.30	2255 (2 of 2)	3	-	3	-	-	-	-
-	2260	1.2	1.8	0.40	2261 (1 of 1)	2	-	1	-	-	-	-
-	2265	0.7	1.9	0.30	2268 (2 of 3)	4	-	1	-	1	-	-
-	3165	1.3	1.7	0.30	3101 (1 of 1)	372	-	1	-	-	-	-
-	3630	0.5	0.5	0.10	3631 (1 of 1)	111	-	-	-	2	-	-
-	4485	0.7	0.7	0.20	4486 (1 of 1)	15	-	3	-	684	-	-
RMC Area 3												
M	5912	1.0	1.0	0.12	5913 (2 of 2)	152	-	3	-	-	-	-
M	5923	0.8	0.9	0.20	5924 (1 of 1)	125	-	1	-	-	-	-
M	5961	0.8	0.8	0.10	5962 (1 of 1)	251	-	10	-	89	-	127
M	5969	1.0	1.1	0.40	5970 (1 of 1)		-	2	-	65	-	-
-	5950	1.1	1.1	0.20	5952 (2 of 2)	9	-	2	-	3	4	-
-	6293	0.6	0.6	0.10	6294 (1 of 1)	15	-	5	-	73	-	-
-	7217	0.8	0.8	0.1	7218 (1 of 1)	-	-	12	-	-	-	-
RMC Area 4												
F	4593	1.0	1.1	0.30	4594 (1 of 1)	73	-	2	-	9	179	-
F	4625	0.9	1.0	0.60	4626 (2 of 2)	10	-	1	-	-	-	-
G	4615	0.6	0.6	0.10	4616 (1 of 1)	265	-	6	-	-	-	-
G	4621	0.9	1.0	0.40	4622 (1 of 1)	26	-	6	-	-	-	-
G	4628	0.8	0.8	0.60	4629 (1 of 1)	27	-	3	-	4	-	-
G	4638	0.7	0.7	0.20	4639 (1 of 1)	70	-	8	-	-	-	-
H	4632	0.7	0.7	0.20	4633 (1 of 1)		-	1	-	53	-	-
H	4646	0.8	0.8	0.25	4647 (1 of 1)		-	6	-	-	-	-
H	4652	0.7	0.8	0.30	4653 (1 of 1)	13	-	-	-	-	-	-
H	4654	1.1	1.1	0.20	4656 (1 of 2)	53	-	-	-	-	-	-
H	4657	0.9	0.9	0.10	4658 (2 of 2) on base	8	-	-	-	-	-	-
H	4660	0.6	0.7	0.20	4661 (1 of 1)		-	3	-	-	-	-
H	4664	0.6	0.8	0.23	4664 (1 of 1	57	-	6	-	19	-	-
J	5035/5041	1.3	1.6	0.60	5036 (2 of 3)	46	-	1	-	45	-	-
J	5088	0.7	0.9	0.50	5089 (3 of 3)	88	-	14	-	108	2	120
K	5376	0.7	0.9	0.10	5377 (1 of 1)	3	-	2	-	-	-	-
K	5386	1.0	1.0	0.15	5387 (1 of 1)	138	-	4	347	-	-	-
K	5388	0.5	0.5	0.10	5390 (2 of 2)	22	-	1	-	-	-	-
L	5381	0.6	0.6	0.10	5382 (1 of 1)	212	-	8	-	121	-	-

Table 2.1 Continued

Group	*Feature*	*W (m)*	*L (m)*	*D (m)*	*Fills (no. from base)*	*Pottery (g)*	*Fired clay (g)*	*Struck flint (no.)*	*Stone (g)*	*Burnt flint (g)*	*Animal bone (g)*	*Hazelnut shells*
RMC Area 4 (con't)												
L	5392	0.9	0.9	0.40	5394 (3 of 3)	23	-	2	-	-	-	-
					5395 (2 of 3)	436	-	8	-	86	-	-
					5396 (1 of 3)	30	-	3	467	39	-	-
-	4617	1.0	1.4	0.15	4618 (1 of 1)	3	-	-	-	-	-	-
-	4623	1.1	1.7	0.15	4624 (1 of 1)	141	-	7	-	-	-	-
-	5101	0.5	0.8	0.20	5103 (1 of 2)	4	-	-	-	-	-	-
-	5313	1.5	2.7	0.90	5318 (6 of 6)	8	-	6	-	-	-	-
					5317 (5 of 6)	1	-	-	120	3	-	-
-	5328	0.4	0.4	0.18	5329 (1 of 1)	3	-	-	-	-	-	-
-	5352	0.7	0.8	0.20	5353 (1 of 1)	4	-	1	-	-	-	-
-	5369	0.7	0.8	0.20	5370 (1 of 1)	2	-	-	-	-	-	-
	5380	1.9	2.6	2.00	5427 (12 of 17)	1	-	-	-	-	-	-
					5438 (3 of 17)	13	-	-	-	-	-	-
-	recut 5442	1.9	2.6	1.30	5414 (9 of 9)	23	-	4	-	67	-	-
					5415 (8 of 9)	14	-	1	-	-	6	-
-	5391	1.2	2.8	1.70	5397 (16 of 16)	20	-	4	-	18	-	-
					5398 (15 of 16)	1	-	-	-	-	-	-
					5411 (3 of 16)	-	-	1	-	-	-	-
-	5393	0.5	0.5	0.10	5413 (1 of 1)	23	58	5	-	-	1	-
-	7177	1.4	2.1	1.2	7191 (14 of 16)	1	-	1	-	-	-	-
					7190 (13 of 16)	11	-	-	-	-	-	-
RMC evaluation												
-	Ev4003	1.4	2.1	0.30	Ev4004 (1 of 1)	132	10	-	-	-	-	-
-	Ev9006	0.4	0.4	0.2	Ev9007 (1 of 1)	1	-	-	-	-	-	-

Table 2.2 Summary of Neolithic pits ICSG

Group	*Feature*	*W (m)*	*L (m)*	*D (m)*	*Fills (no. from base)*	*Pottery (g)*	*Fired clay (g)*	*Struck flint (no.)*	*Stone (g)*	*Burnt flint (g)*	*Animal bone (g)*	*Hazelnut shells*
ICSG Area A												
N	G344	0.7	0.7	0.40	4411/4420/4422 (1 of 1)	242	-	36	-	193	3	73
					4412/4421 (lens in 4411/4420/4422)	203	2	21	-	20	58	24
N	G345	0.8	0.8	0.45	1683/1698 (1 of 1)	366	24	10	-	168	2	-
					1684/1699 (lens in 1683/1698)	481	11	6	-	28	36	42
-	4081	0.7	0.7	0.10	4082 (1 of 1)	211	-	5	70	-	2	-
-	4239	0.9	1.2	0.70	4243 (4 of 7)		-	24	-	-	-	-
ICSG Area B												
O	10236	1.0	1.0	0.20	10235 (1 of 1)	15	-	-	-	-	-	-
O	10238	0.8	0.8	0.10	10237 (1 of 1)	69	18	-	-	-	-	-
O	10459	0.9	0.9	0.10	10458 (1 of 1)	10	-	-	-	-	-	-
P	10298	0.6	0.6	0.07	10297 (1 of 1)	3	-	2	-	8	-	-
P	10300	0.4	0.4	0.05	10299	18	-	-	146	6	-	-
Q	10821	0.8	0.8	0.10	10820 (2 of 2)	1088	-	8	?	-	1	-
					10822 (1 of 2)	8	-	-	-	-	-	400
Q	11018	0.7	0.7	0.10	11017 (3 of 3)	2	3	2	-	-	-	-
					11019 (2 of 3)	1	-	3	-	-	-	-
					11020 (1 of 3)		-	-	-	-	-	395
Q	11024	0.4	0.4	0.07	11023 (1 of 1)	128	-	1	-	-	-	550
Q	11026	0.6	0.6	0.10	11025 (1 of 1)	28	-	12	?	-	-	380
-	1962	0.4	0.7	0.20	1961 (1 of 1)	23	-	-	-	-	-	-
-	10480	0.8	0.8	0.20	10478 (2 of 2)	123	8	8	461	84	-	-
					10479 (1 of 2)	107	-	-	22	-	-	-
-	11062	0.6	1.4	0.20	11061 (1 of 1)	23	-	-	-	-	-	-
-	11340	0.4	0.6	0.03	11339 (1 of 1)	133	4	1	-	14	4	172
ICSG Area C												
R	16031	0.6	0.6	0.07	16030 (1 of 1)	49	49	-	-	-	-	-
R	16033	0.7	0.7	0.06	16032 (1 of 1)	115	-	2	-	-	-	73
R	16109	0.8	0.8	0.16	16108 (3 of 1)	3	-	-	-	1	?	35
					16110 (2 of 1)	446	-	-	-	-	1	29
-	17057	0.6	0.7	0.20	17058 (1 of 1)	1	-	-	-	-	-	-
ICSG Area D												
-	17588	0.6	0.6	0.05	17589 (1 of 1)	-	-	17	-	-	3	-
ICSG Area E												
-	40252	0.8	0.9	0.1	40262 (1 of 1)	-	374	12	-	5	-	-

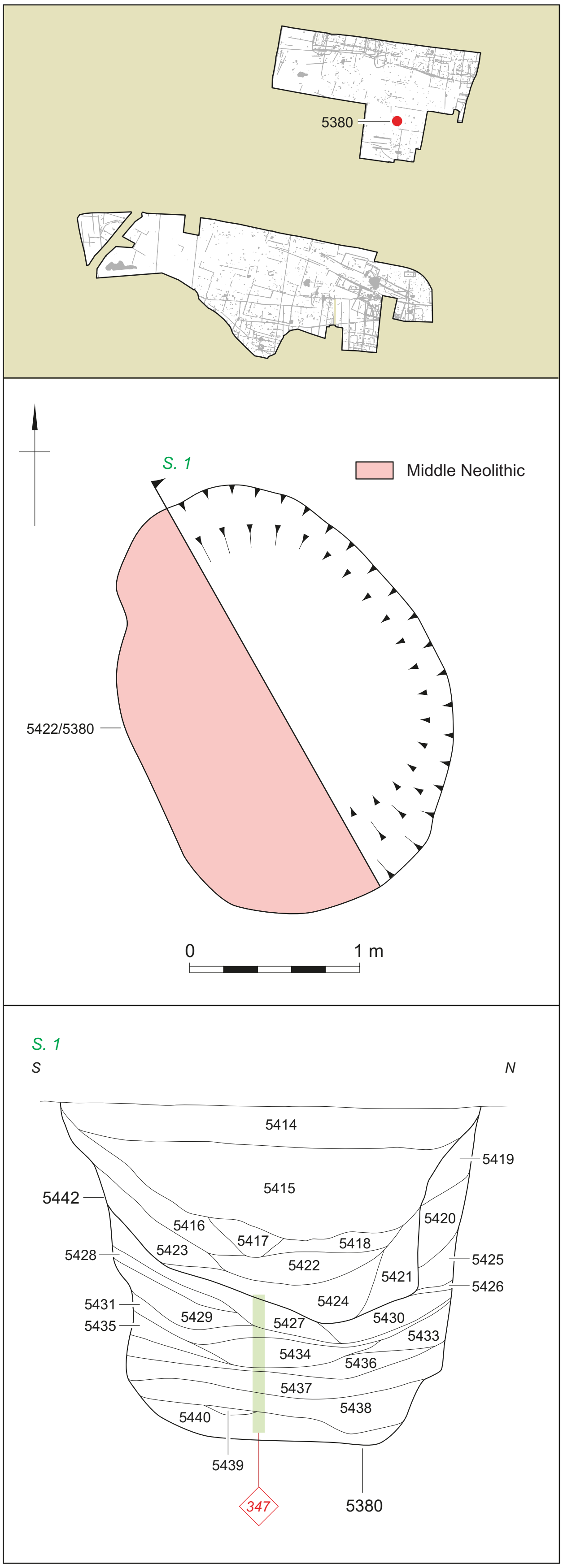

Figure 2.17 Pit 5380 and recut 5442 (RMC Land): plan and section

that represented by the smaller pits. Alternatively, given their size and form and the small quantities of Neolithic finds from them, they may more likely be of later date – possibly late prehistoric or even late Saxon–early medieval – and their finds residual. Their location within the main concentration of Neolithic pits may point to some association, but it could equally account for the presence in them of residual Neolithic pottery if they are later features. A number of ditches apparently forming part of the late prehistoric field system also contained only Neolithic pottery (see below).

There is no necessary equation, however, between the low numbers of finds in pits and their residuality. In some pit groups, where the distinct clustering of pits suggests that they are broadly contemporary, the quantities of finds in adjacent pits can still display considerable variability. For example, in ICSG pit group Q (Fig. 2.16), pit 11018 contained just two sherds (3 g) of pottery and two pieces of struck flint, while the immediately adjacent pit (10821) contained over 1 kg of pottery and eight flints.

Moreover, it is possible that some pits containing no finds also belong to this period such as, at RMC Land (Fig. 2.18), pit 4491 adjacent to group E pits 4471 and 4481, and pit 4496 adjacent to an otherwise individual pit, 4485. In RMC Land group G, three pits (4621, 4628 and 4638) in a group of 10 contained sherds of Peterborough Ware (Fig. 2.19); in the centre of the group another pit (5065) contained a single Peterborough Ware sherd along with three (16 g) of LBA/EIA date and the adjacent pit contained one other LBA/EIA sherd. It is unclear whether the later material is intrusive, or whether two later pits were dug at the same location as the earlier pit group. If the latter, it is unclear to which period the three undated pits (and one unexcavated pit) within the overall group belong; between them they produced two pieces of struck flint flakes and a small quantity of burnt flint. Similarly, in ICSG group O (Fig. 2.19), of the nine excavated pits (another four were unexcavated), only three (10236, 10238 and 10459) contained Neolithic pottery; a further five contained no finds, while a sixth (10219) contained six sherds (16 g) of LBA/EIA pottery. Again these sherds could be intrusive, or the location of pit 10219 could be coincidental.

It should also be noted that largely sterile fills were recorded on the bases of a number of pits that nonetheless contained finds in the layers above, and had these been more heavily truncated these pits would also have appeared ‘empty’.

A range of finds similar to those from the pits was also recovered from a number of probable tree-throw holes. It is possible that such material arrived there by natural processes, either pre-dating or postdating the falling of the tree, but in other cases it appears to

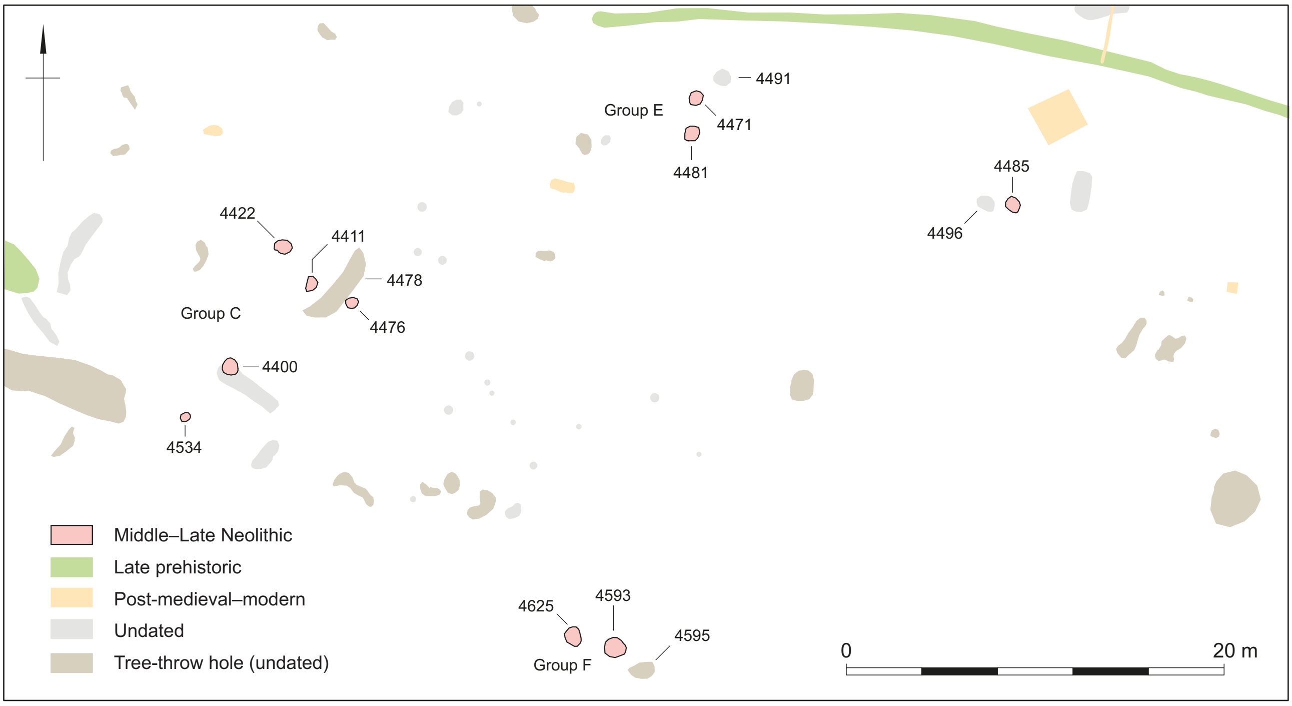

Figure 2.18 Pit groups C, E and F and pit 4485 (RMC Land): plan

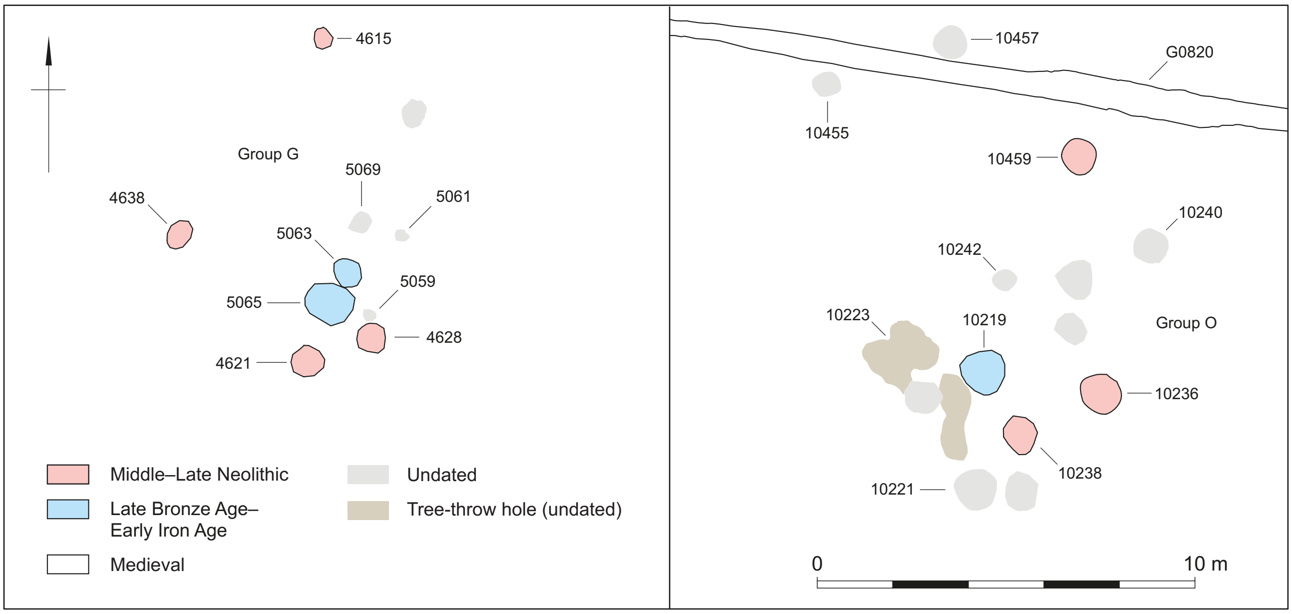

Figure 2.19 Pit groups G (RMC Land) and O (ICSG) with adjacent pits: plans

represent either some form of practical activity, such as flint knapping, within the feature, or an act of deposition in a manner comparable, if not identical, to that found within some of the pits. Some of these tree-throw holes were found in close association with pits. At RMC Land, for example, tree-throw hole 4478 lay between two of the pits in group C (Fig. 2.18), and contained a single Peterborough Ware sherd, one piece of worked flint and 252 g of burnt flint. Similarly, tree-throw hole 4595, which contained five sherds and one struck flint, appears to be associated with the two pits in group F (Fig. 2.18).

Pit 5616, on the same site, was cut into the fill of a tree-throw hole, and had a burnt ashy fill containing six Peterborough Ware sherds, worked and burnt flint and fired clay. It lay on the edge of an area of disturbed ground comprising other tree-throw holes, some of which contained similar material; one (tree-throw hole 5638) contained a further 19 sherds (98 g, see Fig. 6.3, 26) as well as 17 flakes, a blade and a small chisel arrowhead, burnt flint and fragments of animal bone (cattle and sheep/goat). While such associations between pits and tree-throw holes may be coincidental, it is also possible that the locations of

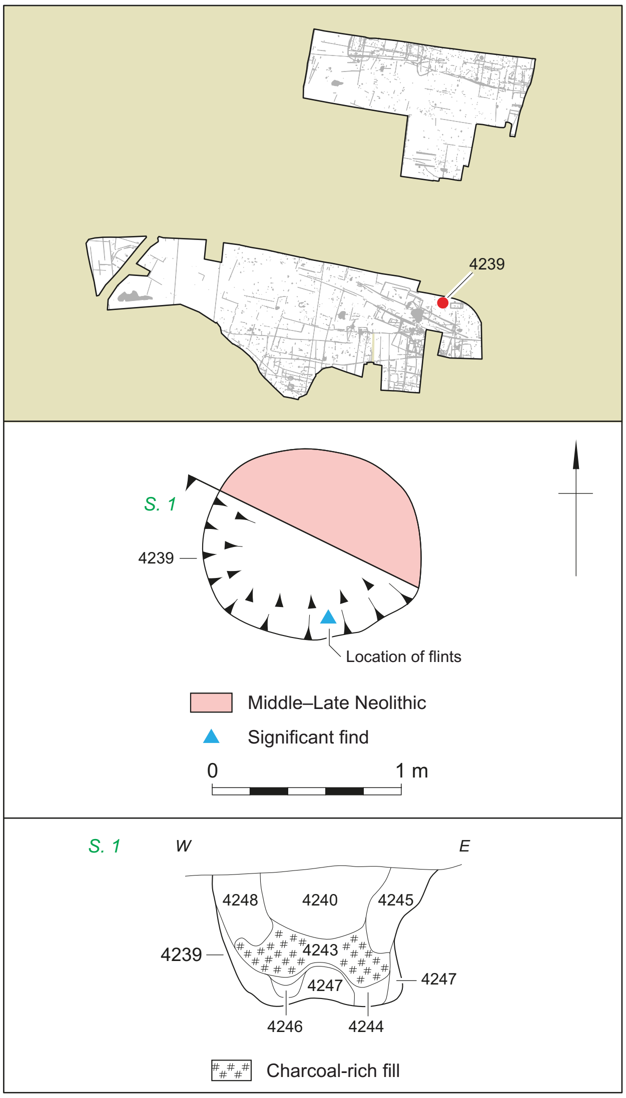

Figure 2.20 Pit 4239 (ICSG): plan and section

the pits were influenced by the presence of the tree-throw hole.

Pits were recorded in all areas of RMC Land, although their distribution was uneven, with only 15 being located in the western and eastern areas (Areas 1 and 3) (Fig. 2.15). There is an even more localised distribution at ICSG, where the pits were concentrated in the southern part of Area B and the adjacent parts of Areas A and C (Figs 1.2 and 2.16). There is no close relationship between the pit distribution at ICSG and the locations of the Neolithic monuments. In fact, there are no pits containing Peterborough Ware within 230 m of the double ring ditch (G2007) (Fig. 2.2).

While it is possible that the uneven distributions of pits at both sites reflect variable degrees of truncation by later ploughing, there is no clear correlation at either site between an Area's average pit depth and its relative concentration of pits. In fact, at ICSG the average depth of the more numerous Area 2 pits is just 0.1 m compared to 0.37 m for the far fewer pits in Area 1 (Table 2.2), suggesting that the recorded distribution reflects broadly their original distribution. This does not appear to be random, however, since the majority of pits in groups (accounting for two thirds of all pits) lie within a 150 m wide north–south band extending across both sites. Beyond this, the pits are more widely dispersed, including a noticeable spread of single, larger pits in the southern half of RMC Land Area 2.

The definition of the pit groups is somewhat arbitrary although in most cases they are easily identifiable. While RMC Land group H comprises seven pits within an area less than 5 m across, with no more than 0.3 m between pits (see Fig. 2.22, below), many other groups consist of between two and four pits spaced on average under 2 m apart. Some groups appear to have outliers, such as pit 5369 at RMC Land, which lies 9 m from group K (Fig. 2.15), but given the overall distribution of pits, groups have been defined here as including only those pits that lie within 6 m of another in the group. In none of the groups do any of the pits intercut, suggesting that each group represents activity over a relatively short period so that each pit (or its location) was still visible when the others were dug, rather than the same location being revisited over an extended period.

Deposition

Between one fill (64% of pits) and seven fills (only four pits had four or more fills) were recorded in the pits, although this is likely to be due to a number of factors other than variations in their depositional histories, such as the degree of truncation and differences in recording. Where single fills were recorded, these displayed considerable variation, some being barely distinguishable from the surrounding brickearth, others being quite distinct in appearance, often on account of their high charcoal, ashy or humic content. Some fills were interpreted on the basis their poorly-sorted character as representing single events, involving the deposition of soil incorporating cultural material soon after the pit's construction. In other cases, well-sorted fills appears to have accumulated naturally, suggesting that some pits were left open, at least for a period of time, before any deliberate deposition.

In very few cases, however, was there any evidence that cultural material had been placed in the pits with any degree of care or formality, although the quantities of finds in some pits make these features stand out. One such pit (4239) was the largest pit at ICSG (Area A) as well as the closest to the rectangular monument (G3001). It measured 0.9 m by 1.2 m and was 0.7 m deep with near vertical sides and an almost flat base (Fig. 2.20). The irregular profiles of its fills suggest that it may have been rapidly backfilled with distinct dumps of variable material. Above a primary fill of redeposited brickearth covering much of the base and lower sides, and a small patch of silt containing flecks of burnt clay, there was a dumped, charcoal-rich layer containing fragments of burnt clay, burnt flint and burnt bone (4244). (The burnt bone from this feature was recorded in the field but not subsequently analysed.) This was overlain by a second black layer 0.2 m thick, of silty clay (4243) containing further flecks of burnt clay and burnt bone, but little identifiable charcoal, from which 24 pieces of struck flint were recovered (see Fig. 7.2, 14–6). The pit contained no pottery, but the flint assemblage, which includes a backed knife or sickle, two knife fragments, a serrated flake and one flake from a polished axe, is consistent with a Middle Neolithic date. Nearly all the flints were found together, within an area 0.2 m across against the side of the pit at the south, while most of the burnt bone was found at the south and south-east, suggesting that both materials had been placed separately in the pit rather than incorporated within the deposited soil. This layer was overlain by material either dumped or collapsed from the sides of the pit, followed by an upper fill of naturally accumulated silt.

The largest pit (2187) at RMC Land (Area 2, Fig. 2.15) was 2.5 m wide and 1 m deep with moderately steep concave sides and a flat base. There were two dumps of material on the base, one of them rich in charcoal and burnt clay, and, given a reddening of the natural on the base of the pit, probably dumped when still burning; the other layer was not burnt but was overlain by a grey ashy layer. All the finds, comprising 106 sherds (842 g) of Peterborough Ware and eight pieces of struck flint (including a microdenticulate), as well as over a thousand charred hazelnut shells, were recovered from the uppermost fill, many of the sherds closely grouped together immediately below machining level.

It might be expected that the identification of any patterns of deposition would be aided by the analysis of pit groups, where the pits' spatial proximity suggests a degree of contemporaneity, both of pit construction and deposition. Any regularities in such activity might indicate those aspects of behaviour which were more formalised and so invested with greater significance.

Pit group B, RMC Land

The two pits containing the richest assemblages of finds were pits 2752 and 2817, placed 1.8 m apart in RMC Land Area 2 (Fig. 2.21).

Pit 2752 was 0.6 m in diameter and 0.4 m deep with near vertical sides and a slightly concave base. The two recorded fills (2754 lower, 2753 upper) refer to the two spits of approximately equal depth by

Plate 2.5 Excavation by spit of Neolithic pit 2752

Plate 2.6 Peterborough Ware, flints and sarsen rub stone in upper spit of Neolithic pit 2752

which the pit was excavated (Pl. 2.5), and no clear distinctions in the fill matrix were noted through the pit; this consisted of mixed greyish brown to very dark brown silty clay containing variable concentrations of charcoal. Together, the two spits produced 226 sherds (4799 g) of Peterborough Ware pottery from a minimum of 24 vessels (see Leivers, Chapter 6 and Figs 6.2–3, 12–17, 19), 123 pieces of struck flint including fragments of polished flint axe (two used as cores – (ONs 11634 and 11670, Figs 7.2–3, 20–1), another made into a Y-shaped tool (ON 11690, Fig. 7.3, 22) and a backed knife (ON 11633), burnt flint (1190 g), fired clay (120 g), stone (1312 g), including two half sarsen pebbles used for grinding or rubbing (ONs 11630 and 11635; Fig. 7.6, 2), animal bone (24 g) and burnt hazelnut shells (Pl. 2.6). A number of the axe fragments and other flints were found on the base of the pit, but further (although fewer) pieces were also recovered from higher up. While a large sherd of a Peterborough Ware vessel may have been placed centrally near the base (Pl. 2.7), the positions of many of the other large sherds, sloping down from the northern side of the pit, suggests that much of this material was simply dumped into the pit, although some appear to have been placed so as to line the side of the pit (Pl. 2.8).

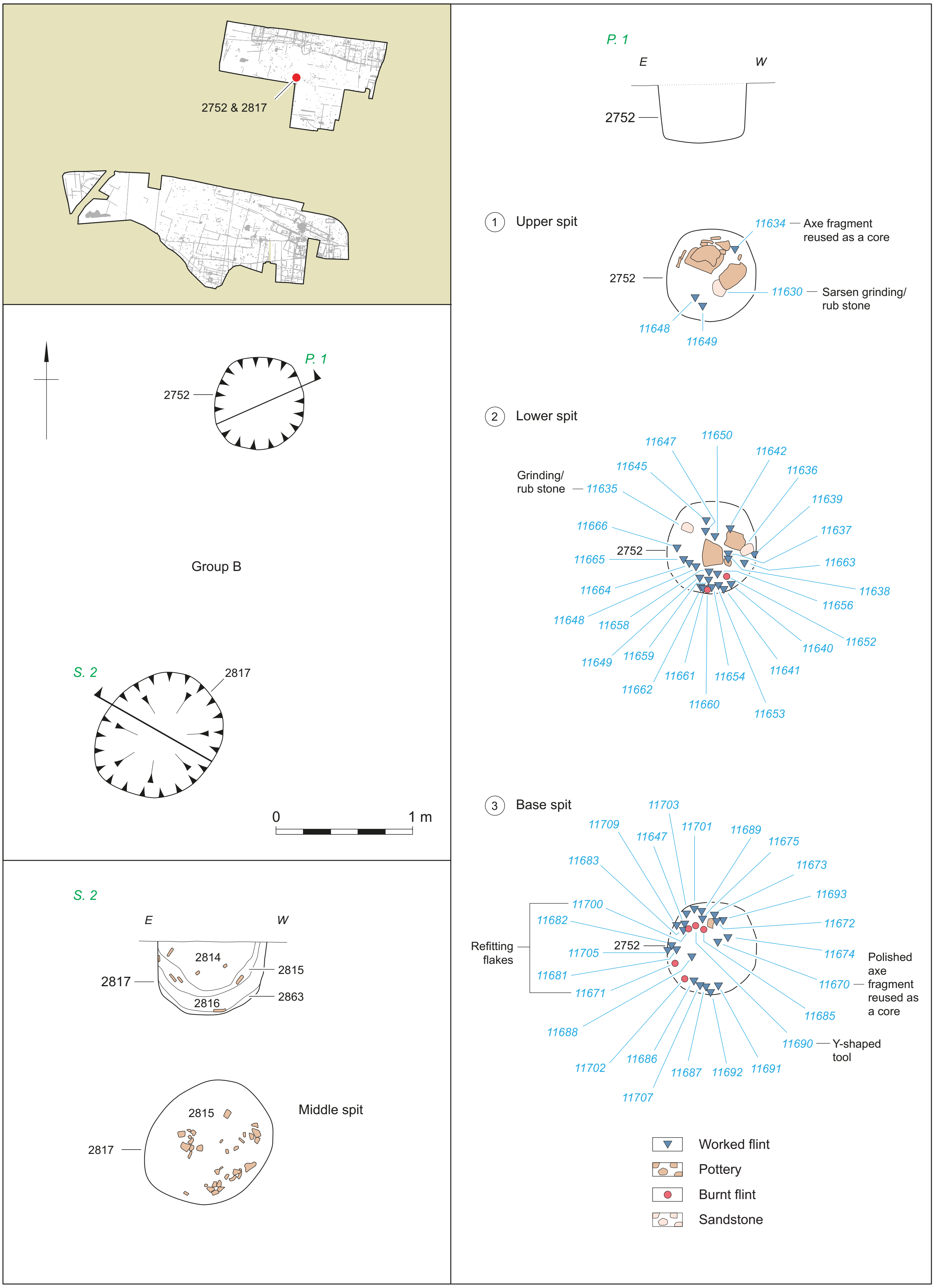

Figure 2.21 Pit group B (RMC Land): plan and section/profile

Pit 2817 was 1 m in diameter and 0.6 m deep with near-vertical sides sloping in towards a flat base. Unlike pit 2752, it was excavated by half section during which four distinct fills were noted. These contained between them 145 sherds (1748 g) of pottery from 17 vessels (three of them also represented in pit 2752) (Fig. 6.3, 18, 20–4), and 77 pieces of struck flint, again including polished axe fragments, as well as a polished mace-head made from a naturally holed flint nodule (Fig. 7.2, 17), a retouched blade and an end scraper, along with burnt flint (90 g), fired clay (9 g), animal bone (12 g) and stone (262 g). Covering the base was a thin (4 mm) layer of charcoal-rich silty clay containing small quantities of pottery, flint and animal bone as well as burnt hazelnut shells. This was sealed by a 10 mm thick layer, extending up the sides of the pit, containing less charcoal but similar finds, overlain, in turn, by a second charcoal- and ash-rich layer which contained over half of the pottery from the pit. Many of the sherds were found sloping inwards near the sides of the pit where the layer was thickest (>15 mm thick), but they were more evenly distributed around the pit than was the case at pit 2752. The upper fill also contained less charcoal, although it had a grey ashy component.

The proximity and artefactual richness of these two pits suggest they were closely contemporary, possibly being dug and filled as part of a single episode. This would appear to be confirmed by the fact that a number of vessels are represented by sherds in both pits. Although there appear to have been some differences in the processes of deposition within the two pits, comparison is hampered by the different methods of archaeological excavation. In both cases, however, it appears that the pits were filled relatively rapidly. It is not possible to establish whether any material, including individual objects, was placed with particular formality, although the relatively even profiles of the lower two fills in pit 2817 suggest that this material was deposited over the base with some care, as does the central placement of pottery near the base of pit 2752.

It is unclear whether the above-average depths of these two pits is due to their having originally been deeper than others, or because they have been subject to a lesser degree of subsequent truncation. It should be noted, however, that had they been more heavily truncated and survived only to the average depth for pits on the site of 0.28 m, they are still likely to have stood out from the majority of pits in terms of their quantities of finds.

Pit group I, RMC Land

Approximately 145 m to the north-east of group B, another pair of pits (5763 and 5783, group I), 1.9 m apart (Fig. 2.15), both survived to depths of only 0.2 m, each with a single charcoal-rich fill. However, while pit 5783 contained 62 sherds (1587 g) sherds of Peterborough Ware (eg, Fig. 6.3, 25) lying mainly against its north side, along with four pieces of struck flint (one from a polished axe), burnt flint (127 g), a few fragments of calcined animal bone and burnt hazelnut shells, pit 5763 contained 12 pieces of worked flint and one of piece burnt flint. It is not possible to determine whether their differing contents reflect significant differences of deposition between the two pits, or whether they have been exaggerated by the degree of truncation suggested by the pits' shallow depths. It may be significant, however that one sherd from pit 5783 is indistinguishable in fabric and surface treatment from some of those in pit 2752 (in group B), and probably derives from the same vessel. (Cereal grain (charred barley) from pit 5783 was radiocarbon dated to the medieval period and therefore, is intrusive (NZA-32687, cal AD 1490–1690, at 95% confidence; see Stevens above and Chapter 11).

Plate 2.7 Peterborough Ware and flints on base of Neolithic pit 2752

Plate 2.8 Peterborough Ware deposit against the side of Neolithic pit 2752

Pit group C, RMC Land

A significant quantity of finds also came from a pair of adjacent pits (4411 and 4422), 1.7 m apart in group C, towards the south of RMC Land (Area 2) (Fig. 2.18). Pit 4411, which was 0.6 m in diameter and 0.2 m deep with moderately steep concave sides and a flat base, contained four fills. A dark brown lower fill, 5–10 mm thick, was overlain by a charcoal-rich fill, similar in thickness but containing all the pit's artefacts, comprising 77 sherds (1369 g, see Fig. 6.4, 31) of Peterborough Ware, four pieces of worked flint (including a knife), burnt flint (11 g), fired clay (21 g) and animal bone (5 g). The upper two fills, one ashy, contained no finds.

Pit 4422, 1.7 m to the north-west, was 0.9 m in diameter and 0.5 m deep and had a very different profile, with steep concave sides meeting at a point at the base. All the finds come from a layer (>20 mm thick), also containing charcoal, covering the base and sides up to the top edge. This produced 79 sherds (832 g, see Fig. 6.4 27–30) of pottery, including cross joining sherds between this feature and pit 4411. There were also 50 pieces of struck flint, including five polished axe fragments, two knives and a hammerstone (see Fig. 7.3, 27), and 10 pieces of stone (together weighing over 7.7 kg), one rectangular piece being convex on one side and dished on the other, and exhibiting signs of wear in the centre. Small quantities of burnt flint (109 g) and animal bone (8 g) were also recovered.

The contrast between these two pits is marked, both in terms of their form, sequences of deposition and contents. The issue may be further complicated by a third pit (4476), 1.7 m east of pit 4411, which was 0.6 m in diameter but only 0.06 m deep, and which contained just six sherds (27 g) of pottery and two pieces of flint. Given the vertical position of the finds within pit 4411, it is quite possible that pit 4476 too may originally have contained larger quantities of finds, since lost by truncation.

A fourth pit (4400), 5 m to the south-west, was 0.8 m in diameter and 0.2 m deep, its single ashy fill containing 11 sherds (230 g) of pottery and a single struck flint, while a fifth pit (4534), 0.4 m in diameter and 0.1 m deep, a further 3 m to the south-west, contained no pottery but six pieces of struck flint, including a couple of fragments of polished axe and a serrated flake (Fig. 7.3, 24–6).

Pit group N, ICSG

A pair of pits comparable to group B was recorded in Area A at ICSG (Fig. 2.16). Pits G344 and G345, aligned east–west and spaced 0.3 m apart, were 0.7 m and 0.8 m in diameter and 0.4 m and 0.45 m deep, respectively, both with similar, steep-sided profiles with flat bases. In each was recorded one main fill containing some charcoal, within which there was a charcoal-rich lens sloping down from the south side in pit G344, and from the north side in pit G345. There was little distinction in either pit, however, between the artefactual contents of the main fill and the charcoal lens. Pit G344 contained 49 sherds (445 g) of pottery (eg, Fig. 6.2, 5), and 57 struck flints (including three polished axe fragments, two scrapers and a piercer), while pit G345 contained 53 sherds (847 g) and 16 struck flints (including a further polished axe fragment and a knife – see Fig. 7.1, 10–12); both also contained small quantities of fired clay, burnt flint and animal bone. The pottery from the two pits came from a minimum of 14 Mortlake-type vessels.

Pit group H, RMC Land

It might be expected that any patterns of artefact selection and deposition would be most visible in the tight group of seven pits of group H in Area 2 (Figs 2.15 and 2.22). The pits were 0.6–1.1 m in diameter (average 0.8 m) and 0.1–0.3 m deep (average 0.22 m), and all but the largest pit (4654) appeared to have a single deposit of sometimes mottled, generally mid-dark brown silty clay. However, the low levels of finds from the group, comprising 29 sherds (131 g) of pottery, 16 pieces of struck flint and 72 g of burnt flint, and the infrequent occurrence of charcoal (recorded as rare in only three of the pits), prevent any such analysis, although they reinforce the distinctiveness of this group, and highlight the variability in the processes, natural and human, which led to pits being infilled.

Discussion

The pits display elements of both regularity and variability, and hence some repeated form of social activity. Although showing some variation in scale, shape and profile, the majority are near circular and of generally comparable size (given their different levels of truncation). Moreover, across both sites, approximately 60% of the pits fall within groups (here defined as within 6 m of another pit), although in some areas (such as the eastern central part of RMC Land) this is much higher (Fig. 2.15).

While there is some variation in the spacing of pits within groups, there are regularities here too, for example in the 1–2 m spacing between pits in many groups comprising pairs of pits (particularly at RMC Land), and in the consistent proximity (no more than 0.4 m between them) of all seven pits in group H. Moreover, if pits were dug primarily for extraction, or for some other practical function of which there are no other indications, or just for the general disposal of waste, then most appear to have been created with an unnecessarily precise circular shape. This apparent formality in both form and size, and, in many cases, in location and spacing, suggests that a pit's excavation may itself have been among the more significant acts in the sequence of events that each pit represents.

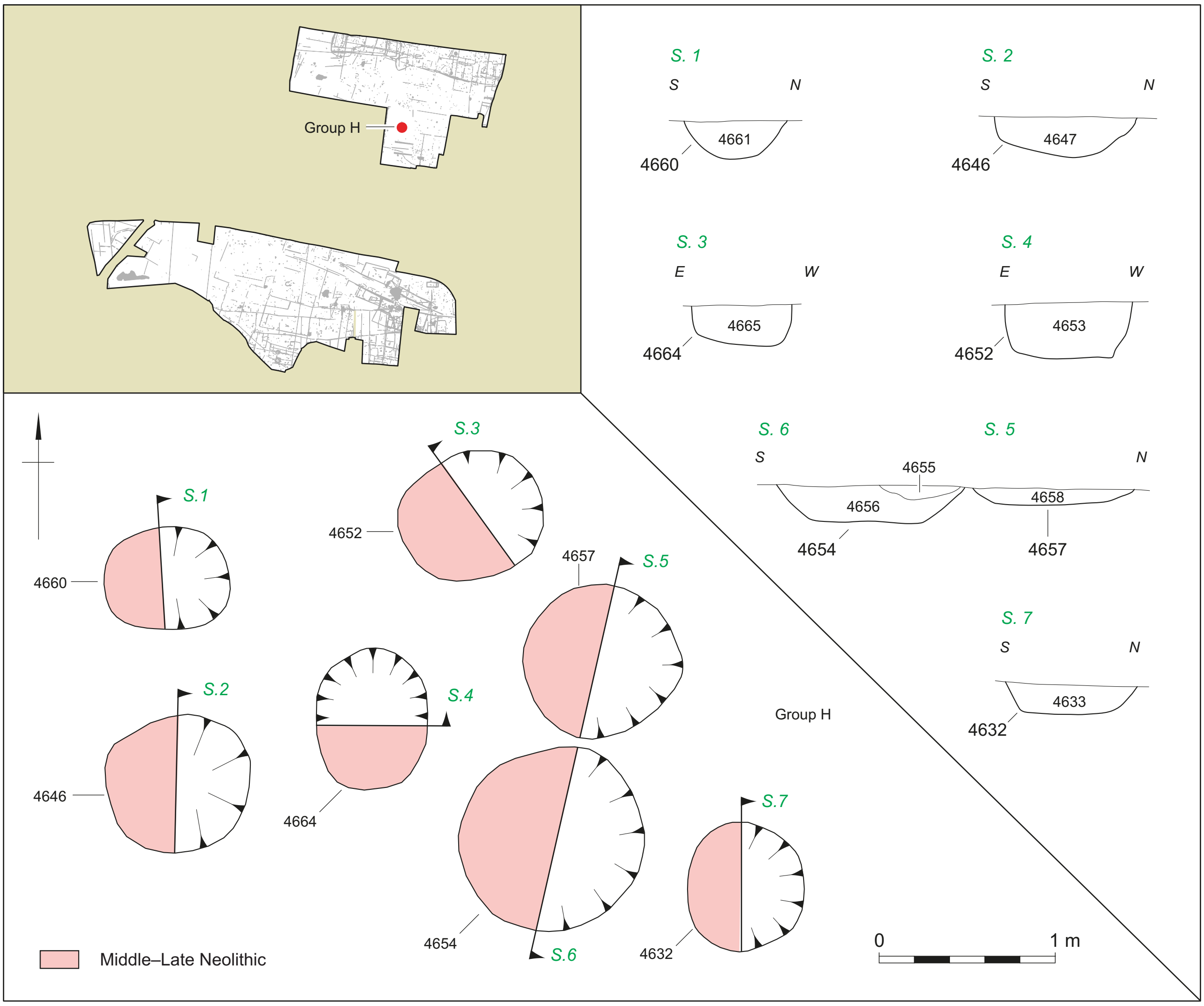

Figure 2.22 Pit group H (RMC Land): plan and sections

What that significance was is unclear, although it remains a topic of extended discussion and speculation (Lamdin-Whymark 2008, 126–7; Garrow *et al.* 2006 81–3; Thomas 1999, 64–74). While such pits can often appear to occupy an otherwise 'empty' landscape, some wider context for the pits at RMC Land and ICSG is provided by their proximity to a range of Neolithic monuments – the rectangular, ring and penannular ditched monuments – as well as, at a greater distance, the much larger monument of the Stanwell bank barrow. Each of these monuments, at its own level, represents the communal and extended endeavours by groups of people to make a permanent mark in the landscape. The digging of a pit also makes a mark, but at a much smaller scale and for a much shorter period of time. Any single pit could possibly even be the work of a single individual, and a pit group the work of a small social unit. In some sense, therefore, the Neolithic pits might be viewed as 'mini-monuments', ie, expressions of individual identity in a society where the construction of communal monuments appears to have been a dominant preoccupation.

While the excavation of the pits appears largely uniform, what was done with them, in terms of the subsequent events that resulted in their being filled in (at least those events that are archaeologically visible) display a high degree of variability. There is variability in the length of time that pits were left empty or only partially filled, the degrees of deliberation and care with which items and materials were placed, dumped or left to accumulate within them, and the range and quantities of materials either selected deliberately or deposited by chance. Those materials included both individual items, collected groups of items, and soil deposits of varying character and origin containing further artefacts. While there is an over-representation of rim sherds, it is possible that this simply reflects the better survival of those parts of cooking vessels that were in less direct contact with fire. Although there are suggestions that some items were placed in the pits, such as the large section of a

Peterborough Ware vessel recorded centrally near the base of RMC Land pit 2752, or the collection of flints at the edge of ICSG pit 4239, these instances are the exception, and there was little evident consistency in the processes, human or natural, by which the pits were filled in, a feature noted more widely in Peterborough Ware pits (Garrow 2007, 14).

While a number of adjacent pits display clear similarities in depositional history, such as the pairs of pits in group B at RMC Land and group N at ICSG, other comparable pits display clear contrasts. This suggests that there was no consistency in depositional practice, and perhaps, therefore, that less emphasis was placed on the processes of deposition than on the act of pit-digging. The presence, certainly within groups but probably also more widely, of apparently empty pits, and pits which appear to have filled in through natural process incorporating cultural material seemingly by chance, suggests that beyond some pits' excavation, there may have been little or no socially significant activity undertaken at them. However, the occasional presence of animal bone (cattle, sheep/goat and pig) and hazelnut shells are a reminder that only the most durable materials have survived, and it is likely that a much wider range of materials were deposited, of which any patterns in deposition are not recoverable.

There is little in the nature of the cultural material to suggests it is anything other than domestic in character, comprising vessels for cooking and possibly storage, debris from flint working, including the apparent recycling of broken axes, some food waste and hearth material comprising burnt flint and clay, charcoal and ash. It should be noted, however, that assemblages of clearly domestic Neolithic waste with which to compare the pit contents are rare, and, in the absence of any contemporary structures, whether due to their possibly insubstantial or short-term nature, or the level of truncation by later ploughing, there is no direct evidence as to the pattern of contemporary settlement.

The recovery of Middle Neolithic pottery from later features, in some cases in larger quantities than from the Neolithic pits themselves, may indicate that a considerable amount of settlement waste materials was not deposited in pits but left on the ground. While some of the material in later features may have derived from pits truncated by ploughing, much of it was found in later prehistoric features, when any cultivation would have had a far lesser effect than in the post-medieval and modern periods which probably account for heaviest levels of truncation. Nonetheless, approximately 93% (by weight) of all the Peterborough Ware, from both sites, was recovered from the pits. However, this figure is significantly skewed by a small number of pottery-rich pits; the proportion of pottery in pits at RMC Land falls to 52% if the two group B pit (2752 and 2817) are excluded, and to 66% at ICSG if the single, richest pit (10821 in group Q) is excluded.

While the presence of groups of pits within the wider pit distribution might indicate the repeated revisiting of slightly different locations within this general area of the landscape, the recovery of sherds probably from the same vessel from groups (B and I) separated by over 140 m may suggests that there may be no direct relationship between settlement location and pit location. It could suggest the existence of a temporary midden where material was stored or allowed to accumulate, perhaps attached to temporary settlement that could have been occupied on a seasonal basis. Such surface deposits are unlikely to survive, although they could account for some of the redeposited material that has been discussed above. It can be noted that at Lake End Road, Dorney (near Maidenhead) and Yarnton (near Oxford) same vessel sherds have been found from pits that are 60 m and 80 m apart respectively (A. Barclay pers. comm.).

Perhaps the most striking aspect of the pit spreads at ICSG and RMC Land is their spatial extent, which covers distances of 300 m and 400 m respectively. Furthermore, the two spreads are so positioned as to suggest that they may once have formed an uninterrupted distribution that covered a much greater distance of almost 1 km, possibly resulting from communities revisiting this area, perhaps on an annual or cyclical basis, over a period of time. As discussed above the act of digging the pits, and the selective burial of mostly token quantities of material residues, could have been associated with certain events and social gatherings. Funerary activity and the creation and maintenance of monuments would be an obvious reason why communities gathered here.

No large concentrations of pits of a similar date are known from the area around the Stanwell bank barrow, despite the extent of recent work (see Fig. 1.1 and Framework Archaeology 2006 and 2010). Clusters of pit groups are generally scarce in the Middle and Upper Thames Valley, but they occur at Yarnton (Oxfordshire) (Hey in prep; Hey with Robinson 2011, 255–7 and fig. 11.30), and two sites on the Maidenhead Flood Alleviation Scheme (Allen *et al.* 2004, 92 and fig. 9.3; Allen *et al.* 2013); these were both large-scale landscape projects, the latter being adjacent to the Eton Rowing Course. What they appear to show is a pattern of landscape habitation that involved occasional isolated pits and a zone in which repeated pit digging occurred. How this corresponds to actual human inhabitation is a matter of interpretation as other forms of social gathering, at monuments for instance, may have left little archaeological trace.

Late Neolithic

Only a single Late Neolithic feature was recorded at RMC Land. Pit 5732 lay towards the northern edge of the site, in Area 2, falling within the general distribution of Middle Neolithic pits but not within the area of their highest concentration (Fig. 2.15). The pit, which was 0.9 m in diameter and 0.1 m deep with a shallow concave profile, had a single fill containing 38 sherds (84 g) of Grooved Ware pottery and 29 pieces of struck flint including a very fine knife, which is almost a discoidal type (Fig. 7.3, 36), as well as fired clay (143 g), burnt flint (2223 g), burnt stone (642 g), and approximately 300 charred hazelnut shells (Fig. 2.23).

Three sherds (10 g) of shelly ware, of possibly Late Neolithic date, were also recovered from pit 2720 (see Fig. 3.17), along with a fragment of LBA/EIA pottery. If the latter is intrusive then it is possible that this represents a second feature of Late Neolithic date.

A number of mostly isolated Late Neolithic pits were recorded at Holloway Lane, the most significant of which contained Grooved Ware, some with large numbers of sherds deliberately stacked on the bases. Some pits also contained fragments of polished axes and transverse arrowheads, and one contained charred hazelnut shells and other food remains (MoLAS 1993, 21). Further Middle and Late Neolithic pits were recorded at Wall Garden Farm (*ibid.*, 27). Notable concentrations of Grooved Ware associated deposits have been recovered from Heathrow Terminal 5 (Framework Archaeology 2010, 113 and fig. 2.56) and from Kingsmead Quarry, Horton (Chaffey *et al.* forthcoming). At Heathrow Terminal 5 the Grooved Ware associated activity, which has a similar extent to that associated with the earlier Peterborough Ware pottery, indicates a continued use of the area around what were by then considerably old monuments. This is in contrast to ICSG and RMC Land where there is a dramatic decline in pit digging and deposition at the monuments after the 29th century BC.

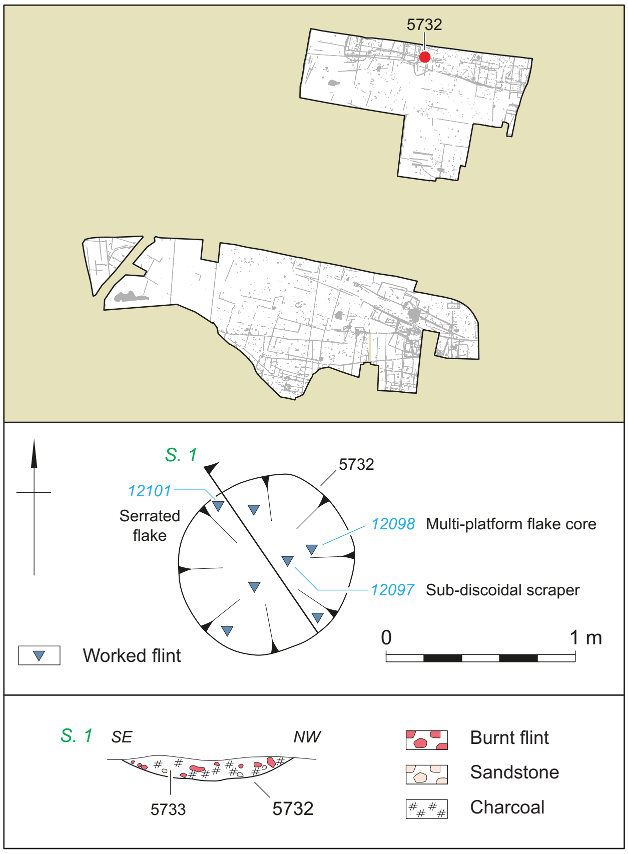

Figure 2.23 Late Neolithic pit 5732 (RMC Land): plan and section

Beaker and Early Bronze Age

There was little evidence for activity on either site in the Beaker and Early Bronze Age (EBA) period other than a group of cremation-related deposits and a small number of pottery sherds and worked flint. This dearth of Beaker and EBA pottery is consistent with the wider pattern in west London, where pottery of this period is noticeably scarce.

A small quantity of grog-tempered pottery (140 sherds weighing 1,252 g) of this date was recovered, most of which comprises undiagnostic body sherds, possibly from Collared Urns occurring often singly, in isolated and later features. One sherd, for example, came from a pit (1215, ICSG Area A) (Figs 2.3, 3.8, 6.5, 33), also containing a piece of cattle bone, that was otherwise undated but which could, alternatively, be associated with the late prehistoric field system (see below). Diagnostic flints include, from ICSG, three plano-convex knives (two from Middle or Late Bronze Age features, one from a Late Bronze Age/Early Iron Age feature) Fig. 7.5, 54–6), and a piercer from an unphased ditch. A barbed and tanged arrowhead was recovered from the subsoil on RMC Land (Fig. 7.5, 59). A knife or possible dagger fragment was recovered from Trench 4 at LEWGF (Fig. 7.5, 62)

The burial of a dismembered aurochs, associated with a number of barbed and tanged arrowheads, was recorded 1.5 km west-north-west of feature G288, at Holloway Lane (MoLAS 1993, 21–2; Cotton *et al.* 2006).

Mortuary Activity

The only securely dated Early Bronze Age features relate to mortuary activity. An oval grave (16669) in ICSG Area C (Fig. 2.3), measuring 0.4 m by 0.6 m

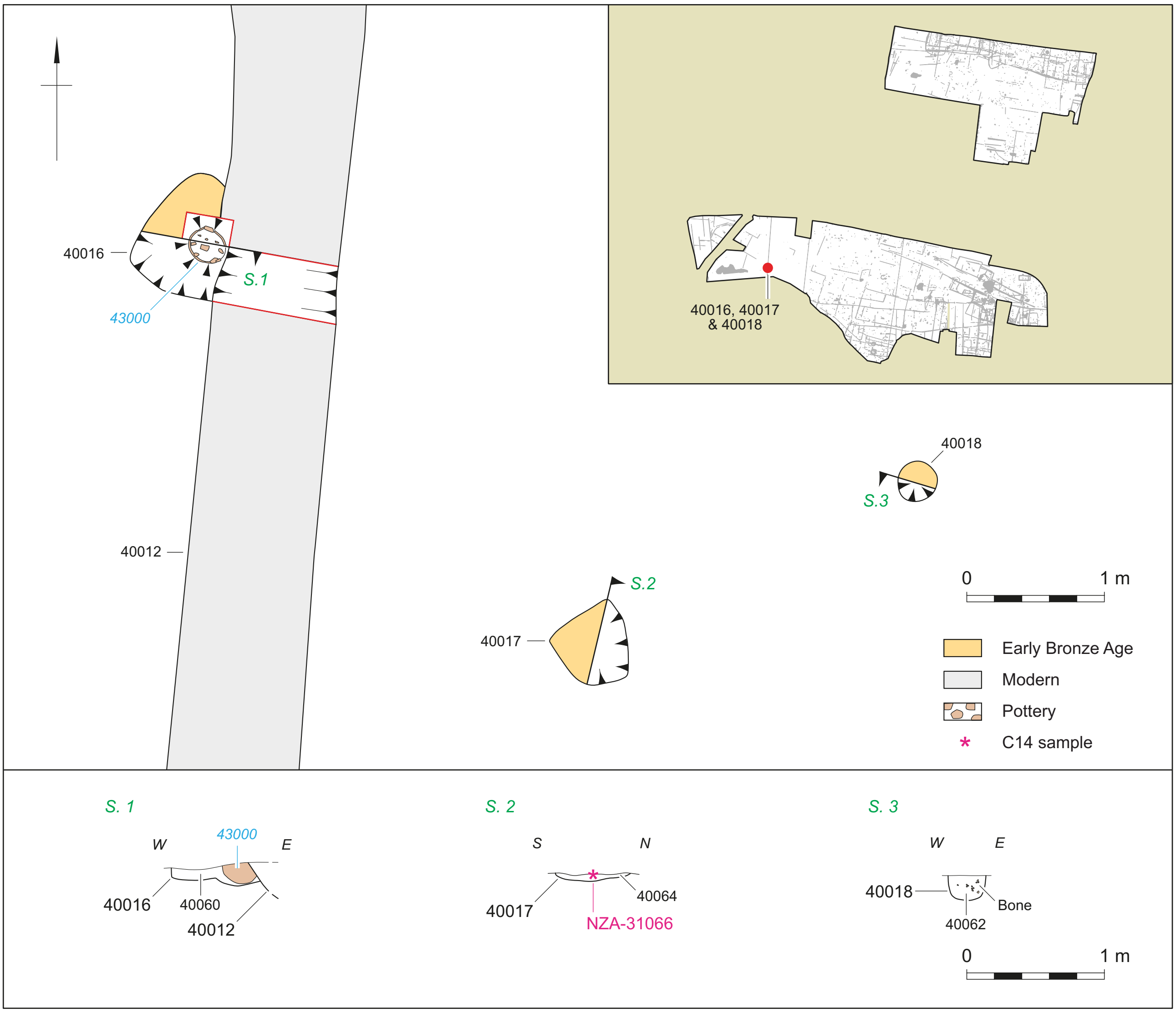

Figure 2.24 Early Bronze Age features 40016, 40017 and 40018 (ICSG); plan and sections

and 0.1 m deep, contained the unurned cremated remains of an adult, possibly male, aged 30–50, accompanied by 25 sherds (160 g) from a grog-tempered Collared Urn (Fig. 6.5, 34); two broken and burnt flint blades also recovered from the grave fill are likely to be incidental inclusions. A sample of the cremated bone produced a radiocarbon date of 1940–1740 cal BC (at 95% confidence) (NZA-30925, 3516±30 BP).

A group of three small features, 470 m to the west in Area E, indicate further mortuary activity of this period (Figs 2.3 and 2.24). Irregular feature (40017), measuring 0.5 m wide and just 0.06 m deep, contained 12 g of cremated human bone and charcoal, perhaps representing the redeposited burial of an individual aged over 13, and pyre debris. Although it contained no pottery, a sample of the cremated bone produced a radiocarbon date of 1880–1650 cal BC (at 95% confidence) (NZA-31066, 3439±35 BP). Parts of two EBA grog-tempered vessels – the rim and collar of one (Fig. 6.5, 35), and the base and lower body of another (Fig. 6.5, 36), however, were recovered from another irregularly shaped feature (40016), 3.5 m to the north-west which was cut by a modern ditch. This feature, whose fill contained a small amount of charcoal, but no cremated human bone, measured 0.9 m wide and 0.15 m deep. The third feature (40018), 2 m to the north-east of 40017, measured 0.3 m in diameter and 0.2 m deep, and had a similar fill containing a small quantity (15 g) of cremated human bone, perhaps representing the unurned burial of a child aged 9–13, and pyre debris. Although undated, its proximity to feature 40017 could suggest a similar date. However, the Middle Neolithic cremation deposit 40413 was only 100 m to the north and, therefore, another date is equally likely.

There is no surviving evidence that the three funerary deposits and, indeed grave 16669, were marked by a barrow, although the existence of some

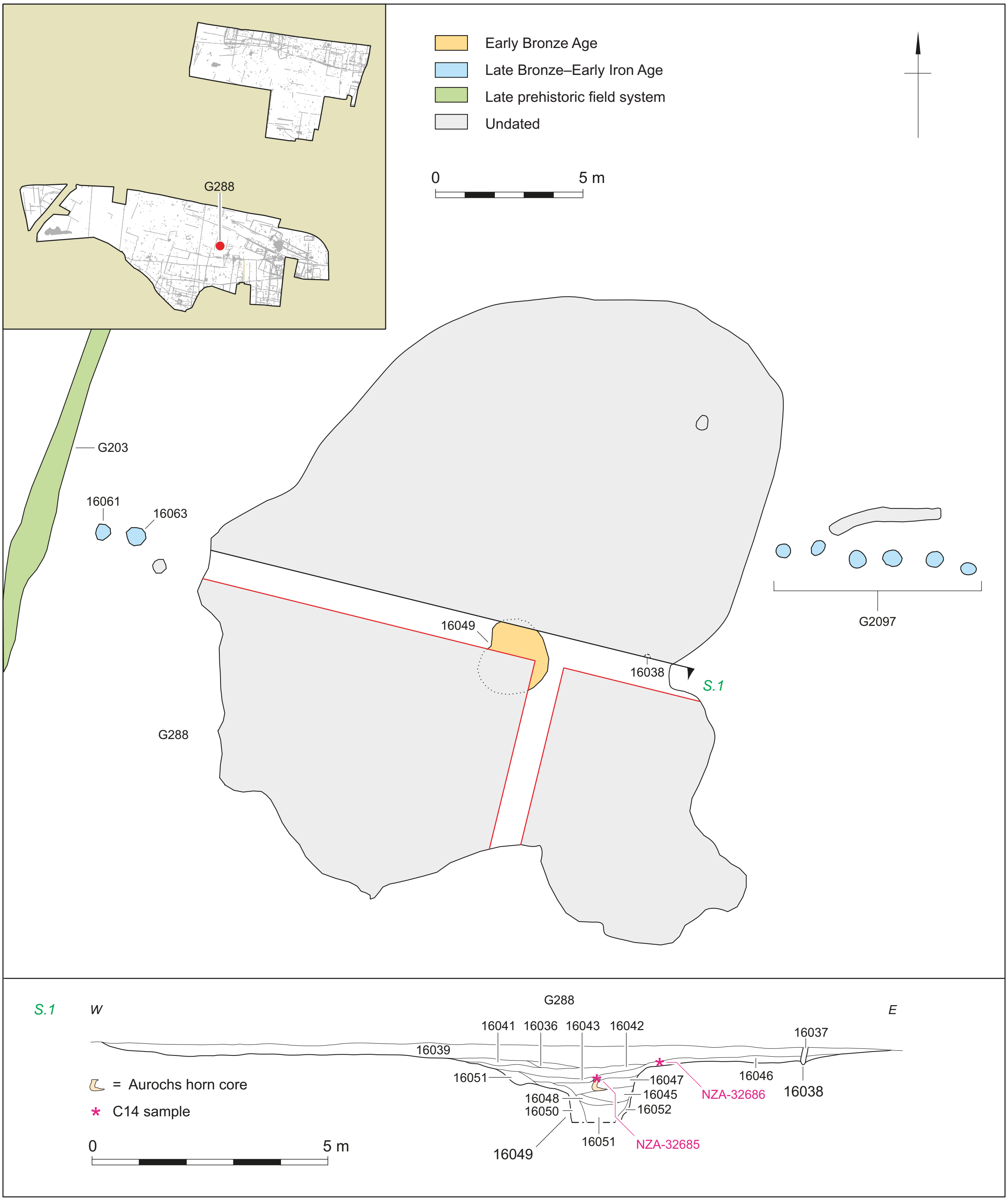

Figure 2.25 Feature G288 (ICSG): plan and section

form of earthwork appears likely. As a group the deposits sit close to the shared east–west alignment of Neolithic monuments G3001 and 3002 that has been discussed above, and if not coincidental suggests at least that these monuments were extant earthworks during the Early Bronze Age. As alluded to above, it is possible that the monuments were arranged along a pre-existing east–west route, which by the Early Bronze Age may have become well-established both as a recognised path and also, perhaps, as a boundary within an otherwise open landscape with few fixed points. The placing of these burial deposits in a way that re-established, enforced or maybe just appropriated an old alignment of monuments was perhaps an attempt to claim resources and land by local communities. The pattern of adding to much older linear barrow and monument groups is familiar, but elsewhere often involves the construction of new monuments. At ICSG this action was more subtle as is the case for much of the Middle Thames Valley.

Feature G288

Apart from the funerary deposits the only feature of possible Early Bronze Age date was an enigmatic shaft-like feature (G288) in Area C (Fig. 2.3). The date is ambiguous and rests on a single radiocarbon date and a few finds. The feature consisted of a central shaft (16049) surrounded by a broad shallow hollow measuring approximately 18 m by 22 m and 0.2–0.4 m deep (Fig. 2.25). The shaft, which was 3 m in diameter with near vertical sides (apart from a shallow scoop on the western side) was excavated to a depth of 1.6 m (1.2 m below the base of the hollow). The earliest recorded fills, lying against the sides, appear to be too steeply sloping to represent naturally deposited material and they may indicate the presence of a timber lining (although no other evidence for this was noted), or possibly the recutting of the shaft to a smaller diameter. Above these were a series of natural silting layers almost filling the shaft to the base of the hollow, one of which (16048) contained an antler, and the uppermost fill (16047) of the shaft containing a cattle horn core; the horn core was too fragmented to confirm its initial *in situ* identification as aurochs. Samples of the antler and the horn core were submitted for radiocarbon dating but both contained insufficient collagen to produce a result (see Chapter 11). Above these was a layer of apparently dumped gravel (16046) lying on the base of the hollow and dipping into the top of the shaft. This contained animal bone, worked flint (including a scraper and a blade core), burnt flint and a piece of burnt sarsen, with a sample of oak roundwood charcoal producing a radiocarbon date in the Early Bronze Age of 2130–1820 cal BC (at 95% confidence) (NZA-32685, 3602±45 BP).

Despite the radiocarbon result, the assigning of this feature to the Early Bonze Age is highly tentative, especially since the same layer produced a second radiocarbon date, in the early Saxon period, of cal AD 380–580 (at 95% confidence) (NZA-32686, 1583±45 BP) from charred barley found with the charcoal. The only pottery from feature G288 was a single sherd of Peterborough Ware from the hollow's uppermost fill, found along with further worked flints (including a serrated tool) and burnt flint. The possibility that the horn core was from an aurochs might also indicate an early date, with the burial of a dismembered aurochs, associated with barbed and tanged arrowheads, having been recorded 1.5 km to the west-north-west at Holloway Lane (MoLAS 1993, 21–2; Cotton *et al.* 2006). In its size and form the central shaft is comparable to a number of the MBA wells recorded at ICSG (such as wells G545, 11093 and 11212, see Chapter 3), as well as to later (Romano-British and medieval) features, although none of these had a wide, shallow hollow surrounding them as found here. It is possible that the hollow was caused by the weight of traffic around the shaft, or it may mark a natural dip in the ground that influenced the positioning of the shaft. One possibility is that the hollow was a type of pond barrow, a type of monument that has been increasingly found in parts of lowland England (eg, Barrow Hills, Radley: Barclay and Halpin 1999, 35–6 and 115). It is also possible that the hollow was a much later feature that had disturbed a number of prehistoric and possibly early Saxon features. A posthole (16038), unassociated with the shaft, cut the fills of the hollow on the east side.

Chapter 3
Settling the Land: From Monuments to Fields – Middle Bronze Age and Late Bronze Age–Early Iron Age

by Andrew B. Powell with Chris J. Stevens

Introduction

The River Thames was an important feature of the landscape during the later Bronze Age, not only as an economic resource, but also as a major route of communication and transport through southern England, and more widely to and from continental Europe. Its importance may be reflected in the recovery from it of substantial quantities of metalwork, particularly weaponry that was apparently deliberately deposited in the river for symbolic and ritual purposes.

Away from the river, however, the archaeological remains on the brickearth soils of the gravel terraces provide a very contrasting view of this period. They indicate a rigidly enclosed and predominantly agricultural landscape, locally settled and with associated small cemeteries. Nonetheless, the high level of organisation displayed in the layout of the field systems suggests possible centralised political control. This is a pattern found across the west London gravels, such as at excavations at Heathrow, Cranford Lane, Prospect Park, Mayfield Farm, Holloway Lane and other sites in the area (Fig. 3.1), as well as much more widely in the country.

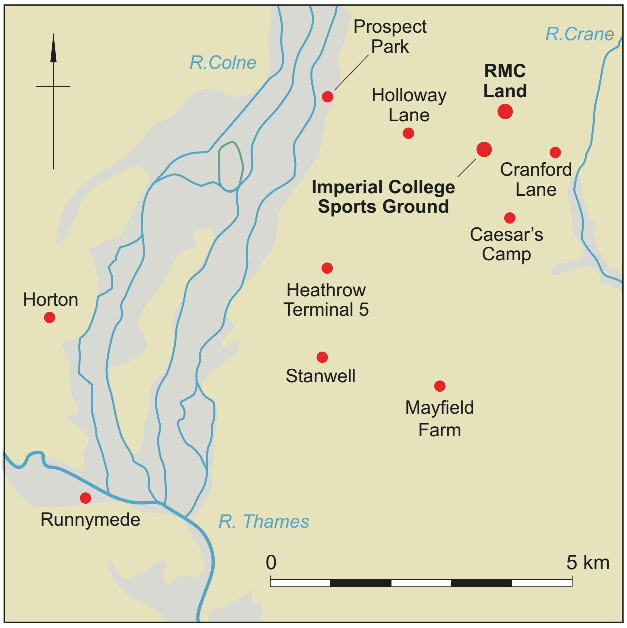

Figure 3.1 Middle Bronze Age and Late Bronze Age–Early Iron Age sites in the Colne Valley and the Middle Thames Valley

The later prehistoric landscape, which is characterised at ICSG and RMC Land both by settlement features – pits, postholes, wells and hearths, as well as a possible roundhouse – and burials, and by the formal division and organisation of agricultural land – as represented by boundary ditches, fields, trackways and watering holes (Fig. 3.2) – is in marked contrast to that of the Neolithic and Early Bronze Age landscape that preceded it (Fig. 2.2). This is a feature noted also at other sites in the Heathrow area, as well as more widely in the Middle and Upper Thames Valley.

While it is evident that in both periods the landscape witnessed significant levels of widespread and varied activity, the nature of those activities, and the patterns of occupation and economic exploitation that they reflect, clearly underwent a fundamental transformation in the Middle Bronze Age (hereafter MBA) that continued to influence activity through Late Bronze Age (LBA) into the Early Iron Age (EIA). This is not to say that the Neolithic and Early Bronze Age landscape was not organised, with selected areas for example being used for different activities (settlement, agricultural, monumental, burial, ritual, and other activities), but simply that the principles underlying any such organisation appear to have been less formally defined and are less visible archaeologically.

Identifying within the archaeological record the reasons for the changes that took place in the Middle Bronze Age, and the processes involved, is hampered by the low levels of material from the earlier half of the Bronze Age at either ICSG or RMC Land, or indeed from the wider Colne Valley generally. The evidence for activity on the site consists of just two (possibly four) Early Bronze Age cremation graves at ICSG. This apparent hiatus may indicate the abandonment of, or at least a major contraction of activity on the site, perhaps reflected in the wider evidence of woodland regeneration (see Stevens, Chapter 2, *Landscape*). Alternatively, it may simply reflect a pattern of semi-sedentary settlement and a shifting, possibly transhumant form of pastoral economy which by its nature has low archaeological visibility. Evidence for both the structure of society

Figure 3.2 Middle Bronze Age and Late Bronze Age–Early Iron Age features at ICSG and RMC Land

during this period, and the social and economic forces leading to its change, may need to be sought in the wider landscape, such as along the River Thames floodplain rather than on the river terraces (Framework Archaeology 2006, 112), as well as further afield in southern Britain (Rowlands 1980; Yates 2007).

There is no clear evidence that the Middle Bronze Age field system had its origins within any perceived organisation of the pre-enclosed landscape, or had any deliberate relationship with the existing Neolithic monuments. Its orientation at the eastern end of ICSG matches that of the Neolithic rectangular monument, and although the monument ditch had largely silted up by the time it was cut by field boundary ditch G477 (Fig. 2.9), it may well have still been a visible feature, as suggested by the sherds of MBA and later pottery recovered from its upper ditch fill. The double ring ditch, or at least what might have remained of any central mound, appears to have been partly enclosed within the western end of a narrow field, but whether this was considered significant cannot be determined. One field ditch (G2046), ended on the edge of its outer ditch (Fig. 2.9), its terminal containing a small quantity of presumably redeposited cremated human bone. The southern penannular ditch (G2002) lay near the south-western corner of a possible field, while the north penannular ditch (G152) lay almost centrally within another field (Fig 3.2).

Environment and Landscape

by Chris J. Stevens

As in many parts of England, the period from 1600–1400 BC sees the emergence of a relatively open landscape containing field systems and permanent settlements. Such field systems, dating from the Middle to Late Bronze Age, have been noted stretching along much of the Thames Valley (Yates 1999).

The environmental evidence from the area (eg, from Runnymede, Berkshire: Greig 1991; the lower Thames: Brown and Cotton 2000; and Heathrow Terminal 5: Leivers 2010a) (Fig. 3.1), shows increasing evidence for clearance and disturbance associated with the creation of these field systems. Diminishing woodland along the floodplain is most clearly seen in the decline of alder (see Scaife 2000, 113), and while this may be due in part to increased flooding, the flooding itself may be a result of the clearance of land adjacent to the Thames and its tributaries.

While the beginnings of the field system may date to before 1500 BC (see below), the earliest substantial evidence from the excavations for the local environment came from a waterhole (16198, below) dated to 1210–920 cal BC. The waterlogged plant remains indicated a woody scrub environment close by, comprising hazel, oak, hawthorn, elder and herbaceous species (Stevens, Chapter 10). However, other seeds and fruits could have come from grassland and the scrubland edge, and it is likely that this feature occupied a landscape of open wet grassland. Indeed, such a landscape, with some evidence of open disturbed ground – possibly trampled soils or arable fields – is also indicated by the insect remains (Smith, Chapter 10).

A well (G2156, below) dated some 400–500 years later (770–480 cal BC) produced a similar waterlogged plant assemblage, but with dogwood rather than hazel, and with charcoal of ash, blackthorn and willow/poplar. However, although woodland was represented in the pollen – by hazel with occasional oak, alder, *Sorbus* type, hawthorn, dogwood, field maple and elder – the overall pollen evidence indicates a landscape dominated by grasses (including common reed), with typical grassland weeds also present. In addition, both the pollen evidence and insect fauna suggest the presence of small patches of heathland in the area, something that was also seen in the pollen evidence from Heathrow Terminal 5 (Wiltshire 2006).

The high woody shrub component is not unusual for Bronze Age waterholes, being commonly seen at Terminal 5 (Carruthers 2006; 2010), as well as in those associated with field systems at Beddington to the south-east (Wessex Archaeology 2004c), and more distantly in Cambridgeshire (Stevens 1997). That such features often occur towards the centres, rather than on the edges, of field systems suggests that the woody shrub components derived not from woodland flanking areas of field system, but from hedges or scrub left along the edges of individual fields. This is also indicated in the pollen and insect evidence, both of which display low proportions of woodland taxa (see below; compare Carruthers 2006 with Wiltshire 2006 and Robinson 2006). Whether or not such hedges, which probably comprised mainly hawthorn and elder with dogwood and blackthorn, were formalised is more difficult to ascertain.

It is also hard to tell whether stands of woodland or larger trees were left on the edge of fields as general boundaries. The high occurrence of oak acorns within the earlier waterhole (16198) suggest that it was overhung by a tree, but given that the field system may have been in existence for three to four centuries prior to its digging/infilling, such trees could easily have become established within the corners of fields, or within the hedgerow scrub running along the field ditches. Such waterholes often occur within the corners of fields, occasionally being integrated with the ditches themselves. While they are likely to have penetrated the water table it is probable that at times they either dried out or only held a little water, and so may have been additionally fed through ditch run-off.

Later Prehistoric Field System

The later prehistoric landscape across both sites is dominated by an extensive, rectilinear array of ditches, defining fields and/or enclosures of varying size, and short lengths of possible trackway (Fig. 3.3). The resulting field system is comparable in many respects to those *coaxial* systems recorded across the neighbouring sites of Cranford Lane, Perry Oaks/Heathrow Terminal 5 and Prospect Park, as well as more widely along the Thames Valley, its tributaries and beyond (MoLAS 1993; Framework Archaeology 2006; 2010; Andrews 1996; Yates 2007, fig. 12.2). The ceramic and radiocarbon dating evidence (see below) suggests a MBA date for the start of the field system's construction. Determining the length of time over which it continued to be maintained and modified, as well as used, is less certain, in part because much of the later pottery cannot be more closely dated than to the Late Bronze Age or the Early Iron Age (LBA–EIA) (see Leivers, Chapter 6).

As will be discussed below, although a number of MBA features, including pits and wells, pre-dated elements of the field system, the broad structure of the field system appears to have been laid out largely without reference to any existing foci of settlement and burial activity. The locations of these activities appear to be secondary to the over-arching structure of the landscape division, implying the settlement of an organised landscape, rather than the organisation of a settled landscape. Such a conclusion, however, is far from certain.

Even identifying the field system is problematic at these sites, as it was severely truncated by later cultivation with the result that in places, such as in the western half of RMC Land, it was, although certainly present, barely discernible. Moreover, many lengths of ditch contained either no datable finds, or only

Figure 3.3 The Bronze Age field system at ICSG and RMC Land showing shifts in orientation (different colours indicate blocks with shared axes)

residual finds, and many ditches had no stratigraphical relationship to other, more securely dated features. Furthermore, at both sites, the field system overlapped with, and had similar orientations to both medieval and post-medieval/modern field systems (as well as some Romano-British features), so that a number of ditches could feasibly have belonged to any of these periods. Nonetheless, comparison with contemporary field systems revealed more widely in the landscape has allowed its general layout to be identified and many of the undated ditches to be assigned to it with some degree of confidence, on the basis of their position, orientation and form.

Closely associated with the fields are lengths of trackway, wells and waterholes, and although only one possible settlement structure was identified, settlement debris was recovered in varying quantities from all these features and from a range of pits. (Unless there are particular reasons to use another term, the full variety of enclosed spaces are referred to here as 'fields', even though they may have been used for settlement, for holding livestock, for cultivation or for some other purpose).

Date

Determining the date of the field system – of its establishment, development, use and abandonment – is problematic. Most of the ditches produced no datable finds, and those that did contained relatively small quantities of MBA and, more commonly, LBA–EIA pottery. Although few ditches produced only MBA pottery, the only two samples from field system ditches which contained material suitable for radiocarbon dating both produced dates falling clearly within the early part of the Middle Bronze Age (Table 11.2).

One date, of 1660–1490 cal BC (at 95% confidence) (NZA-32290, 3291±35 BP), was obtained from a charcoal deposit in the second of four fills (16437) from ditch G1211 (section 16349) (Fig. 3.4); the overlying fill contained a sherd of MBA pottery. The other date, of 1500–1300 cal BC (at 95% confidence) (NZA-31069, 3133±35 BP), was obtained from emmer wheat recovered from a charcoal-rich deposit in the upper fill (1843) of east–west ditch G532 (section 1845) (Fig. 3.4); the deposit also contained MBA pottery, worked flint and animal bone. Given these dates, neither of which date the primary silting of the ditches, it is reasonable to infer that, despite the more frequent occurrence of LBA–EIA pottery in fills of the field system ditches, the construction of a significant number of the ditches dates from the Middle Bronze Age.

It is clear, therefore, that the occurrence of either MBA and LBA–EIA pottery alone does not represent reliable evidence for dating the field system. Although little evidence was recorded for ditches being recut, their heavy subsequent truncation and their largely homogeneous and undifferentiated brickearth-derived fills would make this hard to identify. The presence in a number of ditches, therefore, of solely LBA–EIA pottery, most of which lie within areas where other evidence of LBA–EIA activity was concentrated, does not preclude the ditches' earlier construction.

However, the lack of further radiocarbon dates and the dearth of secure stratigraphical relationships hamper any analysis of the subsequent development of the field system. While there were many stratigraphical relationships recorded between the field system ditches and later features, particularly the Romano-British enclosures and trackway and the medieval field system (see Chapters 4 and 5), there were relatively few recorded with other later prehistoric features.

One such relationship was recorded in the southern part of ICSG Area C where the western edge of a large sub-rectangular feature (16198) was cut by a ditch (G1267), which ran south from near the terminal of ditch G1211 (above) (Figs 3.5 and 3.6). As initially surveyed, this feature appeared to be approximately 10 m wide, and it may have comprised a number of adjacent or intercutting features. A 1 m wide slot excavated through its centre revealed a possible waterhole at least 7 m wide east–west and 2.6 m deep, with a near-vertical, irregular western side and a broad, slightly concave base sloping up towards the east (Fig. 3.5). Although the eastern side appeared to have a shallower gradient, making it possibly accessible for livestock, the upper part of this side was obscured by two later, but undated, features (16172 and 16194).

The bottom half of the waterhole was filled with a series of slumped gravel layers, interleaved with layers of humic silt, deriving from the eastern side. One of these layers (16193) contained three pieces of roundwood timber (16197), 100 mm in diameter, forming a tapering length of 1.65 m, sloping in towards the centre of the cut. The timber (Fig. 8.5), which had three broad notches cut in one side, is interpreted as a 'log ladder', and produced a radiocarbon date falling around the transition of the Middle and Late Bronze Age of 1210–910 cal BC (at

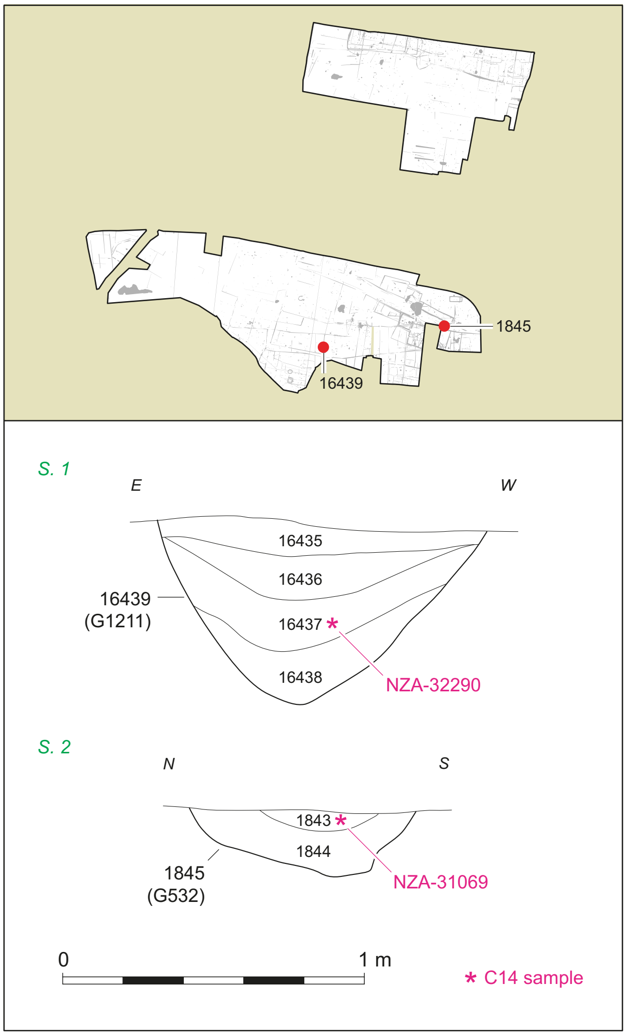

Figure 3.4 Bronze Age field system ditches G1211 and G532 (ICSG): sections

95% confidence) (OxA-8470, 2870±45 BP), consistent with other M/LBA notched log ladders, such as from nearby Stanwell (Parker Pearson and Sydes 1997, 233) and Heathrow (Framework Archaeology 2006, fig. 3.30; Framework Archaeology 2010).

The lower layers were overlain by a 0.4 m thick deposit containing three sherds of MBA pottery (16188), then further gravel layers, with iron panning, sloping down from the eastern side, from which a residual Neolithic flint end and side scraper (16183, ON 18811, Fig 7.4, 52) was recovered. These layers were sealed by a thick layer of colluvium (16180) almost filling the feature, with the overlying fill (16179) cut by ditch G1267 (section 16176). Assuming that the recorded relationship between waterhole and ditch is correct, this would suggest that, despite the main north–south boundary represented by ditch G1211 apparently being laid out at the start of the Middle Bronze Age, it was only extended southwards or, perhaps more likely, recut in the Late Bronze Age.

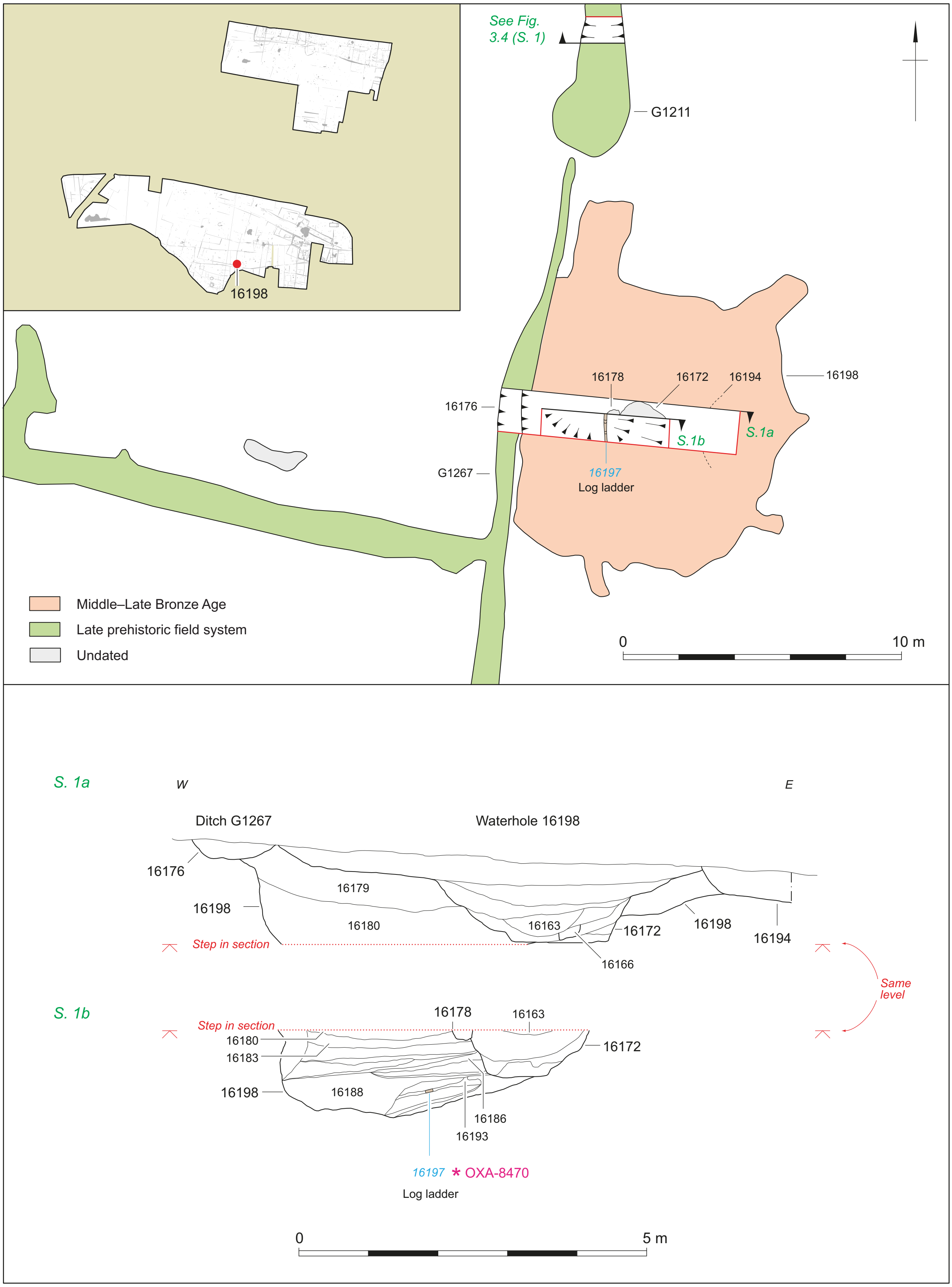

Figure 3.5 Bronze Age field system ditch G1267 and waterholes 16198 and 16172 (ICSG): plan and section

Figure 3.6 Middle Bronze Age features at ICSG

When feature 16198 had almost completely filled, it was cut through, to a depth of 1.8 m, by a smaller undated feature (16172) (Fig. 3.5), possibly a well, 1.6 m in diameter; this had postholes on its northern (16166) and western (16178) edges, suggesting some associated superstructure. Towards the base there was a sequence of finely layered water-lain sediments overlain by at least one possible dumped layer and further natural silting.

Another stratigraphical relationship with the field system was recorded in the southern part of Area D, where north–south ditch (G2198) cut the fills of a large irregular feature (30814) (Figs 2.4 and 3.6), 3 m by 8 m, possibly a gravel quarry, containing numerous naturally accumulated fills. These fills produced 29 sherds (181 g) of MBA pottery from the lower fills, and 20 LBA–EIA sherds (95 g) from an upper fill (as well as residual Early Neolithic sherds probably deriving from feature G2004 which it cut), along with quantities of worked and burnt flint, some of which are also likely to be residual. This, too, suggests a relatively late date for the ditch, which may have been a later modification to the field system, perhaps dividing a larger field block into two parts. However, while it is possible, indeed likely, that new ditches were added to the field system over time, in order to adapt it to particular local and changing requirements, it is notable that ditch G2198 shares the same orientation as, and is positioned exactly halfway between, the parallel field boundaries to the east (G2014) and west (G2167), a fact which makes it appear to be part of the original layout.

Orientation

Nonetheless, there are aspects of the field system's overall design which suggest that its basic structure, conforming to certain organising principles, was laid out over a relatively short period.

One of the regularities evident in the layout of the field system at ICSG and RMC Land is the shifting orientations of its axes, with one axis running north–south in the east, but NNE–SSW in the west (Fig. 3.3). This shift was observed consistently across both sites and was presumably also found in the areas in between. Other than the approximately north–south flowing Rivers Crane and Colne, 2 km to the east and 3 km to the west respectively (Fig. 1.1), there is no obvious topography within the immediate landscape to which such a shift might be an adaptation; in fact, coaxial field systems are often seen to override local topographical variations (Yates 2007, 15). Nor is there any known archaeological site, such as a settlement centre, from which a radiating field system might account for the shift.

While the field system at the eastern end of the ICSG has the same orientation as the rectangular Neolithic monument (Fig. 3.3), this may simply be a coincidence. The earlier monument was neither obviously incorporated within, nor otherwise respected by, the field system; one ditch (G477) cuts across its eastern end. Moreover, the orientation of the field system at the eastern end of ICSG is matched by that at the eastern end of RMC Land, at least 500 m to the north – too distant to have been visibly and accurately orientated on the monument.

It is notable that while the field system revealed at Heathrow Terminal 5 (Framework Archaeology 2010), 2–3 km to the south-west, also displayed a shifting orientation, its orientations do not match, and do not appear to be an extension of, those at ICSG and RMC Land, although it is likely that they would have joined up in some manner in the area in between. Similarly, although only the vestiges of a possible field and enclosure system were recorded at Holloway Lane to the west, these also do not appear to match the orientation of the field system at ICSG/RMC Land (MoLAS 1993, 22). However, the approximately NNW–SSE orientation of main axis of the field system at Cranford Lane, less than 1 km to the east of ICSG (Fig. 3.1), could represent an eastward continuation of the shifting axis evident at ICSG/RMC Land.

A related regularity of the field system is the fact that this shift in its orientation, particularly evident in the better preserved central and eastern areas of ICSG/RMC Land, takes place in a series of punctuated steps, resulting in a pattern of identifiable field blocks within which the ditches are closely parallel (or perpendicular), as indicated by colour in Figure 3.3. At a number of locations these punctuated changes are quite evident, such as between the terminals of ditches G922 and G1211 in ICSG Area C, where there is a marked change in alignment. While there are degrees of overlap between blocks, they average approximately 100 m wide (east–west), and appear to span both RMC Land and ICSG.

Fields – Form and Structure

The field system comprises a series of straight-sided, rectangular fields defined by ditches, up to 0.5 m wide and generally no deeper than the brickearth into which they were cut. In places, particularly in the central part of ICSG, the field system appears to be quite complete in comparison to other areas where it has been almost erased by later ploughing with only isolated lengths of unconnected ditch surviving. In these central areas, therefore, the broad, structure of the field system can be discerned, a number of features of which provide clues as how the landscape may have been divided up. This in turn may reveal something of the field system's relationship to settlement, its organisation, and the degrees of control, either central or local, exerted over the process of enclosure.

Despite their predominantly rectilinear layout, the fields display considerable variation in size and shape, even accounting for the loss of ditches from later ploughing. For example, one fully bounded and apparently undivided field in the centre of ICSG (bounded to the east by ditches G922, G1211 and G1267) (Fig. 3.3), measured at least 130 m east–west by 80 m north–south. In contrast, in the south-east corner of the similar-sized field to its immediate north there was a small 'compound' measuring 46 m east–west by 32 m north–south. Given the very few stratigraphical relationships between different elements of the field system it is not possible to determine whether the latter was part of the original layout of the field system, or a later modification to it.

Nonetheless, there are indications in the broad structure of the field system that its main boundaries defined a pattern of generally large fields, measuring 100–150 m wide and long. This is most clearly seen in the central part of ICSG, where quite a regular, large-scale grid can be discerned. It is significant that the earlier of the two radiocarbon dates from the field system (NZA32290: 1676–1490 cal BC at 95% confidence) came from ditch G1211 forming part of this grid. It is notable, however, the ditches forming this grid do not extend along single lines over long distances, many of them being slightly offset from each other, even between adjacent fields, for example between ditch G922 and ditch G203 to its north. This may indicate that no long-distance and overriding grid structure was imposed on the landscape.

Although only truncated ditches survive, it is likely that these were associated with banks, probably laid with hedgerows (see Stevens, above) to create more substantial barriers to movement. Few examples were noted, however, of the more substantial boundaries formed by closely parallel double ditches, probably with an internal bank, that were recorded extending over long distances at Perry Oaks and Heathrow Terminal 5 (Framework Archaeology 2006; 2010), and which may have marked larger-scale land holdings.

Trackways

Even accounting for the loss of lengths of ditch from later ploughing, it seems clear that most field boundaries contained deliberate breaks, some possibly quite wide, and often close to field corners (hampering stratigraphical analysis). Such breaks may have facilitated the movement of people and animals through the field system. In places the breaks consisted of the slight offsetting of lengths of overlapping ditch, such locations possibly related to the more controlled movement of livestock.

There were also short lengths of apparent trackway, defined by parallel ditches spaced 3–5 m apart, the longest section (defined by ditches 6686 and 6687 in the north-western part of RMC Land, Fig. 3.3) being less than 50 m long. Many of these appear to be randomly placed across the field system (lying on either axis) and unconnected to each other, and they do not seem to combine to form a system of droveways for moving livestock any significant distance across the landscape as found for example at Perry Oaks and Heathrow Terminal 5 (Framework 2006; 2010). Rather, they appear to have been designed to control animals over short distances, perhaps to move them to, or ensure their avoidance of, particular locations, or to facilitate specific animal selection processes as part of the husbandry regime.

Possible Enclosure Ditch

The main exception to the rectilinear form of the field system was a distinctly curved ditch (EV2004), orientated approximately east–west, recorded in an evaluation trench east of RMC Land (Fig. 3.3). It was 1.2 m wide and 0.5 m deep, with three fills, the uppermost of which (2005) contained 132 sherds of Late Bronze Age pottery. The size and curvature of the ditch suggest some function other than as a field boundary, possibly as part of a rounded enclosure, although the ditch was not recorded in the evaluation trench to the south-east. As both trenches lay outside the subsequent excavation area, this feature was not further investigated.

Middle Bronze Age Settlement

The precise character of any MBA settlement is unclear, its locations being implied more by the uneven distributions of MBA pottery across both sites than by the occurrence of identifiable structures or features. As mentioned above, there is no evidence that the layout of the field system was determined, or even influenced by, the presence of any pre-existing settlement foci. Settlements appear to have been open, in as far as this term applies within a wholly enclosed landscape, and while there is some suggestion from both sites that the foci of settlement activity were located within specific 'fields' there was nothing to distinguish such fields, in the form or layout of their ditches, from other elements of the field system.

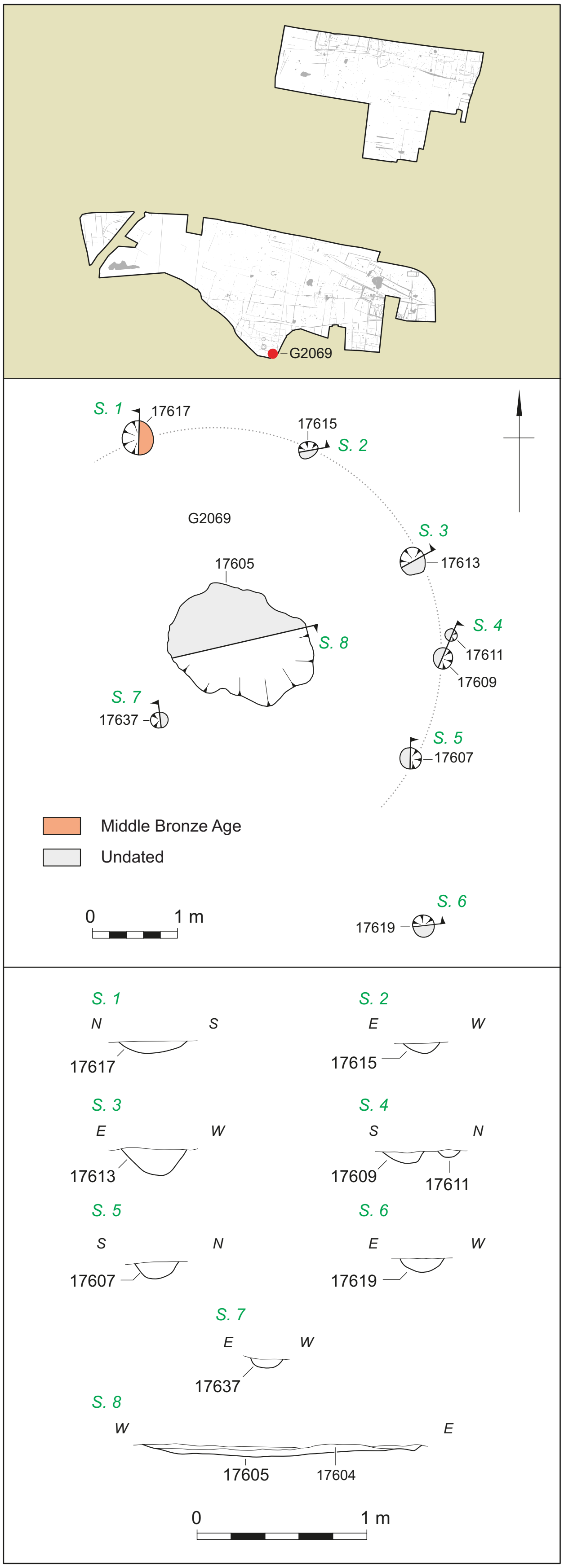

Figure 3.7 Possible Middle Bronze Age roundhouse G2046 (ICSG): plan and sections

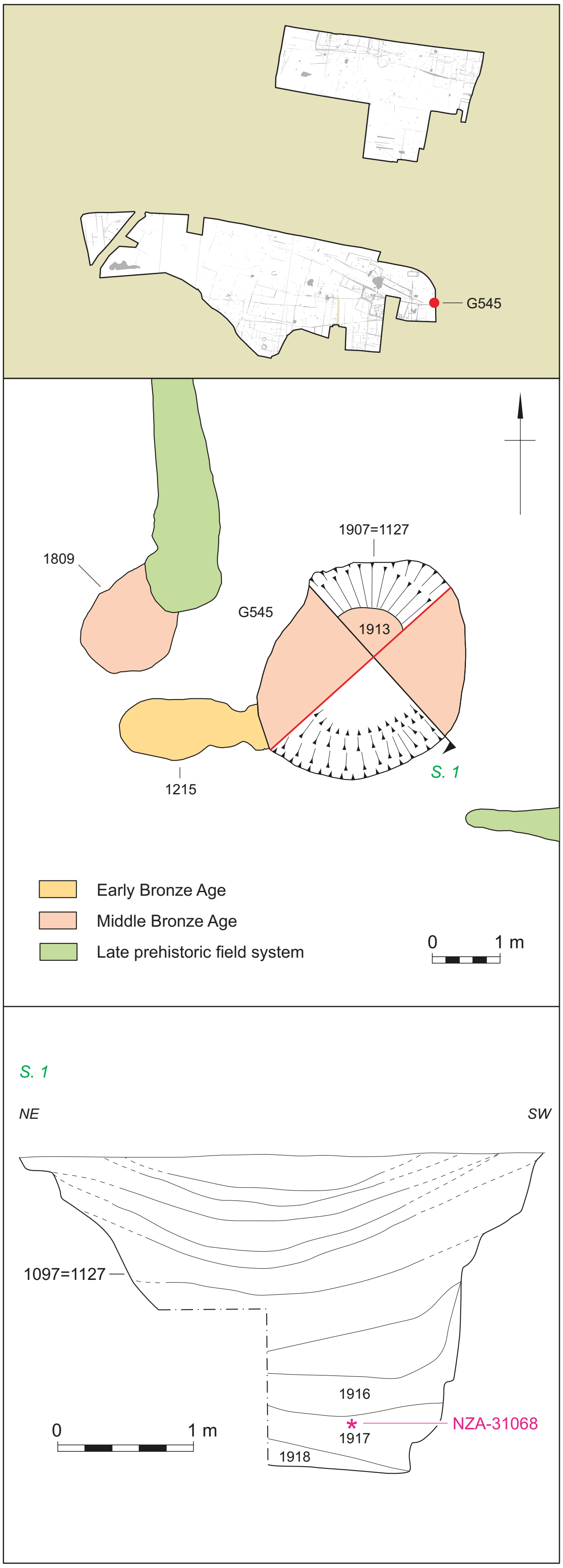

Figure 3.8 Middle Bronze Age well G545 (ICSG): plan and section

Table 3.1 Middle Bronze Age discrete features (ICSG and RMC Land)

Feature	*Width/ diam. (m)*	*Depth (m)*	*No. of fills*	*BA pottery no./weight (g) – Date*	*Other finds*
ICSG Area A					
1320	0.9 x 2.6	0.2	1	7/55 MBA	Fired clay, worked flint, burnt flint, animal bone
1522	0.7	1.2	2	1/8 MBA	-
1809	1.0 x 1.9	0.8	5	3/92 MBA	Worked flint, slag
1982	1.2	0.5	3	10/756 MBA	-
G468	2.2 x 2.7	1.7	6	2/34 MBA	Fired clay, worked flint, animal bone, Neolithic pottery; residual cremated human bone
G545	2.9 x 3.6	1.9	13	16/670 MBA 17/136 LBA	Fired clay, worked flint, burnt flint, stone, animal bone
ICSG Area B					
10009	1.0 x 1.5	0.5	2	4/48 MBA	Fired clay, worked flint, burnt flint
11093	1.3	1.8	6	15/200 MBA 6/40 LBA–EIA	Worked flint (inc. arrowhead), burnt flint, stone, slag, wood, animal bone
11212	1.0 x 1.5	1.5	9	- -	Worked flint, burnt flint, Neolithic pottery (2g)
ICSG Area D					
30814	3.0 x 8.0	1.0>	19	29/181 MBA 20/95 LBA–EIA	Worked flint, burnt flint, Neolithic pottery, intrusive glass
ICSG Area E					
40014	1.0	0.2	1	17/208 MBA	Fired clay
RMC Area 2					
3918	4.0	2.9+	13	1/74 MBA	Worked flint, burnt flint, stone, animal bone, Neolithic pottery, charred plant remains
2824	0.6 x 1.1	0.2	1	1/12 MBA	Animal bone, charcoal, burnt clay

ICSG

A single possible settlement structure (roundhouse G2069) was identified at ICSG (Figs 3. 6–7), although its location at the south-east of Area D is not reflected in the distribution of MBA (or LBA) pottery from the site.

Roundhouse G2069

One posthole (17617) in an arc of six otherwise undated postholes contained four sherds of MBA pottery. Together they appear to form the north-eastern third of a small roundhouse with a projected diameter of 5.5 m (Fig. 3.7). The postholes were 0.12–0.4 m in diameter (average 0.26) and 0.05–0.16 m deep (average 0.08 m), and given the level of truncation they had been subject to it is possible that others had completed the circle. They were spaced 1.1–1.8 m apart (centre to centre), apart from two (17609 and 17611) placed close together at the east, one of which, just outside the circle (17611), may represent a repair. A seventh posthole (17619), 1.2 m outside the circle to the south-east, may represent part of a porch, while an eighth lay just off-centre within the structure (17637). There was also a shallow oval scoop (17605), possibly a hearth, almost central within the circle, measuring 1.3 m by 1.8 m wide, with a layer of burnt earth on the base (17604) and containing burnt flint, a fragment of fired clay perforated slab, burnt earth and charcoal.

Other Middle Bronze Age features

The location of Middle Bronze Age settlement activity is perhaps more accurately reflected, however, in the distribution of MBA pottery on the site. Even excluding the MBA cremation cemetery in Area A (which accounts for 46% of the total weight of MBA pottery), there was a clear concentration of pottery (an additional 38%) in a relatively confined area in the eastern part of the site (Fig. 3.6), suggesting that settlement was focused either in this area or to its immediate south-east. While most of the pottery came from discrete features such as pits, hearths and waterholes (summarised in Table 3.1), some of these features appear to be closely associated with field boundaries.

Eastern side of ICSG

The largest quantity of MBA pottery from a non-mortuary feature came from a well (G545) close to the eastern edge of the site in Area A. It measured 2.9 m by 3.6 m at the top, narrowing with steep irregular sides to a flat base at a depth of 1.9 m (Fig. 3.8). Above a sterile primary fill (1918) was a dark grey clay layer (1917) from which charred *Rubus* seeds produced a radiocarbon date in the Middle Bronze Age of 1420–1210 cal BC (at 95% confidence) (NZA-31068, 3048±35 BP), along with five MBA sherds (35 g), and a small quantity of animal bone. The layer above (1916) contained a further 11 sherds (635 g) of MBA pottery, including part of a bucket-

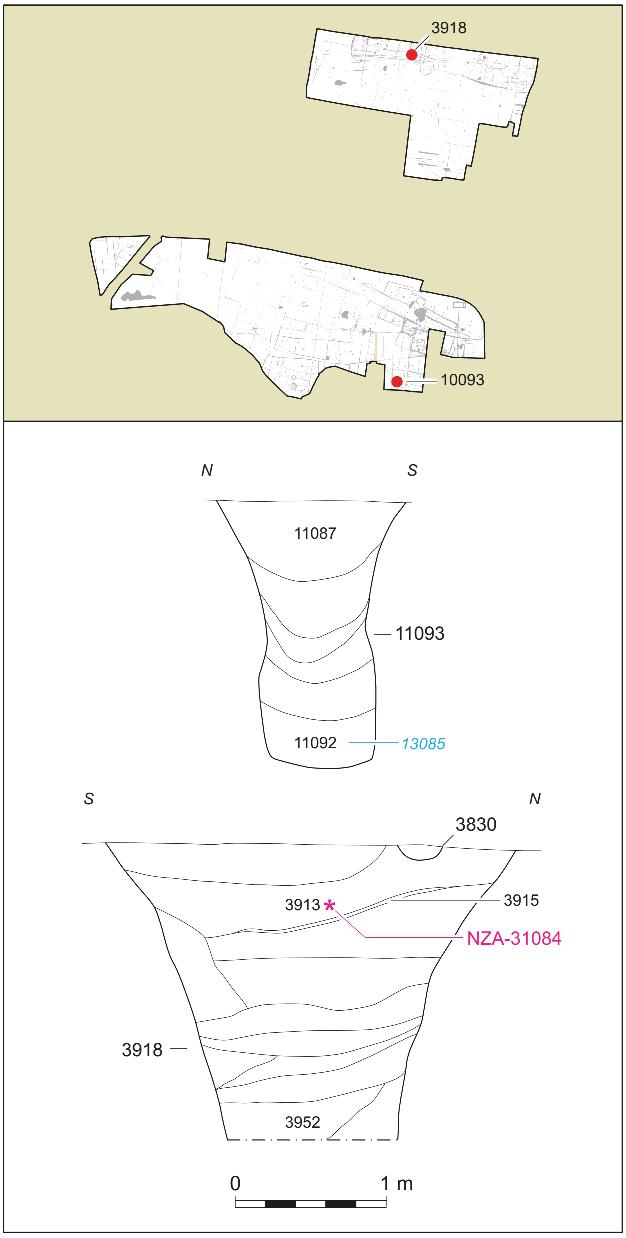

Figure 3.9 Middle Bronze Age wells 11093 (ICSG) and 3918 (RMC Land): sections

shaped jar (Fig. 6.6, 40), while the poorly defined upper fills produced a number of sherds of predominantly LBA–EIA pottery.

Immediately west of the well was an oval pit (1809) with five fills, the middle of which contained three sherds (92 g) of MBA pottery, along with struck flint and a piece of slag. Both features were located at the south-west corner of a slightly irregular arrangement of short ditch segments, which appear to form a small rectangular field, 35 m wide (north–south) but lying largely east of the excavation, and whose general alignments match those of the wider field system in the eastern part both sites (Fig. 3.6).

Further MBA pottery came from a number of ditch segments, 30 m to the south, that form the north-east corner of a field measuring at least 40 m by 40 m, possibly with an internal division, and flanked to the west by a length of trackway. Two of the segments (G621 and G624) (Fig. 3.6) contained MBA pottery, while the southern terminal of another (G625) contained 27 sherds (990 g) from a single vessel (not located at the time of analysis but identified from a photograph). This latter segment was cut by an irregular pit (1320) with two adjacent square postholes cutting its base, that contained further MBA sherds along with struck flint (including a keeled core and broken blade, both of diagnostic Neolithic form), burnt flint, fired clay, and animal bone. There was, however, only a single MBA feature (pit 1522) within the field, two others (1739 and 1762) being dated to the LBA–EIA (see below, Table 3.2).

There was also a cluster of MBA pottery near the Neolithic rectangular monument, some of it residual in later features (Fig. 3.6). The largest quantity (10 sherds, 756 g) came from pit 1982, which produced no other finds. Two sherds also came from a nearby well or deep pit (G468) of possibly similar date. The well, which cut into the fully silted ditch of the Neolithic rectangular monument (see above, Fig. 2.5) at its south-west corner, measured 2.2 m by 2.7 m at the top and was 1.7 m deep with a relatively narrow base. Its sides were irregular, particularly where cutting the ditch fills, being almost vertical and partly undercutting at the south-west but straight and steep on the opposite side. The presence of four Peterborough Ware sherds from the upper fills indicate that many of the finds from the well, including struck flint, fired clay, animal bone and a fragment of cremated human bone, may have been residual; among the struck flint was a Neolithic discoidal core. The position of the pit may have been entirely fortuitous; although the east–west axis of the field system at the eastern end of the site matches that of the rectangular Neolithic monument, there is no other indication that the earlier monument had any continuing or residual significance in the MBA landscape.

Further sherds were recovered from the south-east corner of ICSG Area B, where two ditches form the corner of a field with a wide opening to the north-west, with a third ditch representing a possible internal division (Fig. 3.6). The field's western side was formed by north–south ditch G847, up to 1.1 m wide and 0.35 m deep, whose northern terminal narrowed and turned slightly to the north-west around an evidently pre-existing, 1.8 m deep well (11093) (Fig. 3.9). The layout of the ditches would have placed this well, too, in the corner of the field. The well was 1.3 m in diameter at the top, narrowing to 0.7 m halfway down then widening slightly in its lower half. It had what may have been a sub-square posthole, 0.3 m wide, on its eastern edge. Its lowest, waterlogged fill (11092) contained 12 sherds (62 g) of MBA pottery, animal bone, single pieces of stone and waterlogged wood and some charcoal, as well as a finely worked Neolithic leaf-shaped arrowhead (ON 13085) in very fresh condition (Pl. 3.1). Smaller quantities of finds were recovered from the layers above, including three sherds of MBA pottery, and six sherds of LBA–EIA pottery from the uppermost fill (11087). These fills also produced diagnostic Neolithic flints, including a core, a scraper and a serrated flake.

Some 28 m to the east of the well was a sub-circular pit (10009) (Fig. 3.6), whose possibly backfilled lower fill contained charcoal and burnt flint, while its upper fill contained four sherds of MBA pottery, struck and burnt flint and fired clay. The north side of the field appeared to be open between these two features. A further 17 m to the east was a second well (11212), similar in form to well 11093, and also pre-dating a field ditch. At the top it was oval in plan, 1 m by 1.5 m, narrowing to a circle 0.7 m in diameter before widening again to a concave base at a depth of 1.5 m. It produced a small quantity of struck and burnt flint along with a small, residual Peterborough Ware sherd. When fully silted up, the well was cut by east–west ditch G880, similar in dimensions to ditch G847, which defined the northern side of the field; a short extension at its west end (G879) was aligned on pit 10009. The only feature datable to the MBA within this field was a cremation grave (10001, see below).

Western side of ICSG

There was also a small concentration of MBA pottery at the west of the site in Area E, which appears to have been focused on two short ditch segments (40249 and 40298) aligned on the wider field system in this area (Fig. 3.6). The segments, which were separated by a 4.3 m gap, were significantly larger than other ditches in the field system, but their function is unclear, their interpretation being hampered by the 30 m wide unexcavated strip of land to their south-east. A parallel ditch (G4150), some 20 m to their north-east, also contained only MBA pottery.

Ditch 40298 was 7 m long (possibly continuing beyond the edge of excavation) 1.7 m wide and 1 m deep with steep irregular sides and a concave base. Above a sterile primary fill was a thick charcoal-rich dumped layer containing 41 MBA sherds (239 g), struck and burnt flint and fired clay. A further 18 sherds came from the upper fill (which also contained a piece of glass and a single medieval sherd, both intrusive). Ditch 40249 was 11 m long 1.9 m wide and 0.9 m deep with similar although fewer finds. Although it had a similar fill sequence the profile of its lowest fill suggested a possible bank to the north-east.

Plate 3.1 Neolithic leaf-shaped flint arrowhead from Middle Bronze Age well 11093

A further 18 residual MBA sherds (104 g) came from the south-west end of ditches defining a curved trackway, of possible early Saxon date (see below, Fig. 5.1), in this area, supporting the possibility of a focus of MBA activity at, or more likely beyond, the western end of the site.

RMC Land

There is considerably less evidence of MBA settlement activity at RMC Land (Fig. 3.10), this site producing only 33 sherds (452 g) of MBA pottery. Among these were 19 sherds (155 g) from a single Deverel-Rimbury Bucket Urn found within the western terminal of ditch 6687 in the northern part of Area 3. This ditch, and parallel ditch 6686 to its south, appeared to form a short length of slightly curving, 3 m wide trackway running east–west within the field system.

The few other dated MBA features were located in the northern central part of the site where an arrangement of ditches appear to form two small adjacent fields (or one that was internally subdivided) that conform to the local orientation of the wider field system; there appears to have been a short length of 2.8 m wide trackway entering the northern field at its north-east corner. Two of these lengths of ditch (3483 and 4139) (Fig. 3.10), arranged at a right angle, contained small quantities of MBA pottery (along with residual earlier material).

On the western side of the field, on the line of ditch 4139, there was a well (3918), 4 m in diameter at the top, narrowing with convex sides to 1.7 m at a depth of 2.9 m – the limit of machine excavation (Fig. 3.9). After its period of use the well appears to have been abandoned to fill up naturally; a sherd of Deverel-Rimbury pottery was recovered from the second lowest recorded fill (3952), and the absence of

Figure 3.10 Middle Bronze Age features at RMC Land

later pottery from these fills provides support for a MBA date. The uppermost fills contained a number of residual Early Neolithic (3915) and Peterborough Ware (3913) sherds, presumably derived from disturbed features close by. Charred cereal from layer 3913 produced a radiocarbon date in the Middle Bronze Age of 1410–1190 cal BC (at 95% confidence) (NZA-31084, 3037±35 BP).

Although the field contained a large number of undated features, mainly pits, few contained any finds that might indicate settlement activity, suggesting that any associated settlement lay to the north, outside the excavation area. The only other possibly associated settlement feature in the vicinity (Table 3.1) was an irregular pit (or possible tree-throw hole) (2824) (Fig. 3.10), 40 m north-west of the well, containing one Deverel-Rimbury sherd and pieces of animal bone, with fragments of charcoal and burnt clay mixed into the single fill.

Middle Bronze Age Burials

While the Middle Bronze Age witnessed major changes in landuse and settlement patterns, the contemporary mortuary practices appear to display some continuity from the Early Bronze Age (see Chapter 2) (Fig. 3.11) where the limited evidence from ICSG points to both isolated and possibly grouped cremation graves (above). While a small number of isolated graves, or other cremation-related deposits, were recorded across ICSG and RMC Land, with one such deposit in the outer ditch of the Neolithic double ring ditch monument (G2007) (Fig. 2.9), the main focus of mortuary activity was the small, 'flat' urnfield cremation cemetery at ICSG. Its position, close to the area of possible settlement at the east of the site (Fig. 3.6), appears to reinforce the picture of a settled MBA landscape, possibly representing a few generations of a local farmstead comprising, perhaps a single family unit.

Cremation Cemetery

The cemetery (Fig. 3.12) was sited 50 m west of the rectangular Neolithic monument (Fig. 3.11), this distance suggesting that it was probably not positioned with direct reference to the earlier monument, although its location within the general area of this and the other Neolithic monuments may be significant. More likely determinants would have been the suggested location of the contemporary settlement, the slight rise (possibly more pronounced in antiquity) on which it was sited, and any existing divisions within the landscape – the cemetery lay

Figure 3.11 Middle to Late Bronze Age burials (in relation to Neolithic monuments and Early Bronze Age burials)

immediately west of two lengths of north–south ditch (G446 and G447) forming part of a truncated field boundary.

A single radiocarbon date of 1500–1320 cal BC (at 95% confidence) (NZA-30918, 3155±30 BP), on cremated human bone from grave 1206, is comparable to the date, early in the Middle Bronze Age, obtained from ditch G532 (see above), suggesting that these three main elements of the MBA landscape – land division, settlement and burial – were closely associated.

The cemetery contained 13 features in an area 9 m east–west by 11 m north–south (Fig. 3.12). They were generally similar in form, averaging 0.12 m deep and 0.45 m in diameter, and included up to eight small sub-circular graves, containing urned and unurned cremation burials. In the main concentration of graves at the north end of the cemetery, an oval spread of soil (1009), 2 m by 4 m, also contained a small quantity of cremated human bone, along with MBA pottery, charcoal and fired clay (ie, pyre debris), animal bone and a piece of quern, and probably represents the disturbance of one or more of the graves, all of which had been badly truncated by ploughing. Four of the features (EV164, EV166, EV170 and EV171) were first encountered during the evaluation (Trench 96); the re-excavation of the backfill (1308) produced a further 24 sherds (416 g) of MBA pottery.

At least five of the graves contained urned cremation burials, these producing relatively large quantities of cremated bone (128–643 g). Grave 1100, which had an inverted urn (ON 3000: 59 sherds, 437 g, see Fig. 6.6, 37) placed in the northern half of the grave, contained the remains of an individual at least 18 years old; the grave fill, which was black due to the high charcoal content, contained animal bone which may have been included as offerings on the pyre. The urn in grave 1104 (ON 3001: 65 sherds, 954 g, see Fig. 6.6, 38), which contained the remains of an individual aged at least 30 years, had also been placed in the northern half of the grave; the grave fill contained fired clay and charcoal. Grave 1107, contained the remains of a possible female aged at least 30 years, and vessel ON 3003 (110 sherds, 790 g). The burial deposit appears to have been made while it was still hot as the natural had been reddened by heat, and possible animal bone and a copper alloy globule recovered from it probably represent material placed on the pyre.

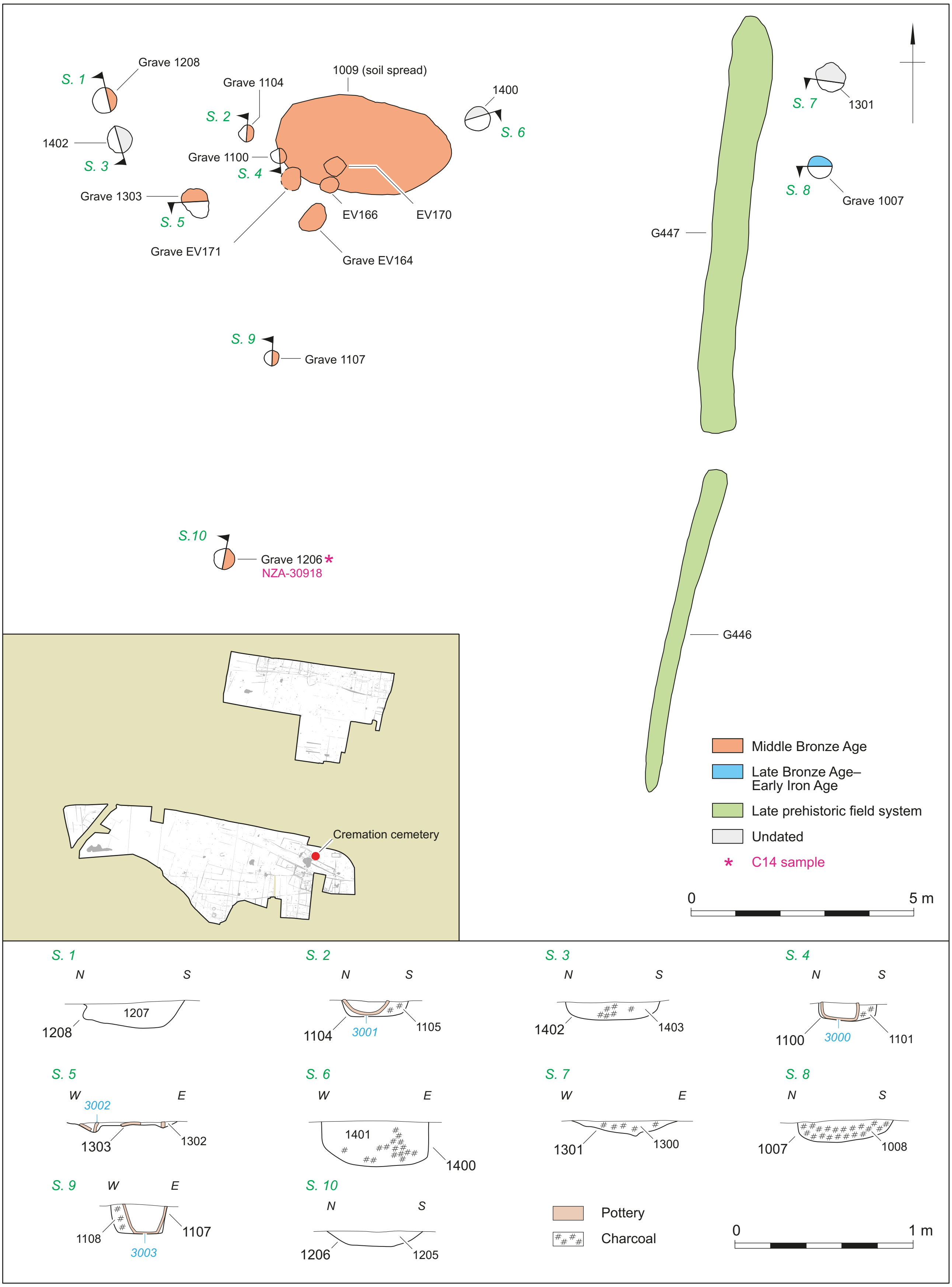

Figure 3.12 Middle Bronze Age cremation cemetery (ICSG): plan and grave sections

The southernmost grave (1206), which had been heavily truncated and disturbed, contained the remains of a person aged 13–18 years. The cremated bone produced a radiocarbon date of 1500–1320 cal BC (NZA-32686, 1583±45 BP) (suggesting eight sherds of Middle/Late Iron Age pottery from this feature are clearly intrusive (see Fig. 6.9, 3); this grave lay within possible Late Iron Age enclosure G499, see Fig. 4.3). Grave 1303, also heavily truncated and disturbed, contained the remains of a person aged over 18 years, and an inverted urn (ON 3002: 53 sherds, 958 g) of which only part of the rim remained *in situ*. A sixth possible urned cremation burial was found in feature EV171 (see Fig. 6.6, 39), although only 12 g of bone, from a person aged at least 13 years old, was recovered, probably due to the disturbance of the urn during the machine excavation of the evaluation trench.

In contrast, the burial in grave 1208, comprising the cremated remains (347 g) of a person aged between 14 and 17, appears to have been unurned, with burnt flint and fired clay being recovered from its fill but no pottery.

The other grave-sized features in the cemetery contained much smaller quantities of cremated bone – between 1 g in feature EV170, which contained a small quantity of pottery, and 20 g in feature 1400 – along with quantities of pyre debris, principally charcoal. No bone was recovered from feature 1402, although it was clearly located within the cemetery and also contained what appeared to be pyre debris. Whether or not these features were also graves, they were clearly associated with the cemetery (see McKinley, Chapter 9). However, no pyre sites were identified anywhere on the site. It is possible that the cremations took place elsewhere and the cemetery was reserved purely for burial, the presence of pyre debris in the grave simply reflecting the manner in which the cremated remains were collected. It is also possible, however, that, unless the construction of the pyres involved digging relatively deep air channels underneath to aid combustion, any traces of them, including burning of the underlying soil, have been erased by later ploughing.

Other Middle Bronze Age Burials

Three other MBA features containing cremated human bone were recorded at ICSG (Fig. 3.11). As mentioned above, grave 10001 was the only MBA feature within the field (bounded to the north by G880) in the southern edge of Area B. Like those in the cemetery it was heavily truncated, measuring 0.3 m in diameter and 0.1 m deep, and although it contained nine sherds (56 g) of MBA pottery, the burial (216 g), of an individual aged between 15 and 45 years, was probably unurned; other finds from the grave fill included fired clay and possible fuel-ash slag.

A small circular pit (19230), 0.6 m in diameter and 0.1 m deep, with a shallow concave profile, which cut the upper fill of the outer ditch of the Middle Neolithic double ring ditch (G2007) on its eastern side (Figs 2.9 and 3.11; Pl. 2.3), had a charcoal-rich fill, comprising possible pyre debris, containing 11 g of cremated human bone from an individual aged over 13 years. A sample of the bone produced a radiocarbon date in the Middle Bronze Age of 1420–1130 cal BC (at 95% confidence) (NZA-32717, 3045±40 BP), and the fill also contained 16 sherds (36 g) of flint-tempered pottery possibly from a Deverel-Rimbury Urn, two pieces of struck flint and burnt flint (68 g).

In addition, a fragment of cremated human bone, probably residual, was recovered from the MBA well (G468) cutting the south-west corner of the rectangular Neolithic monument (Fig 2.5).

Cremated human bone (53 g), from an individual aged over 18 years, was recovered from the charcoal-rich fill of a possible grave (1850) in Area 1 at RMC Land (Fig. 3.11). The feature contained no pottery, and it is unclear whether this represents an unurned burial, or redeposited pyre debris. However, the bone produced a radiocarbon date of 1210–1000 cal BC (at 95% confidence) (NZA-30921, 2904±30 BP), falling into the transition between the Middle and Late Bronze Age.

Seven other undated features contained varying quantities of cremated human bone (between 2 g and 93 g), none of which was clearly a grave (Fig. 3.11); five were from ICSG (EV19, 16452, 16768, 17556 and 40219) and two from RMC Land (572 and 1610).

Late Bronze Age–Early Iron Age Settlement

A relatively large number of discrete features are dated to the LBA–EIA, compared to the MBA, at both ICSG and RMC Land (Figs 3.13 and 3.17). Moreover, there is a much clearer spatial relationship, particularly at ICSG, between many of these features and the layout of the field system, and it is clear that the foci of LBA–EIA settlements had shifted significantly from those of the MBA.

ICSG

While some continuity of settlement is suggested by the recovery of a quantity of LBA–EIA pottery from the area of possible MBA settlement at the eastern end of ICSG, by far the largest quantity of finds, including approximately 84% (by weight) of all the LBA–EIA pottery from ICSG, came from a group of

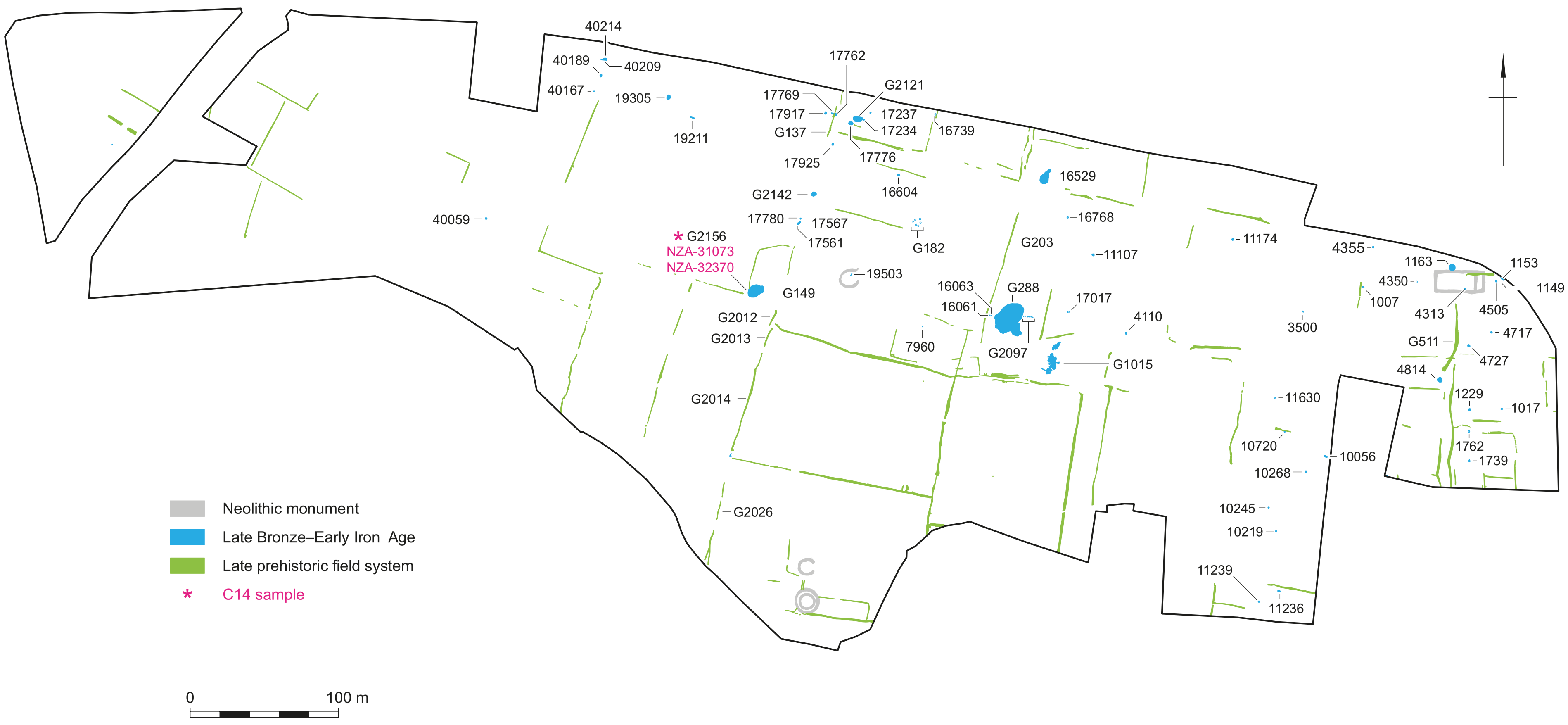

Figure 3.13 Late Bronze Age–Early Iron Age features at ICSG

Table 3.2 Late Bronze Age/Early Iron Age discrete features (ICSG)

Feature	*Width/ diam. (m)*	*Depth (m)*	*No. of fills*	*BA pottery no./weight (g) – Date*		*Other finds*
ICSG Area A						
1017	0.3 x 0.5	0.2	1	1/2	LBA–EIA	-
1149	0.7	0.5	3	1/112	MBA	Fired clay, burnt flint
1153	3.6	0.7	3	29/62	LBA–EIA	Fired clay, worked flint, burnt flint
1163	3.8	2.0	13	1/1 4/16	MBA LBA–EIA	Fired clay (inc. loomweight), worked flint, burnt flint, stone
1229	0.8 x 1.6	1.1	4	3/24	LBA–EIA	Worked flint, slag, iron (?intrusive in upper fill)
1739	1.5	0.6	3	1/6	LBA–EIA	Fired clay, worked flint, burnt flint
1762	0.4	0.1	1	13/12	LBA–EIA	Worked flint
4313	0.7	0.5	3	3/12	LBA–EIA	-
4350	0.3	0.2	1	1/4	LBA–EIA	-
4355	1.0	0.2	2	1/24	LBA–EIA	Fired clay, worked flint, Neolithic pottery
4505	1.3	0.6	7	30/157	LBA–EIA	Fired clay, worked flint, intrusive ?Saxon pottery
4717	0.5	0.2	2	17/242	LBA–EIA	Fired clay, worked flint, burnt flint
4727	1.7	0.7	5	8/17	LBA–EIA	-
ICSG Area B						
4110	0.6 x 0.8	0.4	3	14/161	LBA–EIA	Fired clay, worked flint, burnt flint
10056	1.1 x 2.2	0.1	1	5/80	LBA–EIA	Fired clay, burnt flint, animal bone, ?slag, charcoal, charred plant remains
10219	1.1	0.1	1	6/16	LBA–EIA	Worked flint
10245	1.0	0.3	3	1/8	LBA–EIA	Worked flint, burnt flint, fired clay, Neolithic pottery (82g)
10268	0.7	<0.1	1	1/1	LBA–EIA	Fired clay, burnt flint
10720	0.9	<0.1	1	2/19	LBA–EIA	Burnt flint
11107	0.6 x 1.0	0.2	1	10/32	LBA–EIA	Burnt flint
11174	1.5	0.3	1	3/3	LBA–EIA	Worked flint, burnt flint
11236	1.5 x 2.1	0.5	3	1/8	LBA–EIA	Burnt flint
11239	1.1	<0.1	1	1/4	LBA–EIA	Worked flint, burnt flint
11630	0.3	0.1	1	8/285	LBA–EIA	-
ICSG Area C						
7690	0.5	?	?	1/6	LBA–EIA	Burnt flint
16061	0.3	0.1	1	1/1	LBA–EIA	Burnt flint
16063	0.4 x 0.6	0.2	1	1/4	LBA–EIA	Burnt flint
16529	6.2 x 11.0	?	?	5/27	LBA–EIA	Fired clay, worked flint, burnt flint
16604	1.3 x 2.2	0.1	1	19/46	LBA–EIA	Worked flint, burnt flint
16739	0.4	<0.1	1	8/72	LBA–EIA	Worked flint
17017	0.3	0.2	1	4/60	LBA–EIA	Worked flint, burnt flint
ICSG Area D						
17234	1.0	0.2	1	2/36	LBA–EIA	Fired clay (crucible fragment), burnt flint
17237	1.2 x 1.4	0.2	1	4/28	LBA–EIA	Fired clay, worked flint, burnt flint
17561	2.0	0.7	3	253/4240	LBA–EIA	Fired clay (inc. loomweight), worked flint, burnt flint, stone
17567	0.8 x 2.0	0.1	1	7/45	LBA–EIA	Worked flint, burnt flint
17762	1.9 x 2.8	0.5	2	19/38	LBA–EIA	Fired clay, burnt flint, EBA pottery
17769	0.5	0.4	1	4/18	LBA–EIA	-
17776	2.4 x 3.2	0.6	2	132/1491	LBA	Fired clay (inc. 16 loomweights), worked flint, burnt flint, stone
17780	0.9	0.2	1	24/347	LBA–EIA	Worked flint, burnt flint
17917	1.7 x 2.5	1.1	3	7/32	LBA–EIA	Fired clay (inc. a perforated clay slab fragment), worked flint, burnt flint, stone
17925	0.8 x 1.4	0.6	2	3/14	LBA–EIA	Worked flint, burnt flint, stone
19305	2.4 x 3.0	0.7	4	17/94	LBA–EIA	Fired clay, burnt flint, slag
G2121	3.4 x 6.7	1.0	9	64/429	LBA–EIA	Fired clay, worked flint, burnt flint, animal bone
G2142	3.5	2.0	15	9/442	LBA–EIA	Fired clay, worked flint, burnt flint
G2156	7.0	12.0	23	161/889	LBA–EIA	Fired clay, worked flint, burnt flint, animal bone, wooden stake, wooden lid
ICSG Area E						
40059	0.6	0.1	1	3/19	LBA–EIA	Stone
40189	1.5 x 1.8	1.0	2	65/572	LBA–EIA	Worked flint, burnt flint, stone, animal bone

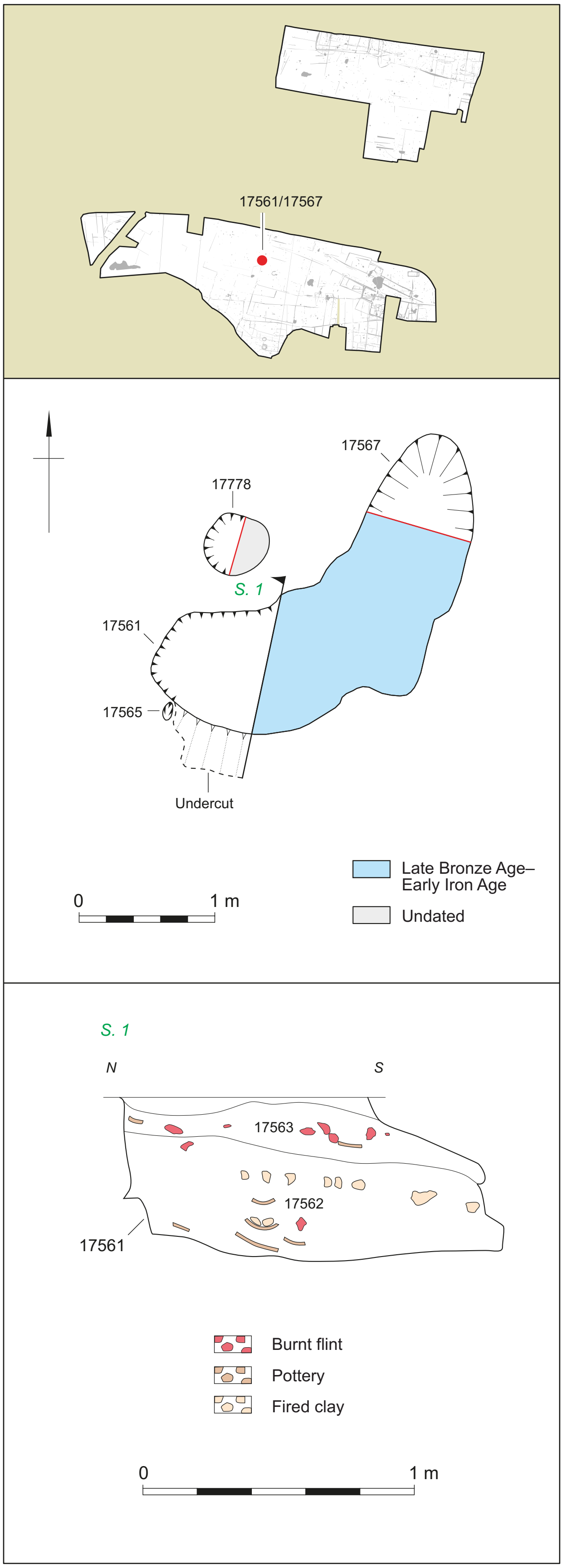

Figure 3.14 Late Bronze Age feature 17561 (ICSG): plan and section

discrete features in the northern part of Area D (see Fig. 1.2; Table 3.2), lying on or close to the projected line of a major field system boundary aligned NNE–SSW (represented by ditches G137, G149, G2012–4 and G2026) (Fig. 3.13). Although these features contained material indicative of settlement, no settlement structures were identified.

Area D

The largest quantity of pottery (253 sherds, 4240 g) was recovered, along with over 5 kg of fired clay (some with wattle impressions) and over 12 kg of burnt flint, from an irregular feature (17561) of uncertain function (Fig. 3.14), located on the projected line of the field boundary. The deepest part of the feature, at the south-west, was 2 m wide and 0.7 m deep, with vertical sides on three sides but sharply undercut at the south, and a largely flat base; there was shallow cut 0.8 m wide, extending 2 m towards the NNE (17567). The base and sides of the feature had been affected by heat, possibly due to *in situ* burning. Although the lowest fill (17562) comprised a 0.4 m thick layer of clay silt mixed with ash, this did not have the appearance of a high temperature deposit, and may simply represent a backfill layer deposited after the feature had gone out of use. The finds from this layer also give no clues as to the function of the feature, these comprising pottery, fired clay (including a loomweight), worked and burnt flint, a fragment of polished quartzite – possibly from a battle axe or square sectioned axe of Neolithic or Early Bronze Age date (ON 18217, Fig. 7.3, 53), and other pieces of burnt and unburnt stone. Similar finds were recovered from the overlying charcoal rich-fill (17563) and the uppermost fill which also filled the shallow extension. Possibly associated with this feature were an adjacent posthole (17778) and a possible stakehole (17565) angled towards the north at its south-west edge, although neither contained any finds.

Lying on the same boundary immediately to the north was a pit (17780, Fig. 3.13) containing 24 LBA–EIA sherds (347 g), and worked and burnt flint.

A further 17 m to the north, there was a steep-sided well (G2142) (Fig. 3.15). Its original cut (17832) was 3.5 m in diameter and 2 m deep. After it had largely silted up it was recut to its base (17854), the lower part of the recut having near vertical sides, but shallower at the top probably due to erosion. When this in turn had filled to at least half its depth, it was recut again (17855), but to only to 1 m depth, this probably having some different function unless the water-table had risen significantly. Although a small quantity of burnt flint was recovered from the fill of the original well, all the remaining finds, comprising LBA–EIA pottery, worked and burnt flint, fired clay and stone, came from the fills of the

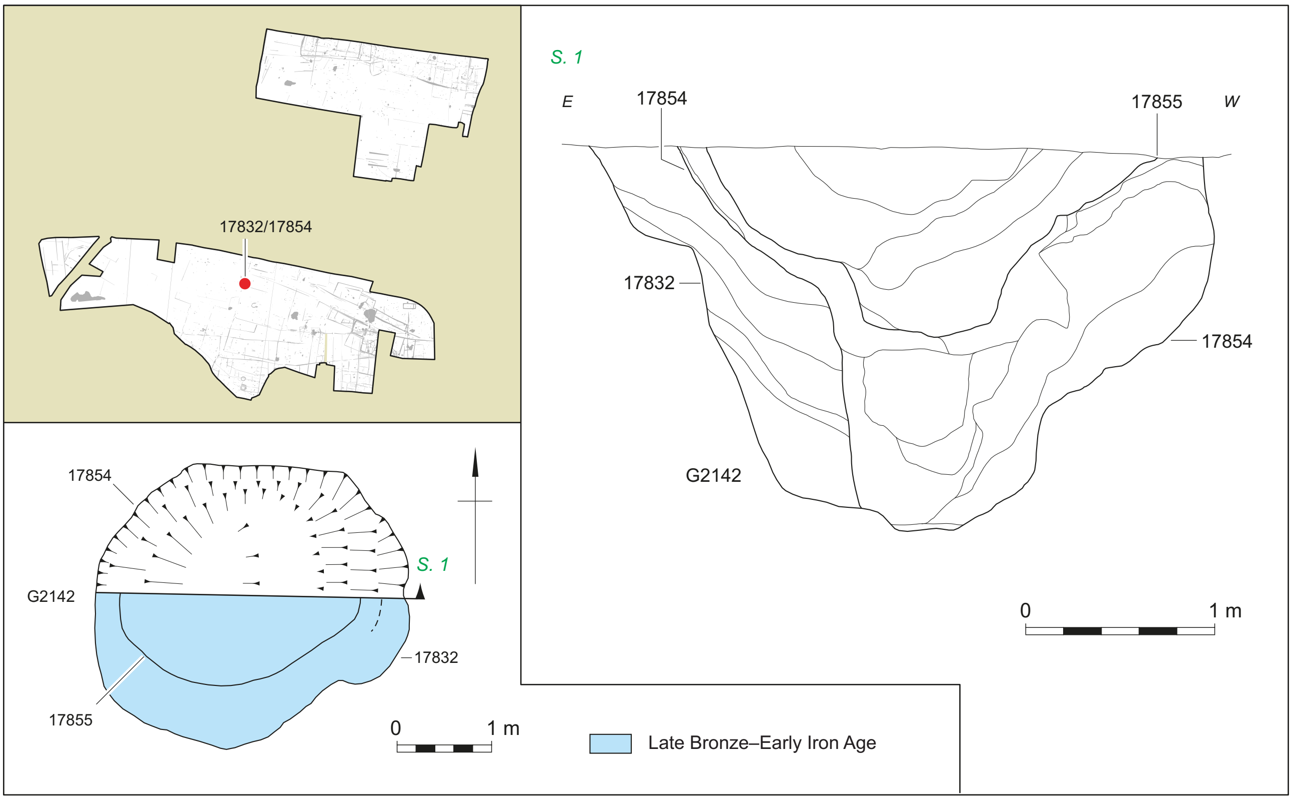

Figure 3.15 Late Bronze Age waterhole 17832 (ICSG): plan and section

second recut. Further north again was another pit (17925), containing smaller quantities of finds (pottery, worked and burnt flint and burnt stone).

Close to the northern edge of the excavation two large features were located close to the south-western corner of a field, 65 m wide, lying east of the same boundary (Fig. 3.13). One was an oval pit (17776), 2.4 m by 3.2 m and 0.6 m deep (Fig. 3.16). Its thin lowest fill (not shown in section) contained no finds but its main fill (17775) contained 132 sherds (1491 g) of LBA pottery and 16 cylindrical fired clay loomweights (23,778 g) (Pl. 3.2), along with burnt flint (1398 g) and a piece of burnt stone, this material apparently deposited as a series of discrete dumps. The other feature, to its immediate north-east (G2121, Fig. 3.13) measured 6.7 m east–west and 3.4 m wide. Only its western end was excavated, and only to a depth of 1 m, where it had steep sides. It contained a sequence of fills that were recut (17269) before it had fully silted up. A small quantity of LBA–EIA pottery (eg, Fig. 6.8, 44) and burnt flint was recovered from the original cut, and larger quantities, together with worked flint and fired clay, from the recut. Other contemporary features in this area included pits 17234, 17237, 17762 (which cut the field boundary ditch), 17769 and 17917.

To the south of this group, another large feature (G2156) lay west of the boundary (Fig. 3.13). It measured 7 m by 12 m and 2.5 m deep, and a stepped slot machine-excavated across its length showed that it had steep sides to the east and moderately steep to

Plate 3.2 Excavation of the fired clay loomweights in Late Bronze Age pit 17776

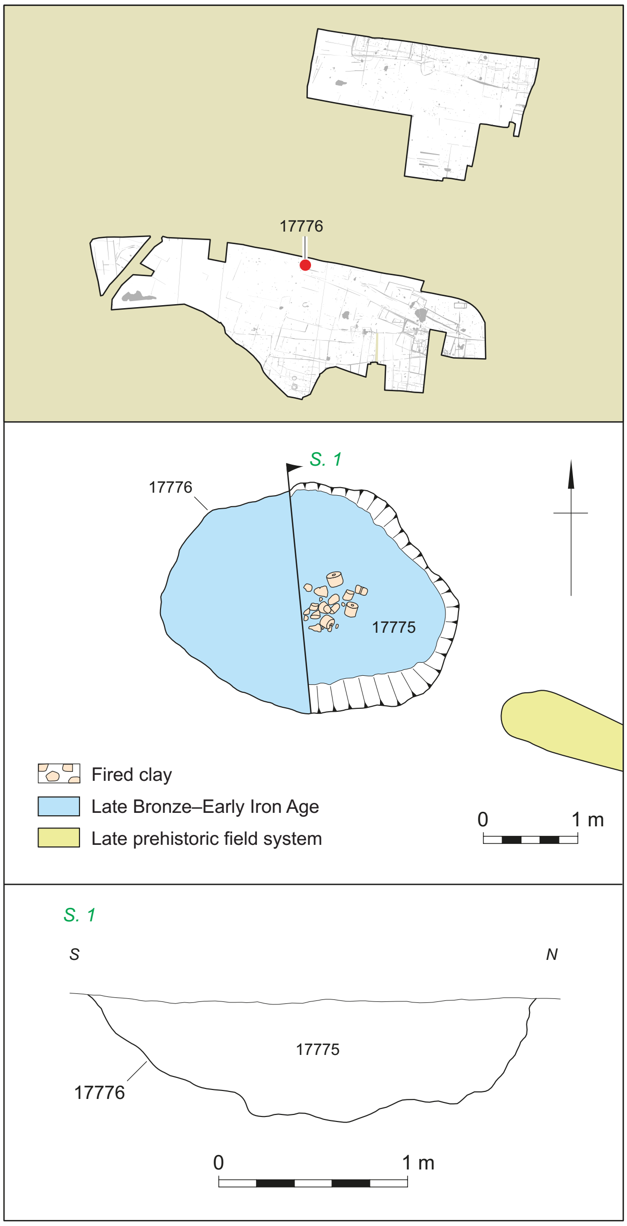

Figure 3.16 Late Bronze Age feature 17776 containing loomweights (ICSG): plan and section

the west, perhaps ruling out its use as an animal watering hole, but perhaps a well. It contained a series of fills both laid down naturally and as deliberate dumps, with most of the finds, including 161 sherds (889 g) of LBA–EIA pottery and quantities of worked and burnt flint and fired clay, coming from the upper fills. However, two radiocarbon determinations obtained from an irregular depression, at least 0.4 m deep, noted in the base of the feature suggests a more complex history for this feature. The depression's lowest, silty clay fill (17581) contained a piece of a wooden stake (ON 18221) and the base of a wooden vessel (ON 18222) (Pl.3.3; Fig. 8.5) which produced a date in the Late Bronze Age of 1110–900 cal BC (at 95% confidence) (NZA-32370, 2829±35 BP), as well as 42 sherds (547 g) of pottery (eg, Fig 6.8, 47), worked flint and a horn core. This was overlain by a layer of silty peat (17587) from which a further nine LBA–EIA sherds, worked and burnt flint and fired clay were recovered. A fragment of charred hazelnut shell from this layer produced a date in the Early Iron Age of 780–410 cal BC (at 95% confidence) (NZA-31073, 2473±35 BP). Unfortunately, as the depression did not lie on the section line, and was only observed in plan following the machine excavation of feature G2156, it was not possible to determine whether it was part G2156, an earlier feature truncated by it, or a later feature cut through its fills. The depression was interpreted, during the excavation, as the possible base of a well.

The quantities of finds coming from this cluster of features suggests that there was a settlement in this area, presumably in one of the fields flanking the north–south boundary, although in the absence of any contemporary structures its precise location cannot be determined. There were a small number of undated postholes in this area. These include a group of six postholes (G182), 5 m across, in the field east of the boundary; although their almost triangular arrangement does not appear to form a roundhouse, it is possible that other postholes which would more clearly reveal its form have been lost through truncation.

Area C

There appears to have been a smaller focus of activity in the centre of Area C, centred on a cluster of adjacent irregular features (G1015) extending 10 m by 23 m, some of which were undated and appear to be natural in origin (Fig. 3.13). Together these features produced 155 sherds (642 g) of LBA–EIA pottery, over 1 kg of burnt flint, 15 worked flints and small quantities of fired clay.

These features lay some 30 m south-east of feature G288, comprising a central well and a wide shallow hollow around it, whose date has not been clearly established (see Early Bronze Age, Fig. 2.20, above). A pair of adjacent postholes (16061 and 16063), both containing single LBA–EIA sherds, lay to the immediate west of the hollow, between it and field ditch G203, and their line appears to be continued, east of the hollow, by a further six similarly spaced postholes (G2097), perhaps representing a fenceline 30 m long. There were a large number of other postholes further east, all but one (17017 containing four LBA–EIA sherds, 60 g) undated and forming no recognisable pattern.

A possible teardrop-shaped waterhole (16529), 6.2 m wide and 11 m long, tapering towards the NNE, was recorded but not excavated at the north of Area C on one of the main east–west field axes, near the south-west corner of a field (Fig. 3.13). A quantity of LBA–EIA pottery, worked and burnt flint and fired clay was recovered from its uppermost fill.

Other Late Bronze Age–Early Iron Age features at ICSG

Other LBA–EIA features were distributed more widely (Table 3.2), particularly across the eastern part of the site (Fig. 3.13). They were of varying size and shape, and contained generally small quantities of finds including pottery, fired clay, worked and burnt flint and animal bone, although pit 1762, in the south of Area A, contained an assemblage of 912 worked flints. Among these features were two possible wells/waterholes.

Feature 1163, which cut the edge of the silted ditch of the Neolithic long enclosure (Fig. 2.5), measured 3.8 m in diameter and 2 m deep. Its concave sides, near vertical at the top, would have made it inaccessible for animals, and the waterlogged fills in a deeper, steep-sided slot in the base suggest it was dug as a well cutting below the water table. It appears to have filled up largely through natural processes, although it also contained some possibly domestic refuse dumped after it had gone out of use, including LBA–EIA pottery, a fired clay loomweight (ON 3085), worked and burnt flint and a piece of non-local stone. The well was located approximately on the line of a north–south field boundary ditch (G511) to the south.

On the same boundary, 70 m to the south (Fig. 3.13), there was another large feature (4814) subsequently recut by a similar feature (4813) of uncertain date, then cut by a Romano-British enclosure ditch (G416) and finally by a Romano-British timber-lined well (1087, see Chapter 4, Fig. 4.13). The original cut (4814), which was at least 3 m wide and 1.6 m deep with moderately steep straight sides, contained a single sherd of undated pottery along with fragments of fired clay and animal bone from the uppermost of its surviving three lowest fills. A late prehistoric date is suggested by its position at the junction of a number of late prehistoric field system ditches, including a north–south ditch (G511) whose terminal curves towards it. The fills of 4814 were subsequently cut by feature 4813, measuring 3.9 m by 5 m and 1.8 m deep, which was steep-sided at the north, but shallow to the south. Feature 4813, however, produced no finds, and it is unclear whether it was a recut of 4814, or the backfilled construction cut for the Romano-British well (see below).

On the eastern edge of Area B, there was a sub-rectangular feature (10056), measuring 1.1 m by 2.2 m and averaging 0.1 m deep, with near vertical sides and a flat base. Its single fill contained five LBA–EIA sherds, along with burnt flint, fired clay, animal bone and fragments of slag and charcoal, but few charred plant remains. Although described in the field as a hearth, there was no signs of *in situ* burning, and its function remains unclear.

Plate 3.3 Lid or base of Late Bronze Age wooden vessel in well G2156

RMC Land

At RMC Land, as at ICSG, the distribution of LBA–EIA pottery, predominantly in the northern part of the site, suggests some continuity in settlement activity from the MBA, although it appears to have shifted slightly to the west, with approximately 71% (by weight) coming from features in Area 2 (Fig. 3.17). Another possible focus of activity lay at the south of the site, in Area 4, where a small group of more dispersed features accounted for a further 20% of the pottery. Across the rest of the site pottery was recovered in only small quantities from a number of generally isolated pits (Table 3.3). (Features containing pottery identifiable only as late prehistoric are not included in Table 3.3).

Again, no clear settlement structures were identified, and given the heavy truncation of the late prehistoric field system in the western part of the site, it is not possible to determine whether the features containing LBA–EIA pottery lay within particular fields. There is a hint, however, that as at ICSG some of these features were positioned in relation to field boundaries.

Areas 1 and 2

Of the north-western group of features, 62% (by weight) of the LBA–EIA pottery from the site came from just four tight clusters of closely spaced, and in some cases intercutting features (Fig. 3.17).

At the north of Area 1, there was a group of at least four largely intercutting pits (633, 635, 645/6 and 649), each containing LBA–EIA pottery. The largest quantity of pottery came from the middle of five fills in pit 635. Towards the base of the charcoal-rich fill there were 95 sherds (1558 g) from a single

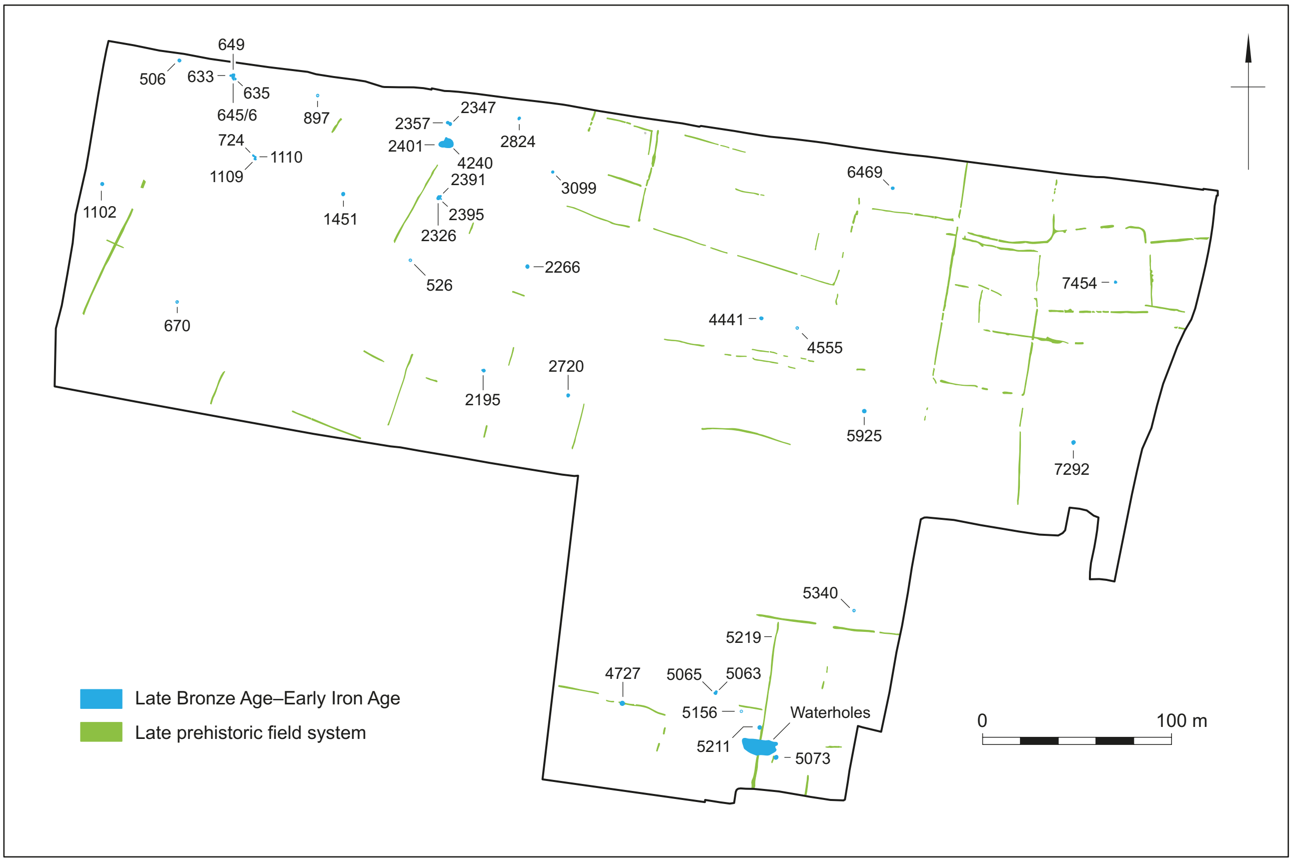

Figure 3.17 Late Bronze Age–Early Iron Age features at RMC Land

vessel, surrounded by burnt flint. The relationship between the intercutting pits was obscured by a modern pipe trench, but other finds from the group comprised fired clay, worked and burnt flint and animal bone.

Approximately 40 m to the south-east there was another tight group of three pits (724, 1109 and 1110), containing similar material (as well as an intrusive medieval sherd in pit 1110). Most of the isolated pits in the same area were of similar form and contents (Table 3.3), although pit 1102 also contained 5 g of cremated human bone, possibly redeposited.

In Area 2, a pair of intercutting features (4240 and 2401), lay on the line of one of the identifiable field system boundaries, here aligned NNE–SSW (matching boundaries towards the western end of ICSG) (Fig. 3.18). Pit 2401 was 2.4 m in diameter and 0.8 m deep with steep to vertical sides and a flat base. Above the primary fill was a thin dumped charcoal-rich layer containing Late Bronze Age pottery, burnt flint and a large quantity of fired clay. The upper, naturally accumulated fills contained similar finds (including one intrusive early medieval sherd – the pit was cut by a shallow medieval gully). When fully silted up the eastern side of pit 2401 was cut by a deep sub-circular well (4240). This was over 5 m in diameter and 3 m deep with steep concave sides and concave base. It contained a series of fills, some of the layers above the primary fills comprising gleyed clay indicating waterlogging. The fill sequence produced large quantities of pottery (395 sherds, 2934 g), as well as animal bone, worked and burnt flint, worked stone and fired clay. The pottery from the primary and secondary fills (74 sherds, 494 g), one of which (2404) also contained a fragment of a fired clay cylindrical loomweight, was consistent with a Late Bronze Age date. When almost fully silted up, the remaining hollow appears to have been used as a dump for further domestic debris and ash (2398), including 347 sherds (2358 g) of Late Bronze Age–Early Iron Age date. Charred cereal grains from this layer produced a radiocarbon date 800–520 cal BC (at 95% confidence) (NZA-31086, 2513±35 BP). The feature also produced a large amount of charcoal and grain, as well a moderate amount of hazel nutshells and sloe stones. Two small pits (2347 and 2357) just north of these two features also date to this period.

Some 26 m to the south of the well there was a group of three adjacent pits. A small pit (2391), containing 33 sherds of LBA–EIA pottery and a small quantity of burnt flint and fired clay, was almost completely cut by a large oval pit (2326) measuring 1.8 m by 2.4 m and 0.7 m deep with a U-shaped profile. Pit 2326 contained a sequence of naturally accumulated fills, the lower fills indicating possible

Table 3.3 Late Bronze Age discrete features (RMC Land)

Feature	*Width/ diam. (m)*	*Depth (m)*	*No. of fills*	*BA pottery no./weight (g) – Date*		*Other finds*
RMC Area 1						
506	0.2	<0.1	1	4/24	LBA–EIA	Worked flint, burnt flint, animal bone (inc. fish)
526	0.4	0.2	1	14/88	LBA–EIA	Fired clay
633	1.0	0.3	1	63/462	LBA–EIA	Fired clay, worked flint, burnt flint
635	1.1	0.7	5	96/1495	LBA–EIA	Fired clay, worked flint, burnt flint, Neolithic sherd
645/6	0.9	0.8	4	3/12	LBA–EIA	Fired clay, worked flint, burnt flint
649	1.2 x 1.8	0.4	2	12/91	LBA–EIA	Fired clay (loomweight), worked flint (inc. Neolithic scrapers), burnt flint
670	0.5	0.2	1	55/332	LBA–EIA	Worked flint, burnt flint
724	0.6 x 0.9	0.2	1	1/30	LBA–EIA	Burnt flint
897	0.5	0.3	1	1/11	LBA–EIA	Burnt flint
1102	0.7	0.2	2	29/345	LBA–EIA	Fired clay, cremated human bone
1109	0.8 x 1.2	0.3	1	21/218	LBA–EIA	Worked flint, burnt flint
1110	0.9	0.2	1	7/83	LBA–EIA	Burnt flint, intrusive medieval sherd
1451	0.7 x 0.8	0.2	1	1/1	LBA–EIA	Animal bone
RMC Area 2						
2195	1.6 x 2.0	0.7	3	1/2	LBA–EIA	Fired clay, flint
2266	1.0 x 1.2	0.3	2	11/61	LBA–EIA	Worked flint (inc. microlith), burnt flint
2326	1.8 x 2.4	0.7	13	36/340	LBA–EIA	Fired clay, worked flint, burnt flint, stone
2347	1.3 x 1.5	0.3	1	7/57	LBA–EIA	Fired clay, burnt flint
2357	0.8 x 1.0	0.1	1	1/4	LBA–EIA	Fired clay, worked flint, burnt flint
2391	0.5 x 0.9	0.2	1	33/135	LBA–EIA	Fired clay, burnt flint
2395	0.8	0.2	2	30/328	LBA–EIA	Worked flint, burnt flint
2401	2.4	0.8	4	88/715	LBA–EIA	Fired clay, worked flint, burnt flint, stone, intrusive Saxo-Norman sherd
2720	1.4	0.5	6	1/1	LBA–EIA	Fired clay, worked flint, burnt flint, Late Neolithic pottery
3099	0.8	0.6	3	4/6	LBA–EIA	Worked flint (inc. Neolithic), burnt flint
4240	5.0 x 5.5	3.0	11	395/2934	LBA–EIA	Fired clay (inc. loomweight), worked flint (inc. Neolithic), burnt flint, stone, animal bone
4441	0.7 x 0.8	0.3	1	3/15	LBA–EIA	Worked flint
4555	0.5	0.2	2	3/18	LBA–EIA	Burnt flint
RMC Area 3						
5726*	0.9 x 1.4	0.7	3	2/4	LBA–EIA	Fired clay, worked flint, animal bone
5925	1.3	1.6	10	188/1642	LBA–EIA	Worked flint, burnt flint
6469	1.6 x 1.7	0.8	6	1/4	LBA–EIA	Fired clay, worked flint (inc. residual Neolithic), burnt flint, stone, animal bone, slag
7292	1.9 x 2.4	0.8	7	18/106	LBA–EIA	Fired clay, worked flint, burnt flint
7454	0.6 x 1.6	0.8	7	1/5	LBA–EIA	Worked flint, burnt flint (inc. scraper), animal bone
RMC Area 4						
4727	2.5	1.1	3	2/6	LBA–EIA	Worked flint
5063	0.9	0.3	1	1/2	LBA–EIA	Worked flint (inc. Neolithic), burnt flint
5065	1.1	0.6	3	3/15	LBA–EIA	Neolithic pottery, worked flint (Neolithic)
5073	2.4	1.1	10	23/373	LBA–EIA	Fired clay, worked flint, burnt flint, stone, animal bone
5156	0.2 x 0.3	0.05	1	12/14	LBA–EIA	-
5340	0.4	0.2	2	130/457	LBA–EIA	Including the remains of at least three vessels
5211	2.3	1.1	13	24/193	LBA–EIA	Worked flint, burnt flint

* Location within Area 3 not known

waterlogging, interspersed with two dumps of domestic waste. It produced 36 sherds of LBA–EIA Age pottery, struck and burnt flint, fired clay, and a pebble possibly used as a whetstone (ON 11584). To the east, part of an *in situ* vessel (ON 11595) was found placed in the centre of a small pit (2395), 0.8 m in diameter and 0.2 m deep. The vessel appeared to be inverted, being wider towards the base of the pit, but no rim sherds were recovered, indicating that it was deposited in a broken state. The base of the vessel had been lost through truncation. No human bone was found that might indicate a mortuary association. A similar feature was recorded in Area 4 (5340, see below).

Area 3

There were many fewer discrete LBA–EIA features in the eastern part of the site (Fig. 3.17), which conversely had the greatest survival of ditches of the

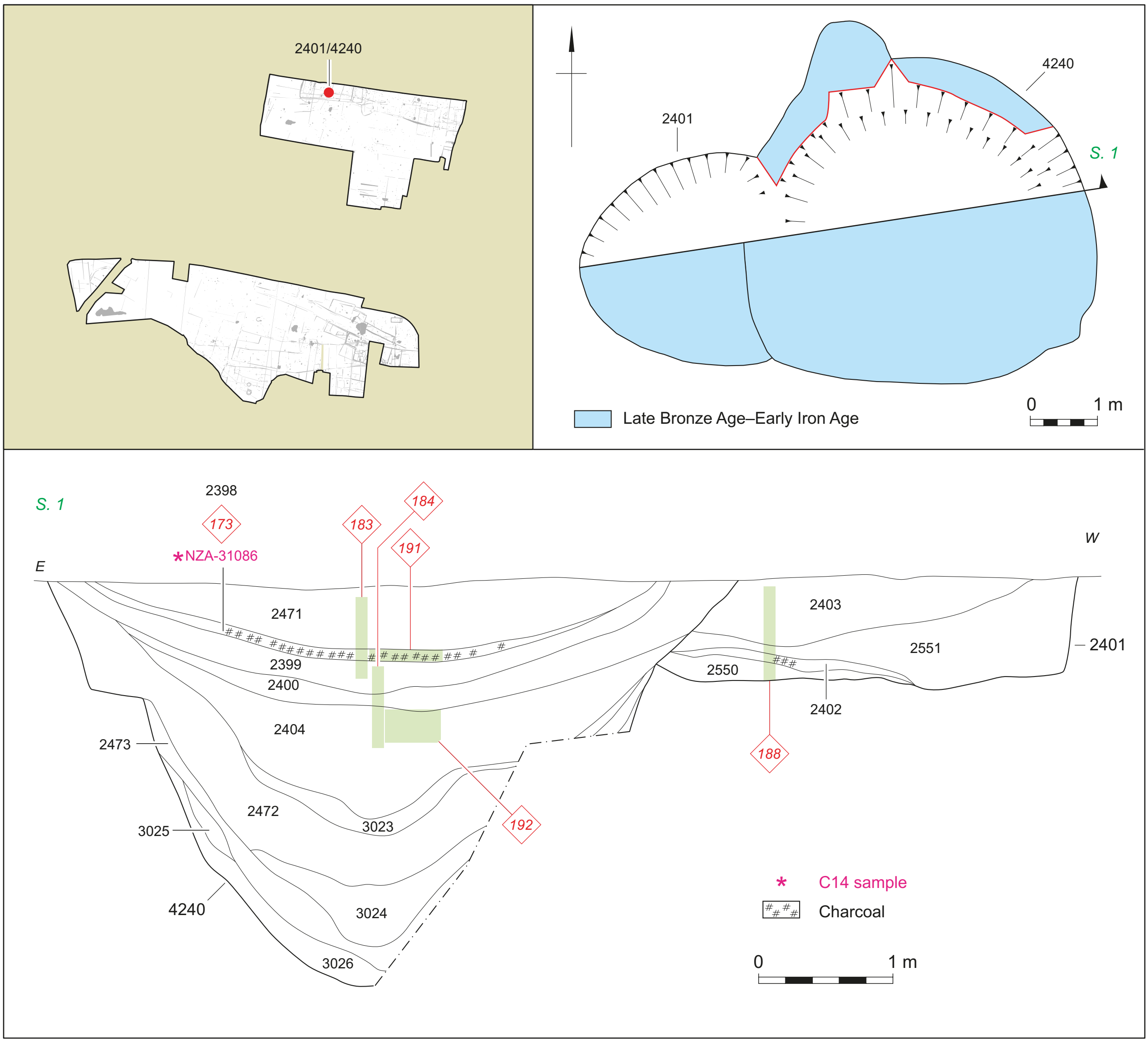

Figure 3.18 Late Bronze Age well 4240 and pit 2401 (RMC Land): plan and section

late prehistoric field system. These included a 1.6 m deep well (5925), 1.3 m in diameter at the top narrowing to a 1 m wide vertical shaft. It contained a series of silting layers, some rich in charcoal, in the lower 0.6 m, two of which between them contained 64 sherds (492 g) of LBA–EIA pottery. These were overlain by a single backfilled layer filling the rest of the well, containing a further 124 sherds (1150 g).

An oval pit (7292), measuring 1.2 m by 1.7 m and 0.8 m deep with slightly stepped sides, had seven fills which contained 18 sherds of LBA–EIA pottery, a fragment of fired clay, a struck flint and two pieces of burnt flint. There were two other large oval pits in this area (6469 and 7454), but these were insecurely dated, each containing a single LBA–EIA sherd (possibly residual), along with varying quantities of worked and burnt flint, fired clay and animal bone and (from pit 6469) a piece of slag. As noted above (Chapter 2), there were a number of similar pits in this area tentatively dated to the Middle Neolithic (Fig. 2.10), which could also potentially be of late prehistoric or even historic date.

Area 4

Activity in the southern part of the site appeared to be focused on a series of at least nine large intercutting pits or waterholes (5252, 5259, 5264, 5274, 5279, 5281, 2587, 5297 and 5441), which together covered an area 8 m by 18 m (Figs 3.17 and 3.19). They straddled the line of a north–south ditch (5219) assumed to form part of the late prehistoric field system. A longitudinal section through these features revealed some of the stratigraphical relationships between them, although their largely homogenous upper fills meant that some of these relationships were not discernible.

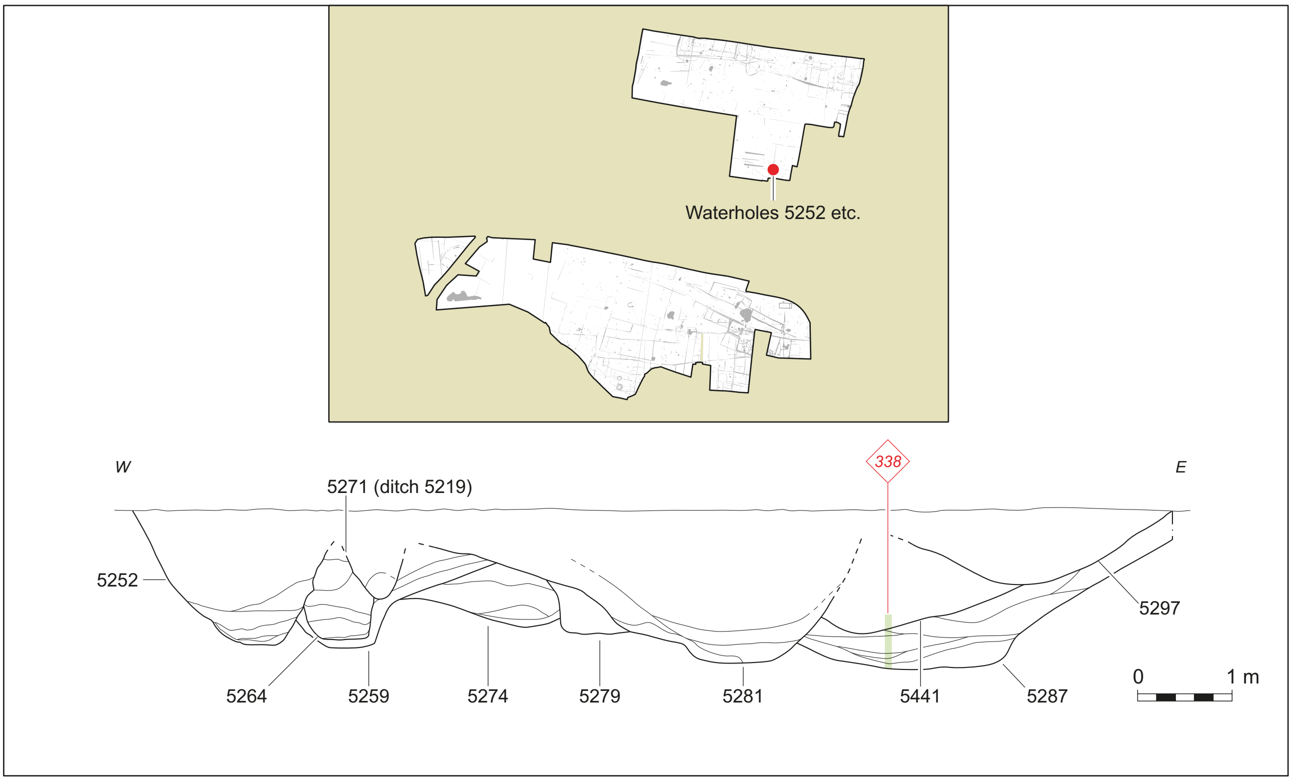

Figure 3.19 Intercutting Late Bronze Age waterholes (RMC Land): section

At least three of these features (5274, 5259 and 5264) pre-dated the field boundary ditch. The earliest (5274) was 1.2 m deep with a gently concave base, although the rest of its profile, which contained at least four fills, was truncated by later features. To its west it was truncated by feature 5259, which was 1.4 m deep and contained at least four fills, being steep-sided towards its flat base but shallow sloping on its surviving eastern side. It fills were cut through to almost the base by a near vertical-sided cut (5264), containing five fills, which was cut in turn, on its western side, by feature 5252 (the most westerly of the features) and, on its eastern side, by ditch 5219. Feature 5252, also 1.4 m deep, had steep sides and a series of five fills filling its lower third but the rest filled by a largely homogenous fill similar to those noted in the adjacent features. As a result, its relationship with the ditch was not established, and it could conceivably postdate the ditch.

In the eastern half of this group, the eastern edge of feature 5274 (above) was cut by the lower part of a vertical-sided, flat based cut (5279) which may represent the western side of a large waterhole, 6.4 m wide and 1.7 m deep, represented at the east by the base and gently sloping side of feature 5287. Feature 5287 had a series of at least eight fills. These were partly cut by feature 5441, whose single fill contained, from near its 1.3 m deep base, 23 sherds (95 g) from the base of an LBA–EIA fineware vessel (ON 12066).

The stratigraphic relationship between feature 5441 and cut 5271 (ditch 5219) could not be established as its western edge was cut by feature 5281, whose relationship with the ditch was also not established. Feature 5281, whose upper of five fills produced a single fragment of LBA–EIA pottery, was at least 4.6 m wide and 1.6 m deep with a gently sloping western side and a possibly steeper eastern side. The most easterly feature in the group (5297), and among the latest in the series, was 3 m wide but only 0.8 m deep and therefore probably too shallow to have reached the water table, indicating that it probably had some function unrelated to the others in the group.

The dating of this group is of some importance since at least three of the features (5274, 5259 and 5264) pre-date ditch 5219. The ditch, which contained a single LBA–EIA sherd (and a residual Neolithic sherd), is assumed to be part of the late prehistoric field system, whose main structure, it is argued (above), dates from the Middle Bronze Age. Although the limited pottery evidence suggests that features 5441, 5281 and 5297 are all of Late Bronze Age date, or later, no stratigraphic relationship between these three features and the ditch was established, and it is possible that they all postdate the ditch. This might indicate that, following the laying out of the Middle Bronze Age field system, the later (Late Bronze Age) phases of this series of waterholes were shifted eastwards, off the line of the ditch, possibly with another late waterhole (5252) located to its immediate west.

Two large pits were located close to the waterholes. To the south-east, pit 5073, which was 2.4 m in diameter and 1.1 m deep with moderately steep, straight sides and a flat base, produced 23 sherds (378 g) of LBA–EIA pottery, along with fired clay, worked and burnt flint, stone and animal bone from the top three of its 10 fills. To the north, immediately west of ditch 5219, pit 5211 was of similar dimensions, but with near-vertical sides, and had similar contents, while another (4727) lay some 70 m to the west. The location of this loose cluster of features, which included two adjacent shallower pits (5063 and 5065), north-west of the waterhole group, may indicate a focus of LBA–EIA settlement to the south, possibly between RMC Land and ICSG which lies just 260 m to the south (Fig. 1.2).

There were also a number of undated pits of varying form and size in this area, containing either no finds or the occasional piece of struck or burnt flint. It is possible that these were associated with this area of activity, as may have been an possible four-post structure (5140, Fig. 3.10), approximately 2 m square, also undated, lying to the east. It was heavily truncated, the postholes measuring 0.3 m in diameter and no more than 0.05 m deep. Its alignment, however, did not match that of the adjacent field system.

In addition, to the north of this group, a small truncated pit (5340), 0.4 m in diameter, appears to have been dug for the deposition of sherds from up to three pottery vessels. The majority of sherds appeared to derive from the *in situ* lower part of a single upright vessel that was missing its base, with the sherds from two other vessels recovered from its fill. The feature contained no human bone that might have indicated a mortuary association, nor other finds, and the purpose of this apparently placed deposit is unclear. It is similar, therefore, to feature 2395 in Area 2 (see above).

Late Bronze Age–Early Iron Age Burials

Two features, located immediately east of the MBA cemetery at ICSG (Fig. 3.12), and separated from it be a north–south field boundary ditch, contained small quantities of cremated human bone. Feature 1007, which contained less than 1 g from a child aged between 2–8 years, was 0.5 m in diameter and 0.1 m deep, with a charcoal-rich lower fill (1008), which contained 11 sherds of LBA–EIA pottery, fragments of animal bone and a struck flint. Feature 1301, 1.5 m to the north, contained just over 1 g of human bone, of an individual aged at least 13, was of similar size; its fill contained fragments of animal bone and charcoal, but no pottery. The proximity of these features to the MBA cemetery suggests they are related, the small quantities of human bone possibly even being residual material. However, the presence of later pottery, the 7 m gap between them and the nearest feature in the cemetery, and the intervention of a length of field boundary ditch (G447) on which they appear to be aligned, suggests a deliberate separation from the earlier features, although the location of the earlier cemetery may have remained a significant location in the landscape, possibly still marked as a cemetery.

In addition, a small feature (40073) in Area E (Fig. 3.11) contained possible pyre debris incorporating a fragment of cremated bone from an individual aged over 13 years.

Economy

by Chris J. Stevens

Animal bone was very poorly represented in Middle Bronze Age features with only a few bones of cattle and sheep/goat present. A larger assemblage was present from the Late Bronze Age–Early Iron Age features although only a fraction of these, including cattle, sheep/goat, pig and a few bones of horse, were identifiable to species. At Heathrow Terminal 5, cattle, sheep/goat and horse were the dominant species, with bones of pig less well represented (Knight 2006). While cattle were better represented in these assemblages than sheep/goat, given the poor preservation of material and the subsequent bias towards larger domesticates, sheep/goat may actually have formed much larger elements than is apparent.

In contrast to the absence for definitive evidence for cereal agriculture from the Middle Neolithic to the Early Bronze Age, such evidence (including dated cereal remains) is well represented following the establishment of field systems in the Middle Bronze Age. Although spelt wheat is known from Middle Bronze Age contexts in north Kent (Pelling 2003), and radiocarbon dated glumes of spelt were present at Heathrow Terminal 5 during the Middle–Late Bronze Age (Carruthers 2006), no evidence of spelt of this date was observed at ICSG and RMC Land. Rather, the Middle Bronze Age samples, dating to 1500–1150 BC, were dominated by emmer and barley, with emmer apparently the main crop during the Middle–Late Bronze Age. Hulled six-row barley was the only other crop represented, but it appears to have been only a minor component.

Charred weed seeds were very uncommon in the samples and it seems probable that crops were stored in relatively cleaned state either as spikelets or, in the case of barley, as hulled grains. The material in the samples, therefore, represents that which results from crops being taken from storage and processed on a regular basis throughout the year, with the waste being thrown onto the domestic hearth. The cleaned grain would have been milled on saddle querns, of which a number of sarsen and puddingstone examples were found in Middle to Late Bronze Age contexts.

The paucity of weed seeds may illuminate aspects of crop husbandry in this period. The presence of seeds of many twining species, which wrap themselves around the cereal plant, might indicate that crops were harvested by uprooting. However, the presence also of seeds of non-twining species, which are less likely to be harvested unintentionally, suggest that the crops are perhaps more likely to have been harvested by sickle. The range of weed species, although narrow, suggests that at least some cultivation of wetter soils took place, but few other ecologically distinctive species seeds were present.

The presence of loomweights and spindle whorls from the Middle and Late Bronze Age would indicate that some of the sheep were kept for wool, although the presence of flax at Heathrow Terminal 5 (Carruthers 2006) raises the possibility that flax was also grown and processed for the production of linen.

While it has frequently been argued that the Middle Bronze Age field systems are related to pastoral activities (Yates 1999; 2001), the associated environmental evidence, where its exists, does suggest they could also have been used for the growing of cereals (and possibly flax). While no ard marks have been recorded in this area, the recovery of ard tips from Heathrow Terminal 5 (Framework Archaeology 2010, 156–7, Fig. 3.14, Pl. 3.6) would suggest that fields were located at least within the local area. The long established association of such areas with pastoral activities is based on the observation that low-lying, occasionally flooded soils are ill-suited to modern arable cultivation, but it should be noted that ICSG and RMC Land are situated on the higher gravels away from the alluviated floodplains of the Rivers Colne and Crane.

In fact, there is ample evidence that low-lying areas are likely to have been cultivated in the past, including Bronze Age ard marks from Southwark (Bates and Minkin 1999; Brown and Cotton 2000) and Iron Age and Romano-British ard marks from the floodplain of the Thames Valley and beyond (Robinson 1992a; 1992b; Lambrick 1992a; Lambrick 1992b), as well as the frequent occurrence of wetland species within the arable weed flora of later prehistoric assemblages (Jones, M. 1988a;1988b) including at this site and at Heathrow Terminal 5. The ill-suited nature of such soils for cultivation today is in large part due to the fact that they do not drain freely, as a result of the accumulation of clay alluvium since the Iron Age and particularly during the Saxon and medieval periods. It is probable that such soils were much more freely draining in the past than they are today and as such may have been more suited to arable farming. Nonetheless, the presence and placement of the waterholes appear tie the field systems more closely to pastoral rather than arable activities and it is probable that the fields' primary function was for the enclosure of animals.

Discussion

The coaxially divided landscape displays a level of organisation, uniformity and consistency that makes it appear as if the main structure of the field system was planned and executed over a relatively short time, something that would indicate a high level of either social consensus or political control (Lambrick with Robinson 2009). This impression is enhanced by the apparent lack of any earlier archaeologically visible boundaries, although some form of deliberate and formal organisation is evident within the wider landscape. Although the rectangular Neolithic monument, the double ring ditch and the penannular ditches at ICSG appear almost as isolated features, seemingly randomly placed, they, together with the distribution of Neolithic pits also at RMC Land, appear to occupy a broad north–south band across both sites. The Stanwell bank barrow, 3.5 km to the WSW, was positioned in relation not only to the local topography but also to existing locations of particular significance (Framework Archaeology 2006).

The Neolithic monuments would have remained as visible, and probably significant, landmarks, and despite the limited evidence for activity in the Early Bronze Age, the pre-enclosure landscape is likely to have been one whose resources continued to be exploited and possibly competed for, over which communities may have claimed rights, across which paths would have passed, and about which people would have recounted histories. The relationship between Middle Bronze Age activity and the Neolithic monuments is unclear. As mentioned above, the field system appears to have been fitted around these landmarks, although without apparently giving them any particular prominence, and while a cremation-related deposit was made in the outer ditch of the double ring ditch, the monuments were certainly not the focus of Middle Bronze Age mortuary activity.

One feature of possibly related significance was the recovery of a number of pieces of Neolithic flintwork from Middle and Late Bronze Age features, particularly at ICSG. While it is likely, given the relative intensity of Middle Neolithic activity on the site, that some Neolithic material would have found its way into these features through natural processes, it is also possible that some of these objects, such as the finely made leaf-shaped arrowhead recovered in very fresh condition from the lowest fill of Middle Bronze Age well 11093, had been found, curated and deliberately deposited for symbolic reasons. However, other pieces of Neolithic flintwork from the same feature came from higher fills, ie, from when the well was no longer in use and therefore filling up through natural processes.

In the absence of any visible evidence for pre-field system boundaries, it is not possible to say to what (if any) degree the layout of the field system had its origins in any organisation of the Early Bronze Age landscape, divided perhaps into areas of cultivation and pasture, and incorporating droveways, settlements or other significant features. It seems unlikely, however, that any pre-existing boundaries had the rigid rectilinear form of the Middle Bronze Age field system.

There are a number of possible reasons why the field system took this form. The fact that such systems were so widely established across large parts of the country could indicate that this form best fulfilled their primary purpose, whether that was agricultural – to increase productivity; or social – to distribute and apportion land; or political – to exert some level of centralised control over local populations. It is also possible, however, that their characteristic form, found widely across very different types of landscape in Britain, both upland and lowland, was adopted without any specific calculation of the benefits that might accrue from it. The apparently rapid spread of this practice across the landscape, may have involved not only the movement of ideas, with communities copying what was happening in adjacent areas, but also possibly of people, spreading into and appropriating adjacent land.

It is possible that enclosing the land had agricultural advantages for those that farmed it – either as arable fields or as paddocks, pastures or other stock enclosures. It might, for example, have allowed greater organisation and rotation in landuse, with a cycle of cropping, manuring, and grazing, resulting in an intensification of landuse. If so, it raises the question as to whether a demand for increasing agricultural productivity was driven by the subsistence needs of a growing population or the political needs of the social elite who were able to transform agricultural surpluses into other forms of wealth, power and prestige. Although the evidence for agricultural practices is limited, the presence of emmer and spelt wheat and barley, by the Late Bronze Age–Early Iron Age, indicates arable cultivation within the landscape, while the bones of cattle, sheep/goat and pig indicate animal husbandry, farmed for their secondary products as well as for meat.

However, a rectilinear field system may also have had disadvantages. Where farmsteads develop over time, the fields, enclosures and trackways tend to have an irregular, organic appearance resulting from their adaptation to existing landscape features and their *ad hoc* growth and modification in a flexibility of response to changing circumstances; they seldom incorporate straight lines, let alone rectangular fields, and certainly not coaxial field systems The agricultural practices undertaken within a predominantly unenclosed landscape may, therefore, have had to be radically changed to accommodate new constraints on movement. The necessity to dig waterholes within the field system, for example, may reflect the extent to which the newly constructed boundaries restricted the former relatively free access of livestock to natural water sources.

Alternatively, the broad, rectilinear structure of the field system may have been the easiest method by which to rapidly divide up, enclose, appropriate and apportion large areas of what was, from then on, to be defined as exclusively productive land. The imposition of a broad grid of ditched boundaries, extending in all directions as far as the eye could see within this flat landscape, would have made a powerful statement about change and progress. A break with the distant past is suggested by the fact that, although ditches of the coaxial field system share some characteristics with the parallel ditches of the Stanwell bank barrow, they overlie it on an entirely different orientation. The same may not apply to the rectangular Neolithic monument at ICSG, whose orientation may have been replicated in the adjacent field boundary ditches. The establishment of the field system would also have erased from the landscape any vestiges of open, wild or common land, imposing a new, controlled social and agricultural order. This would have had profound effects on the daily lives of the population, how they worked, the way they experienced and moved through their world, what they thought about their place in it, and the terms in which they considered its history and its future. The extensive nature of this transformation suggests that it was imposed from a higher level within society than that of the local farmstead community, and may have been undertaken in part to display status and social control.

While it may be possible, by identifying different foci of settlement, to suggest the extents of individual landholdings, the field system is more than just the aggregation of adjacent blocks of fields. Instead it appears to represent an attempt to shape the whole landscape in a way that gave expression to ideas about the structure of society, from the level of the individual unit of production (the field), through the local community, up to any higher-level, possibly regional elite. While it is possible that this process was undertaken piecemeal, over time, it nonetheless conformed to some relatively consistent overall plan. Whatever the process, the enterprise may have been presented as something of ultimate benefit to the community, with participation a prerequisite for some new equity in land rights.

Even so, neither agricultural efficiency nor a desire to facilitate rapid and extensive land division would have required the level of precision that seems to have been employed. Blocks of fields were laid out in a precisely rectangular form, with many adjacent sides angled at exactly 90° (and many of the rest angled within 1–2° of perpendicular). This was maintained, even though the field system's orientation shifted, apparently deliberately, across both sites, by inserting punctuated changes in orientation between adjacent blocks. Sometimes these shifts are centred on the corners of fields (such as between ditches G2014 and G2024), but elsewhere they occur midway along a ditch (such as ditch G203).

It is possible that the blocks represent separate episodes of construction, undertaken perhaps seasonally, extending the field system from an area already enclosed into open land, but taking its alignment not from the existing block but 'recalculating' it on the basis of the wider shifting orientation, the reasons for which are not clear. The blocks are variable in extent and width, and because they appear to span both sites they are longer (north–south) than they are wide (east–west). It is notable, however, that no north–south boundary follows a single line across either site, let alone both sites. In some cases, the blocks appear to overlap, although only to a limited extent, such as where a ditch in one block has the orientation of the adjacent block. This may indicate that some ditches were laid on the orientation of the block from which they extended some distance, but were later incorporated within an adjacent, newly orientated block.

It is important to remember, however, that the field system was laid out, at ground level, in an essentially flat landscape. So while Bronze Age farmers would have had a general visual impression that they were standing within a grid of fields, the distance over they could clearly see that grid would be relatively limited, possibly no more than two or three fields in any direction. If the precision of the grid was unnecessary for the purposes of either agriculture or enclosure, and apparent perhaps only to those who laid out the field system, it may point to the expression of more abstract, overtly symbolic concerns, relating to the order of society (and the nature of order) among the social elite.

The amount of labour necessary to lay out the field system, to dig its ditches and waterholes, and to plant hedges along banked field boundaries, would have been substantial, particularly given the apparent speed with which the main structural elements of the work appears to have been carried out. This would have required both a high level of probably centralised planning and the mobilisation of wide ranging social networks. Although the transformation of the landscape, therefore, may have been presented in terms of the creation of a new, productive social and agricultural order, the Middle Bronze Age may in fact have witnessed a level of ideologically defined communal endeavour comparable in many respects to that seen in so-called 'ritual landscapes' of the Neolithic – in the construction of large-scale monuments such as causewayed enclosures, major cursus monuments and henges (Leivers 2010a).

What is curious, however, is that, while we see evidence in the landscape for large-scale communal activity in the Neolithic, there are few indications in the millennium preceding the establishment of the field systems for the build-up of the types of social and economic pressures – perhaps relating to competition for land – that could account for the relatively sudden transformation of the landscape at the start of the Middle Bronze Age, or for the types of social organisation that could have been mobilised to that end (Brück 2000). It may be that in a society retaining a largely pastoral economic base and a semi-sedentary settlement pattern, evidence for such processes is likely to have low archaeological visibility. Moreover, such internal stresses may have built up over a long period before reaching a tipping point that led, in effect, to extensive land grabs by high-level, possibly kin-related communities. This may have seen the rapid enclosure of the most productive areas of landscape, less as a solution to an agricultural problem than a social and political reaction, to which local, low-level farming communities had to respond by adapting their agricultural strategies and settlement patterns.

In what manner and to what extent this enclosed and divided landscape was occupied, therefore, also remains unclear, with only a single possible Middle Bronze Age roundhouse being recorded (in an area of ICSG from which few finds of this period were recovered). Although finds of both Middle Bronze Age and Late Bronze Age–Early Iron Age dates appear to be concentrated at certain locations within the field system, rather than it being thinly distributed across it, there is nothing in the layout of the adjacent ditches to indicate either pre-existing settlements around which the field system might have been arranged, or the subsequent modification of the field system to accommodate newly established settlements. While the focus of Late Bronze Age–Early Iron Age settlement at ICSG appears to be spatially related to a major field boundary, there are no identifiable settlement structures of this date, either in the form of roundhouses or four-post granaries.

It remains difficult, therefore, to ascertain how the settlement and economy of this distinctive divided landscape was organised, how different social groups were related, under what circumstances they worked together, and to what extent their activities were driven by wider social developments, both in other parts of the Thames Valley landscape and further afield within southern England. It is not until the Middle Iron Age, by which time the field system appears to have largely gone out of use, to be replaced across the wider landscape by both open and enclosed settlements, that there is the first clear evidence of unambiguous settlement structures at ICSG/RMC Land (see Chapter 4).

Chapter 4
Open Settlement and Trackside Enclosures: Iron Age and Romano-British

by Andrew B. Powell with Chris J. Stevens

Introduction

It was not possible at ICSG and RMC Land to identify any elements of the late prehistoric field systems that were unambiguously of Late Bronze Age or Early Iron Age (LBA–EIA) date. However, the close relationship between many features within that date range and a number of the ditches suggests that elements of the field system probably continued to play an active role in the landscape.

It is unclear for how long into the Early Iron Age activity continued on either site, and to what degree this was followed by a hiatus in settlement, or merely a shift in its focus within the wider landscape. There is a comparable dearth of evidence for Early Iron Age settlement activity at Heathrow Terminal 5, and more widely in the area (Wait and Cotton 2000) (Fig. 4.1). By the Middle Iron Age, however, there is an increasing number of settlement sites along the gravel terraces of the Middle Thames Valley.

At some sites, such as at Heathrow Terminal 5 and Thorpe Lea Nurseries near Staines (Leivers 2010a; Hayman *et al.* 2012) the Iron Age occupation involved the modification of the earlier boundaries, and surviving Bronze Age banked (probably hedged) field boundaries have been recorded at Hengrove Farm (Hayman 2005) and Ashford Prison (Carew *et al.* 2006). At ICSG, however, it seems clear that the Bronze Age field system had not only been abandoned, but had been deliberately over-ridden by a realignment of the economic landscape, at least in the eastern part of the site, where a square Middle

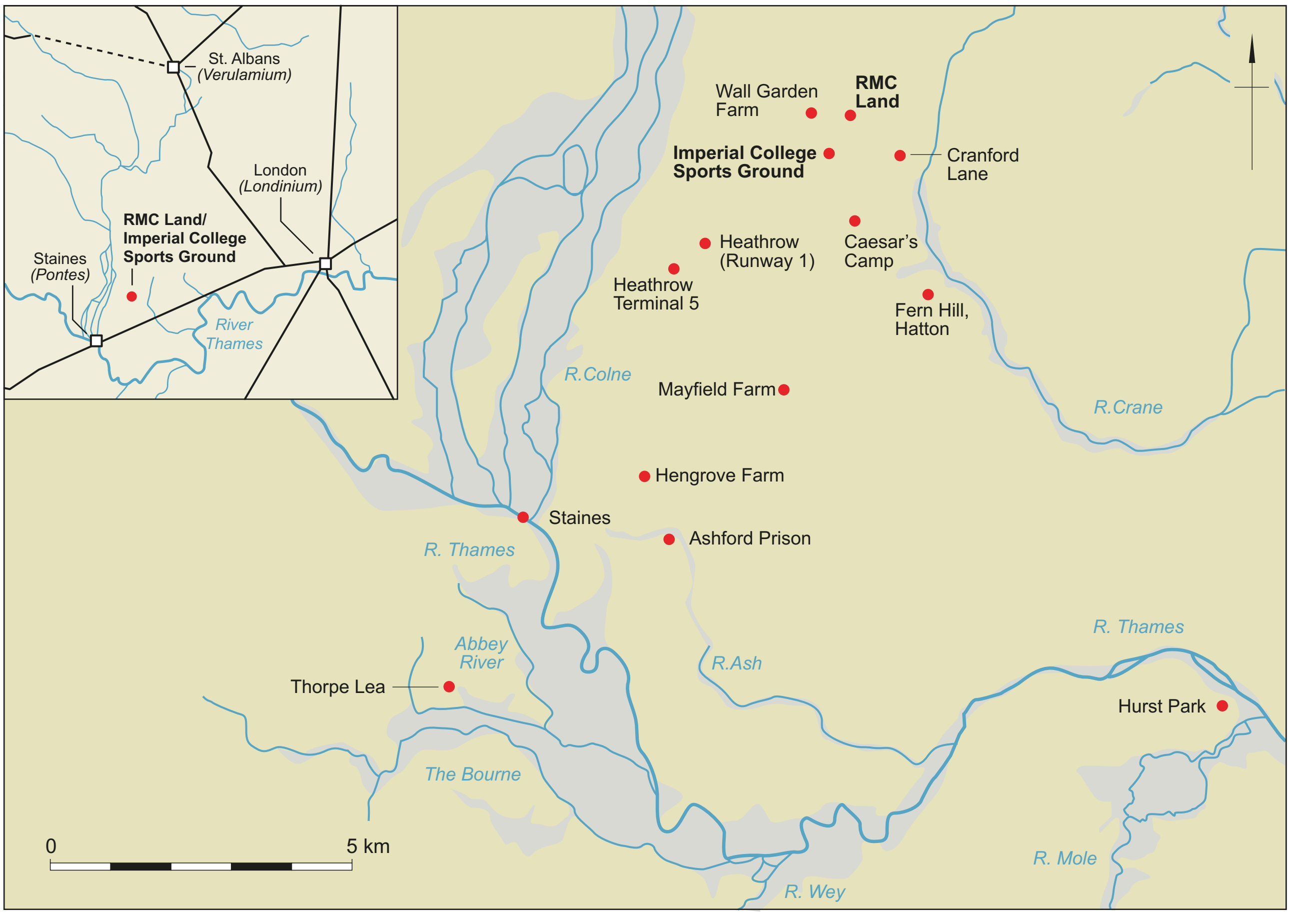

Figure 4.1 Selected sites referred to in the text

Figure 4.2 Iron Age and Romano-British features at ICSG and RMC Land

Iron Age enclosure straddled the corner of one of the earlier fields, but on a new orientation (see Fig. 4.3).

The Middle and Late Iron Age saw a wide range of open and enclosed settlements sited within an organised agricultural landscape. Unenclosed settlements have been recorded under Heathrow Runway 1 (Canham 1978) as well as at Perry Oaks and Terminal 5 (Framework Archaeology 2006; 2010), and at Stockley Park, 3 km to the north of the site, where at least four roundhouses and 13 four-post structures were recorded (MoLAS 1993, 25–6). Similar sites are known at Lower Mill Farm, Staines Moor (Jones and Poulton 1987) and at Mayfield Farm, East Bedfont, south of Heathrow (*ibid.*, 19–21). The most notable enclosed site, probably surrounding an earlier open settlement, was the sub-rectangular enclosure of Caesar's Camp, 1 km to the south, although other enclosures have been recorded in the area, such as east of the River Colne at Staines Moor (Brown 1972) and an undated enclosure visible as a cropmark at Fern Hill, Hatton (MoLAS 2000, 116).

At a number of the Iron Age sites, there is evidence of continuity of settlement and landscape organisation from the Iron Age into the Romano-British period. This is certainly the case at ICSG where the orientation of the Iron Age enclosure was replicated in the subsequent layout of the Romano-British trackside enclosures which were constructed around it (Fig. 4.2). Similar evidence for the extensive exploitation of this landscape, including settlements, fields and enclosures, has been revealed by excavations at Heathrow, Wall Garden Farm, Cranford Lane and other sites in the area. All these sites occupied a distinctly rural landscape, sites well beyond the hinterland of Roman London. Despite the site's location within a London borough, it lies near the centre of the rural expanse between the capital 27 km to the east, St. Albans 31 km to the north and Silchester 45 km to the WSW. What is likely to have been significant, however, is the fact that it lay less than 4 km from the London–Silchester road. The road, which crossed the River Thames at Staines where there was a roadside settlement (*Pontes*), would have provided a means for the distribution to markets of farm produce from the agriculturally productive gravel terraces around the site.

Environment and Landscape
by Chris J. Stevens

The evidence from the pollen, waterlogged plant macrofossils and insect remains together indicate a landscape in the Iron Age and Romano-British period comprising generally open grazed, wet, rough grassland, with patches of bare, animal trampled ground (see Grant, Stevens and Smith, Chapter 10). However, it is probable that some arable fields were located within the general vicinity of the settlement.

Compared with the Middle Bronze Age samples, the insect remains include a more distinctive 'house fauna', including those associated with settlement waste, granaries and woodworm. It might be noted that generally similar results were obtained from Heathrow Terminal 5, and in the Upper Thames Valley (Robinson 2006). Robinson suggests that such changes might be related to increased intensity of occupation, perhaps associated with the stabling or penning of animals for much longer periods during the year. Such an intensity of occupation is also reflected in the waterlogged plant macrofossils, which represent much more of a farmyard flora than seen in the Bronze Age, evident in particular in the presence of seeds of species associated with nitrogen-enriched disturbed soils and manure heaps.

There is scant evidence for woodland, which probably comprised small stands of managed oak, alder, ash and hazel located in the general vicinity of the settlement (see Grant and Challinor, Chapter 10). There are also limited indications of patches of overgrown scrub, or possibly hedgerows, although such evidence was minor compared with that seen for the Middle–Late Bronze Age. Similar differences were seen at Heathrow Terminal 5, where it was suggested that many of the hedges may have been cleared or removed, possibly by the Middle Iron Age (Framework Archaeology 2010).

There also continues to be some evidence for heathland in the area, in the form of heather and *Vaccinium*-type pollen which includes heather, heath, cowberry and bilbury (Grant, Chapter 10), as well as broom/gorse within the charcoal assemblage (Challinor, Chapter 10).

Middle and Late Iron Age

ICSG

In contrast to RMC Land, where there was little evidence of activity in the Middle and Late Iron Age, ICSG produced clear evidence for a small nucleated settlement, with features including a square ditched enclosure, roundhouse ring gullies, a few lengths of ditch and a number of pits (Fig. 4.3). These features were dated largely by the presence of certain pottery forms in sandy fabric QU4, considered to be a later introduction of the Early Iron Age (*c.* the 5th century BC) but predominantly of Middle Iron Age date and a small assemblage of Middle/Late Iron Age (M/LIA) date (see Leivers, and Seager Smith, Chapter 6).

Square enclosure

The enclosure (G383), which measured 30 m square internally and had a 6 m wide entrance at its north-east corner, was defined by a ditch which had been recut on up to four occasions. The relationship between these cuts was most clearly seen in a section excavated on the enclosure's eastern side (Fig. 4.3). The original cut (10633) was at least 1.5 m wide and 0.6 m deep with moderately steep convex sides. Above a thin primary fill containing a single LBA–EIA sherd, the ditch had a largely homogeneous fill containing three Early/Middle Iron Age (E/MIA) sherds (eg, Fig 6.9, 1). It had largely silted up when it was recut on its outer (eastern) edge by a cut (10637) of similar dimensions. A layer of material on the western side of 10637 was probably slumped from the fill of the earlier ditch. Both this layer and the overlying fill, which contained a single LBA–EIA sherd, were truncated by a second recut (10645), which was 1.5 m wide but only 0.4 m deep with a shallow U-shaped profile. This lay on approximately the same line as cut 10637, and represents its partial cleaning out rather than the digging of a new ditch. Its thin primary fill contained three M/LIA sherds, while its upper fill contained six LBA–EIA sherds, presumably residual. A third recut (10640), again 0.4 m deep and probably 1 m wide, cut the outer edge of 10645, its single fill producing two E/MIA sherds. The final and outermost cut (10628) was almost 3 m wide and 0.8 m deep, with a shallow V-shaped profile, steeper towards the narrow base. Above the sterile primary fill were two further fills producing single LBA–EIA and E/MIA sherds from the lower and upper fill respectively (these were cut by a later undated posthole, 10626, Fig. 4.3).

The combined width of these cuts on the eastern side of the enclosure was over 5 m, increasing to 6.5 m at the terminals on the south side of the enclosure entrance. While sequences of two cuts were also evident on the south-west side (2.5 m total width) and the north-west side (4.5 m total width), it was not possible to correlate the cuts around the enclosure's circuit. Along its north-east side, where the line of the ditch had been overlain by a number of parallel Romano-British trackside ditches, only a single cut could be discerned with confidence, this measuring up to 3.5 m wide as it approached the entrance. It appears, therefore, that while the enclosure ditch was maintained and recut, the greatest effort was spent on the south-eastern side on which the entrance was located.

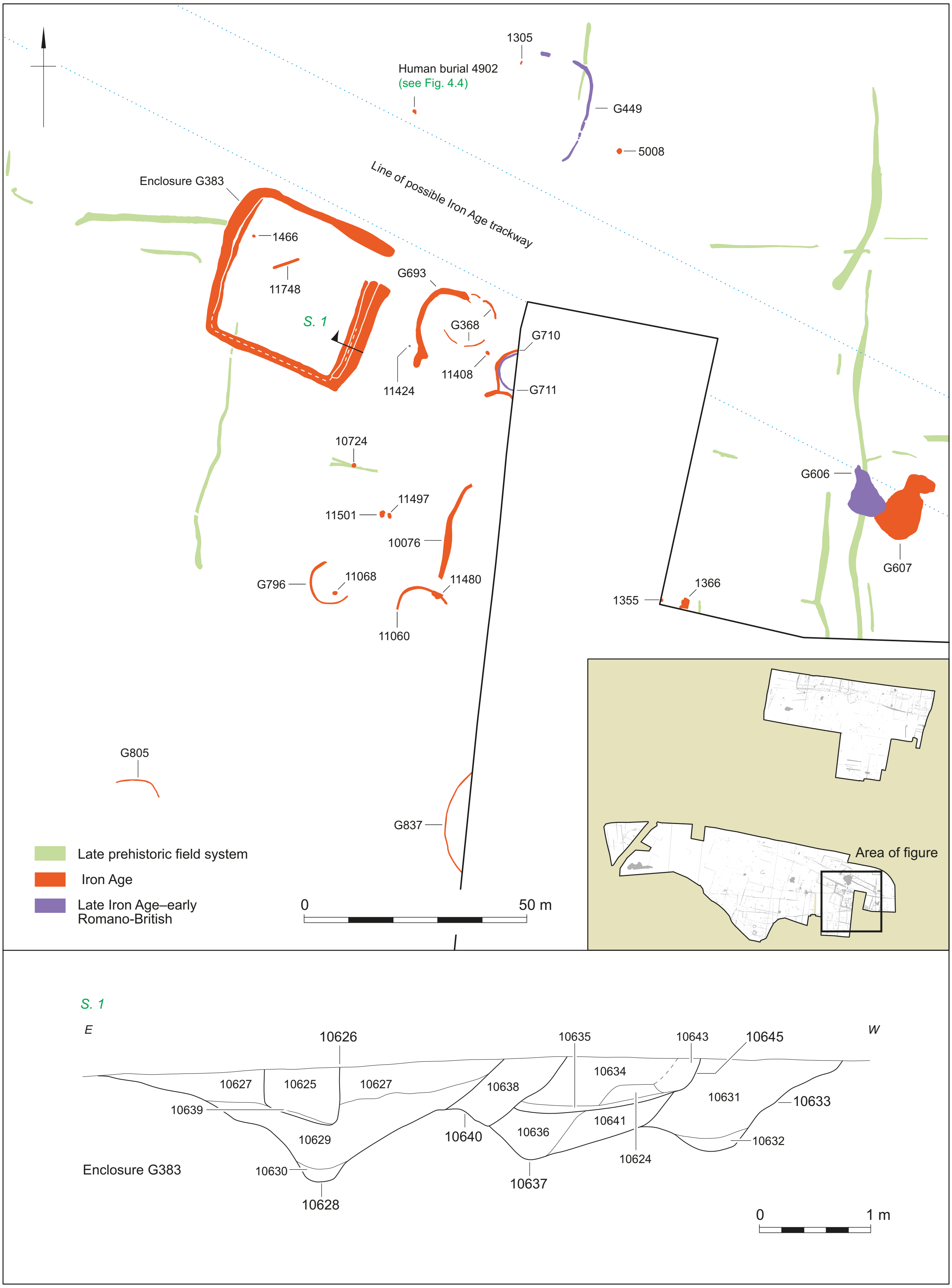

Figure 4.3 Iron Age features at ICSG

The dating of this enclosure is of some importance, given that it was subsequently incorporated within the arrangement of Romano-British enclosure and trackway ditches, which share its orientation (see Fig. 4.6). However, although a significant number of Late Iron Age/early Romano-British (LIA/ERB) and Romano-British (RB) sherds (39 sherds, 384 g) were recovered from it, these came from just three contexts, all of them upper ditch fills along the north-eastern side that were cut by the Romano-British trackside ditches. The remaining pottery from the enclosure ditch cuts comprised almost equal quantities of LBA–EIA pottery (44 sherds, 501 g) and M/LIA pottery (45 sherds, 479 g). Other finds from the ditch cuts included fired clay, burnt flint and animal bone, although none in large quantities, as well as an iron knife (ON 3009), and a small quantity of slag and seven pieces of struck flint. These provide little indication as to the function of the enclosure.

The few potentially contemporary internal features also give little indication to its function. A shallow gully (11748), 6 m long and 0.5 m wide aligned on neither the enclosure nor the earlier field system contained one E/MIA sherd. A small, undated oval hollow (1466), 0.6 m by 0.7 m and 0.2 m deep, possibly a hearth, contained charcoal and fired clay, its baked western edge suggesting burning *in situ*.

The orientation of the enclosure, and its position in relation to the Romano-British trackway which later ran along its northern side, suggests that this trackway may have had its origins in the Iron Age, but because it was not defined by ditches on either side it is not archaeologically visible. It is possible, however, that a length of curved ditch (G449), on the north side of what might have been a trackway at this time, also belonged to this phase. The ditch, which produced four LIA/ERB sherds, was up to 0.8 m wide and 0.3 m deep, but appeared heavily truncated, perhaps by later activity in this area; it was cut by a Romano-British enclosure ditch. It is possible that it originally described a complete circuit, bounding a small sub-rectangular space. Narrow gaps on its eastern side may be due to truncation, the ditch there being less than 0.1 m deep, although a posthole in one of these gaps may indicate an entrance.

Settlement features

While there are few indications of activity within the enclosure, there is clear evidence of a broadly contemporary settlement to the immediate east and south, and possibly the north-east (Fig. 4.3).

An irregular arrangement of curvilinear ditches just outside the enclosure entrance may have been functionally associated with it, although they also appear to be related to two roundhouses defined by ring gullies. The larger ditch (G693), which curved from south to east, was up to 1.6 m wide and 0.3 m deep. In most sections only a single fill was recorded, containing a similar range of finds to that in the enclosure ditch, including 12 sherds of E/MIA pottery. Here too, there was some residual LBA–EIA sherds and a number of intrusive RB sherds, the latter all coming from the ditch's terminals, both of which were cut by Romano-British ditches.

The ditch's north-eastern terminal appeared to extend just inside the line of one of the roundhouse ring gullies (G368) but, due to the positions of later ditches, its relationship with the gully was not established. The recovery of a single sherd of M/LIA pottery from the ring gully, however, may indicate that the roundhouse was later than the ditch. The ring gully, which was up to 0.4 m wide and 0.1 m deep, was 11.6 m in diameter. It probably has an ESE-facing entrance, with most of the finds, which included also slag, fired clay and animal bone, coming from the northern entrance terminal; there was also a narrow gap in the gully, between in-turning terminals, at the north-east. There were no clearly contemporary internal features.

To the south-east of the ring gully, close to the eastern edge of the excavated area, there were two further lengths of connected curving ditch (G710). Only the northern arm of the ditch, which was up to 0.9 m wide and 0.2 m deep, was excavated, producing five sherds of E/MIA pottery, slag, fired clay and animal bone. Neither length of ditch appeared to form part of a roundhouse, although there was a clear ring gully (G711) on the immediate inside edge of G710. This was 0.6 m wide and 0.15 m deep, with an internal diameter of 8 m, lying largely outside the excavation area. Although their relative positions suggest the ditch and gully were associated, their chronological relationship is not certain; G710 was recorded as cutting G711, but the degree of overlap is very small and, while G710 produced E/MIA sherds, G711 contained two sherds of grey coarseware of LIA/ERB date, along with fired clay and burnt flint (see early Romano-British, below).

Two other ring gullies lay some 45 m south of the enclosure (Fig. 4.3). Ring gully G796, which was 9 m in internal diameter, was cut by Romano-British ditches on its north side and possibly truncated on its east side, but a terminal at the south-east suggests an ESE-facing entrance. The gully was up to 0.6 m wide and 0.2 m deep, its single fill producing six small sherds of E/MIA pottery (and three residual LBA–EIA sherds), as well as burnt flint and fired clay. Inside the ring gully, a small oval scoop (11068), measuring 0.8 m by 1 m and 0.1 m deep, contained 14 M/LIA sherds, burnt flint and fired clay (and intrusive clay pipe).

An undated, but probably also associated, gully (11060), 11 m to the east, described a less regular arc,

Table 4.1 Summary of Iron Age pits/postholes at ICSG

Feature	*Width/ diam. (m)*	*Depth*	*No. of fills*	*IA pottery no./weight (g) – Date*		*Other finds*
ICSG Area 1						
1305	0.3 x 0.8	0.15	1	4/24	E/MIA	Fired clay, burnt flint, slag
1355	0.9 x ?	0.3	1	4/42	E/MIA	Fired clay, worked flint, burnt flint, animal bone, slag
4902	0.8 x 1.1	0.6	1	37/258	MIA	Fired clay, worked flint, burnt flint, animal bone
5008	1.2	0.4	1	1/2	E/MIA	Fired clay, worked flint, burnt flint
ICSG Area 2						
10724	1.0	0.11	1	2/10	E/MIA	Worked flint
11068	0.8 x 1.0	0.1	1	14/34	M/LIA	Fired clay, burnt flint (intrusive clay pipe)
11408	0.7 x 1.0	0.15	1	1/4	E/MIA	Animal bone
11424	0.4	0.15	1	3/18	M/LIA	Fired clay
				2/10	LIA/ERB	
11480	2.3	1.5	3	3/14	LBA/EIA	Fired clay, worked flint, burnt flint, animal bone, slag
				7/82	E/MIA	
				30/213	M/LIA	
				16/62	ERB	
11497	0.8 x 1.3	0.2	1	1/2	M/LIA	Worked flint
11501	0.8 x 1.2	0.15	1	8/47	E/MIA	Fired clay, worked flint, burnt flint, animal bone, LBA–EIA pottery

although of similar overall size. Only the northern part of the arc was present, where it was up to 0.6 m wide, and it narrowed towards the apparent terminals (under 0.05 m deep at the west), suggesting the gully had been truncated to the south, rather than this being its original form.

Gully 11060 was cut by a large pit (11480), 2.3 m wide and 1.5 m deep, which contained E/MIA pottery in its lower fill and pottery with a range of dates (from LBA–EIA through to early Romano-British (ERB)) from its upper fill, along with fired clay, worked and burnt flint, slag and animal bone; it is possible that the ERB sherds derived from an ERB ditch (G382) which cut it (Fig. 4.9).

An irregular gully (10076) running north from pit 11480 may be of similar date, as may two other curved gullies, both undated, to the south and south-west. Gully G837, up to 0.25 m wide and 0.1 m deep, with a projected diameter of 30 m, was partly exposed on the edge of the excavated area, and produced a single piece of struck flint. The other, shorter length of less regularly curved gully (G805) lay to its west, and while the form and proximity of these features to the Iron Age settlement may indicate an association, this is far from certain, and their date and function must remain unresolved. Both were cut, however, by a medieval ditch.

There were a number of shallower Iron Age pits (Table 4.1), as well as similar but undated pits, containing small quantities of finds, in the areas between and around the roundhouses, some of which occurred in clusters (many of the undated pits could equally belong to an ERB enclosure (see below) within which they also lie). A small number of other discrete features were dispersed around the area of settlement (Table 4.1).

Two large irregular features (G606 and G607) in Area A (Fig. 4.3), possibly quarry pits, may also belong to this phase. Feature G606 contained part of a triangular loomweight of Iron Age to early Romano-British date, while the lowest fill of G607, to its immediate east, contained nine sherds of E/MIA pottery. To its south-west a smaller irregular hollow (1366), either a tree-throw hole or a number intercutting pits, also contained Early/Middle Iron Age pottery, along with small quantities of animal bone and slag.

Inhumation burial

A crouched inhumation burial (3500) was found in the upper part of an irregular feature (4902), measuring 0.8 m by 1.1 m and 0.6 m deep, in an isolated position to the north of the enclosure and settlement (Figs 4.3, 4.4). The feature's single recorded fill, which lay largely below the skeleton, contained MIA pottery (37 sherds, 258 g), worked and burnt flint, and fired clay, as well as 338 fragments of animal bone, mainly of cattle, but also sheep/goat, horse and pig. The bones appear to represent a mixture of meat-rich parts. It is possible that the burial was made when the feature had partly filled up, or that a subsequent cut (not visible) was made into the fills for the burial. However, Middle Iron Age inhumation burials in pits/graves, sometimes associated with animals bones, are known from the Upper Thames Valley, as at Stanton Harcourt (Lambrick and Allen 2004, 230). The poor bone survival on the acidic soils at ICSG, as elsewhere along the Middle Thames Valley, may help account for the fact that such burials are not more common in this area, although it is also possible that their scarcity reflects a genuine regional pattern in burial practices.

RMC Land

RMC Land produced just 14 sherds (63 g) of M/LIA pottery, mostly residual in later features clustered within the central part of the site (Fig. 4.5). Only one of these, a well (4434) in Area 2, contained exclusively Iron Age pottery, but the single sherd from its uppermost fill does not securely date it. The well was 1.7 m deep with a 1 m diameter circular shaft expanding to an oval shape, measuring 1.5 m by at least 2 m, at the top. It had a sequence of seven fills, comprising an initial silting layer overlain by a series of largely sterile backfilled dumps, then filling up through natural processes. In addition to the pottery, its upper fills contained fired clay, animal bone and worked and burnt flint.

While the small number of finds from this period suggests continued activity within the landscape, this appears to have been at either a very low level, possibly involving the manuring of fields, or habitation at some distance from the site. This is a pattern that continued into the Romano-British period (see below).

Romano-British

In the Romano-British period, the location of the Iron Age settlement and enclosure at ICSG saw the development of a complex of enclosures flanking a straight trackway (Fig. 4.6). Although no conclusive settlement structures of Romano-British date were identified, settlement debris accumulated in the enclosure ditches as well as in spreads of midden material. In addition, two cremation burials were recorded. In contrast, the evidence for Romano-British activity at RMC Land (Fig. 4.5) consists largely of small quantities of pottery and other finds recovered from a number of generally small pits, that are widely dispersed across the site and show no pattern or focus of activity.

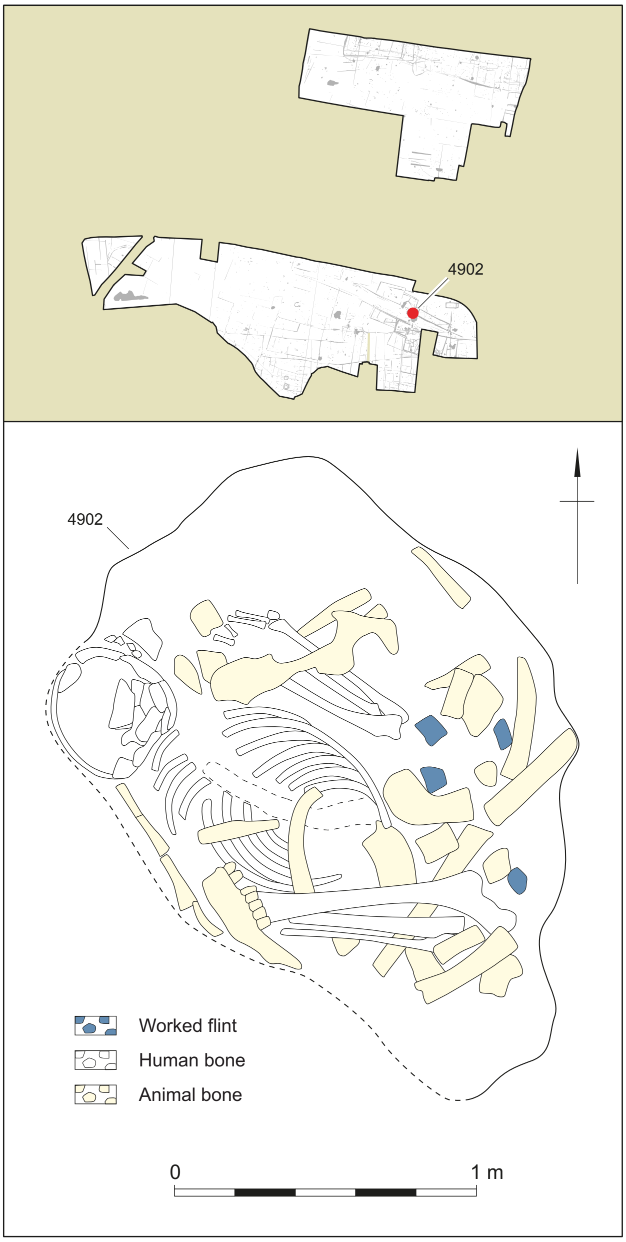

Figure 4.4 Inhumation burial in feature 4902 (ICSG): plan

ICSG

The layout of Romano-British features had its origin in the Iron Age, the trackside ditches possibly defining more clearly, and making archaeologically visible, an already existing feature of the landscape. It is clear that the square Iron Age enclosure remained an extant feature, as it was incorporated within the arrangement of Romano-British enclosures (Fig. 4.6). However, the phasing of the Romano-British period is hampered by the high levels of residuality and intrusion of pottery in the Romano-British features, and by the fact that, although some of the pottery was identifiable as of early Romano-British (ERB), middle Romano-British (MRB) or late Romano-British (LRB) date, a significant proportion of the assemblages could only be assigned a general Romano-British (RB) date (Seager Smith, Chapter 6).

Nonetheless, a number features appear to have been of definitely earlier or later date, providing some indication as to how the site developed during the Romano-British period.

Trackway

As mentioned above, the orientation of the Iron Age enclosure, at variance with that of the late prehistoric field system but replicated in the line of the subsequent Romano-British trackway (Fig. 4.6), may indicate that there was an unditched trackway here in the Iron Age. The first of the ditches defining the

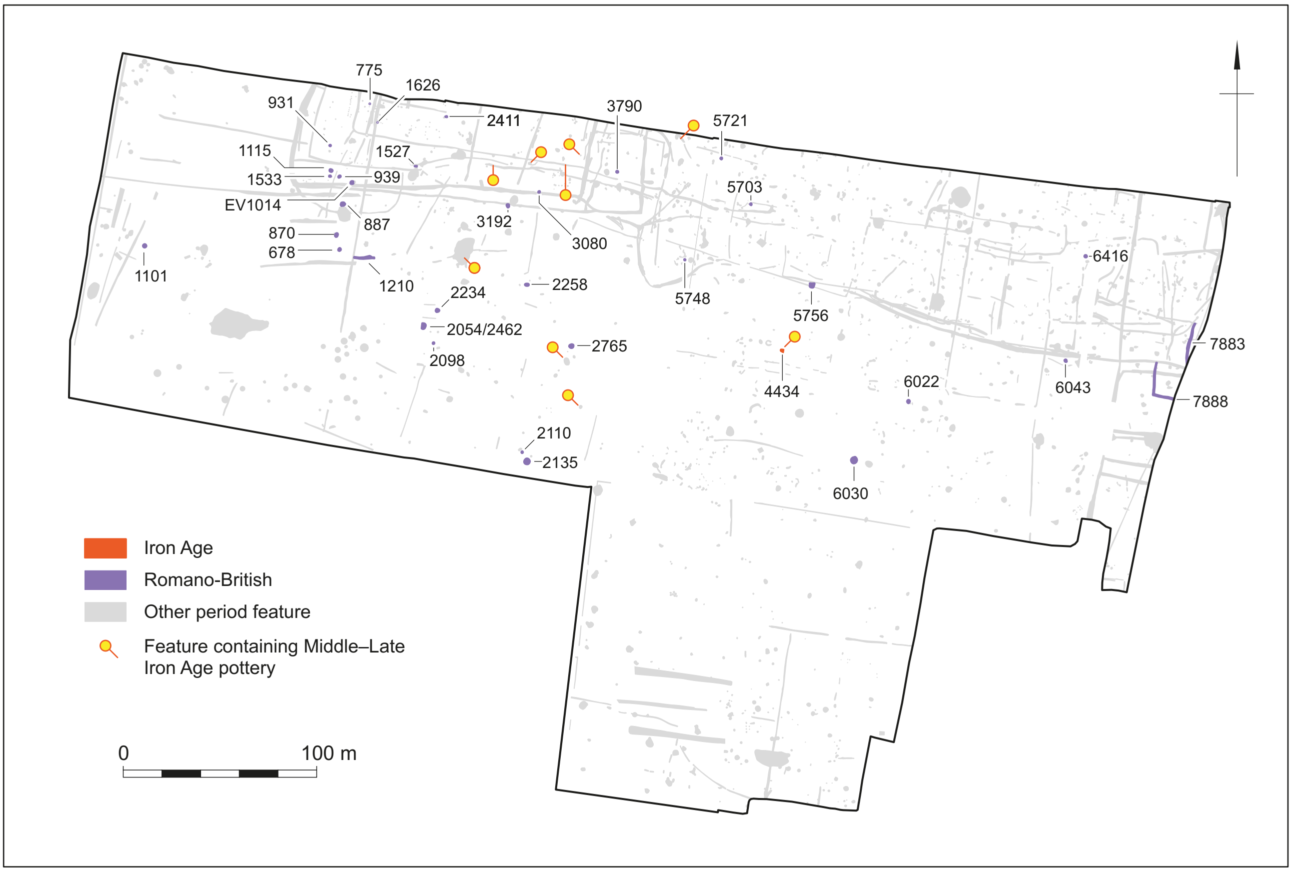

Figure 4.5 Distribution of M/LIA pottery at RMC Land

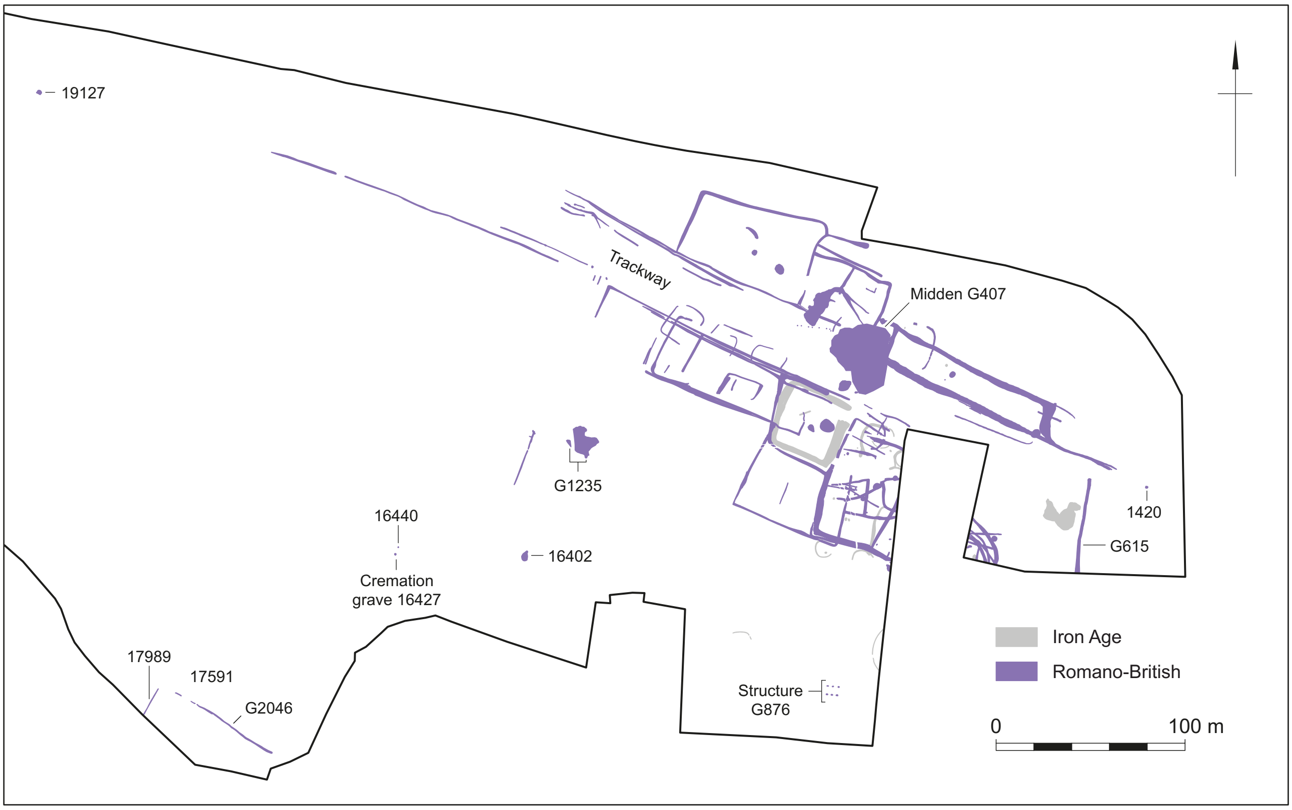

Figure 4.6 Romano-British features at ICSG

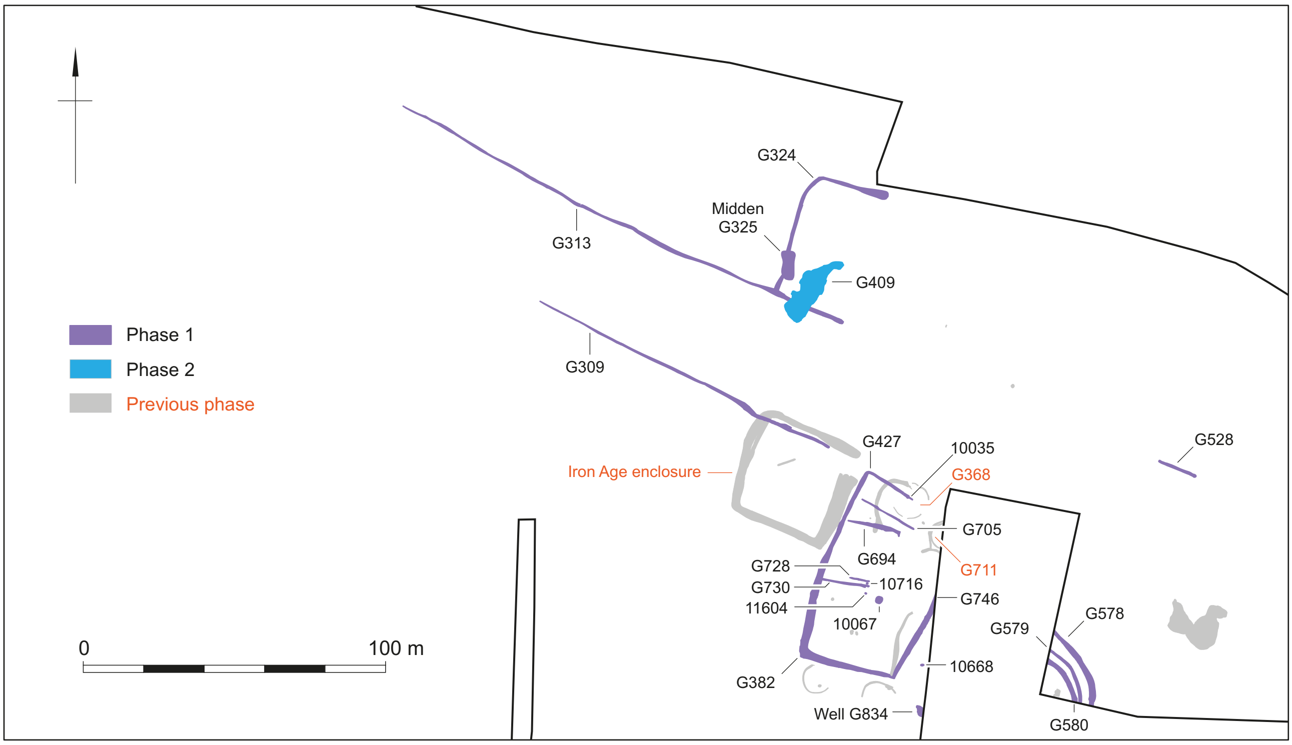

Figure 4.7 Romano-British Phases 1–2 features (ICSG)

trackway appear to have been constructed early in the Romano-British period, contemporary with the Phase 1 enclosures (see below) (Fig. 4.7).

The trackway was traced for 480 m. Intriguingly, it has been noted that its alignment appears to continue westwards that of a section of the A4 trunk road running WNW from its junction, at Hounslow, with the A315/A30 which follows the line of the Roman road between London and Staines (Crockett 2002, fig. 3). While this might suggest that the trackway followed a straight line from where it branched off the Roman road, in fact this appears to be a coincidental alignment. No trackway was observed on this line passing through the Romano-British settlement at the intervening site at Cranford Lane (MoLAS 1993), although a number of features shared the same general orientation. Moreover, there is no evidence of a continuation of this alignment to the west of the site; in fact, towards the western end of ICSG, the trackway appears to curve slightly to the south, putting it on an alignment closer to that of Sipson Lane which defines the northern edge of the site.

Trackside enclosures

The trackway was flanked on either side by a series of rectangular enclosures of varying size and probable function (Fig. 4.6). On the basis of the pottery evidence, the majority appear to be of later RB date, although as mentioned above, the possible recutting of their ditches, the accumulation of midden material, and the likely weight of human and animal traffic both along the trackway and into the enclosures mean that there are likely to be significant levels of both residual and intrusive pottery within the ditch fills, hampering reliable phasing. The following phasing, therefore, while taking into account the ceramic evidence, relies largely of the stratigraphical relationship between the many ditches, and their evident layout and association.

Although a number of pits, wells/waterholes and other discrete features were recorded within and around the enclosures (summarised in Table 4.2) – the most distant, early Romano-British pit 19127, lying over 300 m to the west (Fig. 4.6) – few have stratigraphical relationships with the ditches which would allow them to be securely assigned to a phase.

Six phases are suggested, with Phase 1 being of earlier Romano-British date, and Phase 2, represented by a midden north of the trackway, being middle Romano-British (Fig. 4.7); the subsequent four phases (4–6) are of later Romano-British date (Figs 4.9–11, 4.14). Because there were no stratigraphical relationships between the enclosures on the south and north sides of the trackway, their relative phasing is tentative.

Phase 1 – South of the trackway

The earliest of the enclosures south of the trackway was that defined by ditches G382, G427 and G746 (Fig. 4.7). Together they contained 136 sherds of pottery, three of which are of MRB date, but the

Table 4.2 Summary of Romano-British discrete features at ICSG, by suggested phase

Possible phase	*Feature*	*Width/ diam. (m)*	*Depth*	*No. of fills*	*R-B pottery no./ weight (g) – Date*		*Other finds*
1	10067	2.3	0.3	1	58/579	ERB	CBM, fired clay, burnt flint, animal bone
					3/13	RB	
	10668	0.4 x 0.6	0.2	1	9/164	ERB	Fired clay, worked flint, animal bone, (residual Iron Age sherd)
	10716	0.5	0.2	1	2/20	ERB	Quern
					2/6	RB	
	11604	0.5	0.2	1	1/5	ERB	Worked flint, burnt flint
					13/48	RB	
	19127	2.6	0.2	1	1/3	ERB	Iron, burnt flint, animal bone, LBA–EIA pottery
	G834	2.1+ x 4.1+	1.7	6	11/230	ERB	Fired clay, worked, flint, burnt flint,
					4/38	RB	animal bone, prehistoric pottery
3	11177	2.7	0.15	1	2/18	LRB	Animal bone
					7/45	RB	
	11551	1.8 x 8.0	0.2	1	28/214	LRB	-
	11752	2.3 x 5.4	0.15	1	6/103	ERB	Fired clay, burnt flint
					2/12	MRB	
					46/666	LRB	
					1/1	RB	
5	1529	2.8	1.2+	8+	2/26	MRB	Fired clay, slag
	1922	1.0 x 2.8	0.2	3	1/21	MRB	Fired clay, burnt flint, animal bone
					3/47	RB	
	4651	2.6 x 3.4	1.6	6	2/116	RB	Fired clay, worked flint, animal bone
	4750	0.3 x 0.5	0.1	1	4/7	LRB	-
					18/309	RB	
	10680	2.5	1.2	4	5/11	ERB	Fired clay, burnt flint, animal bone,
					10/52	LRB	LBA–EIA pottery
					15/128	RB	
	10738	2.4 x 3.2	1.6+	4+	5/36	ERB	Fired clay, slag, shale, animal bone,
					13/346	LRB	LBA–EIA pottery, post-med CBM
					3/42	RB	(intrusive)
	11313	3.0 x 4.2	2.3	24	1/10	ERB	CBM, fired clay, Cu alloy bracelet, iron
					4/92	MRB	objects (ring, bracelet, bar, staples, ox
					88/1690	LRB	goad, nails), quern, burnt flint, animal
					17/145	RB	bone, prehistoric pottery
	11612	3.0 x 4.0	0.8	3	1/2	ERB	Fired clay, burnt flint, animal bone, IA
					11/26	LRB	pottery, Saxon pottery (intrusive)
					54/282	RB	
	G369	6.4 x 7.7	0.7	2	2/3	ERB	CBM, fired clay, slag, worked flint, burnt
					1/4	LRB	flint, animal bone, Iron Age pottery
					16/129	RB	
6	4156	0.8 x 1.6	0.3	3	1/4	LRB	Burnt flint, animal bone
	4160	5.3 x 7.6	0.2	1	9/145	LRB	CBM, fired clay, worked flint, burnt flint,
					1/17	RB	quern
	4852	0.4	0.1	1	2/26	LRB	Fired clay
	4854	0.4	0.2	1	2/132	LRB	Fired clay, animal bone
Unph.	1420	1.2 x 1.4	0.4	2	1/30	RB	CBM, animal bone, LBA–EIA pottery
	16402	3.2 x 5.8	1.2+	10	1/123	LRB	Worked flint, burnt flint, animal bone,
					1/2	RB	early medieval pottery (intrusive)

rest being of either latest Iron Age/ERB (ie, from *c.* 50 BC) or indeterminate RB date, and none of LRB date. The enclosure flanked the south-east side of the Iron Age enclosure, but extended further to the south being 60 m long on its western side. Although one cut of ditch G382 continued beyond the eastern edge of Area B (see Fig. 4.9), the eastern side of the enclosure was probably defined by ditch G746 which ran north-north-east from a slightly bend in ditch G382. This would make the enclosure up to 37 m wide.

Where it flanked the Iron Age enclosure on its the north-west side, the ERB enclosure ditch (G427) was 0.7–1.4 m wide and up to 0.4 m deep, with only a single cut recorded; ditch G746 on the eastern side was of similar dimensions. However, around the south and south-west, up to three cuts were recorded in ditch G382, with a combined width of up to 3.6 m; the outer recut may be an extension of the later, Phase 3 ditch (G381) which surrounded both this and the Iron Age enclosure (see below; Fig. 4.9).

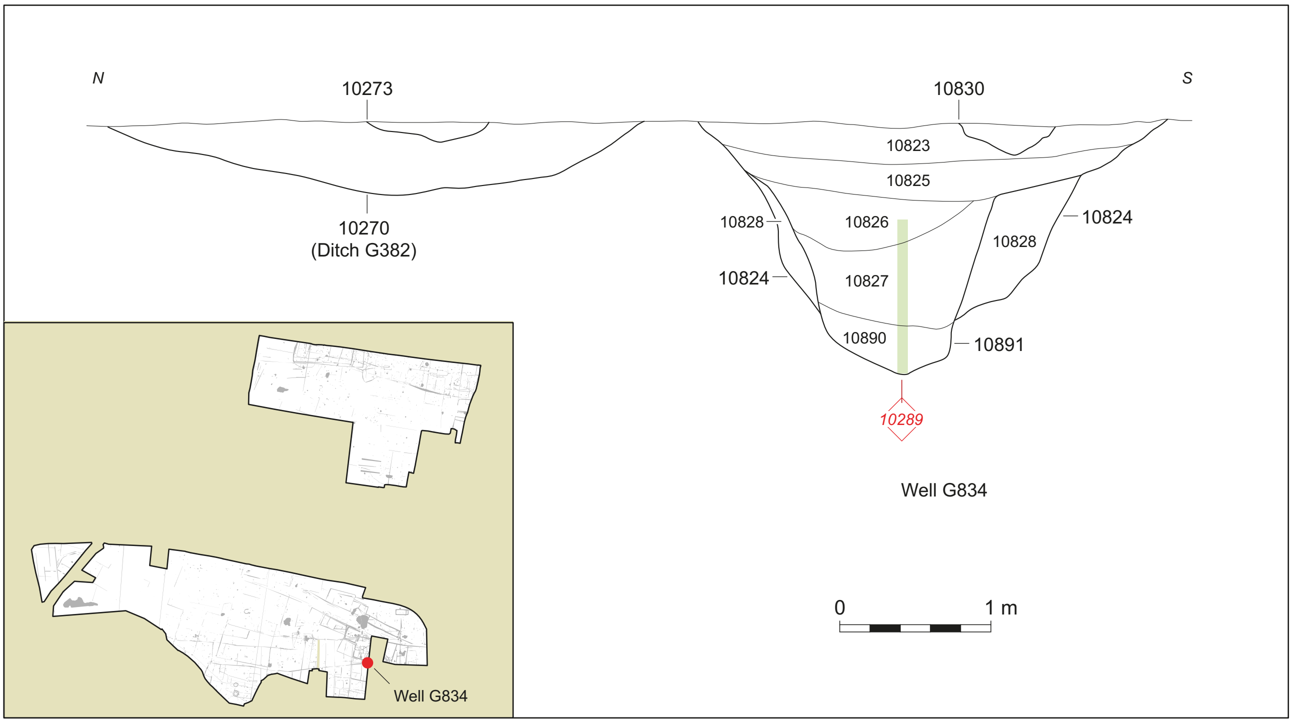

Figure 4.8 Well G834 (ICSG): section

The enclosure's north side was aligned on the outermost and stratigraphically early trackside ditch G309 (Fig. 4.7). This ditch, which was 107 m long, produced only a single sherd of indeterminate RB date. While the Iron Age enclosure ditch, although largely silted up, would still have been a visible feature, the eastern end of ditch G309 cut across it and ran just inside its northern side. It terminated 10 m from the Iron Age ditch terminal, and 15 m from the north-west corner of the Phase 1 enclosure, suggesting that the earlier enclosure continued in some use and remained accessible from the trackway.

The north side of the Phase 1 enclosure, ditch G427, was 16 m long and had an entrance terminal at its eastern end. A small gully (10035), 0.3 m wide and 0.1 m deep, extended the line of the ditch beyond the terminal but was cut by a modern ditch which may have obscured the other side of the enclosure entrance. This entrance also faced onto the trackway.

While the ditch along the front of the Phase 1 enclosure bisected E/MIA roundhouse (G368), it is possible that roundhouse G711 (see Iron Age, above), which contained two LIA/ERB sherds, represents settlement activity within the Phase 1 enclosure (Fig. 4.7). Few other features inside the enclosure clearly relate to ERB settlement, although a number of the undated pits within the area of Iron Age settlement could equally belong to this period. Pit 10067 contained 58 sherds (579 g) of ERB pottery, and three of indeterminate RB date, although its relationship with three ditches with whose intersection it overlapped was not established (Fig. 4.6). To the north-west were two possibly associated postholes (11604 and 10716) 3 m apart, both containing ERB and RB pottery.

Other possibly contemporary features were four lengths of internal ditch (from north to south G705, G694, G728 and G730) running almost perpendicular from (or from close to) the western side of the enclosure, which appeared to define narrow subdivisions. Two of the ditches (G728 and G730) appear to be closely associated with postholes 11604 and 10716. A small charcoal-rich deposit in the fill of ditch G694 contained 17 ERB sherds.

There was a complex of intercutting ditches inside the enclosure (see Fig. 4.6), some with irregular lines which appeared unrelated to the dominant orientations of the other Romano-British features. While some can be shown to belong to the Phase 5 enclosure layout (see below) (Fig. 4.11), others had varied stratigraphical positions, and their function and relationship to the Phase 1, or later enclosures, are unclear.

Features that probably also belong to this phase, occurring just outside the enclosure to the south-east, include a small oval pit/posthole (10668) and a teardrop-shaped well (G834) (Fig. 4.7), the latter on the edge of the excavation. The well measured over 2 m by 4 m, and was 1.7 m deep with steep sides and a concave base (Fig. 4.8). Against the sides of the cut (10824) was a sterile layer of redeposited gravelly soil (10828) with a near-vertical interface (10891) with the feature's other fills. This may indicate that the well had been recut through a predominantly gravel-

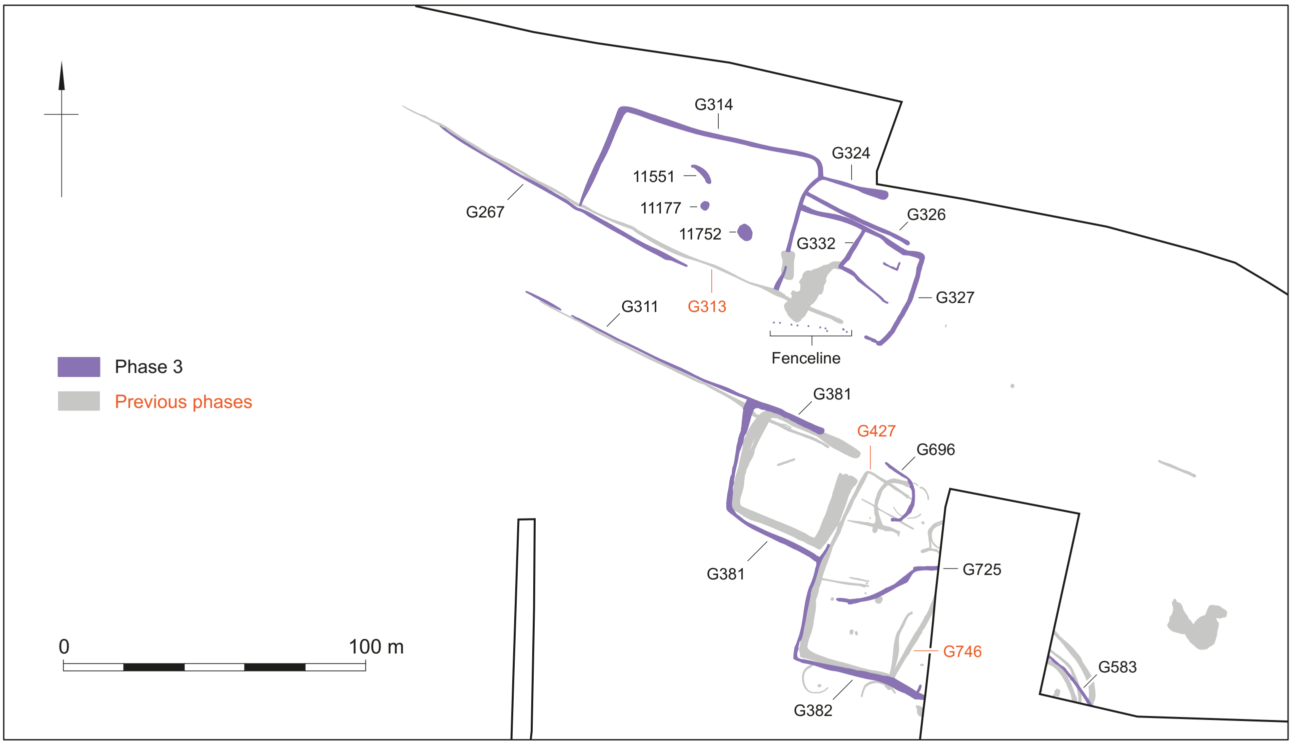

Figure 4.9 Romano-British Phase 3 features

rich fill. Alternatively, the interface may represent the position of a timber lining, of which no trace survived but which had gravel packed behind it. The fills within 10891 (the uppermost cut by a medieval ditch) were more silty, and appeared to have accumulated largely naturally. The primary fill contained nine sherds of LIA/ERB and ERB pottery, and further Romano-British and residual earlier pottery was recovered from the upper fills, along with fired clay, worked and burnt flint and animal bone. Analysis of pollen from the well indicates extensive grassland, as well as cultivation and waste ground, with minimal woodland in the vicinity (see Grant, Chapter 10).

Although the generally rectangular arrangement of enclosure ditches extended beyond the immediate eastern edge of the excavation area, they were not found further south-east, in an adjacent area. Here, less than 40 m to the east, a series of at least four largely concentric ditches, curving from north-west to south, was recorded, possibly indicating that the trackway turned towards the south. Three of the ditches may belong to this phase. The outer and inner ditches (G578 and G580), which were 4–6.7 m apart, were both 1.5 m wide, and up to 0.5 m and 0.3 m deep respectively. The pottery from ditch G780 was (apart from a single LIA/ERB sherd) of indeterminate RB date, while that from ditch G578 contained a range of LIA/ERB, ERB and RB sherds, but nothing diagnostically later. A narrower ditch between them (G579), 0.7 m wide and 0.2 m deep, also contained LIA/ERB, ERB and RB pottery. Other finds from these ditches included worked and burnt flint, fired clay and animal bone.

Phase 1 – North of the trackway

As on the south side of the trackway, it appears that the outermost trackside ditch (G313) on the north side (Fig. 4.7) was also the earliest, including a short length of ditch (G528) on the same line further to the south-east. Apart from one MRB sherd, all of the diagnostic sherds from ditch G313, which was over 160 m long, are of LIA/ERB and ERB date.

Ditch G324 (Fig. 4.7), which ran for 40 m north from ditch G313, then curved south-east to a rounded terminal, also belonged to this phase. Close to the trackway the ditch was overlain by a spread of midden material (G325), which was sample excavated in test pits. The only section of the ditch excavated (10924) was in one of these test pits, where the only pottery recovered from it were two residual sherds (of LBA–EIA and E/MIA date). However, the midden contained predominantly ERB pottery, along with fired clay, animal bone and fragments of greensand quern and ceramic building material (CBM), indicating an early date for the ditch. The area defined by ditch G324 and the eastern end of ditch G313 appears to be open to the east.

Phase 2

Overlying the eastern end of the northern trackside ditch (G313, Fig 4.7), extending 5 m into the trackway and at least 15 m behind it, there was a series of layers filling an 8 m wide shallow hollow (G409). These produced a large finds assemblage, particularly of pottery, the majority of which is of MRB date, as well as CBM, fired clay, animal bone and a quern fragment. The lowest fill, a layer of clay averaging 0.2 m thick, was overlain by a compacted gravel deposit forming a possible surface. Two other layers above filled the hollow. The proximity of this feature to the ERB midden to its west may indicate continued settlement activity on the north side of the trackway from the 1st to mid-3rd century.

Phase 3 – South of the trackway

The close relationship between the Iron Age and the Phase 1 enclosures was subsequently formalised by the construction of a ditch (G381) that partly surrounded both of them (Fig. 4.9). Although this ditch branched west from the Phase 1 enclosure, it also recut part of ditch G427 to the north of the junction, as well as probably representing the outer recut of ditch G382 to the south, which could be traced at least around the south-west corner of the Phase 1 enclosure. In fact it may be this recut which cut across the southern end of ditch G746 (the east side of the Phase 1 enclosure) and continued on a slightly altered line beyond the eastern edge of excavation.

Ditch G381 ran around the south and west sides of the Iron Age enclosure and up to the trackway, then crossed over the line of the Phase 1 trackside ditch (although their stratigraphical relationship was not clearly established). Beyond that point, however, its precise course is not entirely clear, although the best-fit interpretation for the complex of overlapping ditches along the south side of the trackway is that it turned towards the south-east, cutting the outer edge of the Iron Age enclosure ditch. It appears to have terminated just short of the terminal of the Phase 1 trackside ditch, again, therefore, allowing continued access into the Iron Age enclosure.

The combined pottery assemblage from ditch G381 and the outer recut of ditch G382, comprised 12 LIA/ERB or ERB sherds, 10 LRB sherds and the rest of indeterminate RB date, suggesting an LRB date for this ditch. However, the three contexts containing LRB were the single fill of one ditch section, the upper (possibly backfilled) of three fills in another section, and the main fill (only partly sealed by a thin upper fill) in the third section, making it possible that this material was intrusive given the density of LRB activity in this area. Ditch G381 was certainly stratigraphically earlier than the Phase 5 ditches (G305 and G380, below; Fig. 4.11).

The line of ditch G381 along the trackway, and its continuation to the north-west by G311, resulted in the slight narrowing of the trackway from Phase 1. Also possibly of this phase was ditch G696, 23 m south-east of the terminal of ditch G381, which continued on approximately the same line before curving round to the south and west through the entrance of the Phase 1 enclosure (Fig. 4.9). Less securely phased is ditch G725 which followed an irregular course from the eastern edge of excavation area, and was cut by two Phase 5 ditches (G380 and 11617, see below; Fig. 4.11).

To the east, ditch G583, which curved less sharply than the three concentric Phase 1 ditches, and which cut across the outer two, contained both ERB and MRB pottery and may belong to this phase.

Phase 3 – North of the trackway

North of the trackway, a large sub-rectangular enclosure was added on to the western side of Phase 1 ditch G324 (which appears to have remained in use), its northern and western sides defined by ditch G314 (Fig. 4.9). The enclosure measured 70 m long, and 35 m and 45 m wide at the west and east ends, respectively. The western terminal of ditch G314 cut the silted up Phase 1 trackside ditch and the front of the enclosure may have been defined by the next ditch in front (G267). Ditch 267 ended (or was possibly truncated) approximately mid-way along the front of the enclosure, and it is possible that access to the enclosure was gained from the trackway somewhere beyond this point. Ditch G314 produced 15 sherds of LIA/ERB and ERB pottery, and single MRB and LRB sherds, while ditch G267 produced a single RB sherd. There were three shallow hollows (11177, 11752 and 11551) within this enclosure, producing pottery with a range of dates (Table 4.2). All are of uncertain function or origin, and none need be directly associated with the enclosure.

It is possible that a straight ditch (G326), that ran south-east from ditch G324, parallel to the trackway, also belongs to this phase. To its immediate south, however, ditch G327 appears to form another enclosure, 40 m long and 30 m wide, broadly contemporary with the larger enclosure to its west. Inside it, an L-shaped ditch (G332) defined a small compartment in its north-eastern corner, within which was a small L-shaped unexcavated gully. While this enclosure's southern side may have been defined by the Phase 1 trackside ditch (G313), in which case the enclosure would have had a 9 m wide entrance gap opening onto the trackway, the terminal of ditch G327 on the east side of the entrance lies slightly in front of the line of the Phase 1 ditch, and more of the line of ditch G267, suggested as defining the front of the larger enclosure to the west.

A notable feature possibly associated with the smaller enclosure is a 23 m long line of eight postholes, running at a slight angle to the north side

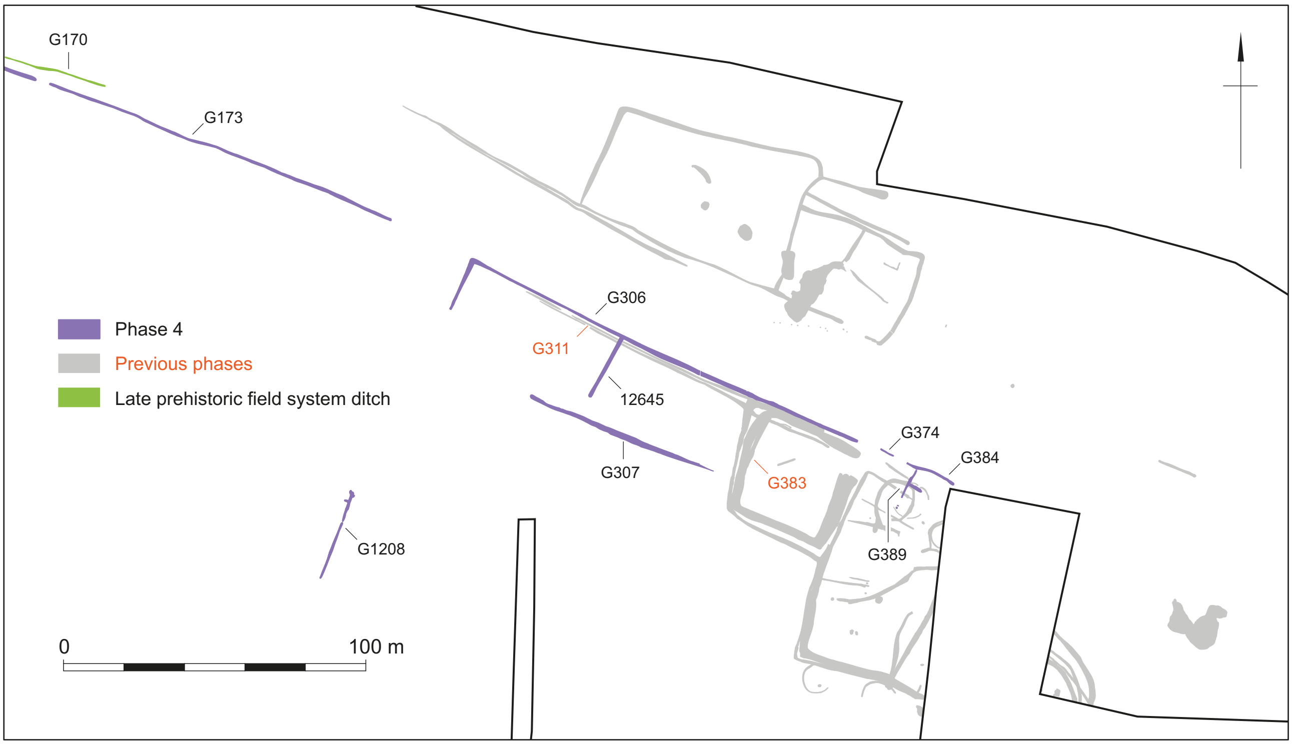

Figure 4.10 Romano-British Phase 4 features

of the trackway and aligned on the terminal on the east side of the entrance (Fig. 4.9). The postholes were not excavated and some variation in their spacing suggests an originally regular spacing of *c.* 1.8 m with at least a further five lost through truncation. Two other postholes, just south of the line at its east end, are also probably associated. The resulting fenceline may have acted as a funnel to aid the herding of livestock being driven south-east along the trackway into the enclosure, this weight of animal traffic possibly accounting for the loss of the trackside ditch in this area.

Phase 4

The trackway was further narrowed on its south side by ditch G306, which lay just north of ditch G311 (Fig. 4.10). At its north-west end it turned away from the trackway at a right angle. Another perpendicular branch (12645), 54 m to the south-east, ran from it cutting over the earlier trackside ditches and creating a very regular, rectangular trackside enclosure, 53 m long. The ditch, which ran for 142 m along the trackway, had a variable profile up to 1.2 m wide and 0.5 m deep. It shallowed towards the south-east, and petered out at the entrance to the former Iron Age enclosure. Its approximate line was continued to the south-east by two short lengths of shallow ditch (G374 and G384) (Fig. 4.10), which lay 8–10 m in front of the Phase 1 enclosure (Fig. 4.7) and appeared to close of any direct access to it from the trackway.

Another short ditch (G389) ran perpendicular from ditch G384. Its distance from ditch 12645, of 106 m, is exactly double the distance (53 m) between 12645 and the turn in ditch G306 at the north-west end. The midpoint between ditches 12645 and G389 falls on the line of the Iron Age enclosure ditch G383), whose recuts may have obscured the presence of another perpendicular ditch at this point; this line was certainly continued to the south in the subsequent phase (Phase 5, see below; Fig. 4.11). If there was a ditch in this position, this phase would have seen the laying out of three equal plots, possibly bounded at the rear by ditch G307.

After a 30 m break from the corner of the north-western enclosure, ditch G173 continued the line of the front of the enclosures for a further 160 m along the trackway (Fig. 4.6), broken only by a 4.6 m wide gap. The line of the ditch showed that the trackway curved slightly towards the west until its orientation was close to that of the prehistoric field system (eg, ditch G170, Fig. 4.10), elements of which may well survived as relict banks or hedge-lines. The ditch crossed the area of most concentrated LBA settlement activity, and 28 of the 35 pottery sherds recovered from it were of LBA date.

Further to the south-west, ditch G1028 continued the line of ditch G306 perpendicular to the trackway and may be related, extending activity further back from the trackside enclosures; it contained a single RB sherd.

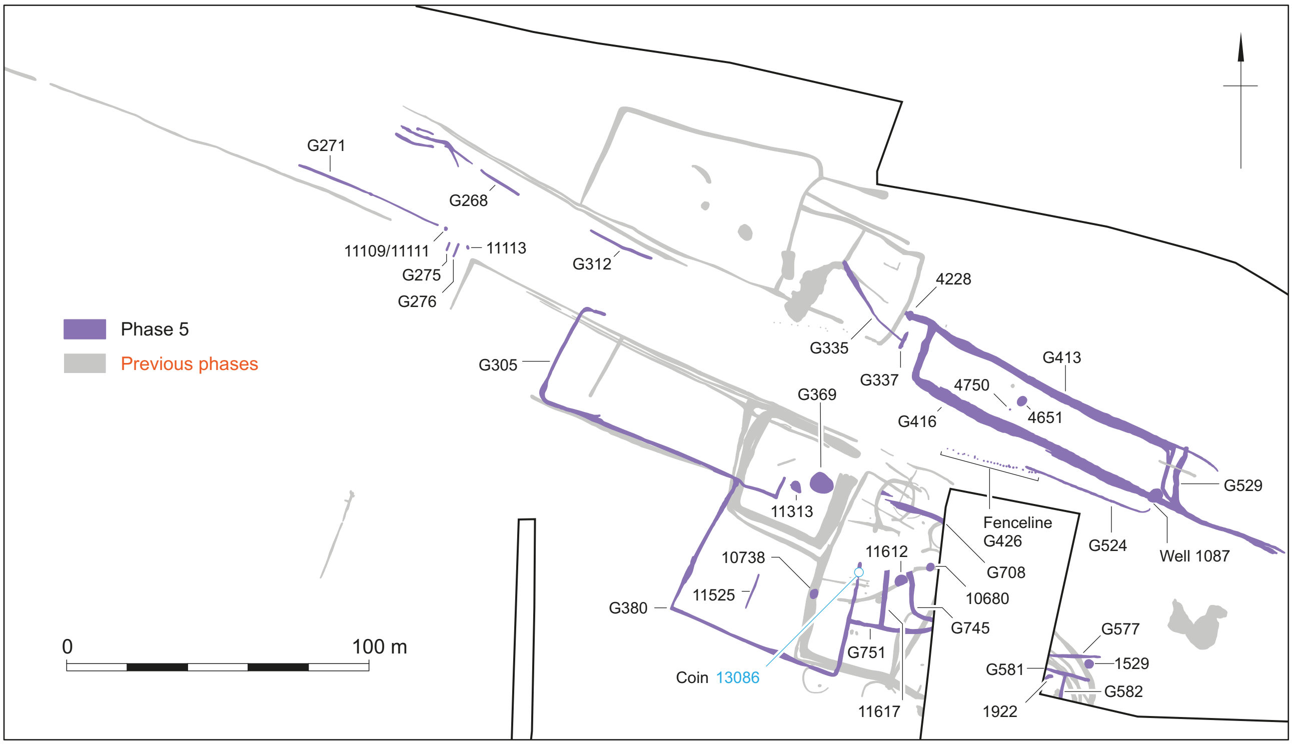

Figure 4.11 Romano-British Phase 5 features

There were no comparable enclosures on the north side of the trackway, the Phase 3 enclosures there possibly continuing in use in their original or modified form.

Phase 5 – South of the trackway

The Phase 5 enclosures no longer respected the earlier, Iron Age features which had influenced the initial layout of the Romano-British ditches (Fig. 4.11). Towards the west a rectangular enclosure, 84 m long and 33 m wide, was defined by ditch G305. Its rear largely matched that of the Phase 4 enclosures, which it partly spanned. At the north-west, the ditch turned towards the trackway, encroaching into it by up to 4 m. Its course extended north of the Phase 4 enclosures and then turned to the south-east where it continued for a short distance. The enclosure's south-east corner lay within the former Iron Age enclosure, signalling the final abandonment of this feature. The ditch turned towards the trackway, but terminated after 7 m. The enclosure appeared therefore to be largely open on the trackway side.

Approximately 55 m north-west of where the enclosure encroached onto the trackway, a length of trackside ditch (G271), a similar distance in front of Phase 4 trackside ditch, may belong to this phase, reflecting a narrowing of the trackway along its length. Possibly associated with it were a pair of adjacent postholes (or small pits) (11109 and 11111), a shallow oval scoop (11113), and two short lengths of parallel gully (G275 and G276) perpendicular to the trackway. If associated, these features may have had some function of the control of livestock between the trackway and land to its south.

To the rear of the rectangular enclosure, a second, deeper enclosure was defined mainly by ditch G380, which branched off ditch G305 near its south-east end, extending the line suggested for the possible division between two of the Phase 4 enclosures (above). The enclosure was 47 m deep (north–south), its rear boundary lying just outside the rear of the Phase 1 ERB enclosure (Fig. 4.7), and 57 m wide (east–west), although narrowing towards the front. The single Roman coin from the site, a small copper alloy *nummus* of the late 4th century (ON 13086), was recovered from the single fill of the ditch near its north-eastern terminal. The eastern end of ditch G305 formed part of the front of the enclosure, which was set back at least 28 m from the trackway, but here too the enclosure was largely open to the front. A short length of ditch (11525) inside this enclosure may represent an internal division.

Further east, ditch G751 branched off the eastern side of the enclosure, with another ditch (11617) running north from it defining a small compartment outside the enclosure. Although the pottery from these ditches was predominantly LIA/ERB, with only three sherds of LRB date, this probably reflects the fact that the ditches lie within the Phase 1 ERB enclosure. Two other stratigraphically late ditches may also belong to this phase – ditch G745 which

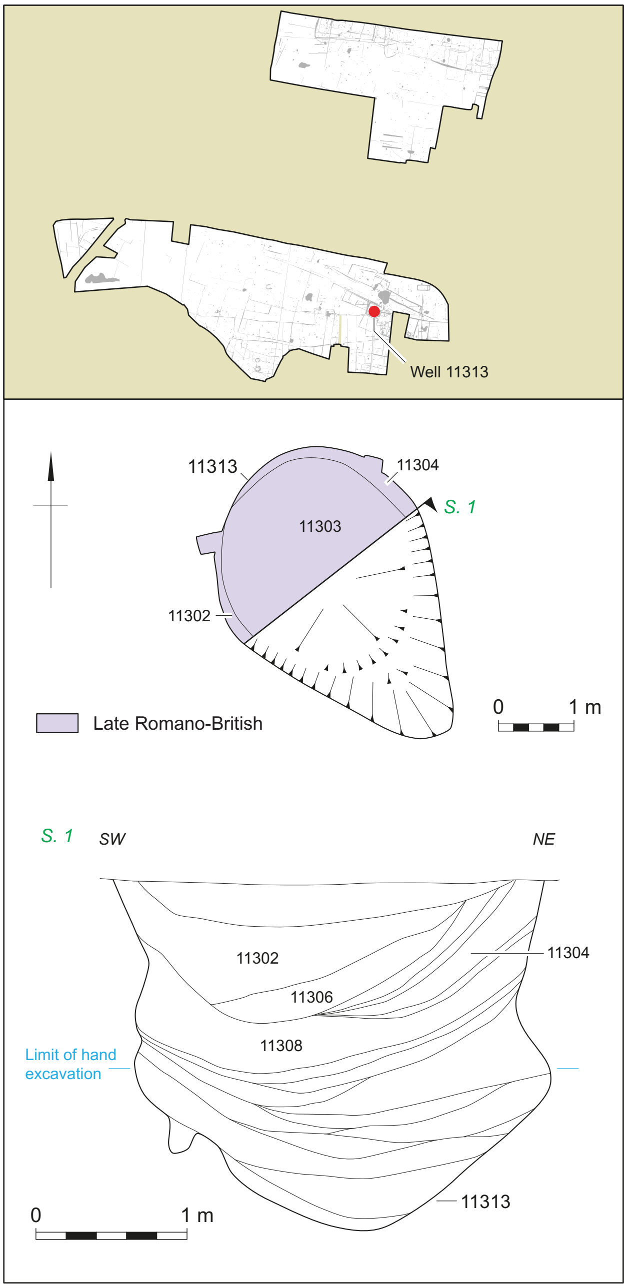

Figure 4.12 Well 11313: plan and section

curved to the east, and ditch G708, which was parallel to the trackway, but 13 m back from it.

Some of the discrete features among these ditches were stratigraphically later than at least the Phase 3 ditches. For example, Phase 1 ditch G382, and its outer (Phase 3) cut, were cut by pit 10738, which measured 2.4 m by 3.2 m, and was excavated to a depth of 1.3 m then augered for a further 0.35 m. It had vertical sides, slightly undercut in places. Its four recorded fills, the second of which may have been a dumped layer containing cess, contained predominantly LRB pottery, along with fired clay, slag and animal bone, as well as a piece of shale, possibly from an armlet (a 1 g fragment of post-medieval CBM is intrusive). A further two pits (10680 and 11612) cut possible Phase 3 ditch G725, the latter pit surrounded by spreads of possible midden material (11613 and 10662, not shown on Fig. 4.11), and a number of other small pits or isolated postholes were also recorded in this area.

Two features in the area of the former Iron Age enclosure, a large sub-rectangular hollow (G369), 0.7 m deep with a gravelly lower fill, and a tear-drop shaped well (11313) to its immediate west, may also belong to this phase, although this cannot be demonstrated stratigraphically (Fig. 4.11). The well was 3 m wide, 4.2 m long and 2.3 m deep with vertical sides, slightly undercut in places where the sides had slumped, but shallowing to a point at the south-east (Fig. 4.12). It was excavated by hand to a depth of 1.2 m, then its full profile exposed by machine. It contained a sequence of 24 fills indicating its gradual silting during and after its period of use, and possible episodes of dumping waste. There were no signs of any timber lining. The well produced a large assemblage of finds, including 110 sherds (1937g) of Romano-British pottery (mostly LRB). Metal finds, many of them from layers 11302, 11304 and 11308, included two bracelets – one copper alloy (ON 13092) and one iron (ON 13093) – an iron ring (ON 13088), an iron bar (ON 13089), 57 nails and two staples, and a ferrule or ox goad (ON 13124, see Fig. 8.1, 5). A number of quern fragments and pieces of CBM, as well as fired clay, burnt flint and animal bone, were also recovered.

To the south-east, three ditches (G577, G581 and G582), which cut across the curved (Phases 1 and 3) ditches, may also belong to this phase (Fig. 4.11). Among them were two features (1922 and 1529), although neither need be directly associated with the ditches. Possible hearth 1922 contained pottery, burnt flint, fired clay, animal bone and charcoal. Large pit 1529, 2.8 m in diameter at the top but narrowing significantly at a depth of 1.2 m where excavation stopped, contained eight recorded fills, with two MRB sherds recovered from an upper fill along with fired clay and slag.

Phase 5 – North of the trackway

On the north side of the trackway, the phasing of what appears to have been a long, narrow enclosure is hampered by the lack of any recorded stratigraphical relationships with the ditches of earlier phases to its west (Fig. 4.11). In places its ditches (G416 at the front and G413 at the rear) comprised up to three cuts with relatively shallow, U-shaped profiles. The front ditch lay between 6 m and 9 m (depending on the cut) further into the trackway than the adjacent Phase 3 enclosure, and if each phase of activity encroached further into the line of the trackway (as was the case on the south side of the trackway), a later phase is implied. Nonetheless, given the ditches' multiple cuts, they could easily span more than one phase. Two lengths of ditch (G312 and G268) to the north-west are on the same line as ditch G416 and may also belong to this phase.

Internally, the enclosure was 87 m long and 15 m wide. However, it had no obvious entrance and it is possible that its apparent form (and identification as an enclosure) is simply the result of the alteration to a boundary on the north side of the trackway, with ditch G416 replacing ditch G413 in a more forward position. Unfortunately, the stratigraphical relationship between the two ditches was not established at either end of the enclosure.

The rear boundary (ditch G413) branched off the eastern side of the smaller Phase 3 enclosure, although the relationship was obscured by a large undated feature (4228). At the west this ditch comprised a single cut up to 3 m wide and 0.5 m deep, but further east there were up to three parallel but separate cuts (inner to outer 0.5 m, 1.2 m and 1.3 m wide) whose chronological sequence could not be determined. At the east end, the three cuts followed slightly different lines, the outer cut continuing straight for a further 16 m, the inner two turning south towards the trackway, with another, more substantial and steep-sided ditch (G529) lying parallel to them to their east. These three then curved to the south-east along the edge of the trackway.

Ditch G416, which formed the western end and the front of the possible enclosure branched off ditch G413 9 m from the Phase 3 enclosure. Only a single cut, albeit 2.5 m wide, was recorded at its north-west end, whereas three cuts, as well as a number of less substantial gullies, were recorded where it ran along the side of trackway; again the chronological sequence of these cuts could not be determined. At the east, it merged with the cuts of ditch G413 (and G529), and continued a further 40 m down the trackway.

A 6 m long feature (G337) perpendicular to the trackway lay in the gap between the enclosure's western end and the adjacent Phase 3 enclosure. A narrow gully (G335) ran north-west from it across the Phase 3 ditches, curving slightly and widening to a 1.7 m wide 0.4 m deep ditch; its function is unclear.

Within the trackway, a 43 m length of gully (G524) converged gradually with ditch G416, before curving sharply in towards it near the 'enclosure's' south-east corner. If contemporary with ditch G416, there would have been a gap of just 3 m between the ditch and the gully (Fig. 4.11). Extending westwards from near the western end of the gully, on approximately the same line, there was a 32 m long fenceline of 25 postholes (G426), comparable to that leading to the Phase 3 enclosure (Fig. 4.9) but more closely spaced at an average of 0.8 m. Although none of the postholes produced pottery, the fenceline is clearly associated with the gully which did contained Romano-British pottery. Together, the gully and the fenceline, the western end of which lay over 12 m into the trackway in front of ditch G416, would have been an effective means of controlling and filtering the movement of livestock.

Plate 4.1 Base of timber box frame in Romano-British well 1087

The functional and temporal relational between these features is complicated by the presence of a timber-lined well (1087) in the south-east corner of the 'enclosure' (Fig. 4.11). This appeared to cut the fills of a large late prehistoric pit (4814, see above; Fig. 3.13) that was later recut (4813) (Fig. 4.13).

At its base, the square well shaft was 0.9 m wide internally and 1.8 m deep, with vertical sides and a flat base. Although recording of the well was hampered by the collapse of the section, the base of the box frame, which rested on a thin primary fill, survived *in situ* to a height of 0.4 m (Pl. 4.1). This comprised up to three courses of rectangular planks, averaging 130 mm long and 15 mm high, each plank having two squared notches cut out of one edge, approximately 20 mm from the each end. The notches allowed the adjacent timbers in each course to be slotted together (in the manner of some self-assembly wooden compost bins), without being nailed. Because only one edge was notched, each overlying course simply rested on the one below. On the bottom course the eastern and western sides, with upward facing notches, were laid first, then the north and south sides with downward facing notches. The second course was less well preserved, but here the north side had notches on the upper surface. There appear to have been no other structural timbers to provide added internal support to the frame, such as the corner posts and corner braces found on some box-frame wells in Roman London (Wilmott 1982). It is possible, however, that the construction method employed at the base was different to that used further up the well. The bottom courses of two of the

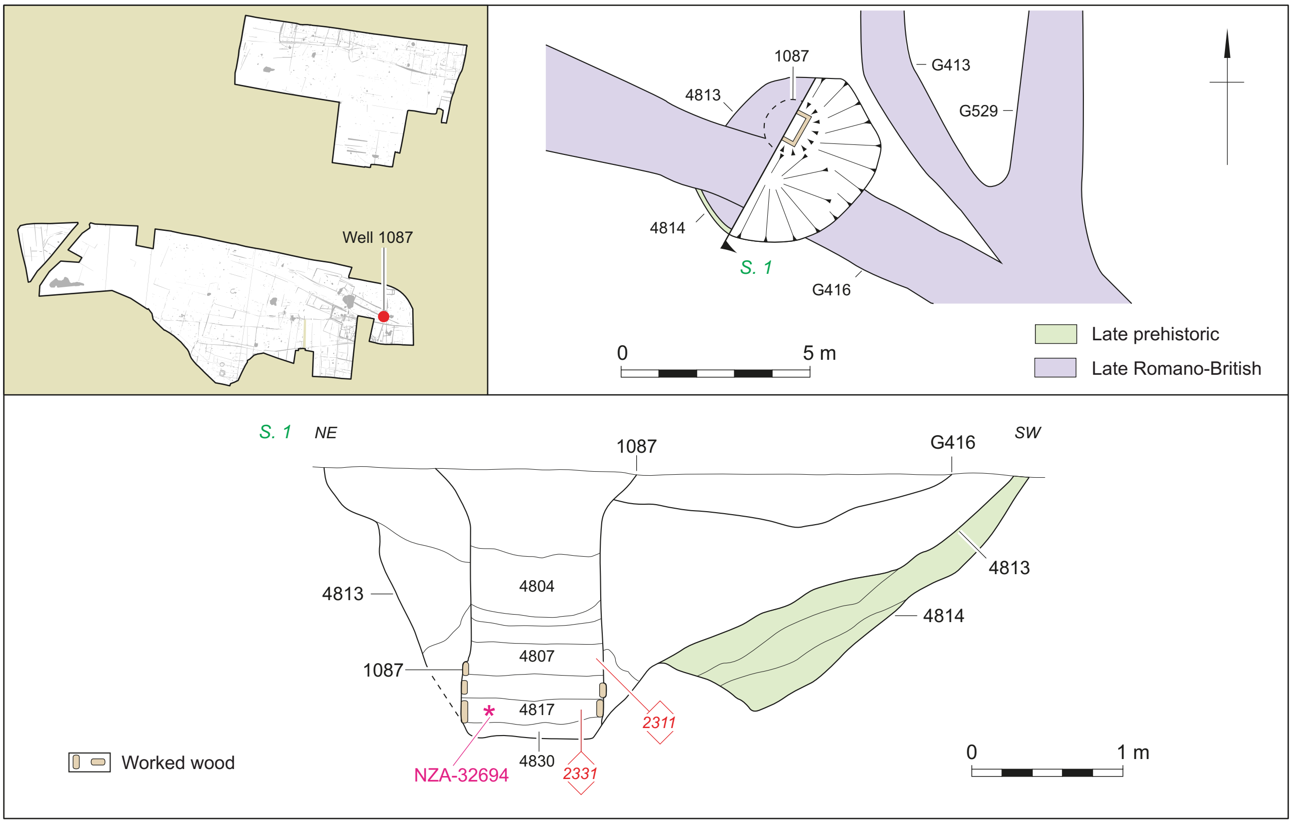

Figure 4.13 Timber-lined well 1087: plan and section

London wells (St Swithins House and Poultry, *ibid.*, fig. 21), for example, were of a similar (although not identical) construction to well 1087, but used a different method of construction further up the well.

Because the timbers overlapped at the corners, the well's construction cut would have had to have been at least 0.4 m wider than the frame. As no such cut was apparent, it is seems likely that feature 4813, rather than being a recut of the prehistoric pit (4814), was in fact the well's construction cut within which the box frame was assembled. If so, the cut would have been progressively backfilled, providing support for, and securing the position of, each course of timbers as they were added, a process suggested by the cut's fill profiles. Eight fills were observed within the well, although these could not be fully recorded. Together they produced 67 sherds (2793 g) of predominantly LRB pottery (see Fig 6.9, 6–18), as well as CBM, fired clay and an iron mount (ON 3021).

This indicates that the construction of the well pre-dated ditch G416, the line of which (here a single shallow cut, 1089) ran immediately in front of (south of) the well (Fig. 4.13). Although the top of the well appears to cut the ditch, it may just be the erosion cone at the top of the well which cuts the ditch's edge. Rye chaff from the well's second lowest fill (4817) produced a radiocarbon date in the late Romano-British period of cal AD 240–510 (at 95% confidence) (NZA-32694, 1680±45 BP) (Table 11.3).

Only two other features lay within the 'enclosure', ie, between ditches G413 and G416) – a large oval pit (4651), 1.6 m deep with steep sides and a narrow base, whose six fills produced two RB sherds, fired clay, animal bone and a single struck flint, and an adjacent small, shallow oval feature (4750) containing further sherds.

Phase 6 – South of the trackway

The final phase of Romano-British activity on the southern side of the trackway is represented by a cluster of small enclosures, defined by narrow gullies, some slightly curving, lying partly within the Phase 5 trackside enclosure, but overlapping its ditch to the north-west and north-east (Fig. 4.14). This phase saw activity encroaching further into the line of the trackway, with three of these enclosures being up to 12 m in front of the Phase 1 roadside ditch. Only two of the enclosures can be shown stratigraphically to belong to this phase, and it is possible, for example, that the south-eastern enclosure, defined by ditch G355, represents an internal division within either a Phase 4 or Phase 5 enclosure, although its markedly skewed form is similar to that defined by ditches G354 and G920 to its north-east.

There were three possible enclosures along the trackway. The example to the north-west, defined by gully G310, was 16 m wide and 19 m deep with rounded corners and an outward curving front. Its

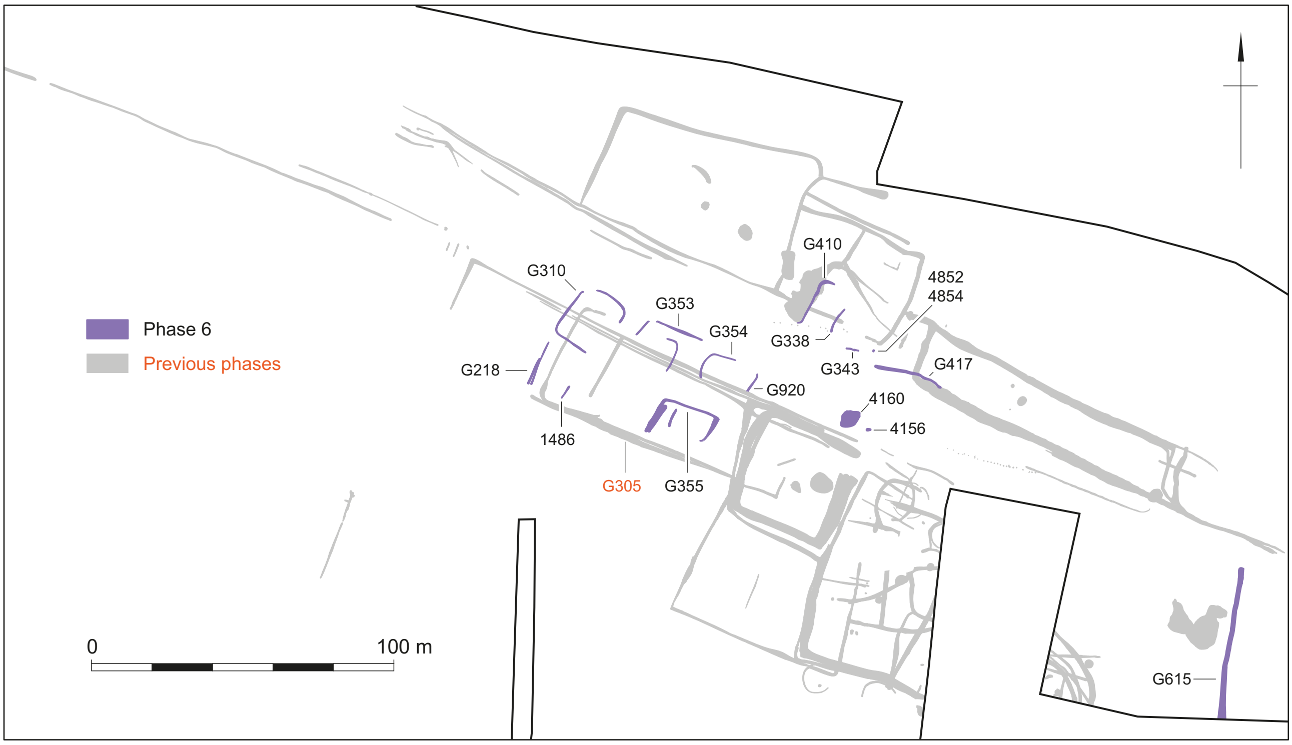

Figure 4.14 Romano-British Phase 6 features

gully averaged 0.5 m wide and 0.1 m deep and it is unclear whether the wide break at the south-east marks the original width of an entrance or whether this had been widened by being truncated. To its south-east an arrangement of three gullies, one (G353) possibly defining the contemporary edge of the trackway, suggest another enclosure up to 14 m wide and at least 10 m deep. The eastern enclosure, defined by gullies G354 and G920, was up to 17 m wide and 10 m deep. There was an 8 m wide gap at its front, and no trace of a gully at its rear.

There was at least one, and possibly two further small enclosures set back behind the front row. The south-eastern enclosure, defined by gully G355, was 17 m wide and appeared to be open to the rear, although Phase 5 ditch G305 could have formed the rear in which case it would have been 15 m deep. To the west, a possible fifth enclosure, at least 11 m wide and 15 m deep, is represented by gullies 1486 and G218.

None of these small enclosures, which produced small quantities of pottery, CBM, fired clay and animal bone, contained any features suggesting their function. Further to the east, on the southern side of the trackway, there was a large irregular hollow (4160) measuring 5.3 m by 7.6 m and up to 0.2 m deep. It extended into the trackway about the same distance as the front row of small enclosures, and while its function or cause is unclear, its position may indicate activity of a similar date. Apart from some indeterminate RB sherds, the pottery was all LRB. A small oval pit (4156) immediately east of 4160, containing evidence of burning and a further LRB sherd, may be associated.

Phase 6 – North of the trackway

A small number of features on the north side of the trackway may belong to this phase (Fig. 4.14). Two lengths of gully (G338 and G410), both cutting Phase 1 ditch G313, extended 4 m and 5 m into the trackway, respectively, and are of similar relative scale and position to those on the south side of the trackway. Gully G338 contained predominantly LRB pottery, while gully G410, which also cut the Phase 2 midden, contained pottery with a wider date range, but including LRB sherds.

A third gully G417 cut across the south-western corner of the long, Phase 5 'enclosure', running along the inner edge of ditch G416 at the east but bending slightly into the trackway at the west, its alignment here comparable to the two fencelines, possibly indicating a related function. A short length of undated gully (G343) with the same orientation, to its north-west, may be associated, as may two small intercutting pits (4852 and 4854), both containing LRB sherds.

Other features

Apart from the fencelines, no structures of clearly Romano-British date were identified. However, a single sherd (4 g) of RB pottery was recovered from one of six sub-rectangular postholes forming a

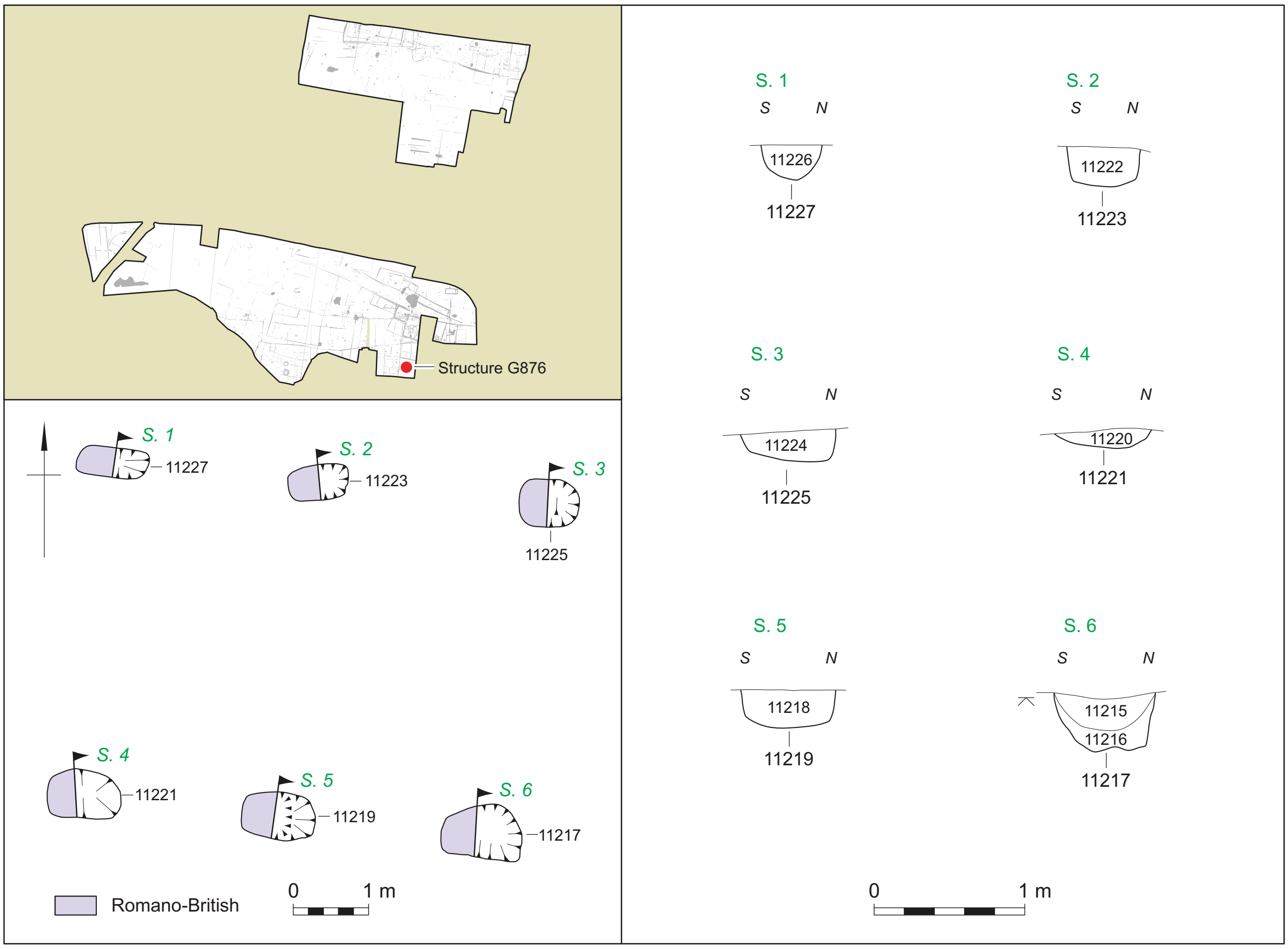

Figure 4.15 Rectangular six-post structure G876 (ICSG): plan and sections

rectangular structure (G876) towards the south-east corner of the excavated area (Fig. 4.6). The postholes, which averaged 0.6 m by 0.9 m and 0.25 m deep, were aligned east–west, as was the structure which was 6.5 m long and 5 m wide (Fig. 4.15). There were no internal features, and no other finds apart from burnt and struck flint, and given that no other Romano-British features were identified within over 65 m of the structure, there must be some doubt as to its date. Its alignment is at odds with that of the bulk of Romano-British features, but is close to that of both the late prehistoric and medieval field systems in the area.

Further west, two undated ditches (G2046 and 17989) shared a similar general orientation as the other Romano-British features, and may have formed the corner of a field (Fig. 4.6). Because the ditches were heavily truncated, being up to 0.5 m wide and 0.1 m deep, it is unclear whether or not the gap at the corner represents an entrance, although the 3 m long segment of ditch to its immediate south-east (17591) may have contained a line of six small postholes.

An urned cremation burial in a truncated grave (16427), 0.4 m in diameter (Fig. 4.16), was cut into the fills of a later prehistoric field system ditch, 200 m south-west of the enclosures (Fig. 4.6). The urn, a Verulamium region white ware jar of MRB date, contained the remains of an individual aged over 14 years; the grave also contained sherds from a shallow, Black Burnished ware dish. Less than 4 m to the north along the same ditch (G1211; see Fig. 3.3) there was possible unurned cremation deposit, containing charcoal and cremated human bone from an adult aged over 21 years, in a truncated cut (16440). Although a sherd of LBA pottery was recovered from the fill, the presence of an iron nail suggests that it was residual, and the proximity of these two features along what may still have been a visible feature, may indicate that they were contemporary.

In addition to the spreads of ERB and MRB midden material on the north side of the trackway (Fig. 4.7), a further spread of soil (G407) interpreted in the field as containing midden material was recorded lying largely within the trackway to their south-east. The eastern part of the spread was excavated in a series of test pits spanning the trackway and extending into the smaller Phase 3 enclosure (Fig. 4.6), although its extent was not fully established, and no relationships between the midden material and the enclosure and trackside ditches were recorded. The test pits produced 39 sherds of Romano-British pottery, all but a single MRB sherd being of LRB or indeterminate RB date, as well as fired clay, CBM, animal bone, stone and burnt flint.

At the eastern end of the Romano-British enclosures, a single north–south aligned LRB ditch (G615) ran south from a terminal 9 m from the Phase 5 northern trackside ditch (Fig. 4.6). Its alignment is at odds with the general orientation of the Romano-British enclosures and trackway, and while not blocking the trackway it would have restricted movement along it, possibly directing it towards the south. As noted above, the southward curving Phase 1 and 3 ditches in Area A may have indicated a trackway running south at that point. The most easterly feature on the site (Fig. 4.6) was a sub-rectangular pit (1420) containing a single RB sherd, a piece of CBM and animal bone.

There was a very large irregular feature (G1235), possibly a quarry pit or waterhole, south-west of the enclosures (Fig. 4.6). It was excavated in a number of slots in which its profile and fill sequence varied considerably and it is possible that it comprised a number of intercutting features, although this is not evident from the section drawings. Overall, the feature had a slightly cruciform, 'lobed' shape, 9 m wide at its narrowest, and 19 m at its widest. At the south it was 1.2 m deep with gently sloping sides, but to the north-west it was steeply sided, and deeper than 1.2 m (where excavation stopped). Numerous fills were recorded, particularly at the north-west, but relatively small quantities of finds were recovered. Only a single fill, at a depth of 0.7 m, produced Romano-British pottery (25 LRB sherds), the remaining pottery (15 LBA sherds) deriving equally from layers both higher and lower. Other finds included fired clay, animal bone and burnt and worked flint. The feature cut one of the later prehistoric field system ditches, and was cut, in turn, by a medieval ditch, so a Romano-British date seems reasonable.

A teardrop-shaped pit (16402), possibly a well, in the southern part of the site (Fig. 4.6), measured 3.2 m by 5.8 m and was excavated to a depth of 1.2 m without the base being reached. Apart from the gently sloping extension at the north, its sides were steep, and in places undercut. Ten fills were recorded, the lower fills comprising interleaving layers of clay and gravel in which a number of pieces of waterlogged wood were preserved; these did not appear to be *in situ*, and it was not established whether they had originally formed part of a well lining. These layers, which also contained animal bone, appeared to be sealed by a thin layer of compact gravel, above which the feature appears to have continued to fill up through natural silting. These upper fills produced two Romano-British sherds (one LRB) and burnt flint; the uppermost fill contained a medieval sherd. It is possible that this was associated with fields set back from the trackway, behind the enclosures.

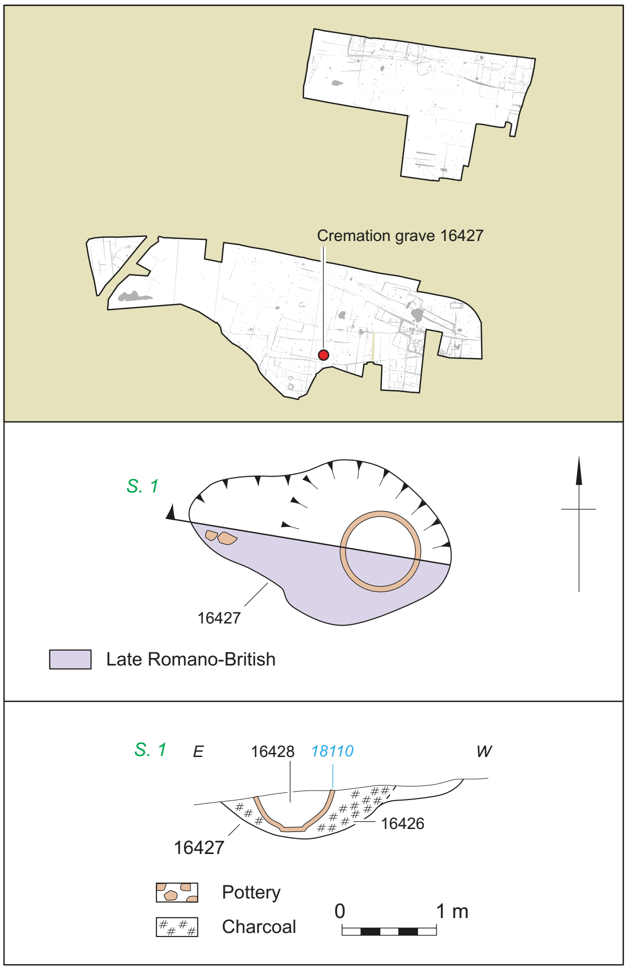

Figure 4.16 Cremation grave 16427 (ICSG): plan and section

RMC Land

Some level of Romano-British activity on the site is indicated by usually small quantities of chronologically undiagnostic Romano-British pottery found both in features which contained no other dating evidence, and residually in some clearly later features (Fig. 4.5) (summarised in Table 4.3). As a result the identification of a distinct Romano-British phase at RMC Land is far from clear, and it is possible that much, perhaps most of the Romano-British material is residual in later features, perhaps deriving from the manuring of fields at a distance from settlement activity.

Most of the features were pits, of varying form and dimensions, and hence function. Apart from a possible rough line of pits towards the west of the site,

Table 4.3 Summary of possible Romano-British features at RMC Land

Feature	*Width/ diam. (m)*	*Depth*	*No. of fills*	*R-B pottery no./weight (g)*	*Other finds*
RMC Area 1					
EV1014	1.4	1.0	6	2/7	Fired clay, worked flint, burnt flint, animal bone
678	1.5	0.6	5	1/3	Worked flint, burnt flint
775	0.4	0.3	1	1/1	Burnt flint
870	1.1	0.7	3	1/2	Fired clay, worked flint, burnt flint
887	1.8 x 2.1	0.1	1	1/3 (LRB)	Burnt flint, animal bone
931	0.9	0.1	1	1/5	-
939	1.4	0.1	1	1/1	Burnt flint, animal bone
1101	1.8	0.7	2	2/4	Worked flint, burnt flint, animal bone
1115	1.4 x 1.9	0.8	2	2/7	Fired clay, worked flint, burnt flint, animal bone
1527	0.5 x 1.1	0.2	1	1/15	Burnt flint
1533	0.8	0.4	1	1/5	Worked flint, burnt flint
RMC Area 2					
2098	0.9	0.5	4	1/5	Fired clay, animal bone
2110	0.6 x 0.8	0.15	1	1/1	-
2135	2.9	1.6	7	7/25 (LRB)	Lava quern, worked flint, burnt flint, animal bone
2234	1.8	0.8	2	2/4	Fired clay, worked flint, burnt flint, slag, animal bone
2258	1.1 x 2.0	0.5	3	2/14 (LRB)	Worked flint, burnt flint, animal bone
2411	0.4 x 0.9	0.1	1	1/2	Worked flint, burnt flint
2765	2.0 x 2.8	0.5	3	1/2	Fired clay, CBM, worked flint, burnt flint, animal bone
3080	0.8 x 1.0	0.3	1	1/3	Burnt flint, animal bone
3192	1.4 x 1.8	1.2	6	1/47	Fired clay, worked flint, burnt flint, stone
3790	1.0	0.4	4	2/24	Fired clay, CBM, worked flint, burnt flint, stone, animal bone
5703	0.9	0.2	1	1/4	-
5721	0.8	0.2	1	1/2	Fired clay, worked flint, burnt flint, animal bone
5748	0.6 x 0.8	0.3	4	-	RB CBM, worked flint, burnt flint, animal bone
5756	2.0 x 2.2	0.7	1	3/10	Worked flint, burnt flint (residual Neolithic pottery)
RMC Area 3					
6022	0.9	0.5	2	1/2 (ERB)	Fired clay, worked flint, burnt flint, animal bone
6030	3.1	1.5	8	-	Cu alloy brooch
6043	1.3 x 1.6	1.1	2	2/4	Fired clay, worked flint, burnt flint, animal bone
6416	1.3 x 1.5	1.1	4	1/1	Fired clay, worked flint, burnt flint, animal bone

the features containing just Romano-British pottery appear to be randomly distributed, revealing no concentration of activity that might indicate the location of any associated settlement. At the south of the line of pits there was a short length of ditch (1210), 11 m long aligned east–west. There were no other comparable features of this date in this area, and its date, resting on a single Romano-British sherd, is therefore questionable. However, it lies largely outside the distribution of Saxo-Norman ditches (below) and its alignment does not correspond to that of the later prehistoric field system, and its position in relation to the Romano-British pits may support its phasing.

A sherd of Romano-British pottery was recovered from posthole 775 located near undated fenceline (1213) (see Fig. 5.11). Fenceline 1213, although undated, is probably associated with Saxon or early medieval activity particularly since timber structure 4175, to the east, has been radiocarbon dated to the late Saxon period (see Chapter 5).

There were a number of larger features, possibly wells or waterholes. In Area 2, pit 2135, which was 2.9 m in diameter and 1.6 m deep, with a steep-sided U-shaped profile, contained a sequence of seven largely naturally accumulated fills, although containing some dumps of probably domestic waste including charcoal. These produced seven sherds of Romano-British pottery, fragments of lava quern (ON 11931), worked and burnt flint and animal bone. There was possible waterhole (6030) in Area 3. It was 3.1 m in diameter and 1.5 m deep with a U-shaped profile, and contained a sequence of eight naturally accumulated fills, only the uppermost of which contained any finds – a Romano-British copper alloy trumpet-headed brooch (ON 12108, see Fig. 8.1, 4).

Two ditches in Area 3 may also belong to this phase. L-shaped ditch 7888 ran west for 11 m from the eastern side of the site, then north for a further 17 m. It may represent the truncated remnants of a rectangular field/enclosure. It produced a single sherd of Romano-British pottery. At the north it petered out, rather than terminated, immediately to the south of a late Saxon/early medieval ditch, and it was cut by another late Saxon/early medieval ditch. To its immediate north-east, another ditch (7883) ran north–south for 22 m. It had a slightly irregular line and varied considerably in width and depth. It contained two sherds of Romano-British pottery and an iron object (ON 13022), perhaps a small hook or a bent nail. This section was 1 m wide and 1 m deep, over twice the width and depth of other excavated sections, and may have functioned as a sump.

Economy

by Chris J. Stevens

It was noted in Chapter 3 that emmer wheat dominated assemblages of Middle Bronze Age date. However, during the Romano-British period it was replaced by spelt wheat as the dominant crop. While a few remains of emmer are still present, it is questionable whether it was still grown as a crop; it may be that its remains are either intrusive or that it just grew as a weed. Barley, however, is still well represented and possibly more prolific than in the earlier periods.

Of some interest is the presence of several rachis and grains of rye that have been radiocarbon dated to the Romano-British period. This crop is unusual for this period especially in southern England, being more common in northern England (Stevens 2006), although it was also recovered from Heathrow Terminal 5 (Carruthers 2010) and Staines (Clapham in McKinley 2004a; see Jones with Poulton 2010). It is possible that it was used as a fodder crop; alternatively, its presence may reflect an influence from Germanic and central Europe where rye was more firmly established at this time (Behre 1992).

While smaller weed seeds (and weed seeds in general) are more frequent in the Romano-British samples than those of earlier periods, the fact that cereal grains and larger weed seeds dominate the Romano-British samples would suggest that crops continued to be stored as relatively cleaned spikelets, after having been threshed, winnowed and sieved in the field (Stevens 2003; see Chapter 10). Unlike in the Bronze Age assemblages there is evidence from the samples of this period for insect granary pests (see Smith, Chapter 10). After further pounding and the removal of the glumes and chaff, the cleaned grain would have been milled probably on rotary querns of basaltic Mayen lava stone, Lodsworth and millstone grit (Jones, Chapter 7). Many of the querns were only represented by fragments, but only rotary querns were seen in the assemblage (see Jones, Chapter 7).

The weed assemblage suggests that crops were probably grown locally, and the presence of wetland species indicates that the fields extended into wet, probably seasonally flooded areas, while the occurrence of stinking mayweed suggests that heavier clay soils were also cultivated.

The animal bone assemblage indicates that cattle and sheep were the most commonly represented animals, with lesser numbers of pig and horse. The generally higher proportion of older animals is consistent with their use for milk and wool (see Grimm, Chapter 9), as recorded also at Heathrow Terminal 5, although there horse was better represented (Knight 2006).

Discussion

Change in the Iron Age

The Iron Age roundhouse gullies are the first indisputable evidence of a settlement on the site, and represent a shift eastwards from the focus of Late Bronze Age settlement activity. The later prehistoric field system, established at the start of the Middle Bronze Age, had continued to influence the organisation of landuse and settlement during the Late Bronze Age and into the Early Iron Age, but by the Middle Iron Age it appears to have been abandoned, or at least was no longer maintained. As at Heathrow Terminal 5 the nature of Iron Age settlement is poorly defined until around 400 BC. The earlier field boundaries, still visible perhaps as relict hedge-lines even if the ditches had long silted up, may therefore have been a characteristic feature of the landscape, but it is clear from the layout and orientation of the square Iron Age enclosure and the adjacent nucleated open settlement that new economic and social factors were influencing the disposition of agricultural settlement at ICSG.

The enclosure straddles the corner of one of the earlier fields, but on a new orientation – one which was replicated in the subsequent layout of the Romano-British trackside enclosures which were constructed around it. Its orientation may indicate that the trackway, visible in the Romano-British period due to the extensive nature of the adjacent enclosures, had its origins in the Iron Age. While caution should be taken in projecting back into the Iron Age the line of the Romano-British trackway, it is possible that any Iron Age trackway may have connected with the earlier field system further to the west, due to the shifting orientation of the field system axis. Unfortunately, the heavy truncation of the field system towards the west of the site prevents the identification of any possible trackway on that line forming part of the field system. However, an Iron Age trackway defined by two parallel ditches 5 m apart, following a slightly irregular east–west line, was recorded to the west, at Holloway Lane (MoLAS 1993, 22).

The enclosure's entrance, facing east-south-east at its north-east corner, does not open onto the line of such a trackway but it would have been immediately accessible from it. Although all the possible roundhouses could have had south-east-facing entrances, as is typical for structures of this date, it is not possible, due to their heavy truncation, to say whether their precise orientations matched that of the enclosure.

Although the importance of the enclosure is indicated by the scale of its construction, and the repeated recutting of its ditches, its function is unclear, there being no clearly associated features within it, and its ditches producing relatively modest quantities of settlement debris. This material, which includes Iron Age pottery (38 sherds, 476 g), animal bone (2252 g), redeposited worked flint (seven pieces), burnt flint (2328 g), fired clay (1382 g) and slag (531 g), may have derived largely from the small nucleated open settlement located to the immediate south and east, although there was not a noticeable concentration of finds along the eastern and southern sides of the enclosure.

However, although the finds and environmental evidence provide a general picture of a small farmstead practising a mixed agricultural regime based on the cultivation of emmer and spelt wheat, and barley, and the raising of livestock, mainly cattle, in a largely open environment, the evidence is sparse allowing little opportunity for detailed analysis of the settlement's economy.

There was another settlement, 1 km to the south, comprising roundhouses of comparable size and form, four-post structures, as well as pits, gullies and unassociated postholes (Grimes and Close-Brooks 1993). Originally an open settlement, this was subsequently enclosed, or perhaps overlain, by a large Middle–Late Iron Age sub-rectangular enclosure defined by a ditch, 7 m wide and 2.4 m deep, and an internal bank. The size of the enclosure, shown on early maps as *Shasbury*, but referred to by Stukeley who surveyed it as Caesar's Camp, is comparable to some hillforts, perhaps indicating a similar function within this generally flat landscape, although the presence within it of a rectangular building resembling a Romano-Celtic temple may indicate a different function. Whatever its role, the presence of such a large feature in the immediate area is likely to have provided some of the social and economic context for developments at ICSG during the Iron Age.

In general terms, the Iron Age settlement at ICSG can also be compared with some of the features evident at the more extensive and better preserved settlement at Perry Oaks, where a Middle Iron Age nucleated settlement remained the focal point for activity into the Romano-British period, this period witnessing a similar significant realignment of landscape boundaries. Unenclosed Middle Iron Age settlements have also been recorded at Stockley Park, 3 km to the north, comprising at least four roundhouses and 13 four-post structures (MoLAS 1993, 25–6), as well as under Heathrow Runway 1 (Canham 1978), at Lower Mill Farm, Staines Moor (Jones and Poulton 1987) and at Mayfield Farm, East Bedfont, south of Heathrow (*ibid.*, 19–21).

Continuity into the Romano-British Period

The continuity between Iron Age and Romano-British features at ICSG is seen most clearly in the incorporation of the Iron Age enclosure into the early phases of the Romano-British enclosures. While precise dating for the suggested phases of enclosure is not possible, the Phase 3 enclosure on the south side of the trackway, which continues to respect the Iron Age enclosure, produced a significant number of LRB sherds suggesting that the Iron Age enclosure remained a recognisable feature until the mid-3rd century. It was only during the reorganisation of the site in Phase 5 that the early enclosure ceased to influence the layout of the site.

Despite the quantities of apparently domestic waste recovered from the enclosures' ditches, as well as from a number of spreads of possible midden material of ERB, MRB and LRB date, no clear Romano-British settlement structures were identified, either inside or outside the enclosures, and there were few other features that might be classed as distinctly domestic in character. It is possible that all identifiable traces of any Romano-British houses have been ploughed away, or it may be that the settlement producing this waste was located outside the boundaries of the site.

It cannot be established from the archaeological remains, whether this was a typical rural farmstead practising mixed agriculture, or if it had a more specialised role on account of is trackside location. The enclosures form the obvious focus of the site, but there are indications of fields extending to the south and the limited pollen evidence indicates a generally open landscape subject to both arable and pastoral activity. It is possible that this activity was undertaken from the local settlement, or it might have been a component of a more wide ranging and extensive agricultural concern. The plant remains, for example, indicate the cultivation of wheat (principally spelt) on a range of possible soil types, from heavy clay soils and wet soils to drier, sandier and more calcareous soils, perhaps indicating the importation of cereals to the local settlement, rather than (or in addition to) their local cultivation.

At Wall Garden Farm, 1 km to the north-west, a series of enclosures was recorded dating from the early and late Romano-British period, flanking a possible trackway, some interpreted as possible small paddocks (MoLAS 1993, 27). Although no buildings were identified, corn driers, pits and a probable well again indicate the likely proximity of settlement.

The animal bone assemblage from the ICSG, comprising mainly cattle followed by sheep/goat, with small proportions of horse and pig, appears to be a normal component of the domestic waste recovered from the enclosures, pits and middens. It is typical of rural settlements in Thames Valley and, as such, its composition, comprising both butchery and domestic waste, probably reflects the subsistence of the local settlement rather than any more specialised activity undertaken at the site. There is no indication of any large-scale slaughtering of animals undertaken here.

As with the Iron Age enclosure, however, the function of the site is not immediately apparent, although the position of the enclosures flanking the (by then) clearly delineated trackway may have been related to the movement of livestock. Moreover, the arrangement of the various fencelines extending into the line of the trackway suggests that the dominant direction of animal movement was towards the south-east. In the absence of settlement features, some if not all of the enclosures may have been used as animal holding pens, with facilities for sorting, processing or otherwise handling the flow of livestock.

While the suggested correlation of the enclosure phases on the north and south sides of the trackway is tentative, there does seem to have been a gradual reduction in the trackway's width. While this could reflect some reduction in its role and importance, it could also indicate an increasing concern with exerting control over the movement of animals along the trackway and with what was potentially a very lucrative agricultural industry. The expansion of the enclosures and the various phases of their reorganisation may reflect the development of animal-based food production during the Romano-British period, driven perhaps by the market economy serving the Roman towns and military.

Similar late Romano-British enclosures were recorded at Perry Oaks to the south-west (Framework Archaeology 2006; 2010). Here a series of rectangular 'ladder' enclosures flanked a broad central corridor that was also interpreted as facilitating the movement of animals. The ditches provided no environmental evidence to indicate the enclosures' function, but the low level of finds indicates that they were not settlement enclosures. The Perry Oaks corridor lies at an approximate right angle to the ICSG trackway, and the two systems may have been part of the much wider organisation of the landscape, perhaps within large managed estates. At Wall Garden Farm, also, there is another possible trackway running at a right angle to the ICSG trackway, again with a number of flanking enclosures (MoLAS 1993, 27).

A large, irregular oval enclosure of early Romano-British date was recorded to the west, at Holloway Lane, containing numerous pits but no evident structures (MoLAS 1993, 23).

Chapter 5
Farmsteads and Fields: the Saxon to Medieval Evidence

by Lorraine Mepham with Chris J. Stevens

Introduction

Evidence for activity during the post-Romano-British period was revealed at ICSG and RMC Land (including LEWGF), although varying in its scale and nature (Fig. 5.1). For the early Saxon period (5th to mid-7th century) this took the form of sporadic traces of settlement (pits, possible sunken-featured buildings), adding to the body of evidence for a pattern of dispersed and probably shifting settlement along the east side of the Colne Valley (Fig. 5.2). In addition, and adding a new element to the Harmondsworth early Saxon complex, a small group of at least three, possibly five inhumation burials dating to the 6th century was uncovered at RMC Land.

While there appears to have been a hiatus in activity at ICSG, radiocarbon dates and sparse ceramic evidence indicate that settlement at RMC Land persisted into the middle Saxon period (mid-7th to mid-9th century), thus adding to the scarce evidence for rural settlement at this period, within the hinterland of *Lundenwic* (Cowie and Blackmore 2008). The evidence is stronger for the late Saxon period (mid-9th to late 11th century), when a field system was laid out on a largely east–west alignment on the northern edge of RMC Land and across the southern part of ICSG. Post-built structures at RMC Land are less confidently dated to this period, but quantities of pottery and an Ælfredian coin attest to settlement activity here until around the middle of the 12th century, at which point the site seems to have been largely abandoned. At ICSG ceramic evidence is sparser, but indicates a continuation of activity here until around the 13th century.

Figure 5.1 Post-Roman features at ICSG and RMC Land

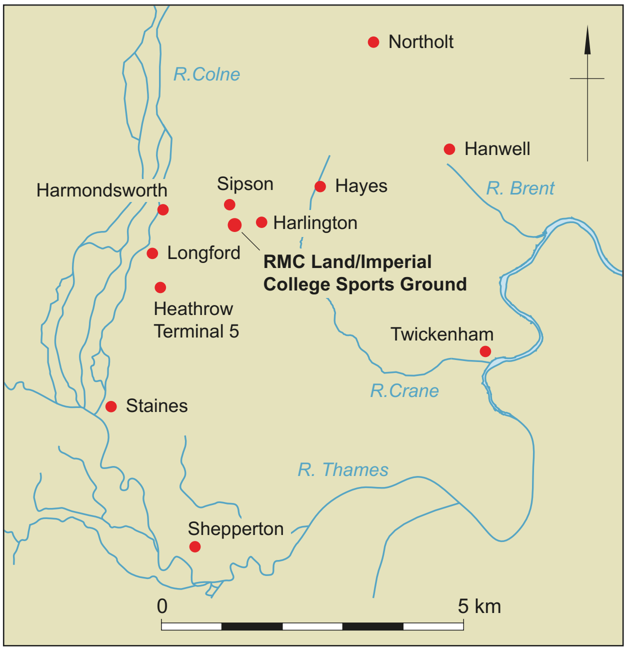

Figure 5.2 Location map, showing site in relation to other sites in the area

The Historical Background

Early Saxon

The historical background to the early Saxon occupation of the London area has been well rehearsed, and will not be repeated in depth here (Poulton 1987; Cowie with Harding 2000, 177; Hines 2004; Cowie and Blackmore 2008, 126–8; Cramp *et al.* 2010, 314–9). The swift decline of London after the end of Roman rule in AD 410 led to its abandonment by the early 5th century (Milne 1995, 89; Perring 1991, 128), and this was accompanied by a marked discontinuity of settlement in the area. The extreme rarity of sites for which there is any evidence for continuity from the Roman into Saxon period is notable; Staines is one possible candidate, but the evidence is very tenuous (Poulton 1987, 215). A decline in population is possible, following the end of imperial rule and its inevitable effect on the agrarian economy (Cowie and Blackmore 2008, 130). The conclusion appears to be that the indigenous population either moved out of the area, or adopted the material culture of the incoming Saxon settlers (Cowie with Harding 2000, 178). In the ongoing debate on the nature of the earliest Saxon settlement, views are shifting towards a relatively small-scale Saxon influx and a more consensual division of territory (Poulton 1987, 216; Hines 2004, 97–8).

Middlesex emerged as an identifiable region in the 6th century AD, between the Rivers Colne, Thames and Lea, and the wooded hill country to the north. The first known mention is as a province called *Middelseaxan* in a charter of 704 (Sawyer 1968, 87, no. 5; Gelling 1979, 95, no. 191). It never formed a separate kingdom, but was rather a loose confederation of peoples called the Middle Saxons, who were dominated by the surrounding larger kingdoms (Kent, Wessex and Mercia). The kings of Kent and Wessex were competing for control here in the 560s. The East Saxons were in control of Middlesex from at least the reign of Saberht (590–616), and Wessex and Mercia sought to dominate the region after 650. Wulfhere established Mercian overlordship north and south of the Thames after *c.* 665. The Thames served as a trading route in times of peace, but became a barrier and a boundary in times of unrest and political fragmentation (Bailey 1989, 108–14, 118–22; Cowie with Harding 2000, 177).

The organisation of the early Saxon landscape was based partly on pre-existing Romano-British land-units and partly on new tribal groupings; both of these can be suggested from place-names and 8th-century charter evidence. There was therefore an element of continuity from the period of Roman dominance, and perhaps even from the Iron Age. In Spelthorne, for example, to the south of Harmondsworth, there are good correlations between Roman settlements, Saxon cemeteries and parish boundaries (Poulton 1987, 215). Middlesex may be related to the earlier *territorium* of Roman London, the land allocated for the support of the city (Sharpe 1919, 64–8, 97–107). At least part of the Saxon settlement at Harmondsworth was established within Roman field systems, as were others in the London area, for example at Rainham, Mucking and Mortlake (Cowie and Blackmore 2008, 130).

Evidence for settlement in the Heathrow area, however, shows a spatial and morphological break with the Romano-British period, which supports the idea of an incoming population, but the environmental evidence is more ambiguous. Early Saxon field systems have been tentatively identified at Manor Farm, Harmondsworth, but other evidence for agricultural activity at this time is sparse (Cowie with Harding 2000, 180).

Middle Saxon

The dating evidence from other early Saxon sites in the Harmondsworth area suggests desertion from at least the 7th century (Cowie and Blackmore 2008, 88–9). However, the inclusion of settlements and estates in south-western Middlesex in charters dating from the 8th to 10th centuries implies that it remained an occupied and exploited landscape throughout this period. In 831, for example, Harlington was mentioned in the boundary clause of a charter granting land at Botwell in Hayes (Sawyer 1968, 119, no. 188; Gelling 1979, 104, no. 207). The boundaries between the later parishes of Harmondsworth and Harlington, and between Stanwell, the Bedfonts and Feltham to the north, and Staines and Ashford to the south, follow stream courses and sinuous lines across the landscape, and partly the Roman road, and may represent the division of the landscape into multiple estates in the 8th or 9th century (Cramp *et al.* 2010, 334). Hounslow Heath perhaps remained as an area of uncultivated pasture between multiple estates.

In the 7th century, at the same time as the Harmondsworth sites were being abandoned, the mercantile port of *Lundenwic* was established; the settlement traded extensively with other parts of Anglo-Saxon England, and with similar ports on the Continent. Given the scarcity of middle Saxon settlement sites in Greater London, the relationship of the port with its rural hinterland is still little understood. It may be the case, however, that the growth of *Lundenwic* affected the rural settlement pattern, initiating a pattern of settlement nucleation and the pursuit of higher agricultural production in order to supply the port; the same pattern may be observed around other large centres, such as Southampton, Ipswich and Canterbury (Hinton 1990, 58). This process continued into the late Saxon period, and was most marked in those areas more suited to grain production.

Late Saxon and Early Medieval

By the 10th and 11th centuries the larger middle Saxon estates had been broken up, and the new smaller estates evolved into manors; this process probably took place relatively early in Middlesex. These changes were accompanied by the continued concentration of settlements into large villages and the formation of open field systems. Settlement nucleation, as we have seen, may have started as early as the 7th century, while the common field system, in which large open fields were divided into separate cultivation strips, developed in the early 10th century, alongside stock enclosures. Some of the open fields may have been formed within a pre-existing landscape framework, the location of their furlongs dictated by previous ditched enclosures. In western Middlesex the system appears to have involved one very large field for each village, surrounded by a series of smaller peripheral fields (Cramp *et al.* 2010, 334–5); in Harlington, this survived as late as the 19th century (*VCHM* iii, 267).

The manorial structure in west Middlesex can first be traced in detail in the *Domesday* survey of 1086, which also refers back to conditions at the end of the reign of Edward the Confessor in 1066 (Williams and Martin 2002, 360–6, 411, 415). In 1086 not all the arable land was being used to full capacity, and this was often accompanied by a fall in annual value over the previous 20 years, probably reflecting the political dislocation of the period. *Domesday* records a total of 28 people for the hamlet or village of Harlington (a priest, 16 villeins, two bordars, eight cottars and a slave); there were two ploughs on the demesne, three more belonging to the villagers, and land for one more (*VCHM* iii, 267).

The manorial framework provided the context in which later medieval landscape changes took place. It was followed by the emergence of the parish framework which was based on proprietorial churches built on the manors in the 11th and early 12th centuries. The present Harlington church was built in the 12th century, but almost certainly had earlier origins, given the *Domesday* reference to a priest in Harlington.

Medieval agriculture was subject to advances and retreats. Some manors were probably extending their areas of cultivation in the late Saxon period by clearing areas of woodland and heath, in a clearance process known as ‘assarting’, but extension of the cultivated area does not appear to have been widespread in west Middlesex, at least in the early medieval period (Cramp *et al.* 2010, 334–5). Hounslow Heath, however, may have been subject to assarting at this period; the present village of Harlington is located at what was the northern extent of the heath (as seen on Rocque’s map of 1765), and could have originated as an encroachment. To the west, in Harmondsworth parish the shape of the south-west part of Heathrow Field suggests that it was an assart into the heath, with Heathrow established as a looped settlement on its fringe.

The Chronological Evidence

Three strands of evidence from the sites combine to provide the chronological framework for the Saxon and medieval period: pottery, other datable finds such as coins, and radiocarbon dates (see Chapters 6, 8 and 11).

Pottery

The artefactual dating evidence is provided primarily by the pottery. This is a relatively commonly occurring material type across both sites (1058 sherds from RMC Land and 399 sherds from ICSG), but its value as a chronological indicator is limited by its sparse distribution – only four features at RMC Land

Plate 5.1 Silver Ælfred the Great (AD 871–899) penny from pit 3817

and two at ICSG yielded more than 25 sherds. Pottery tended to occur in pits and waterholes rather than in the ditches of the field systems, rendering the dating for the latter features particularly uncertain.

Nevertheless, an attempt was made to attribute ceramic phasing to all features producing pottery, and this phasing is based on the ceramic sequence established for Saxo-Norman London (Vince and Jenner 1991, 24–5):

- Ceramic phase (cp) 1: early Saxon (6th to early 7th century);
- Ceramic phase 2: middle Saxon (mid-7th to mid-9th century);
- Ceramic phase 3: late 9th to 10th century;
- Ceramic phase 4: mid-10th to mid-11th century;
- Ceramic phase 5: mid- to late 11th century;
- Ceramic phase 6: late 11th to 12th century;
- Ceramic phase 7: 13th to 15th century;
- Ceramic phase 8: post-medieval and modern.

Clearly, this ceramic phasing must be used with caution where quantities of pottery are so low, but it provides a useful starting point. In the site illustrations throughout this chapter, these ceramic phases are simplified to four broad stratigraphic phases:

- Early–middle Anglo-Saxon: equivalent to cp1/2;
- Late Anglo-Saxon to Saxo-Norman: equivalent to cp3–6;
- Medieval: equivalent to cp7;
- Post-medieval: equivalent to cp8.

Other Finds

Few other artefact types provide close dating. Objects found in the inhumation graves at RMC Land indicate a late 6th- or early 7th-century date for at least two of the graves; these dates are based on well-established chronologies for glass beads (Brugmann 2004) and brooches (Avent 1975).

A slightly worn silver coin from a pit (3817) at RMC Land is a penny of Ælfred the Great (AD 871–899), belonging to Ælfred's first coinage, issued between AD 871 and 875 (Pl. 5.1).

Other artefacts provide only broad dating, such as early/middle Saxon bone objects, and middle/late Saxon ceramic loomweights.

Radiocarbon Dating

Thirteen Saxon/medieval radiocarbon dates were obtained on short-lived plant remains (charred) and on parts of a wooden object, mostly from features at RMC Land; the two dates from ICSG came from components of a wooden bucket (see Chapter 11). The dates from the Saxon settlement at RMC Land have been modelled to provide a series of date estimates for its start, use and duration (see Chapter 11). In summary, the earliest radiocarbon dated feature belongs to the late 7th or early 8th century AD, whilst the main phase of activity is likely to have happened over a period of up to 100 years from the late 9th century onwards.

Field System at RMC Land

The field system as laid out at RMC Land (Figs 5.3–7) clearly underwent a number of additions and modifications during its period of use, but the main elements can be broken down as follows:

- an ovoid enclosure at the western end (Enclosure 1), surrounding a smaller, rectangular enclosure (Enclosure 2), and containing various pits, waterholes and posthole alignments;
- a sub-rectangular enclosure to the east (Enclosure 3);
- a double-ditched droveway which linked the enclosures and extended beyond them to the east;
- later, more regular subdivision of the landscape into north–south fields.

There is no sign that the field system (or any other activity at this period) continued to the west of Enclosure 1; to the east, the field system extends into the area of present-day Harlington. The field system occupied the northern part of the site only, and there appears to have been a clear southern boundary; beyond which were a few scattered features, mainly pits.

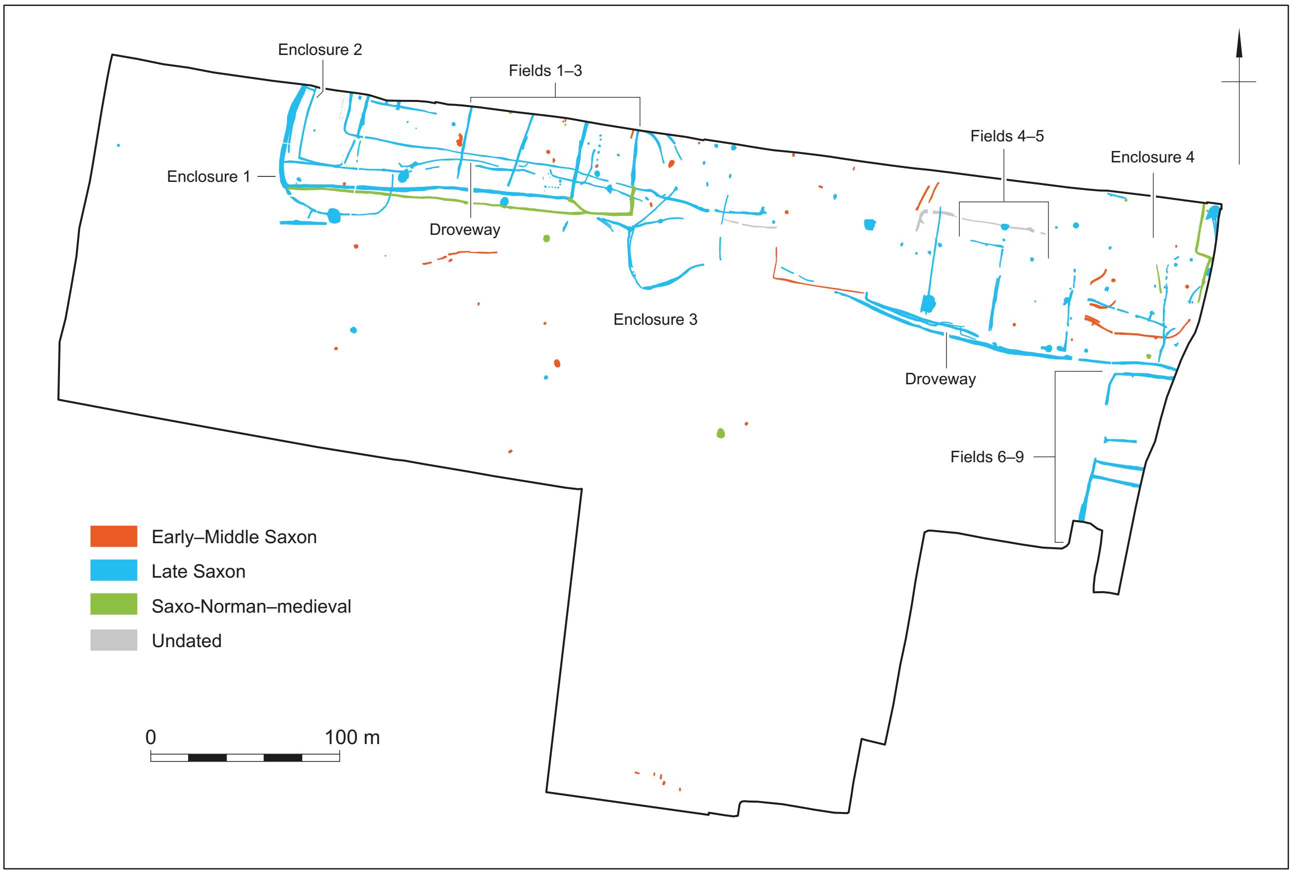

Figure 5.3 RMC Land: the field system

Enclosure 1 (1202)

The earliest phase of Enclosure 1 comprised a curving ditch (1202) that defined a sub-oval or egg-shaped area (Fig. 5.4). The ditch appears to be incomplete on its eastern side; on the western side the ditch continues beyond the edge of the trench to the north. Datable material from the ditch is limited to five sherds of pottery, on the basis of which the ditch has been assigned to cp3 (mid-10th to early 11th century), and a copper alloy penannular finger-ring of probable 11th- to 13th-century date. It must be stressed, therefore, that the dating for the enclosure, and features associated with it, remains tentative. A relatively early date for the enclosure ditch, however, appears to be confirmed by a relatively large pottery assemblage (59 sherds) from waterhole 879, which cut the ditch at its southern apex; the pottery from this feature includes nothing later than cp3.

Within the enclosure were two post-built structures, probably fencelines (1204, 1213; see below) (Fig. 5.11). The paucity of dating evidence from these means that they cannot be definitively tied to the enclosure, but their proximity to, and relationships with other features stratigraphically later than the enclosure, tend to support their early origin, and they are therefore assumed to be earlier than, or contemporaneous with the enclosure. There were also a number of pits and postholes, but only three produced any dating evidence, of which two contained pottery of cp4 (later 11th century). The third, a small pit (1612), contained a single sherd of late Saxon Shelly ware (LSS) and could, therefore, be contemporaneous with the enclosure ditch.

Truncation by East–West Ditches (1205–7)

Modifications to Enclosure 1 seem to have taken place in the early 11th century (cp3/4). These included the cutting of ditch 1205/1206/1207, which truncated the southern part of the enclosure, cutting through its ditch (1202) and extending beyond it to the east (4042) (Fig. 5.5; Pl. 5.2). Ditch 1205 was subsequently cut by ditch 1211 (see below). Ditch 4042 contained a complete cattle skeleton (Pl. 5.3) with no visible butchery marks.

Second East–West Ditch (1214)

Ditch 1214 was aligned east–west across the centre of enclosure 1202. As with ditch 1205, its relationship with the western side of ditch 1202 is uncertain

Figure 5.4 RMC Land: detail of Enclosures 1 and 2

Plate 5.2 Ditch 4042 profile

Plate 5.3 Cattle burial in ditch 4042

due to disturbance from a later recut, and on the eastern side it passed to the north of the apparent terminal. It just clipped the edge of the southern side of Enclosure 2.

Recut of Enclosure 1 (1211/4043)

Ditch 1211 recut part of the western side of enclosure 1202, then cut across the southern end of the enclosure on roughly the same line as 1205/1206; it certainly cut 1205. To the east it continued as 4043 (Fig. 5.5). Dating evidence from 4043 comprises a few sherds of pottery of cp4 (mid- to late 11th century).

At its eastern end, ditch 4043 terminated just to the west of Enclosure 3; its alignment appears to straighten out a 'kinked' alignment to the north, where ditch 4144 joined and extended ditch 4042 to the east, before returning to the north to join the alignment of ditch 4143. Ditch 4043 cut ditch 4144, which also contained pottery of cp4. Ditch 4043 may, therefore, have acted as a second-phase southern boundary (following 4042/4144) to the three north–south 'fields' (see below).

Enclosure 2 (1203/1212/1710)

The stratigraphic position of this phase is ambiguous. At some stage a smaller, sub-rectangular enclosure (1203/1212/1710) was constructed within Enclosure 1 (Fig. 5.4). Two sherds of pottery from the ditch fill enable a tentative assignment to cp2/3, ie, contemporaneous with, or possibly slightly earlier than Enclosure 1.

Southern Droveway Ditches

There was a possible droveway between Enclosures 1 and 3, delineated by a series of roughly parallel ditches broadly aligned east–west (Figs 5.4–5). On the southern side the ditch sections (1215, 4132, 4137, 4139, 4141) were discontinuous, overlapping and more irregular, and ran from just outside the putative entrance to Enclosure 1 to a point just to the north of Enclosure 3; there was a possible continuation to the north-east of the latter enclosure (5550). The limited amount of pottery from these southern ditches (18 sherds) includes nothing later than cp3 (mid-10th to early 11th century), which would place them as contemporaneous with Enclosure 1. There is an uncertain relationship with structure 4175 (which produced two late Saxon radiocarbon dates; see below); one of the ditch segments cut through the corner of the

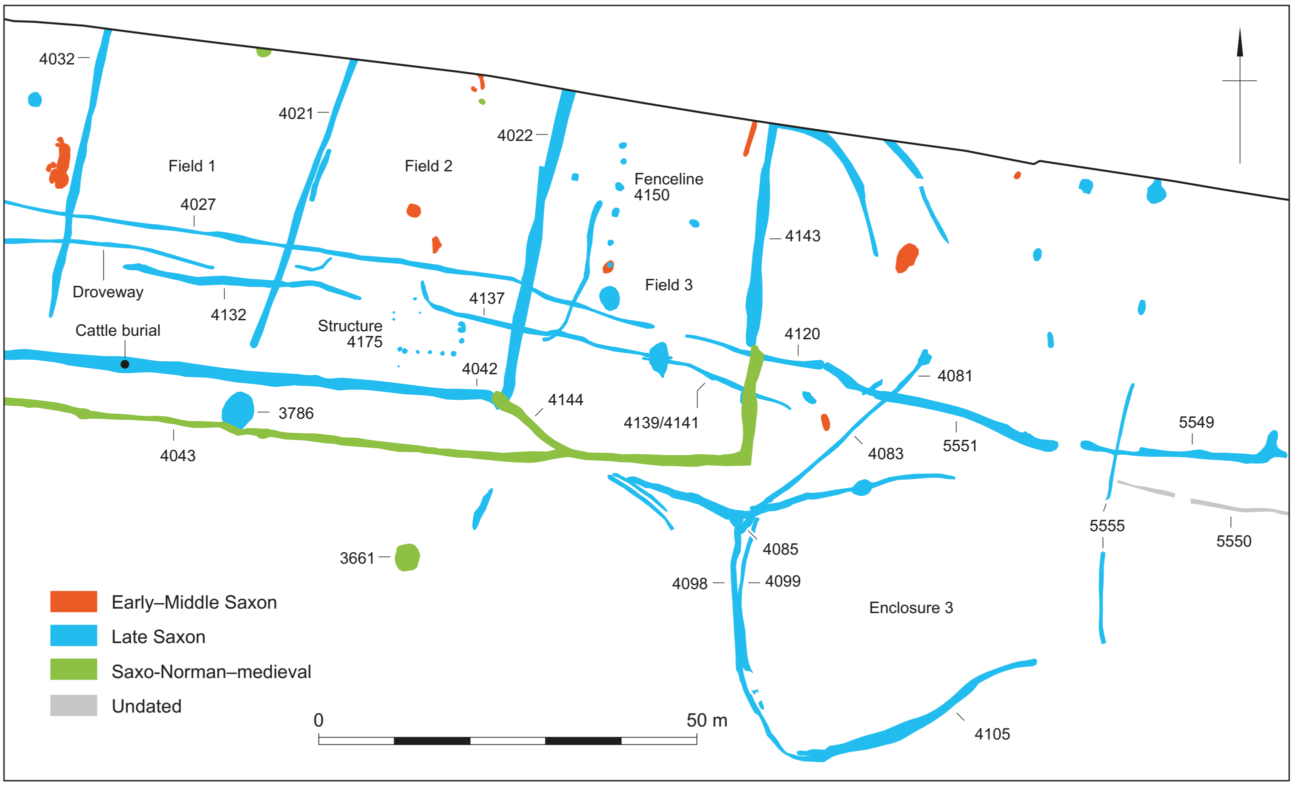

Figure 5.5 RMC Land: detail of Enclosure 3, droveway and Fields 1–3

putative building outline, but there is no stratigraphic relationship.

Northern Droveway Ditches

The northern ditch line is both more continuous and more regular in its alignment; four separate sections were distinguished (1208/4027, 4120, 5551 and 5549) (Figs 5.4–5). The only dating evidence comprises four sherds of early/middle Saxon organic-tempered pottery. While the absence of any later pottery from the ditches, and the absence of early/middle Saxon pottery from the southern ditches, suggest that this might indeed mark an earlier ditch alignment, the fact that ditch 1208 at its western end returned to the north, where it cut the smaller enclosure ditch 1203/1212 (cp2/3), indicates a later date. Combined with the southern ditches, this droveway would lead stock into Enclosure 1, or its later recut 1211.

Enclosure 3

At the eastern end of the possible droveway was a second enclosure, roughly sub-rectangular and open on the eastern side (although 5555 may have formed an eastern boundary) (Fig. 5.5). It is made up of ditches 4081, 4083, 4085, 4098, 4099 and 4105. Earliest amongst these appears to be 4098, running around the western and southern sides, ditches 4099 and 4105 marking a recut on the same alignment. Ditches 4081, 4083 and 4085 may also be later additions (ditch 4085 certainly cut 4098). Ceramic dating has assigned ditch 4098 to cp3/4 (one sherd only), with the other ditches producing pottery of cp4. This includes a significant group (80 sherds) from ditch 4083, including jars in Early Medieval Sandy ware (EMS) and Early Surrey ware (ESUR), some with stamped decoration (Fig. 6.10, 16).

In its earliest form, Enclosure 3 could have functioned at the same time as the droveway, but the possible later ditch 4081 cut the northern droveway ditch (5551), and thereby closed off this east–west route, sometime in the later 11th century.

There are few internal features within the enclosure, and none that could be tied to the Saxon or medieval periods.

Fields 1–3

Four parallel ditches aligned north–south (from west to east: 4032, 4021, 4022, 4143), spaced at roughly regular intervals (30 m apart) formed the boundaries to three rectangular fields (Fields 1–3) (Fig. 5.5). None of the four ditches produced any dating evidence, but all except 4143 cut the droveway ditches (4143 did not cross their alignments), and

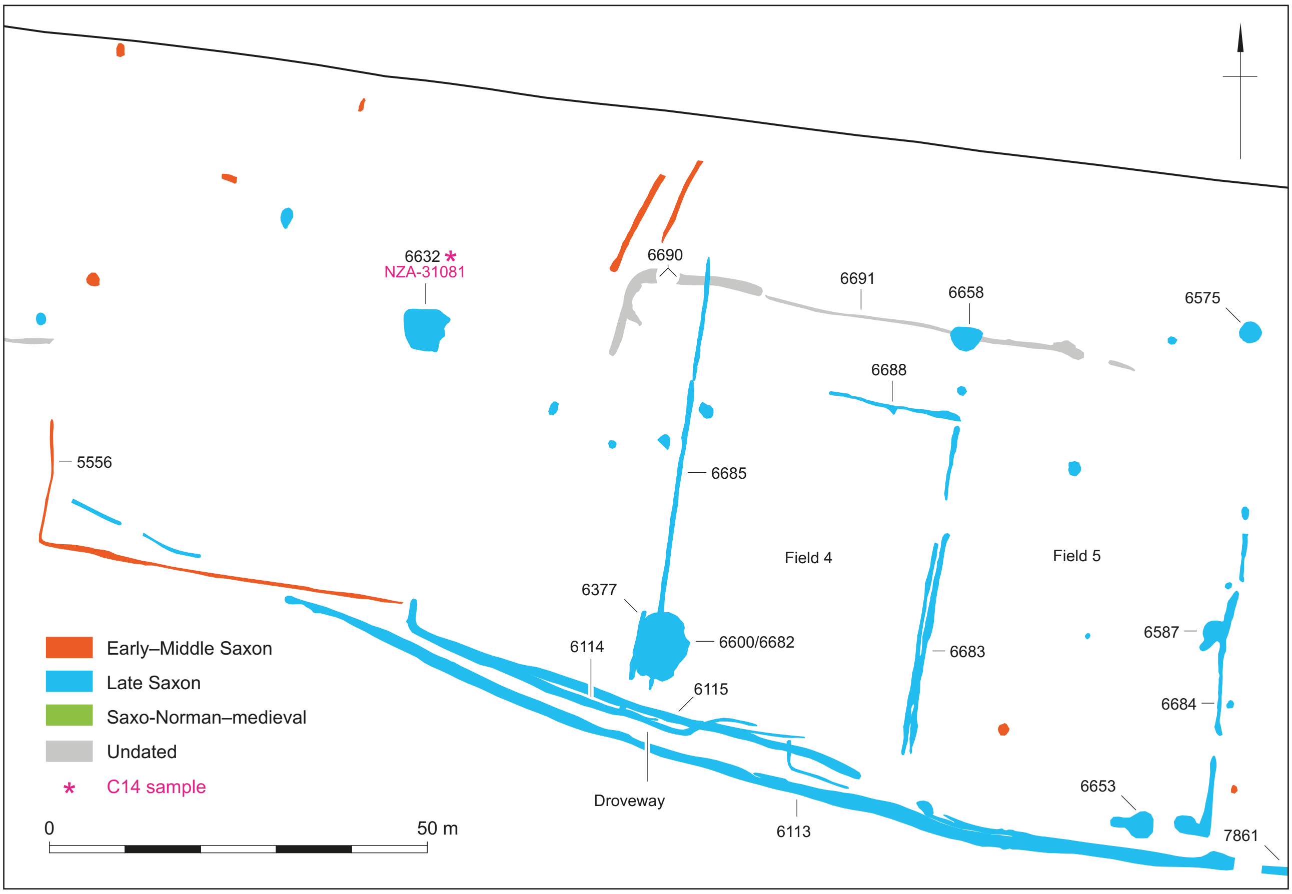

Figure 5.6 RMC Land: detail of droveway and Fields 4–5

4022 also cut ditch 4144, which closed off the southern end of the easternmost 'field'. The other two 'fields' were apparently open at their southern ends, although could have been delimited by ditch 4042, or ditch 4043.

Two post-built structures were located within the fields. A small rectangular structure (4175) lay within the middle field and within the easternmost field, a series of six pits appeared to form a deliberate north–south alignment, probably a fenceline (4150; see below). Radiocarbon dates (NZA-31076–8 on charred plant remains) from both structures (see below) suggest that the fenceline, and possibly also the rectangular structure, pre-date the field boundaries.

Eastern Section: Enclosure 4 and Fields 4 and 5

Two short sections of ditch (7853, 7856) are enigmatic, but could have formed the boundaries of a small, irregular enclosure (Enclosure 4) although not apparently continuous (Figs 5.6–7). Dating for these ditches is limited to a single early/middle Saxon sherd (cp1) from 7856, which was also cut by a field boundary ditch (7855, see below) that produced one sherd of cp3/4 pottery. Within this putative enclosure was a pit (7064) which contained similarly slight dating evidence in the form of a single pottery sherd of cp1. To the south of Enclosure 4, two other ditches were possibly associated, the longer of the two (7858) aligned approximately east–west but curving to the north-east at the eastern end, and the other (7857) parallel for a short distance at the western end. Neither of these ditches could be traced further west within Area 3. Neither produced any dating evidence, but 7858 cut a pit (7332) containing one sherd of early/middle Saxon pottery (cp1), and was in turn cut by a north–south ditch (7878) which produced pottery of cp3/4.

To the east of Enclosure 3, a possible continuation of the droveway was observed, comprising two parallel ditches, the southern ditch (6113/7861) running across and beyond the excavated area (a distance of nearly 200 m), while the northern ditch (6114/6115) was traced for a shorter distance (approximately 60 m) (Figs 5.7–8). Ditch 6113 contained two pottery sherds, of which the later was Early Surrey ware (cp4). Ditch 6115 contained no dating evidence, but was cut (or recut) by ditch 6114, which produced earlier (late Saxon) pottery (cp2/3). A later phase of droveway could be seen as contemporaneous with Enclosure 3 (which blocked the route of the droveway to the west), as its ditches were aligned towards the east-facing entranceway of Enclosure 3.

The possible droveway extension also appears to form the southern boundary of at least two fields (Fields 4 and 5), delineated by three north–south ditches (from west to east, 6685, 6683, 6684), and with a boundary to the north provided by ditches 6690 and 6691, and a possible subdivision (6688). In Area 3, a fourth north–south ditch (7878) may delineate another field, which was bisected by a NW–SE ditch (7855). The line of ditch 7878 was slightly more sinuous than the other field boundaries, and may have extended in curvilinear form at the northern end, marked by several elongated 'pits' that may in fact be remnant ditch segments (7509, 7495, 7497, 7499, 7585, 7576, 7565; Fig. 5.7). Ditch 6685 cut through 6690; there was a parallel possible recut at the southern end of this ditch (6377). Ditch 6690, noticeably more substantial than the other ditches within this complex, may in fact mark the north-west corner of an earlier field later superseded by 6685 and the other north–south ditches. Ditch 6683 was also recut at least once and possibly twice on the same alignment; this ditch was made up of discontinuous sections (there is a pit, 6408, on the alignment), and its relationship with 6691 to the north is obscured by a waterhole (6658), which cut through both ditches at the junction. Waterhole 6587 to the east was more irregular and ephemeral. Dating evidence, in the form of very small quantities of pottery, was recovered only from the north–south ditches, and suggests that these belong to cp3/4 (early to mid-11th century) or cp4 (later 11th century), in other words broadly contemporaneous with Enclosure 3. The fields were slightly larger than those observed to the west – 40 m by 60 m. Possible contemporaneity with the western fields, on the basis of size and alignment, cannot be demonstrated in the absence of dating evidence from the latter. A slight concentration of waterholes, both cut by and cutting the field boundary ditches, was observed within this area (see below).

A right-angled section of ditch (5556) to the west of Fields 4 and 5 remains enigmatic. The alignment matches that of the fields, but its relationship with the droveway ditches is unclear (either cutting through, or being respected by them), and it produced in the way of dating evidence only one small sherd of early/middle Saxon pottery (cp1).

Fields 6–9

A series of rectangular fields or paddocks (Fields 6–9), aligned approximately east–west, was uncovered on the eastern side of Area 3 and extending beyond the excavated area (Fig 5.7). They are delineated by

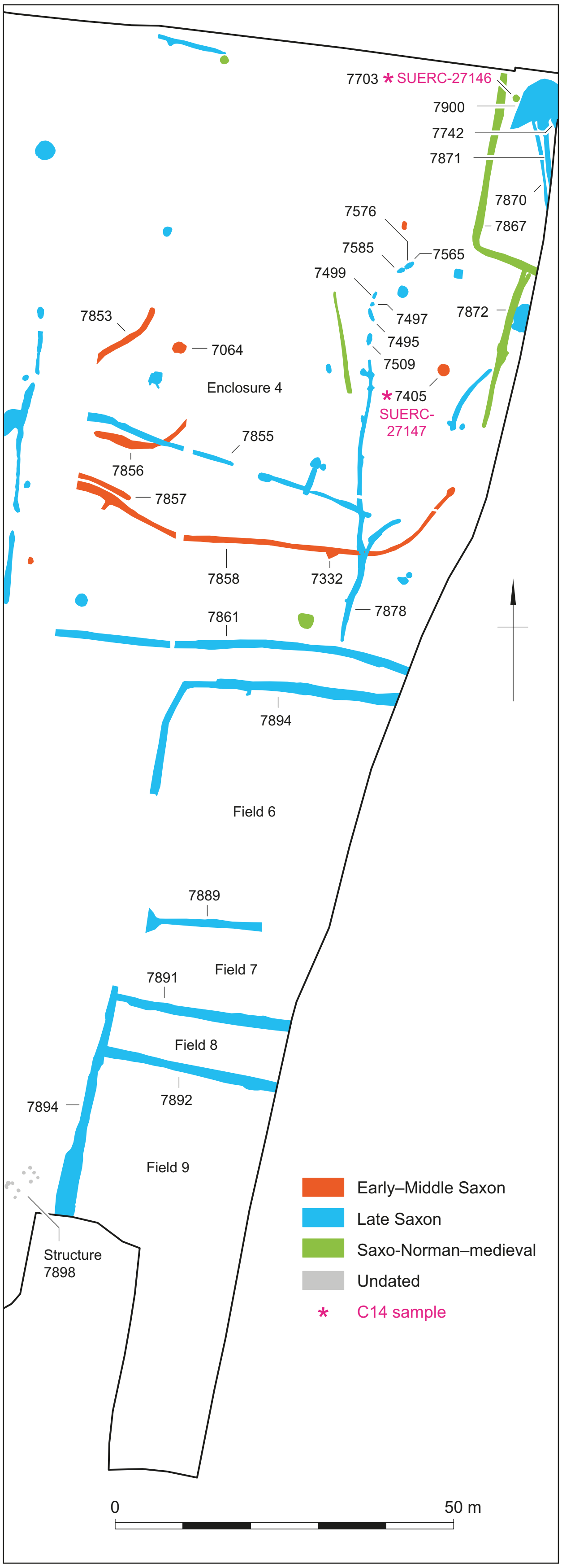

Figure 5.7 RMC Land: detail of Enclosure 4 and Fields 6–9

Figure 5.8 ICSG: all field system ditches

ditches 7889, 7891, 7892 and 7894. The enclosed areas are not of equal dimensions. No internal features were observed within these paddocks, except for tree-throw holes which are of uncertain date.

A further rectangular enclosure or field was observed in the north-east corner of Area 3, bounded by ditch 7867. Within this enclosure were one small pit (7703), one large waterhole (7900), and three irregular ditches (7870–1, 7742), possibly providing drainage into pit 7900. On its southern side, ditch 7867 cut another field boundary ditch (7872), which produced a high quality knife with inlaid decoration (ON 13012, see Chapter 8, Fig. 8.2). Both ditches 7867 and 7872 contained pottery sherds of cp5.

Field System at ICSG

At ICSG, a large number of medieval features (predominantly 12th/13th-century) were recorded within the southern parts of the excavated area (Fig. 5.8). These consisted mainly of small discontinuous lengths of ditch forming a network, not particularly coherent, of fields and enclosures. The relatively small size of the enclosures suggests that they were most likely used for stock and/or market gardening rather than arable cultivation. It is notable that the alignment of the medieval field system ignores the alignment of the Romano-British trackway and enclosures, and reverts to an east–west orientation closer to that of the Bronze Age system (Fig. 1.3).

The field system extended up to, but not north of, the main later east–west post-medieval field boundary, which crossed the eastern part of the site (G1240), then on a slightly more southerly line to the west (G0927), and is marked on recent maps (eg, OS 1943). Ditch alignments in the south-eastern section of the site (the southern parts of Areas A and B) suggest that the field system continued to the south, beneath the built-up area of Harlington (Fig. 1.1). The density of features decreased westwards, and evaluation of the area to the south-west of ICSG identified no post-Roman features in this area (Wessex Archaeology 2006), although it should be noted that the latter area lies on the other side of the parish boundary, within Harmondsworth parish, and may have been under differing landuse (see Fig. 5.8).

While some elements of the field system could be dated by ceramics to the late 10th to late 11th century, quantities are uniformly low and the evidence is therefore slight. The majority of datable features appear to belong to the later 12th century or later, and it may be more likely that the earlier pottery occurred residually. Alignments and stratigraphic relationships do, however, imply that the field system was not laid out as a single entity, but the more regular north–south and east–west alignments may be later, perhaps later medieval or post-medieval (the post-medieval developments are discussed further below). Certainly at least two of the north–south ditches (G0741, G0783), dated ceramically as late Saxon or early medieval, appear to have been recut later on more regular (but undated) alignments (Fig 5.8).

The finds distribution was low across the site (the overall quantity of pottery recovered, for example, is roughly half that from RMC Land), but there is a definite concentration in Areas A and B, from the field system ditches and from other features – the largest pottery group came from well 16413 (41 sherds, see below and Fig. 5.14).

Structures

Possible Sunken-Featured Buildings (SFBs)

Two possible structures were excavated at ICSG, in the far west of the site (Fig. 5.9). EV620 was a wide, shallow feature, roughly square in plan and 4 m across, with two post-/stakeholes (608, 610) at the midpoint of the north and south sides respectively, and surrounded by five other post-/stakeholes (EV603, EV612, EV614, EV616, EV618). The feature (fills 604, 619) contained 29 sherds of early Saxon pottery, including one jar rim, four fragments deriving from one or possibly two annular ceramic loomweights, and 60 pieces of animal bone. Feature EV620 can be fairly confidently identified as a sunken-featured building (SFB). The two post-/stakeholes EV608 and EV610 were 0.3 m in diameter and would probably have held gable posts. Although they contained no dating evidence the five other post-/stakeholes, which were of varying size, appeared to be functionally and spatially associated with EV620.

A second feature is of more dubious interpretation. Approximately 80 m to the south of EV620, within Area E, was a sub-oval, dish-shaped cut (40100, G4058), 2.25 m by 2 m, and containing two postholes and a central pit (Pl. 5.4). Its fill contained only burnt (unworked) flint and fired clay. This feature has been very tentatively identified as an SFB; its size is small, but still within the range of other SFBs from the Greater London area (Cowie and Blackmore 2008, table 66).

Post-Built Structures

One post-built structure at RMC Land (4175) dates to the post-Roman period (Figs 5.5, 5.10; Pl. 5.5). This comprises 13 postholes; some small stakeholes around the outside may suggest a supporting

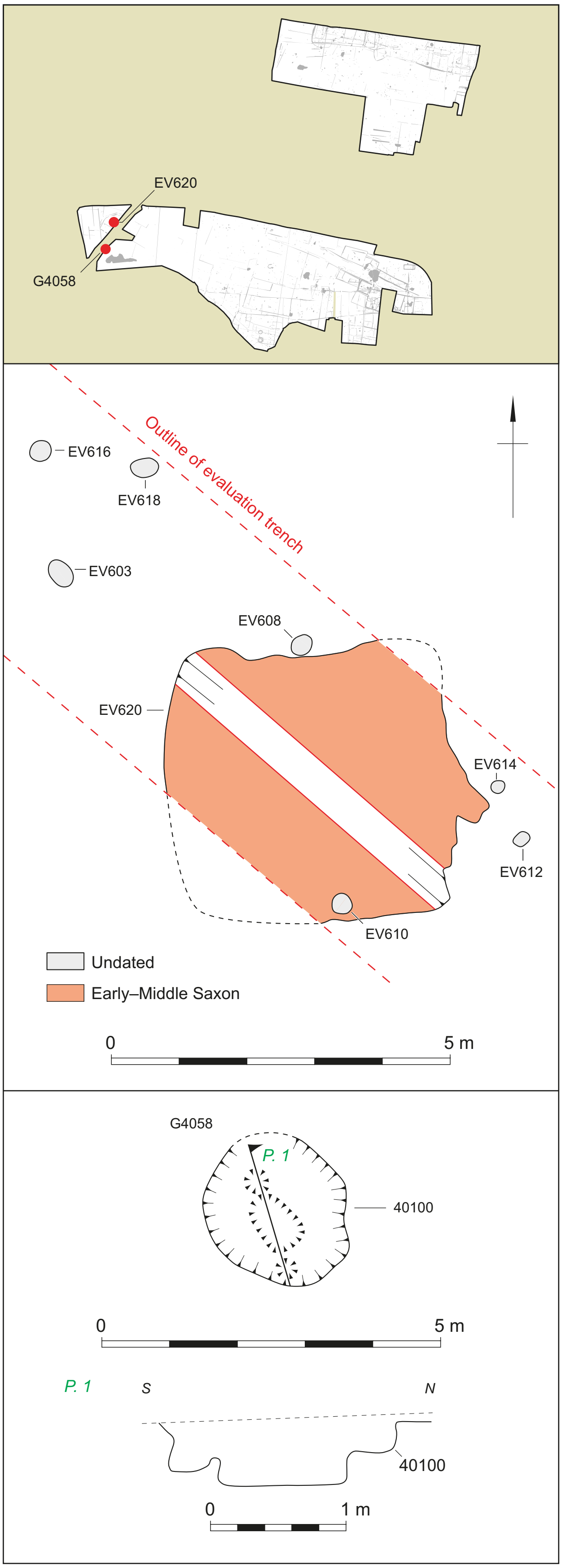

Figure 5.9 ICSG: plans of possible SFBs EV620 and 40100

Plate 5.4 Possible sunken-featured building EV620

structure. It is worth noting that many of the postholes/stakeholes were dubious due to the poor definition within the brickearth, and it is possible that some posts were missed or obscured by tree-throw holes in the structure area and also simply by the nature of the brickearth. The spacing between the postholes is fairly even on the southern and eastern sides, but not on the western, and on the northern side only one possible stakehole was recorded. The structure measured 9 m in length by 5 m in width, and was aligned east–west. There is the possibility of an entranceway to the west but this is unclear due to the presence of tree-throw holes. There was no positive artefactual dating from any of the postholes – only eight postholes produced finds, and these consisted entirely of very small quantities of worked flint, burnt, unworked flint and animal bone. However, environmental evidence from six of the postholes (cereals and weed seeds; samples not fully analysed) is comparable to other Saxon assemblages from the site, and this is confirmed by the radiocarbon dates of *AD 890–990 (NZA-31076) and AD 890–1000 (NZA-31077) (at 95% probability)* on charred cereal grains from two of the postholes (2872 and 2958 respectively, see Table 11.3).

The small size of the structure suggests that this was an animal shelter or shepherd's hut rather than a dwelling. This interpretation is supported by the lack of domestic debris. The relationship with the surrounding field system is uncertain, but the radiocarbon dates suggest that 4175 was constructed at a relatively early date within the chronological sequence, and it appears to have been slighted by one of the ditch segments of the southern droveway (4137). It may, therefore, have been relatively short-lived.

A second structure (7898) (Figs 5.7, 5.10), identified on the eastern edge of the site, adjacent to Field 9, is undated and may not, therefore, belong to this phase at all, but has certain morphological similarities with late Saxon/early medieval structures

Plate 5.5 Structure 4175

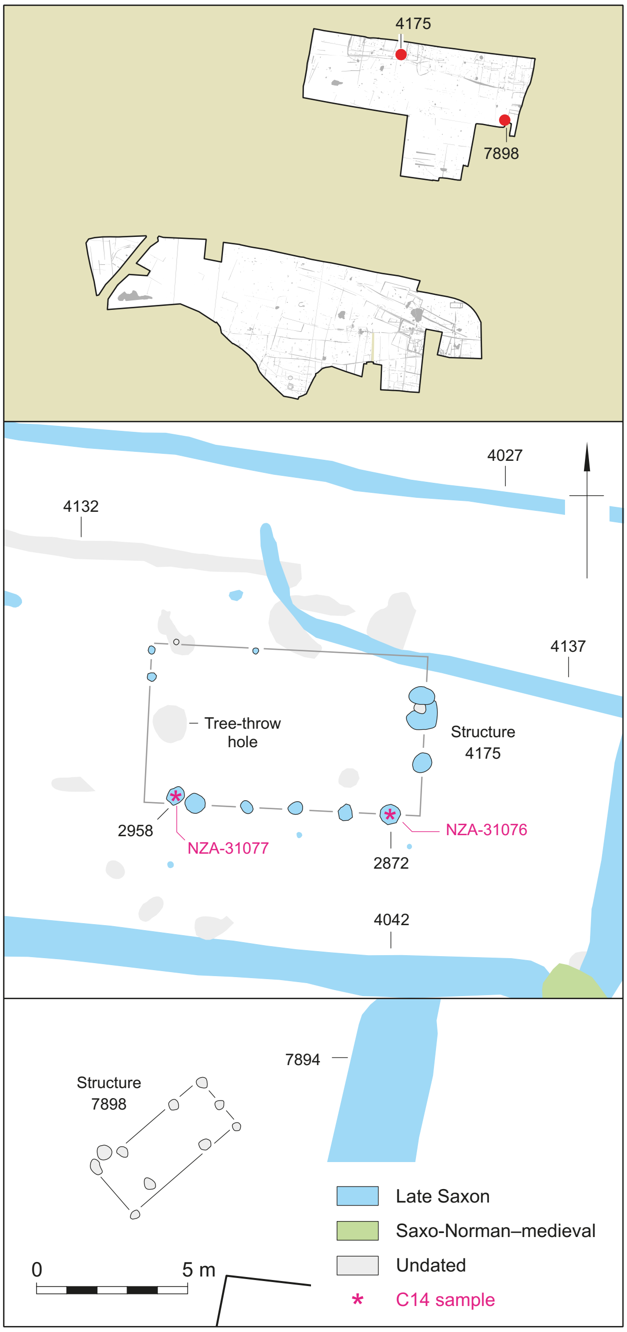

Figure 5.10 RMC Land: post-built structures 4175 and 7898

excavated nearby at Heathrow (Cramp *et al.* 2010, fig. 5.17). The structure consistsed of 10 postholes (two lines of four, with another slightly off-set on the northern side, and another centrally placed at the eastern end), and measured 5 m by 2 m. The alignment, which was SW–NE, is at odds with the surrounding field system – it lay just to the west of north–south ditch 7894 – but does not match any earlier alignments either.

Other evidence relating to structural components is slight – there are a few fragments of fired clay with possible wattle impressions (daub), nearly all from Area 1; none were associated with any of the putative post-built (or sunken-featured) structures, and nor were any of the eight iron nails recovered.

Fencelines

Three fencelines were identified at RMC Land. Two were located within Enclosure 1 (1202) (Figs 5.4, 5.11). The first group (1213) comprised 12 postholes, which appear to fall into three groups – one group of five at the southern end, a second group of five to the north, with a sixth slightly offset in the middle, and one posthole isolated at the northern end. Within the two groups, spacing between the postholes was fairly even (between 0.50 m and 0.75 m). Between the two larger groups, and between the second group and the single northern posthole, were slightly larger spaces (1.75 m). The total length was about 12.5 m. Morphology and dimensions are relatively constant – these are small postholes (diameters 0.25–0.30 m) with no sign of post-pipes

There was no closely datable material from this structure. Finds comprise one piece of animal bone, 15 pieces of burnt (unworked) flint and one worked flint flake. The dating is therefore very tentative, but the alignment mirrors that of other late Saxon/early medieval ditches, such as those of Enclosure 1.

There were other postholes to the east of 1213 (Figs 5.4, 5.11), but these were more randomly distributed. There is a suggestion of another north–south alignment in between ditches 1208 and 1203, comprising five postholes, although one of these (775) has been dated as Romano-British on (minimal) pottery evidence.

To the south of 1213 was a second posthole group (1204), of more tentative association. This group was made up of five postholes on an approximately east–west alignment, with two further postholes apparently forming a right-angled alignment at the western end (Fig. 5.11). The size and shape of the four postholes on the southern side (but not those on the western side) were fairly similar; there was no evenness,

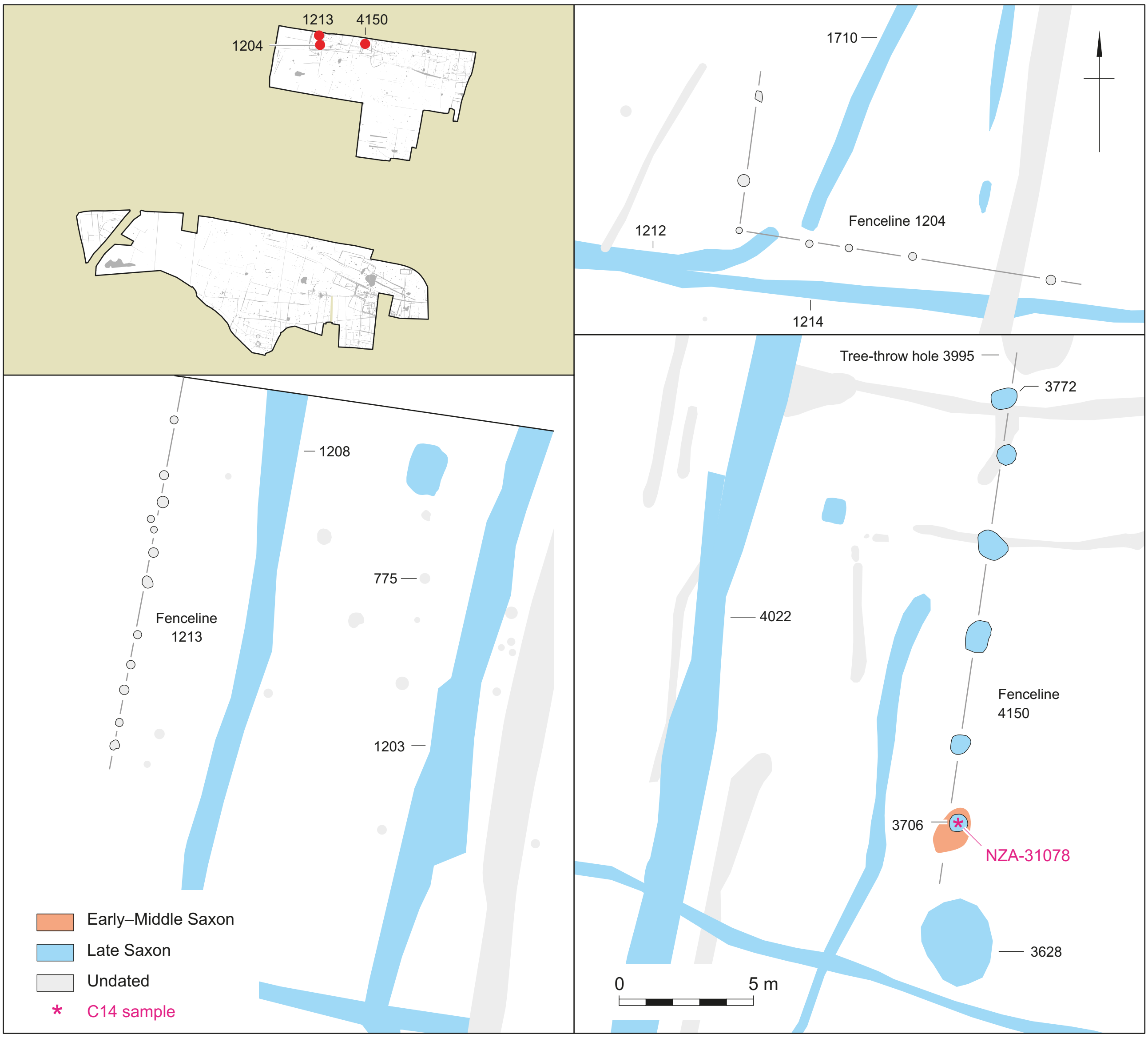

Figure 5.11 RMC Land: fencelines 1213, 1204 and 4150

Plate 5.6 Pit 3772 (fenceline 4150), showing post-pit

however, in the spacing. No finds at all were recovered from any of the postholes, and the date and the function remains uncertain. Again, however, the alignment suggests a late Saxon/early medieval date. The structure was bisected by Enclosure 1.

The third fenceline was situated within Field 3 (Fig. 5.5), and comprised a series of six equally spaced pits forming a north–south alignment (4150) (Fig. 5.11). The presence of post-pipes within some of these pits (eg, 3772; Pl. 5.6) suggests that this was a fenceline, about 21 m in length. Tree-throw hole (3995) lay at the northern end of the alignment; it is possible that a tree in this location may have formed one end of the fenceline. All of the pits were roughly circular in plan and had concave profiles; their diameters range from 0.36 m to 1.10 m. The fenceline may have formed part of a separate enclosure or division within the field, or it may have

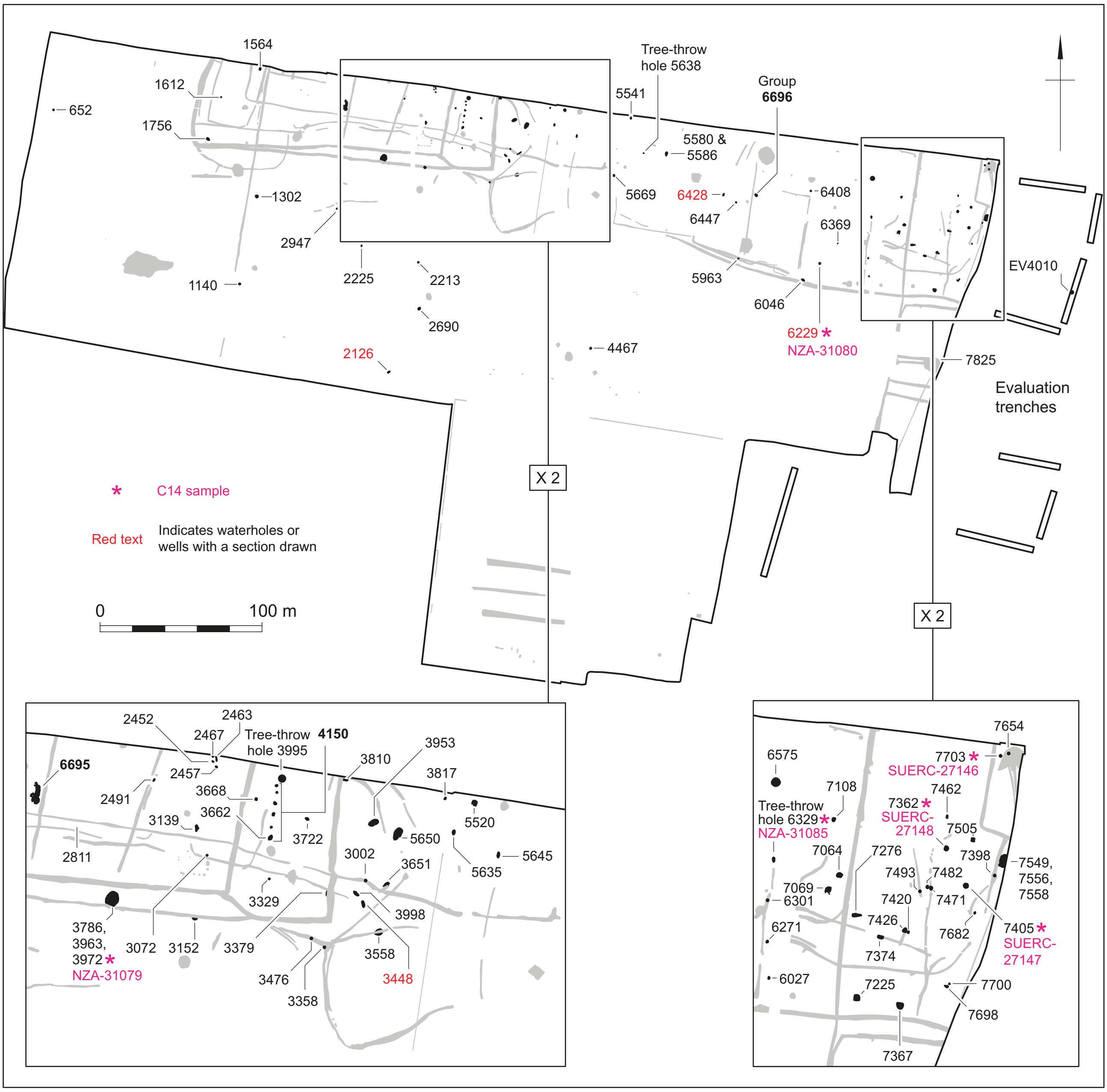

Figure 5.12 RMC Land: plan showing all pits

been associated with waterhole 3628, which was located at the southern end of the line. Artefactual dating is sparse – one sherd of early Saxon pottery from one pit (cp1), and two 10th/11th century sherds from another (cp2/3) – but a radiocarbon date of *AD 890–990 (NZA-31078) (at 95% probability)* was obtained from a third pit (post-pit 3706 within pit 3662, see Table 11.3). Charcoal from the latter pit was mainly from roundwood fragments of alder and hazel, which could have been used structurally (eg, for wattles) but there was not enough oak to suggest the presence of a large timber post (see Challinor, Chapter 10).

Pits

Pits at RMC Land

A total of 111 pits at RMC Land has been assigned to the post-Roman phase of activity (Table 5.1), on the basis of artefactual evidence and/or stratigraphic position; four of these are post-medieval, and the remainder Saxon or medieval. Their distribution lies mainly within the area of the enclosures and field system on the northern edge of the site, with a cluster on the eastern edge of Area 3 (Fig. 5.12), although there are some outliers to the south. Six appear to

Table 5.1 Pits at RMC Land

Pit no.	*No. fills*	*Plan*	*Length (m)*	*Width (m)*	*Diam. (m)*	*Depth (m)*	*Pot qty (no./wt.)*	*Pot date*	*Env. evidence*	*Other dating/comments*
RMC Area 1										
652	1	circular	1.10	1.0	-	0.05	2/9	cp3/4	-	-
1140	1	circular	-	-	1.50	0.45	1/4	cp1	-	-
1302	1	circular	-	-	1.50	0.35	11/538	cp1	C	-
1564	2	sub-rectangular	1.90	1.33	-	0.87	2/11	cp3/4	PR	-
1612	1	circular	-	-	0.51	0.26	1/4	cp3/4	-	-
1756	3	sub-circular	2.80	1.75	-	0.60	38/1078	cp4	PR	-
RMC Area 2										
2126	9	oval	2.10	1.18	-	1.06	3/158	cp1	C; PR	-
2213	1	circular	-	-	1.29	0.30	13/259	cp1	C; PR	-
2225	1	oval	1.54	0.80	-	0.21	1/3	cp1	-	-
2452	1	irregular	0.76	0.50	-	0.13	1/4	cp1	-	-
2457	1	oval	0.85	0.62	-	0.22	2/11	cp7	-	-
2463	1	linear	1.20	1.19	-	0.42	1/10	cp1	-	-
2467	2	irregular	0.30	0.68	-	0.45	-	-	-	-
2491	1	circular	-	0.67	-	0.08	-	-	-	-
2553	6	sub-rectangular	0.50	0.60	-	0.87	1/11	cp1	-	Part of pit group 6695
2558	2	oval	1.30	0.60	-	0.53	-	-	-	Part of pit group 6695
2561	1	sub-circular	1.00	0.80	-	0.20	-	-	-	Part of pit group 6695
2565	4	sub-circular	0.40	1.35	-	0.80	3/41	cp4	-	Part of pit group 6695
2569	1	sub-circular	1.30	0.75	-	0.30	-	-	-	Part of pit group 6695
2581	1	sub-circular	0.56	0.32	-	0.31	-	-	-	Part of pit group 6695
2584	1	sub-circular	0.70	0.53	-	0.10	-	-	-	Part of pit group 6695
2590	1	sub-circular	-	-	0.40	0.16	-	-	-	Part of pit group 6695
2592	1	sub-circular	-	-	0.40	0.10	-	-	-	Part of pit group 6695
2620	9	sub-rectangular	1.45	0.77	-	0.97	-	-	-	Part of pit group 6695
2628	1	sub-circular	0.60	0.50	-	0.30	-	-	-	Part of pit group 6695
2644	3	irregular	0.81	0.30	-	0.32	-	-	-	Part of pit group 6695
2648	3	sub-circular	0.29	0.00	0.16	0.42	-	-	-	Part of pit group 6695
2690	4	sub-circular	2.22	2.10	-	0.75	-	-	-	Lava quern
2811	2	irregular	1.62	0.89	-	0.64	-	-	-	-
2947	1	irregular	1.80	0.92	-	0.06	1/27	cp1	-	-
3002	1	circular	1.36	0.87	-	0.21	1/2	cp1	-	-
3072	2	irregular	1.65	2.00	-	0.37	4/30	cp4	-	-
3139	3	irregular	2.20	>1.10	-	0.88	1/14	cp1	-	-
3152	2	sub-circular	1.76	1.58	-	0.27	-	-	-	-
3329	1	sub-circular	-	-	0.62	0.35	1/1	cp5	-	-
3358	3	oval	1.70	1.58	-	0.57	9/192	cp5	-	Bun-shaped loomweight
3379	1	rectilinear	0.93	0.43	-	0.12	1/6	cp4	-	-
3448	7	rectilinear	2.30	0.50	-	0.90	2/12	cp1	-	-
3476	1	sub-circular	-	-	1.15	0.70	3/46	cp4	-	-
3558	3	sub-circular	2.70	2.10	-	0.70	5/52	cp5	-	-
3651	1	irregular	2.25	1.44	-	-	1/7	cp1	-	-
3662	1	oval	1.90	0.70	-	0.43	-	-	-	-
3668	2	sub-rectangular	0.36	0.95	-	0.32	2/38	cp3/4	-	-
3692	4	sub-circular	1.10	0.95	-	0.38	2/17	cp3/4	-	Part of fenceline 4150
3700	3	circular	-	-	1.21	0.33	-	-	-	Part of fenceline 4150
3705	2	sub-circular	1.10	1.02	-	0.38	1/9	cp1	-	Part of fenceline 4150
3706	1	sub-rectangular	0.62	0.40	-	0.27	-	-	-	Part of fenceline 4150; AD 780–1000 (NZA-31078) (at 95% conf.)
3719	1	circular	-	-	0.78	0.11	-	-	-	Part of fenceline 4150
3722	4	oval	1.35	0.92	-	0.58	26/575	cp3	PR	-
3772	1	oval	1.00	0.74	-	0.50	-	-	-	Part of fenceline 4150
3786	3	circular	-	4.56	-	0.90	2/3	cp1	PR	-
3810	5	sub-rectangular	>1.85	>1.24	-	0.83	-	-	PR	-
3817	4	irregular	0.83	1.71	-	0.60	3/13	cp1	-	Ælfred coin
3953	5	irregular	3.20	0.90	-	1.20	-	-	-	-
3963	4	circular	-	-	1.75	0.62	-	-	-	-
3972	3	circular	-	-	1.74	1.10	-	-	-	AD 710–970 (NZA-31079)(at 95% conf.)
3998	3	irregular	1/74	0.40	-	0.37	15/317	cp5	PR	-
4467	1	oval	1.56	1.27	-	0.14	8/187	cp1	-	Bun-shaped loomweight
5520	2	sub-circular	2.36	1.56	-	0.56	1/31	cp3/4	-	-
5541	6	oval	1.72	1.20	-	0.61	1/5	cp1	C; PR	Bun-shaped loomweight
5580	5	oval	2.10	1.60	-	1.20	3/22	cp3/4	-	-
5586	1	sub-circular	0.82	0.79	-	0.15	1/1	cp3/4	-	-
5635	2	sub-circular	1.12	1.10	-	0.65	1/1	cp3/4	-	-
5645	4	sub-rectangular	1.70	0.90	-	0.55	2/9	cp3/4	-	-
5650	3	oval	4.32	2.80	-	0.80	1/3	cp3/4	-	-
5669	2	oval	1.26	0.88	-	0.29	1/10	cp1	-	-

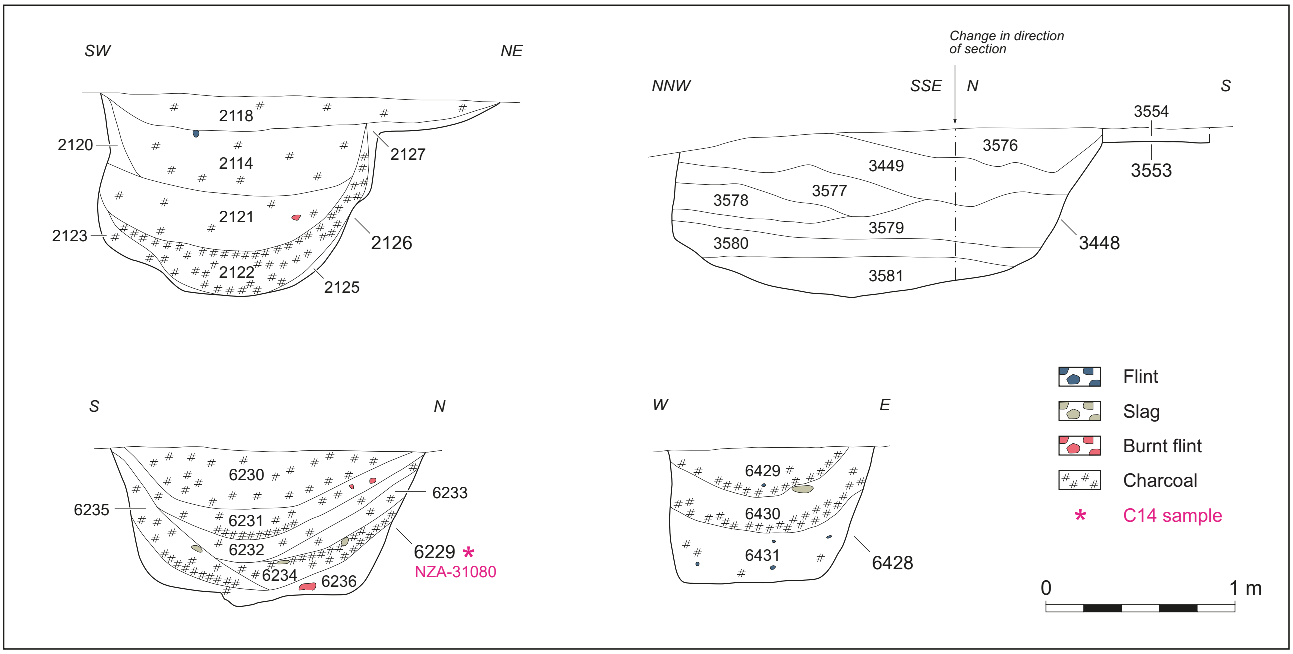

Figure 5.13 RMC Land: selected pit sections

form a fenceline within Field 3 (Fig. 5.11), and have already been discussed (see *Structures*, above).

The number of pits dated as post-Roman may in fact be higher. The dating of several pits on the basis of (minimal) Iron Age or Romano-British pottery is not entirely convincing, and it may be that these finds are really residual finds in Saxon and medieval features (see Chapter 4).

Morphology and dimensions vary widely – the pits range from small, shallow cuts with single fills, to larger cuts with more complex fill sequences (see Fig. 5.13 and Pls 5.7–8 for some examples). Most were less than 1 m in depth; only six exceeded this. There is some ambiguity in the distinction between some of these larger pits and the waterholes (see below); the largest 'pit', for example, had a depth of 2 m (pit 6575), and could belong to the 'waterhole' category, but the profile did not match those of other waterholes.

The function of these pits probably varied; some may have been dug for storage, and others for the extraction of brickearth for building purposes. Many, however, ended up as receptacles for the deposition of domestic refuse, and at least two contained cess deposits. Finds generally occurred in small quantities, but one pit stands out as producing noticeably large amounts. Pit 3972, which was cut into the top of a disused waterhole (3978, Fig. 5.12), contained a large quantity of animal bone (1616 fragments), including consumption and some butchery waste.

In terms of dating evidence, 68 pits produced Saxon or medieval pottery. This suggests that 24 pits are early Saxon (cp1), 43 are late Saxon/early medieval (cp3–5), and one is medieval (cp7). One of

Plate 5.7 Pit 3139

Plate 5.8 Pit 6447

Figure 5.14 ICSG: plan showing all pits and waterholes

Table 5.2 Pits and postholes at ICSG

Feature No.	*Description*	*No. fills*	*Plan*	*Length (m)*	*Width (m)*	*Diam. (m)*	*Depth (m)*	*Pot qty (no./wt.)*	*Pot date*	*Other dating/ comments*
ICSG Area A										
1988	pit	1	sub-circular	-	-	1.00	0.50	10/97	cp1	-
ICSG Area B										
1117	pit	1	circular	0.54	0.50	-	0.05	1/16	cp7	-
10445	pit	1	circular	0.98	0.83	-	0.23	2/26	cp5	-
10545	posthole	1	circular	indet.	0.19	-	0.11	-	-	-
10591	pit	1	sub-circular	1.31	1.34	-	0.18	-	-	-
10595	pit	1	oval	0.34	0.23	-	0.08	-	-	-
10887	posthole	1	irregular	0.47	0.38	-	0.10	1/2	cp5	-
10898	pit	6	oval	0.33	1.60	-	*c.*2.00	19/208	cp7	-
11080	posthole	1	circular	-	-	0.35	0.16	-	-	-
ICSG Area C										
16445	pit	1	sub-circular	-	-	1.00	0.64	2/24	cp4	-
ICSG Area D										-
17905	pit	7	sub-circular	-	-	2.64	1.37	-	-	-
17913	pit	3	sub-circular	-	-	1.73	0.90	9/172	cp7	Recut of 17905
30211	pit	4	sub-oval	indet.	2.70	-	1.02	4/36	cp7	-
30442	pit	2	sub-circular	-	-	0.62	0.28	-	-	Post-medieval glass
30603	pit	6	oval	1.92	-	-	1.22	4/86	cp7	-
ICSG Area E										
40177	pit	1	irregular	1.70	0.90	-	0.06	2/40	cp1	-

the pits containing early Saxon pottery, however, also produced a coin of Ælfred (AD 871–875) (Pl. 5.1), and two others produced bun-shaped loomweights generally dated as middle or late Saxon. Quantities of pottery overall are low – only two pits yielded more than 25 sherds. Four pits (all in Area 3) produced post-medieval or modern artefacts.

Radiocarbon dates were obtained from six pits: 6229 (*AD 680–880; NZA-31080*), 3972 (*AD 710–950; NZA-31079*), 3706, from fenceline 4150 (see above), 7362 (*AD 890–990; SUERC-27148*), 7405 (*AD 660–880; SUERC-27147*) and 7703 (*AD 890–990; SUERC-27146*) (*at 95% probability*) (see also Table 11.3). None of these pits contained pottery, or any other dating evidence.

Samples from 19 pits produced charred or waterlogged plant remains (see Stevens, Chapter 10); all were relatively rich in cereal remains (free-threshing wheat, barley and rye). The predominance of rachises of rye and free-threshing wheat over grains in four samples (in particular in pit 5541) may indicate the presence of the earlier stages of crop processing, ie, threshing, raking, winnowing and coarse sieving. It is possible that occasionally crops were stored as sheaves for processing later in the year. Barley and rye were more commonly cultivated in the early and early/middle Saxon period than in the late Saxon to early medieval period, while evidence for cultivated oats seems to be restricted to later periods. The evidence from RMC Land, however, contradicts current understanding as it indicates that they continued to grow barley into the 10th century and late Saxon period. The radiocarbon date from pit 7405 (*AD 660–880; SUERC-27147; at 95% probability*) was obtained on barley grains, while pit 7362, which produced a relatively large amount of barley grains, yielded a slightly later radiocarbon date (10th century – free-threshing wheat) in the late Saxon period (*AD 890–990; SUERC-27148; at 95% probability*). Other probable food resources include carrot and mustard (although both of these could represent wild rather than cultivated species), bean, sloe/plum, bramble, and hazelnut.

Pits and Postholes at ICSG

Thirteen pits and three postholes at ICSG (Fig. 5.14) have been assigned to the post-Roman phase (Table 5.2), although five produced no dating evidence. On the basis of datable finds, two pits are dated as early Saxon, two pits and one posthole as late Saxon/early medieval (10th/11th century), five pits as medieval (13th/14th century), and one pit as post-medieval. One pit was recut – the earlier pit was undated, but the recut contained 13th/14th-century pottery.

Waterholes

Waterholes at RMC Land

Twenty-seven waterholes at RMC Land (Fig. 5.15) produced post-Roman dating evidence (Table 5.3) – in all but two cases this comprised pottery sherds (one waterhole contained a bun-shaped loomweight, and a

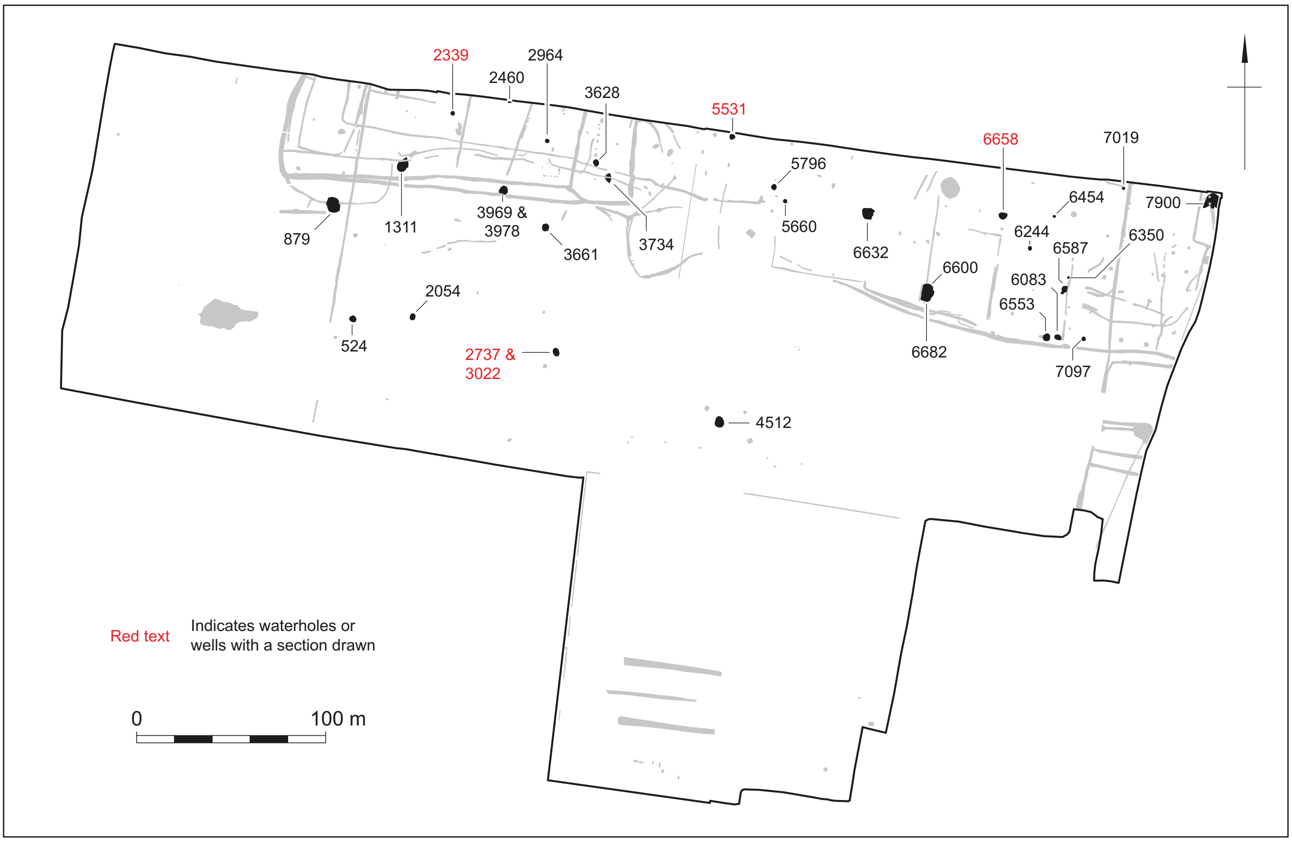

Figure 5.15 RMC Land: plan showing all wells/waterholes

Plate 5.9 Waterhole 3022 (shallow-sided)

Plate 5.10 Waterhole 5531 (stepped)

second a medieval roof tile), and one waterhole (6632) also has a radiocarbon date (*Prunus domestica – AD 890–1000; NZA-31081 at 95% probability*). One other waterhole (2339) contained no datable finds, but produced a late Saxon radiocarbon date (*AD 890–990; NZA-31075 at 95% probability*), and a further three waterholes (2737, 3969, 3978) have been added on the basis of spatial location and/or stratigraphic position. As with the pits (see above), further waterholes dated as Iron Age or Romano-British on pottery evidence may in fact be Saxon or medieval.

The term 'waterhole' is used here to cover all types, rather than attempting a rather arbitrary division into 'waterholes' and 'wells'. The waterholes fall into two groups on the basis of morphology: those with vertical or steep sides, and those with a more gradual slope, or 'steps', on one side (Fig. 5.16). This two-fold distinction is assumed to reflect function – the waterholes with one gradually sloping side would have allowed access for animals to drink (eg, 3022 – Pl. 5.9, 6658), while those with steep sides would have required human intervention to extract the water, by drawing up buckets (eg, 2339) (there is no evidence for access into these waterholes by means of log ladders, as there is for the prehistoric period). The 'stepped' waterholes (eg, 5531; Pl. 5.10) are unlikely to have admitted animal access, but could have

Table 5.3 Waterholes at RMC Land

Cut No.	No. fills	Width/ diam. (m)	Depth (m)	Morphology	Pot qty	Pot date	Env. evidence	Comments
RMC Area 1								
524	6	-	-	steep-sided	2/32	cp5	P	-
879	5	-	1.10*	steep-sided	59/898	cp4	PR	-
1311	2	-	-	ramped?	5/36	cp5	-	-
RMC Area 2								
2054	14	3,00	2.00	steep-sided	-	-	-	Bun-shaped loomweight
2339	11	1.85 x 1.81	2.03	steep-sided	-	-	-	(from upper fill): AD 770–1000 (NZA-31075) (at 95% conf.)
2460	9	1.94 x 1.31	1.40*	steep-sided	10/204	cp4	PR	-
2737	3	2.40 x 2.00	2.00	steep-sided	-	-	-	Recut by 3022
2964	7	1.8 (L)	1.70	steep-sided	1/7	cp1	-	-
3022	7	4.90 (L)	1.80	ramped?	1/3	cp1	-	Contained dog skeleton; recut of 2737
3628	14	3.30 x 3.00	1.70	steep-sided	4/88	pre-cp3	PR	Lower fills
					6/126	cp5		Upper fill
3661	3	3.96 x 3.37	1.80	steep-sided	1/18	cp5	-	-
3734	5	3.80 x 1.25	1.45	ramped?	13/114	cp5	PR	-
3969	5	2.39 (W)	1.43	ramped?	-	-	-	Recut of 3978
3978	7	2.13 (W)	1.60	stepped?	-	-	-	Recut by 3969
4512	11	5.24 x 4.14	2.13	ramped	-	-	-	Medieval roof tile
5531	3	2.80 x 2.60	1.20*	stepped?	3/12	cp3/4	-	-
5660	4	2.00 x 1.80	1.25	steep-sided	1/39	cp1	-	-
5796	14	2.70 x 2.32	1.75	steep-sided	1/69	cp4	-	-
RMC Area 3								
6083	10	-	-	steep-sided	7/82	cp4	-	-
6244	8	1.98 x 1.88	1.81	steep-sided	11/251	cp4	-	Bun-shaped loomweight
6350	4	1.14 x 1.08	1.63	steep-sided	6/30	cp3/4	-	-
6454	8	1.22 x 1.18	1.20	steep-sided	2/15	cp3/4	PR	Lower fill
					13/98	cp4		Upper fill
6553	11	2.33 (L)	2.44	steep-sided	3/28	cp5	-	-
6587	15	2.25 (W)	2.14	steep-sided	4/28	cp4	-	-
6600	15	5.30 (W)	2.30	steep-sided	4/16	cp3/4	-	Cut by field system ditches; cuts 6682
6632	12	5.52 (L)	2.28	steep-sided	5/29	cp5	P R	AD 890–1030 (NZA-31081) (at 95% conf.)(from lower fill; pot from upper fill)
6658	5	3.04 x 2.80	1.20	ramped	2/30	cp3	-	-
6682	6	-	2.30	steep-sided	96/1287	cp4	-	Cut by 6600
7019	1	1.3 (D)	1.6	steep-sided	30/560	cp5	-	-
7097	8	2.1 (D)	1.9	steep-sided	1/50	cp3/4	-	-
7900	13	8.7 x 6.3	2.45*	ramped?	-	-	-	-

* Waterhole not fully bottomed
P = pollen; PR = plant remains

allowed easier access for humans. None of the waterholes produced any evidence for timber revetments, but one (2054) in Area 2 may have been wattle-lined. A distinct dark stain probably represents the remains of a wattle lining inserted within the feature, the space around it then being backfilled with soil. Although the lining would originally have been vertical, as the wattle decayed, the material around it would have slumped into the base of the waterhole, resulting in the dark layer's almost conical, bowl-shaped profile in section (Pl. 5.11). Amongst other finds, this waterhole contained part of a bun-shaped loomweight.

The distribution of the waterholes extended across the northern part of the site, within the area of the enclosures and field system, with three outliers to the south (524 and 2737/3022) (Fig. 5.15); there was a slight concentration at the eastern end of the site, in and around Fields 4 and 5, where 12 waterholes were found over a distance of 160 m. Their position in regard to other features is difficult to ascertain, given the complexity of the field system and the frequent

Plate 5.11 Waterhole 2054 (wattle-lined)

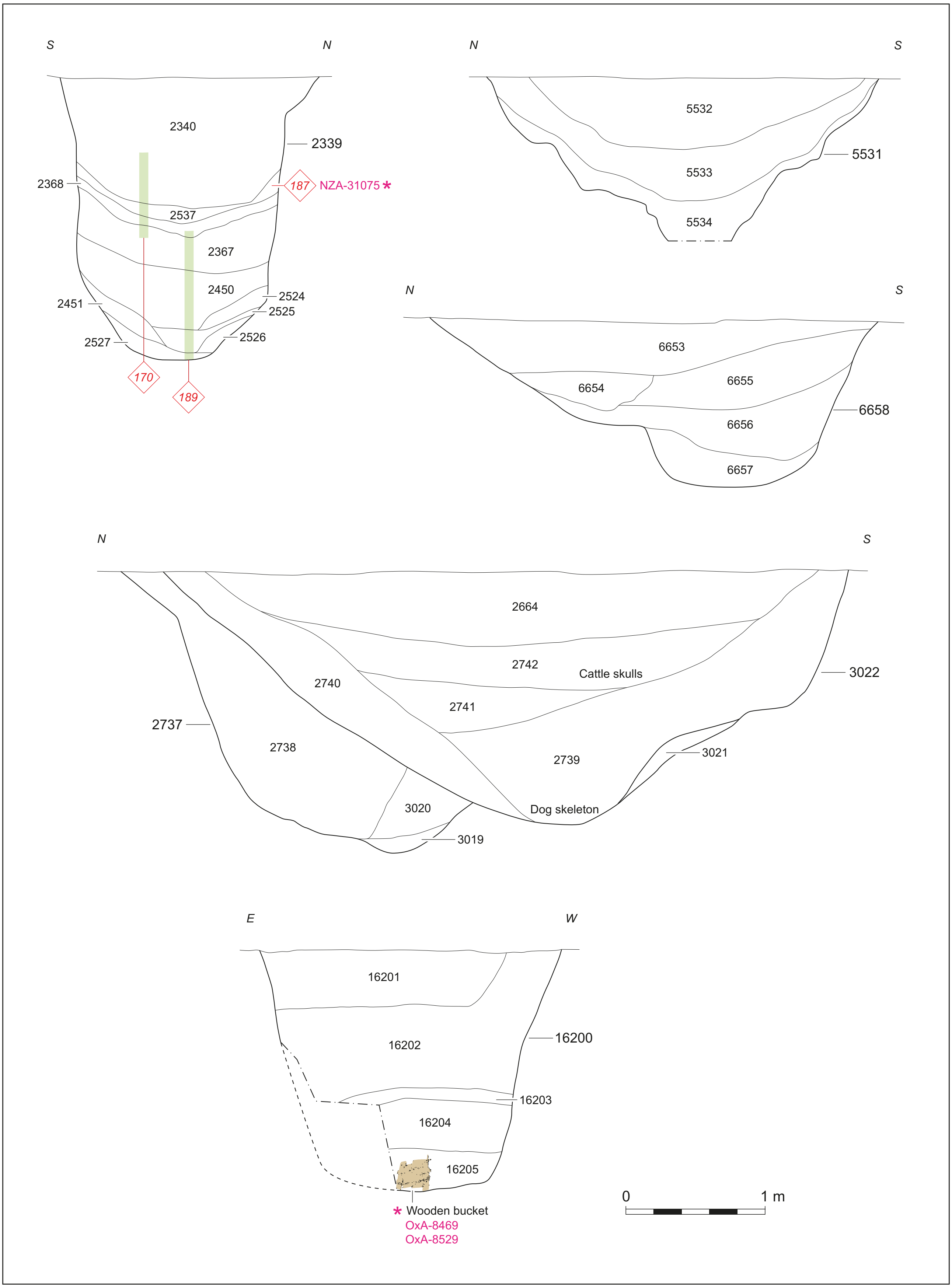

Figure 5.16 RMC Land: selected waterhole sections

scarcity of dating evidence, but some observations may be made. Some of the waterholes appear to cluster around the field edges. Four of these (6083, 6587, 6600/6682) were cut by later field subdivisions, while two cut earlier ditches (6632, 6658) – in the case of 6658, the waterhole cut through the junction of two field boundaries, in a position which cannot be considered as entirely coincidental. These waterholes may have acted as sumps, to drain off water from the ditches. Waterholes were found in similar field edge/field boundary locations at Heathrow (Cramp *et al.* 2010, fig. 5.24). One waterhole (1311) lay just outside the putative entrance to Enclosure 1 (Fig. 5.4), but appears to have been relatively rapidly decommissioned; it was cut by a later subdivision of the enclosure. Waterhole 3628 lay at the southern end of pit alignment 4150; the latter may suggest some kind of structure associated with the use of the waterhole.

Pottery from the waterholes suggests that they could potentially range from early Saxon (ceramic phase 1) to late Saxon/early medieval (ceramic phases 3–5), although most fall within the range of mid-10th to late 11th century, and only two lie well outside (one early Saxon and one middle/late Saxon). A note of caution should, however, be sounded here as the largest quantity of pottery from any one waterhole was 15 sherds, insufficient evidence on which to date these features with any degree of confidence. In any case, the pottery appears to relate largely to the re-use of these features for the dumping of domestic refuse. Indeed, stratigraphic relationships suggest that at least one waterhole must be later than the suggested pottery phasing, but this merely strengthens the emphasis on the later 10th/11th-century date range. This is supported by the radiocarbon dates from two waterholes both of which indicate a late Saxon date (2339, *AD 890–990 NZA-31075 at 95% probability*, no pottery dating; and 6632, *AD 890–1000 NZA-31081 at 95% probability*, pottery mid- to late 11th century).

In terms of finds, the waterholes yielded only small assemblages, in which animal bone was the most commonly occurring material type (Fig. 5.17). As noted for the pottery, most finds appear to relate to refuse dumping into the waterholes following disuse. As mentioned above, pottery is relatively sparsely represented. Other finds include fragments of lava quernstones, Romano-British brick/tile and undiagnostic fired clay (probably structural); fragments from bun-shaped loomweights (a middle/late Saxon type) came from waterholes 2054 and 6244. An iron padlock slide key (ON 12116, Fig 8.1, 6) came from waterhole 6350; these objects have a wide date range from late Saxon to post-medieval (see Chapter 8).

Two waterholes, however, can be highlighted for the large finds assemblages they produced. Waterhole

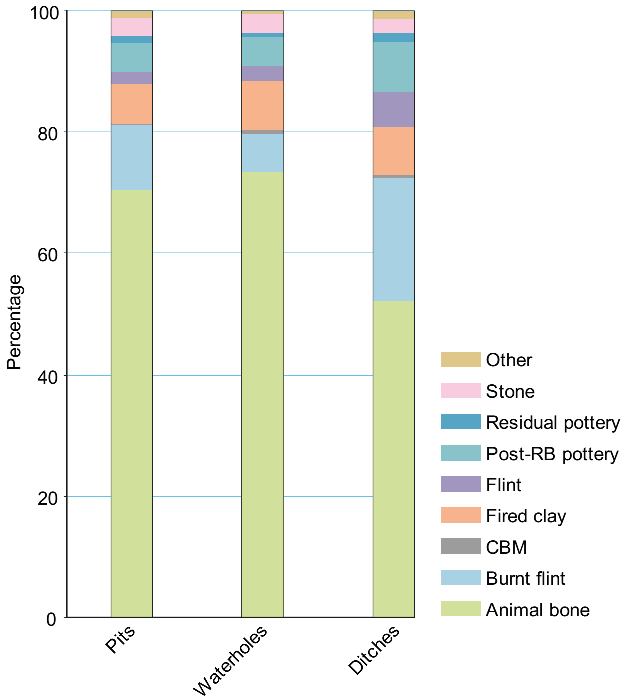

Figure 5.17 RMC Land: finds distribution by feature type

Plate 5.12 Dog burial in waterhole 3022

879 yielded 792 pieces of animal bone (including a partial dog skeleton), some of it burnt, 62 sherds of pottery (59 post-Roman and three residual), 58 pieces of fired clay, 71 pieces of burnt, unworked flint, 10 pieces of quernstone and six metal objects (ONs 11506–9, 11513, including a knife and a possible lock part, Fig. 8.1, 7). These finds were distributed throughout the excavated fill sequence (the waterhole was not bottomed). Waterhole 879 was dug through the southern end of Enclosure 1 (Fig. 5.4), possibly in a deliberate act of decommissioning, as the pottery suggests that this took place not long after the initial construction of the enclosure, possibly when the enclosure was modified by the digging of east–west ditch 1205 (see above).

Waterhole 3022 (Fig. 5.16; Pl. 5.9), for which the pottery suggests an early Saxon date, stands out by

Plate 5.13 Remains of timber revetment in waterhole 30424

Plate 5.14 Bucket (ON 18756) in situ *at base of waterhole 16200*

virtue of the large quantity of animal bone recovered, and the nature of its deposition. This assemblage includes a partial dog skeleton, lying on the base of the cut (Pl. 5.12), and parts of two (or possibly one) cattle skulls, all deposited when the waterhole had partially silted up (fill 2742). The dog skeleton was of a mature male individual, which displayed several severe pathological lesions; shortening of the right front leg and right hind leg due to fractures would have left the dog severely crippled. While this deposit could be seen as the disposal of domestic waste into a disused waterhole (and it may be no coincidence that the feature chosen for the deposition of a dog carcass was located away from the main focus of activity, south of the field system and enclosures), the possibility of some other meaning should not be excluded. A recent study has suggested that 'special deposits' of animal or human remains, often including skulls and/or articulated skeletons, can be identified within Anglo-Saxon settlements; the most common species represented amongst these 'special deposits' is cattle, while the percentage of dogs is disproportionately high (Hamerow 2006, 8). The interpretation is as yet tentative, but it may be noted that another possible deposit of this nature, comprising a dump of pig and horse bones within a sunken-featured building, was identified nearby at Heathrow (Cramp *et al.* 2010, 328), and another dog skeleton was found in the middle fill of a pit at Lake End Road West near Dorney, Buckinghamshire (Foreman *et al.* 2002, pl. 5.1).

Charred or waterlogged plant remains were recovered from six waterholes (Table 5.3; Stevens, Chapter 10). Of note is waterhole 2460, which yielded a charred assemblage particularly rich in oats, including clearly identifiable cultivated oats. Other probable food resources included bean and hazelnut, and possibly beet, although this could be a wild species. Waterlogged species from waterhole 6632 are indicative of farmyards and nitrogen-rich, disturbed soils in general, as well as hedge and/or overgrown scrub. Seeds of hemp are of some interest, as they may suggest that the feature was used for hemp retting (in which the hemp plants are soaked in water in order to obtain the fibres). Pollen evidence from waterhole 524 also confirms the presence of scrub, while indicating a generally open environment with few trees.

Waterholes at ICSG

Only five waterholes at ICSG produced dating evidence from the post-Roman period; four of these are late Saxon or medieval (10318, 16200, 16413, 30424), and one is post-medieval (G4074) (Figs 5.14, 5.16). All but one were steep-sided (10318 was ramped on one side), diameters ranging from 1.05 m to 3.60 m, and depths from 1.60 m to 1.75 m. Two contained the waterlogged remains of timber revetments. In waterhole 30424, eight upright timber stakes were recorded, as well as one horizontal timber, at the base of the feature (Pl. 5.13), while in 10318, eight timber fragments appear to derive from a construction of tangentially split planks laid edge up and held in place with pegs (see Mepham, Chapter 8).

Apart from the worked timbers, these features produced relatively little artefactual evidence – two sherds of pottery from 30424 (cp3), 11 sherds from 10318, 18 sherds from 16200 and 41 sherds from 16413, as well as minimal amounts of fired clay, animal bone and worked flint, the latter certainly residual in these contexts. Waterhole 16200 (Fig. 5.16) produced a wooden stake (ON 18738) and a substantially complete, stave-built wooden bucket (ON 18756; Pl. 5.14; see Chapter 8, Fig. 8.6), while well 16413 yielded an iron spur of unusual form (ON 18031; see Chapter 8, Fig. 8.1, 8). Both the bucket and the spur have provided useful chronological information. Two samples from the bucket were submitted for radiocarbon dating, and produced dates of AD 760–1020 (OxA-8529; from the base),

Figure 5.18 RMC Land: early Saxon graves; plan of all funerary-related features (certain and possible)

and AD 1180–1290 (OxA-8469; from the handle) (95% confidence) (see Table 11.3).

In terms of environmental evidence, waterhole 16200 produced waterlogged species indicative of hedgerows, scrub edge and waysides (eg, elder, bramble, hemlock and sloe/hawthorn), and also some species more directly associated with arable fields and disturbed, nitrogen-rich soils (eg, fat-hen and nettle). This is supported by the insect remains from the same feature, which are dominated by species indicative of disturbed and agricultural land, including 'dung beetles' and granary pest (see Smith, Chapter 10).

Funerary Activity at RMC Land

Two groups (10 features in total) of possible and certain graves occurred at RMC Land (Fig. 5.18). None contained any human bone, due to the post-depositional environment, although a few produced a range of grave goods.

A small group of five shallow graves was recorded in an irregular east–west line on the extreme southern edge of the excavated area (Fig. 5.18, A). Three of these contained grave goods. All the graves but one were aligned north–south, the exception being aligned WNW–ESE. The number and type of grave goods per grave are summarised in Table 5.4, and are listed in the catalogue (see below).

Grave 4662

This grave was aligned NNE–SSW, and comprised a sub-rectangular cut measuring 1.90 m in length and 0.90 m wide (Fig. 5.19). All of the grave goods were found at the southern, presumed to be the head end. These grave goods comprise 22 glass beads (17 monochrome and five polychrome; Pl. 5.15), a silver garnet keystone brooch (Pl. 5.16), fragments of a copper alloy rod, and an unidentifiable iron object. The beads were clustered in such a manner as to indicate that they were originally strung as a necklace (Fig. 5.19, top right). They were not arranged regularly in terms of colour, and monochrome beads were mixed with polychrome, but the smaller beads

Table 5.4 Summary of Saxon grave goods

Grave	*Personal items*	*Iron*	*Other grave goods*
4662	Silver brooch (12025); 22 glass beads	Unidentified obj. (12043)	Cu alloy rod fragments (12039)
4707	Cu alloy brooch (12047)	Buckle (12046); knife (12045)	-
4720	Cu alloy brooch (12049); 22 glass beads; 2 amber beads	2 knives (12055, 12056)	-
5601	-	Unidentified obj. (12093)	-
Total	47 objects	6 objects	1 object

seem to have been strung together, with the larger beads strung in groups on either side. The copper alloy rod (ON 12039) was found amongst the bead cluster and may originally have formed part of the necklace, although there are no obvious means of attachment. The silver brooch (ON 12025) was immediately adjacent, and the iron object (ON 12043) was located approximately 0.20 m to the north-west of the nearest bead (ON 12040).

Plate 5.15 Glass beads from grave 4662

Plate 5.16 Silver garnet brooch from grave 4662

Grave 4662 catalogue

The positions of all grave goods, apart from sample finds, are marked on Figure 5.19; asterisked objects (*) do not have detailed illustrations.

Glass beads

ON 12019, 12020*, 12146*: three monochrome glass beads, opaque yellow, medium, annular (one is fragment only).

ON 12021: monochrome glass bead, semi-opaque green blue; medium, double cylinder.

ON 12022, 12040*, 12041*: three monochrome glass beads, opaque red, medium, cylinder.

ON 12023, monochrome glass bead, opaque red, medium, disc.

ON 12024: monochrome glass bead, opaque blue white, medium, cylinder.

ON 12027: monochrome glass bead, blue, large, disc.

ONs 12028, 12032*, 12035*: three monochrome glass beads, opaque yellow, medium, cylinder.

ON 12029: polychrome glass bead, medium, barrel; double intersecting wave, opaque yellow on opaque red.

ON 12030: monochrome glass bead, opaque yellow, medium, globular.

ON 12031, 12033*: two polychrome glass beads, medium, biconical; double intersecting wave plus spots, opaque yellow on opaque red.

ON 12034: 12042*: two monochrome glass beads, opaque pale blue, medium, cylinder (one in two fragments, degraded).

ON 12036: polychrome glass bead, medium, globular; double intersecting wave, opaque white on opaque red.

ON 12037: monochrome glass bead, opaque yellow, coiled globular (in two fragments).

ON 12038: polychrome glass bead, medium, disc; double intersecting wave, opaque white on opaque red.

Metalwork

ON 12039*: copper alloy rod fragments, from unknown object (possibly pin shank?).

ON 12043*: small iron object, unidentified.

ON 12025: silver garnet keystone brooch.

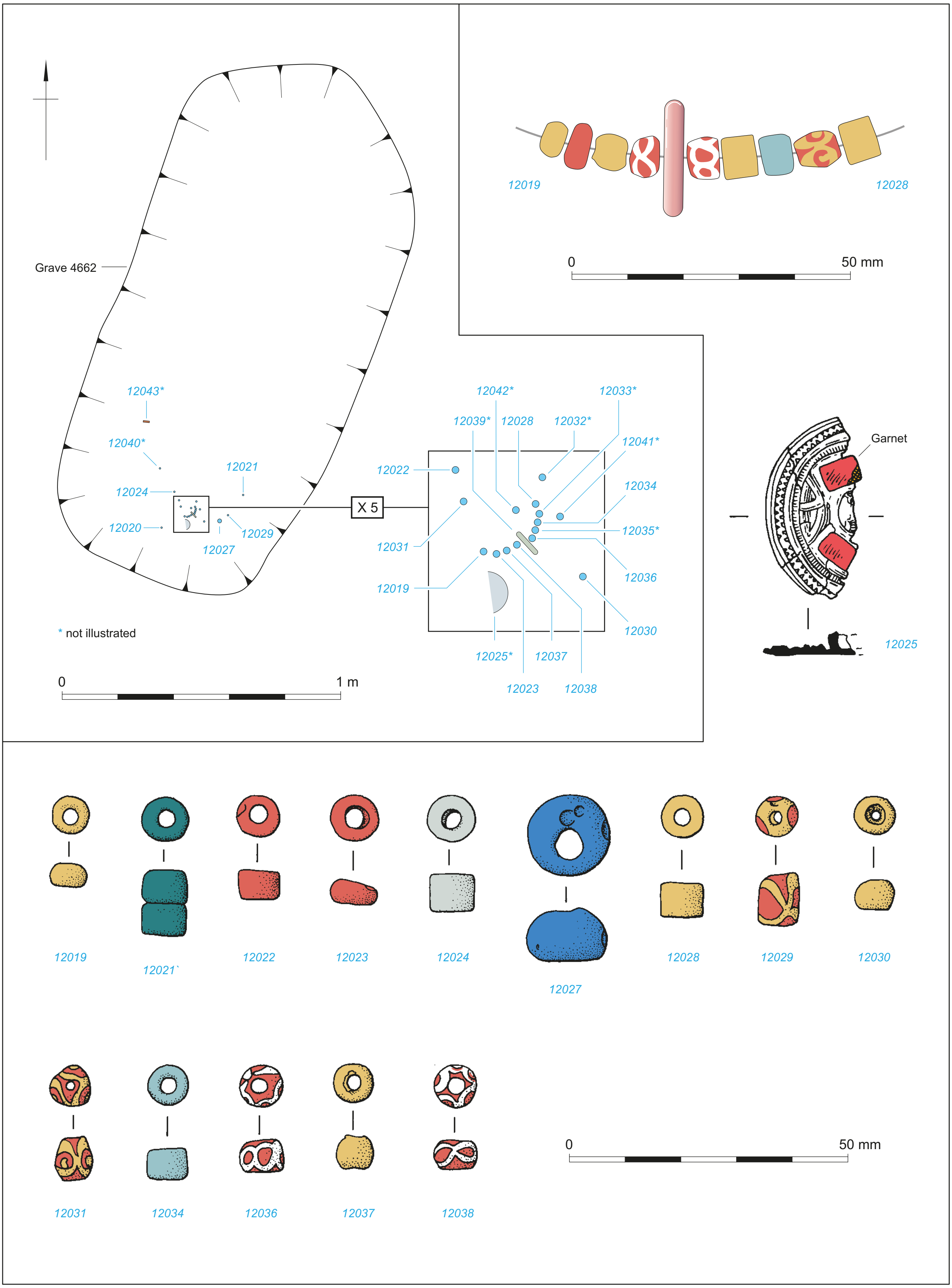

Figure 5.19 RMC Land: grave plan, 4662, with objects

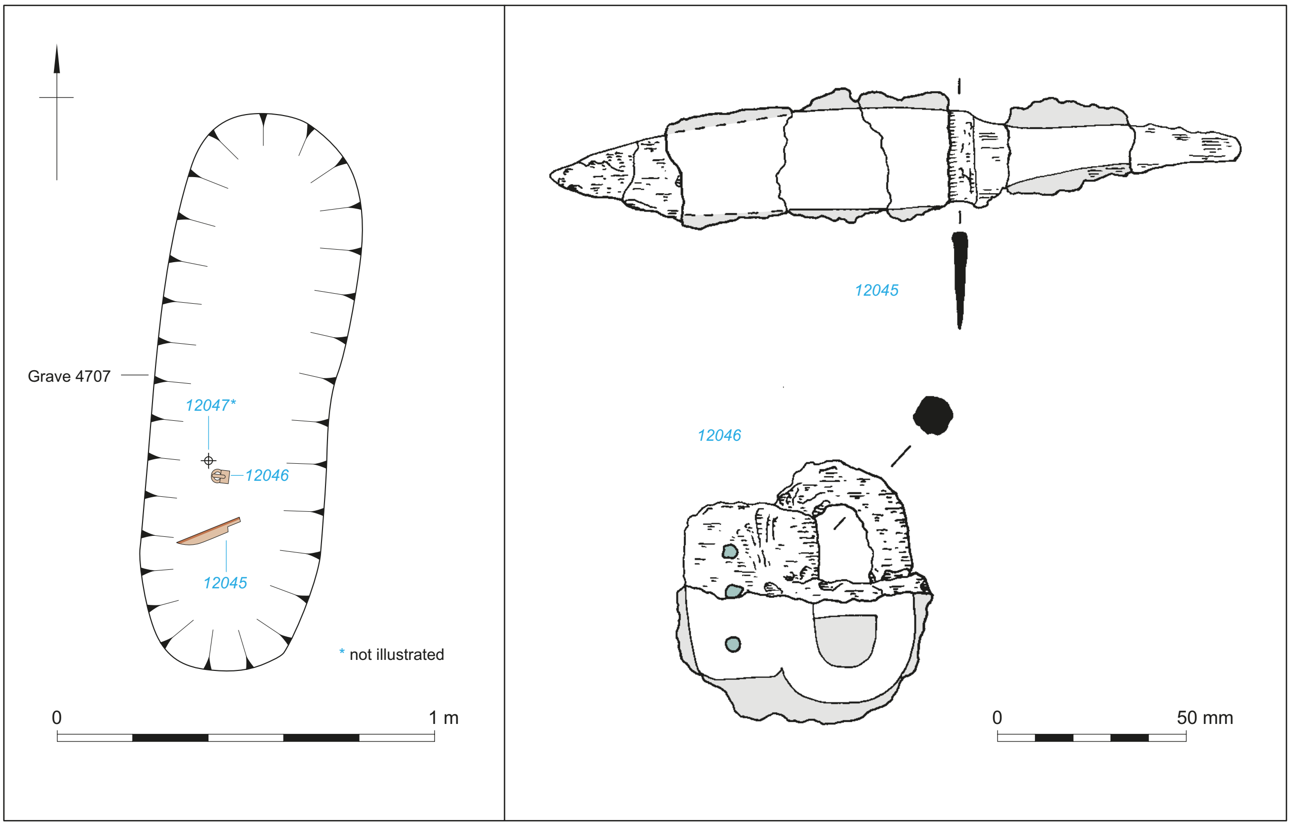

Figure 5.20 RMC Land: grave plan, 4707, with objects

Plate 5.17 Grave 4707

Grave 4707

Located 1.80 m to the north-west of grave 4662 (Fig. 5.18), grave 4707 was aligned north–south (Fig. 5.20, Pl. 5.17). The sub-rectangular cut measured 1.50 m by 0.50 m. Again, the head end is presumed to be at the south; all the grave goods found were located in the southern half of the grave, around what would have been the waist or chest area. They comprise an iron knife of Böhner's type A (ON 12045) and an iron buckle (ON 12046). Some very fragmentary traces of copper alloy found next to the buckle (ON 12047) may be from an associated belt fitting.

Grave 4707 catalogue
The positions of all grave goods, apart from sample finds, are marked on Figure 5.20; asterisked objects (*) do not have detailed illustrations.

Metalwork

ON 12045: iron knife, Böhner type A; traces of mineralised organics on tang.

ON 12046: iron buckle, oval, with tongue and buckle plate; three copper alloy rivets.

ON 12047*: copper alloy fragments adhering to mineralised organic remains; original form unknown.

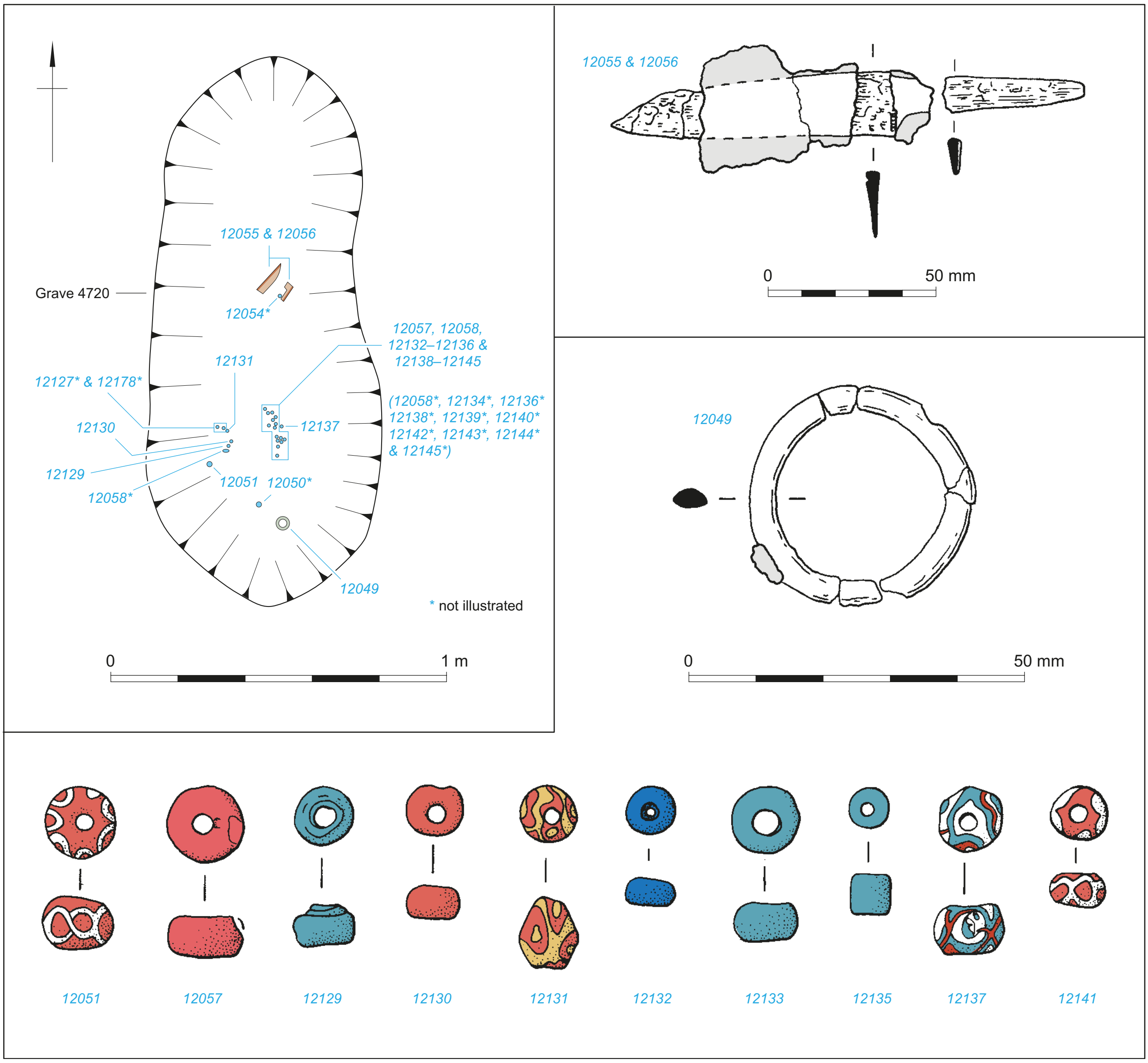

Figure 5.21 RMC Land: grave plan, 4720, with objects

Grave 4720

This grave lay 2.20 m to the east of grave 4662 (Fig. 5.18). The slightly irregular, ovoid cut measured 1.65 m by 0.70 m and, again, the head end is presumed to be at the south (Fig. 5.21). Grave goods found within the grave formed two clusters, one at the southern end, and one located just north of centre. The southern cluster comprised a group of 21 glass (12 monochrome and nine polychrome; Pl. 5.18) and two amber beads, and a small, copper alloy ring of unknown function (ON 12049). In the central cluster were a knife (ON 12055/12056; possibly of Böhner's type C) and a single monochrome glass bead (ON 12054) – the latter may have been displaced from the main cluster after deposition.

Grave 4720 catalogue

The positions of all grave goods are marked on Figure 5.21; asterisked objects (*) do not have detailed illustrations.

Glass beads

ON 12050*, 12131: two polychrome glass beads, medium, biconical; double intersecting wave and spots, opaque yellow on opaque red.

ON 12051, 12138–12142 (only 12051 and 12141 illustrated): six polychrome glass beads, medium, disc, double intersecting wave, opaque white on opaque red.

ON 12054*, 12132, 12144*: three monochrome glass beads, blue, medium, disc (one incomplete).

Plate 5.18 Beads from grave 4720

Plate 5.19 Possible grave 5573

ON 12129: monochrome glass bead, opaque pale blue, medium, drawn globular.
ON 12130, 12143*: two monochrome glass beads, opaque red, medium, disc (one in two fragments).
ON 12127*, 12128*, 12133, 12134*: four monochrome glass beads, opaque pale blue, medium, disc (both degraded).
ON 12135, 12136*: two monochrome glass beads, opaque pale blue, medium, cylinder.
ON 12137: polychrome glass bead, medium, disc, double intersecting waves + spots in opaque red + opaque pale blue on opaque white.
ON 12145*: glass bead(s), frags only, blue.

Amber beads
ON 12057: amber bead, roughly annular.
ON 12058*: amber bead, roughly annular (in two fragments).

Metalwork
ON 12049: copper alloy ring (original external diameter 18 mm); lenticular section; function unknown.
ON 12055/6: iron knife; unknown type (?Böhner C); traces of mineralised organics.

Possible Graves 4713 and 4717

There were two other grave-like features in the same area as the three graves (Fig. 5.18, A). These are 4713, aligned north–south, located in between 4707 and 4662 (1.47 x 0.45 x 0.12 m); and 4717, aligned ESE–WNW, located to the west of 4707 (2.35 x 0.66 x 0.10 m). Since neither contained any human remains, nor any finds, their identification as graves is purely tentative, based on morphology and association with other features.

Other Possible Graves at RMC Land

Five other features were tentatively identified as graves on the basis of morphology and dimensions. Four of these were located towards the northern edge of the excavated area (5573, 5601, 5633, 5785) (Fig. 5.18, B). All were steep-sided, flat-bottomed, broadly sub-rectangular cuts (Pl. 5.19). Two were aligned approximately east–west (5573, 5633) and two approximately north–south (5601, 5785). Lengths ranged from 1.36 m to 1.90 m, widths from 0.49 m to 0.86 m, and depths from 0.11 m to 0.76 m. None of these features contained any human bone, although possible bone staining was noted in 5601. The latter grave contained an iron object of unknown function (ON 12093), U-shaped with a closed loop at

Figure 5.22 RMC Land: all post-medieval features

the base of the U, and with hooked ends. Six sherds of early–middle Saxon chaff-tempered pottery were also recovered, presumably as incidentally incorporated finds within the backfill, which would not be inconsistent with an interpretation as an early Saxon grave, but 5573 contained five sherds of early medieval (11th/12th century) pottery, making a funerary interpretation extremely unlikely.

One other feature (6542) (Fig. 5.18, B) is of similar dimensions (1.72 x 0.82 x 0.42 m) and sub-rectangular form to the possible grave cuts. It was orientated approximately east–west, and contained neither bone nor any datable finds. The interpretation as a grave cut remains very tentative but has not been ruled out.

5601 catalogue

ON 12093 (not illustrated): iron object, U-shaped with closed loop at base of U, hooked ends; function unknown.

Other Features

Three tree-throw holes at RMC Land (Fig. 5.12) were dated to the post-Roman period (3995, 5638, 6329). Only one produced artefactual dating evidence (three sherds of pottery from 5638, assigned to cp4). There are, however, a number of undated tree-throw holes across the site, which could include others from this period. Tree-throw hole 6329 is notable for the environmental evidence it produced – a large deposit of celtic beans (see Stevens, Chapter 10). One of the beans yielded a radiocarbon date in the late Saxon period of *cal AD 890–1000 (NZA-31085, 1075±35 BP, at 95% probability)*.

Late Medieval and Post-medieval Development

On both sites there appears to have been a hiatus in activity (or at least in the deposition of finds) after the early medieval period; there is little that can be dated later than 12th century at RMC Land, and little later than 13th or early 14th century at ICSG.

Few features at either site were dated as post-medieval. At RMC Land (Fig. 5.22), two north–south ditches, one towards the western edge of the site and the second 140 m to the east, are known to be modern boundary ditches. A regularly spaced pattern of north–south ceramic field drains lie between these ditches, with the occasional main ceramic drains aligned east–west. Three large, east–west linear features between these ditches appear to be remnant furrows from a ridge and furrow field system. Their date is unknown, but two of them cut through late Saxon/early medieval enclosure 1202. Another ditch (7859/7827), north–south with an east–west return, appears to enclose an area at the eastern end of the site, and there are four other associated features here: three pits (7225, 7493, 7825), and a short length of east–west ditch (7882).

At ICSG there is a closer correlation between the post-medieval ditches and the medieval field system in the southern part of the site (Fig. 5.8), and this presumably implies that the former remained in use throughout the later medieval period, although material evidence for activity at this period is virtually absent. North–south ditches were recut on straighter alignments, but apparently terminated at a more irregular east–west ditch (G1240), which coincides with a track/boundary marked on the 1943 OS map. Three other known post-medieval boundaries were also located, all marked by north–south ditches; the most westerly of these is the parish boundary (which, at its southern end, turns to the south-east and follows the edge of the site). More recent fencelines and drainage features in the north-east of the site are associated with the site's former use as sports pitches.

Discussion

Early Saxon Settlement

The settlement-related features seen at ICSG provide the first material evidence for Saxon occupation along Sipson Lane, extending to the east the known 'corridor' of settlement along the east side of the Colne Valley from south of Longford (Heathrow) northwards to the M4 (Cowie and Blackmore 2008, 88, fig. 64). This raises a number of questions regarding the pattern of Saxon settlement in this part of the landscape. With documentary records providing evidence for nearby Saxon settlements at Sipson and Harmondsworth, it is perhaps not surprising that isolated features were recorded within the two sites, representing the dispersed fringes of what were presumably unenclosed hamlets, like that excavated at Prospect Park, Harmondsworth (Andrews 1996; Farwell *et al.* 1999). Scattered finds to the east of Harlington, and the discovery in 2006 of an early Saxon settlement at Hayes, comprising a sunken-featured building and a number of rectangular timber structures, suggests that in fact early Saxon activity in this area extended as far east as the River Crane (Cowie and Blackmore 2008, 88–9; www.pre-construct.com/Sites/Summary06/HYA01.htm, last accessed February 2010). There may have been two zones of activity, on the basis of feature distribution – a settlement zone near the Colne, and mixed farmland to the east (Cowie and Blackmore 2008, 137). The settlement at Hayes may have formed part of a similar 'corridor' along the Crane Valley (early Saxon graves have been found at Twickenham, at the confluence of the Crane and the Thames – Meaney 1964); the sites at ICSG and RMC Land fall roughly midway between the two rivers.

The density of settlement in the Harmondsworth area is not as great as that observed, for example, at Mucking, comprising just over 20 SFBs and at least two timber structures, and the evidence is insufficient to confirm either a pattern of shifting settlement, or a stable focus from which settlement expanded, both of which have been postulated for Mucking (Hamerow 1993, 86–9). Dating evidence from Harmondsworth indicates that the sites at Prospect Park and Manor Farm formed part of the earliest settlement focus, from the 5th century, expanding eastwards in the 6th and 7th centuries (Cowie and Blackmore 2008, 137). There is likely to have been at least some period of chronological overlap, however; all the sites could have been in contemporaneous occupation during the 6th century. ICSG and RMC Land, at the eastern extent, both produced pottery assemblages dominated by organic-tempered wares, which are unlikely to date earlier than 6th century, but could have continued in use until the 8th or even the 9th century (*ibid.*, 152). The absence of other identifiable middle Saxon wares from ICSG, however, and the general spatial distinction at RMC Land between organic-tempered wares and middle Saxon wares, suggest that a date range of 6th to 7th century is more likely. This would accord well with the artefactual dating from the graves (see below).

Early Saxon Funerary Evidence

Artefacts from the two more richly furnished graves (4662 and 4720) indicate a date range in the second half of the 6th or first half of the 7th century AD, based on the glass beads, garnet brooch and iron knife. Dating for the third grave with grave goods (4707) is broader – the only datable artefact is the iron knife, which is of a type dated as *c.* AD 450–700. The supposition is that all three graves, and presumably the two possible graves, are at least broadly contemporaneous, and the artefactual dating confirms a probable contemporaneity with the nearby settlement features.

Interestingly, although evidence for early Saxon settlement in Harmondsworth is relatively plentiful, there is little corresponding evidence for the burial of the inhabitants. Greater London in general is rich in both inhumation and cremation burial sites. Early Saxon graves have been found at Twickenham, Shepperton and Hanwell on the gravel terraces of the Thames and its tributary the Brent (Meaney 1964, 167–8). At Oaklands Road in Hanwell 10 skeletons were found with their weapons (Keene 1975, 5), and in Longford, to the rear of the King's Head Inn, early Saxon necklace beads and a possible cremation urn were found; these objects are now in the British Museum (Cowie with Harding 2000, 203). Given the known extent of settlement at Harmondsworth, other burials might be expected in the area.

Middle Saxon to Medieval Activity

Very little is known of middle and late Saxon rural settlement in the hinterland of London; knowledge of late Saxon settlement in particular is based almost entirely on documentary evidence – Harlington, for example, is mentioned in the boundary clause of a charter of 831 (Sawyer 1968, 119 no. 188; Gelling 1979, 104, no 207), and the parish boundary with Harmondsworth may be of middle Saxon date. Within the West London area, there is evidence for middle and late Saxon settlement at West Drayton (possible retting pits at Colham Mill Road; Knight 1998), Staines (middle Saxon pottery but no definite settlement-related features; Blackmore 1981) and Northolt (timber building; Hurst 1961). There are some traces of a late 8th- or 9th-century occupation site within an oval enclosure at Stanwell (O'Connell 1991, 59); and an 11th- and 12th-century site has been excavated at Manor Farm, Harmondsworth (Cowie and Harding 2000, 192).

Apart from RMC Land, none of the early Saxon settlement sites around Harmondsworth have produced evidence of activity definitively post-dating the 7th century, suggesting a widespread shift in settlement at this time, perhaps as a result of a process of nucleation into small villages. At RMC Land, dating evidence suggests that, following some sporadic activity during the middle Saxon period (mid-7th to mid-9th century), the field system and associated enclosures were probably established from the late 9th century, ie, shortly after the first documentary mention in 831, and were abandoned by the late 11th century, suggesting a shift in settlement at around the time of the conquest – the present Harlington church was built in the 12th century, but may have had an 11th-century predecessor. The present village location may have had its origin at this time. There is a slight, but noticeable concentration of medieval roof tile, of probable 13th century or later date, at the eastern end of the excavated area at RMC Land.

The near absence of post-Roman features, apart from some isolated pits, postholes and waterholes, within the southern part of RMC Land suggests a real southern boundary for activity at this period. Given the position of Harlington on the northern edge of Hounslow Heath, the field system at RMC Land could represent an assart or encroachment into the heathland (although there is only very slight evidence for tree clearance at this period). The later date of the field system at ICSG could mark further encroachment southwards, the limit of which more or less coincides with the heath edge as shown on Rocque's map of 1765.

While the layout of the late Saxon features at RMC Land indicates a field system primarily geared towards stock management, it is probable that this also encompassed some settlement-related activity. Post-built structures were identified, at least one of which can be tied to the late Saxon period by a radiocarbon date of AD 890–1020 (NZA-31077) (the other is more ambiguously dated), although this, from its size, may have been no more than a short-lived shepherd's hut. The quantity of finds recovered was by no means large, but the range is sufficient to suggest settlement refuse, including personal items (dress/hair pin, finger-ring), tools (knives, awls), textile-working equipment (loomweights, pin beater, spindle whorl) and lock furniture. The faunal assemblage indicates that meat-bearing animals (horse, cattle, sheep/goat and pig) were being slaughtered and consumed on or close to the site, and their remains discarded there, while cereal crops were being grown and processed. The distribution of finds shows some definite clustering around Enclosures 1 and 3, although elsewhere a low frequency of finds, and a high level of abrasion (particularly noted for the pottery from the eastern end of RMC Land) suggests the redeposition of domestic refuse, probably during manuring.

In terms of morphology, close parallels can be seen between the features at RMC Land and those recently excavated at Burrow Hill within the Terminal 5 excavations, and dated to the 11th/12th century – these comprised a complex of irregular enclosures (probably used for stock), two of which contained rectangular post-built structures similar in form to structure 7898 (Cramp *et al.* 2010, fig. 5.17, pl. 5.9). Ceramic evidence suggests that while there was probably some chronological overlap between the sites at RMC Land and Burrow Hill, the latter site appears to have continued in use for up to a century later than RMC Land. Both the Burrow Hill and RMC Land sites fit the definition of secondary 'dispersed settlements'. These comprise loose agglomerations of paddocks and structures, but have no apparent focus such as a manor house, although they may be tied to nearby manors; they are often sited close to parish boundaries – Burrow Hill is close to the border of Stanwell parish with Harmondsworth parish, while RMC Land is close to the Harlington/Harmondsworth boundary. Such settlements appear to characterise the area between the Thames and the Chilterns, where there is an apparent absence of nucleated villages (Lewis *et al.* 2001). The 11th- to 13th-century settlement site at Lot's Hole, Dorney, Buckinghamshire, which contained an ovoid enclosure very similar to Enclosure 1 at RMC Land, and also a number of timber buildings, is likely to be another example (Hiller *et al.* 2002, 102).

The nature of the activity at ICSG, at a later date still (12th to 13th century), is not quite so obvious. Again, the morphology of the field system suggests stock management in a series of small fields or enclosures, the general alignment of which persisted into the post-medieval period. The greatest density of both features and finds is in the south-eastern part of the site, but there was a distinct lack of features other than ditches that could be tied to settlement activity, and the finds distribution was at a much lower level than at RMC Land. It seems most likely that the settlement focus was under present-day Harlington village (the area marked as 'West End' on Rocque's 1765 map, with small fields or gardens and possibly also houses).

Finds Deposition and Site Formation Processes

The finds distribution at RMC Land allows some comment on the nature of discard and deposition; quantities at ICSG were too small for comment. A breakdown of the quantities of finds (by count) deposited in pits, waterholes and ditches shows some interesting patterns (Fig. 5.17). Those for pits and waterholes are broadly similar, and differ from that for ditches – the latter contained less animal bone, but more pottery, worked flint and burnt flint. The presence of more worked and burnt flint in the ditches suggests that more residual material was incorporated into the ditch fills, and it seems that the pottery, too, may have undergone a degree of reworking, as the mean sherd size is smaller than for pits and waterholes (see Chapter 6). The smaller proportion of animal bone in ditches could be explained either by a less beneficial microenvironment for bone preservation in these features, or by the discard of larger bones from primary butchery activities, rather than kitchen waste. The analysis of skeletal parts by feature type, however, shows that leg bones (ie, meat-rich kitchen waste) dominate by weight within the pits, whereas heads and feet (primary butchery waste) were more likely to go into waterholes; ditches were used for the disposal of both types of waste (see Grimm, Chapter 9).

There is, however, a hint that not all finds deposition might result from 'standard' domestic refuse. One waterhole, possibly of early Saxon date (3022), contained the partial skeleton of a severely crippled dog, together with parts of one or two cattle skulls, a possible 'special deposit'.

Environment and Economy

by Chris J. Stevens

Evidence for woodland was generally more limited than that recorded for the Romano-British period, although again oak and hazel appear to be the dominant taxa, with smaller numbers of alder, elm and birch (see Grant, Chapter 10). To this could be added the first appearance of beech on the site, recorded in both the pollen sequence and charcoal assemblage for the late Saxon/early medieval period, although this species is represented in earlier deposits at Perry Oaks, Heathrow (Challinor 2006; Wiltshire 2006).The presence of both honeysuckle and ivy indicates some localised woodland, perhaps small copses or hedgerows, and it can be noted that the plant macrofossils indicate the presence of overgrown scrub or hedgerow through the presence of characteristic species such as white bryony, elder, hawthorn and/or sloe (see Stevens, Chapter 10).

The general picture for the Saxon/early medieval period is, however, one of an open landscape with a high level of probable arable activity in the vicinity of the site, along with probably rough, poorly managed grazed pasture (see Grant, Stevens and Smith, Chapter 10). As in the Romano-British period, the plant macrofossils contained many seeds associated with farmyards, manure heaps and animal trampling, as well as probable arable fields, including seeds of poppy, corncockle and stinking mayweed.

A number of bones of wild animals were present in the late Saxon/early medieval assemblage, including red deer, roe deer, fox and hare, probably reflecting the hunting of game in woodland and long-grassland environments.

The Saxon period has evidence for most of the classic changes in agriculture that are seen on many sites within southern England, and that serve to distinguish this period from Romano-British farming. These changes include the replacement of spelt wheat with free-threshing wheat, while rye became much more dominant than in the Romano-British period. Barley was also generally well represented in the samples.

Evidence for other crops includes charred seeds of flax, celtic bean and pea, with a single middle Saxon feature (tree-throw hole 6329) producing several thousand charred beans. Other charred and waterlogged remains included stones of plum, cherry and sloe, as well as fragments of hazelnut shell. Charred seeds of beet and carrot may also represent cultivated plants. The first is rare away from coastal areas (see Hanf 1983) and is more probably representative of the cultivation of this species; carrot, however, was potentially growing wild in the local area. Finally, one of the waterholes (6632) also produced seeds of hemp that may be indicative of the use of this feature for hemp retting (see Stevens, Chapter 10).

The assemblages from the late Saxon/early medieval period include a similar range of cereal crops to the early Saxon period, although wheat became much more dominant compared to barley and rye. Pea and bean were probably both still cultivated, and while they are less well represented here, this is more probably a factor of the chance finds of bean-rich deposits in the Saxon period. One pit (1756) also produced possible fragments of stones of either domestic plum and/or sloe (see Stevens, Chapter 10). The range of crops also compares well with that seen for Staines, where remains of peas were generally much better represented (Clapham in McKinley 2004a).

In the earlier Saxon period the animal bone assemblage indicates that, in comparison to the Romano-British period, remains of sheep/goat had declined in relation to those of cattle and pig. Bones of goose and other possible domesticated fowl are also present. The assemblage from the late Saxon/early medieval period suggests a more even distribution across the three main domesticates, while the age structure suggests a culling strategy suited to a mixed meat/milk/wool economy. In the late Saxon/early medieval period there is also some evidence for the hunting of deer and possibly hare (see Grimm, Chapter 9).

The late Saxon/early medieval animal bone assemblage includes a similar range of species, with bones of cattle, pig and with slightly less numbers of sheep and/or goat, along with some of horse. The cattle and sheep/goat were mainly of adults, whereas the bones from the pigs indicate that they were slaughtered before they had reached full maturity (see Grimm, Chapter 9). This generally compares well with the data for medieval Staines (Hamilton-Dyer in McKinley 2004a), although sheep/goat was better represented at this site than pig.

Medieval accounts for the parish of Harmondsworth, although from a slightly later period than the two excavated sites, generally accord well with this data, recording arable farming with some dairy and pig farming. In the late 13th century the main crops being cultivated in the area were wheat and oats, with lesser amounts of rye and barley, and a smaller acreage given over for peas (*VCHM* iv, 10).

Regarding crop husbandry itself, the weed assemblage indicates the cultivation of a range of soils, including those that were probably occasionally subject to flooding as well as heavier clay soils, as seen through the presence of seeds of stinking mayweed. Such expansion onto clay soils, possibly facilitated by the introduction of heavy ploughs, is a Saxon development observed over much of southern England and continued into the medieval period.

The absence of chaff, and the generally poor representation of weed seeds, seem to imply that crops were stored fairly clean in the Saxon period after threshing, winnowing and sieving. Occasionally high numbers of rachis were present, however, perhaps indicating the occasional storage of sheaves when demands on labour, possibly combined with poor weather, did not permit full processing to be carried out. No samples from the medieval period contained rachises, perhaps indicating more regular storage of crops in a clean state.

The insect fauna from medieval waterhole 16200 at ICSG includes two species of granary pests associated with spoilt grain, a problem that may have become more frequent with the change from hulled to free-threshing wheat (see Smith, Chapter 10).

Concerning the milling of grain, a number of quern stone fragments were recovered from Saxon and early medieval features on both sites, but particularly from RMC Land (see Jones, Chapter 7). As with the Romano-British period, only rotary querns were identified, mainly of basaltic Mayen lava stone. This can probably be taken to indicate the grinding of small amounts of grain within the domestic settlement itself, although at a later period this may have been undertaken by local mills. Three mills are recorded for Harmondsworth manor in *Domesday* (1086) (*VCHM* iv, 13); there were none in Harlington. The suggestion has been made that many medieval querns may have been used for grinding malt rather than grain, given the increasingly tight controls over milling (Margeson 1993, 202), but this is more likely to apply from the 13th century onwards, ie, at the very end of the settlement activity at ICSG, and after the abandonment of the settlement at RMC Land.

Chapter 6
Pottery and Fired Clay

Prehistoric Pottery
by Matt Leivers

The prehistoric pottery assemblage studied here consists of 6541 sherds weighing 52.237 kg; 268 sherds weighing 2.172 kg from two phases of work at WGA 07 were analysed and quantified, but are not included in the period discussions due to the comparatively very small quantities of material.

The material spans the Early Neolithic to the Middle Iron Age (see Seager Smith below for later ceramics), with the largest period assemblages dating to the Middle Neolithic and Late Bronze Age. As is the case elsewhere in the region (Leivers 2010b), Early Neolithic and Early Bronze Age ceramics remain somewhat under-represented; and at these three sites at least, diagnostic Late Neolithic pottery is almost entirely absent, accounting for less than 0.7% of the total assemblage.

Methods

The material was analysed in accordance with the nationally recommended guidelines of the Prehistoric Ceramics Research Group (PCRG 2010). Sherds were examined using a x20 binocular microscope to identify clay matrices and tempers, and fabric groups were defined accordingly. Although the resulting groups are site-specific, an attempt has been made to compare the series with that produced for Framework Archaeology's excavations at Terminal 5, Heathrow (Leivers 2010b), and this report follows the format of that produced for Heathrow Terminal 5 in an attempt to facilitate comparison of the assemblages. The fabric series is given in Appendix 1.

All data have been entered onto WA's standard pottery recording Access database.

Dating

As is often the case, the continued or episodic use of crushed calcined flint as the primary tempering agent in ceramic traditions spanning several millennia inhibits the definite separation of otherwise featureless sherds into chronologically distinct groups. The difficulties in distinguishing Middle and Late Bronze Age wares on the basis of fabric alone are well known, although the separation of those traditions from Early Neolithic ceramics has been eased on this occasion by the presence of chronologically significant forms in relevant fabric groups.

Radiocarbon dates have been obtained which date ceramics indirectly. Table 6.1 shows contexts dated by radiocarbon samples and the fabric types of the ceramics they contain.

The charred barley grain in pit 5783 (RMC Land) is clearly intrusive. The Middle Bronze Age date from grave 19230 (ICSG) is perhaps explicable as misidentification of featureless flint-tempered body sherds. Otherwise, the dates accord with the fabric types: there is no particular reason why the rather undistinguished flint-tempered Late Bronze Age and Early Iron Age fabrics in wells 4240 (RMC Land) and G2156 (ICSG) could not remain in use for the duration suggested by the dating.

Table 6.1 Radiocarbon dating from stratified contexts dated by pottery

Feature	*Context*	*Sample Id*	*Material*	*Date (95.4% conf.)*	*Ceramic fabrics*	*Ceramic date*
RMC Land						
5783 pit	5784	NZA-32687	Charred barley grain (intrusive)	AD 1490–1690	FL10	Middle Neolithic
4240 well	2398	NZA-31086	Charred emmer/spelt grains	800–520 BC	FL3/FL4/FL6/QU1	LBA/EIA
ICSG						
11024 pit	11023	NZA-36738	Charred barley grain	AD 1010–1170	FL8/FL10/GR5	Middle Neolithic
16669 grave	16670	NZA-30925	Cremated human bone	1940–1740 BC	GR6	Early Bronze Age
19230 pit with pyre debris	19231	NZA-32717	Cremated human bone	1420–1130 BC	FL5	LBA/EIA
G2156 well, cut 17580	17581	NZA-32370	Waterlogged wooden lid/ vessel base	1110–900 BC	FL3/FL4/FL6	LBA/EIA
G2156 well, cut 17580	17587	NZA-31073	waterlogged hazelnut shell fragment	800–520 BC	FL3/FL4	LBA/EIA
G532 ditch, section 1845	1843	NZA-31069	Charred emmer wheat grain	1500–1300 BC	FL14	Middle Bronze Age

Context

Of the 661 contexts containing prehistoric ceramics, 52 contained more than 30 sherds (440 contexts from ICSG; 221 from RMC Land); 394 contexts produced less than five sherds while a further 26 contexts contained between 20 and 30 sherds, 86 between 10 and 19 sherds, and 103 between five and nine. As might be expected from these figures, the dating of many contexts on the basis of pottery has proved difficult.

Pottery by Chronological Period

A total of 28 fabric groups were defined, which have been grouped into seven chronological periods. The breakdown of ceramics by fabric group and chronological period is given in Table 6.2. Fabric descriptions are given in Appendix 1.

Early Neolithic

Only 365 sherds weighing 3441 g were identified as Early Neolithic. Some uncertainty remains in the separation of Early Neolithic and Middle/Late Bronze Age flint-tempered fabrics, but the relatively high average sherd weight (9.43 g) and the presence of large diagnostic sherds has aided this distinction somewhat.

Two fabrics were identified, both flint-tempered (FL1 and FL2). There is nothing to suggest anything other than local manufacture for the Early Neolithic assemblage, which is a pattern well documented for other earlier Neolithic assemblages in the Thames

Table 6.2 Prehistoric pottery fabrics by chronological period

Date	*Fabric*	*No. sherds*			*Weight (g)*			*ASW (g)*
		ICSG	*RMC Land*	*Total*	*ICSG*	*RMC Land*	*Total*	
EN	*FL1*	41	6	47	298	77	375	
	FL2	316	2	318	3025	41	3066	
	Sub-total	*357*	*8*	***365***	*3323*	*118*	***3441***	***9.43***
MN	*FL8*	141	162	303	967	1019	1986	
	FL9	6	6	12	66	16	82	
	FL10	463	605	1068	3,014	8583	11,597	
	FL11	0	118	118	0	1444	1444	
	FL12	0	175	175	0	2,902	2902	
	FL13	0	45	45	0	478	478	
	GR4	6	97	103	13	830	830	
	GR5	27	116	143	71	593	664	
	Sub-total	*643*	*1193*	***1867***	*4131*	*15,693*	***19,996***	***10.71***
LN	*V2*	0	41	41	0	109	109	
	Sub-total	*0*	*41*	***41***	*0*	*109*	***109***	***2.66***
EBA	*GR1*	4	3	7	13	19	32	
	GR2	0	3	3	0	5	5	
	GR3	66	2	68	813	15	828	
	GR6	70	0	70	426	0	426	
	Sub-total	*140*	*8*	***148***	*1252*	*39*	***1291***	***8.72***
MBA	*FL7*	235	14	249	3,496	297	3,793	
	FL14	89	0	89	1,212	0	1,212	
	FL15	150	0	150	997	0	997	
	FL16	23	0	23	863	0	863	
	Sub-total	*497*	*14*	***511***	*6568*	*297*	***6865***	***13.34***
LBA-EIA	*FL3*	532	655	1187	3907	6053	9948	
	FL4	853	416	1269	2233	3056	5289	
	FL5	251	103	354	1071	634	1705	
	FL6	216	95	311	938	439	1377	
	QU1	61	47	108	466	197	663	
	QU3	37	0	37	51	0	51	
	QU4	173	0	173	1007	0	1007	
	V1	33	7	40	147	45	192	
	V3	40	0	40	133	0	133	
	Sub-total	*2196*	*1097*	***3419***	*9953*	*8468*	***20,365***	***5.95***
U	*FL99*	78	11	89	112	11	123	
	U1	0	1	1	0	2	2	
Total		***3911***	***2630***	***6541***	***25,33***	***26,898***	***52,237***	***7.98***

Valley, such as Staines (Robertson-Mackay 1987, 67) Runnymede Bridge (Kinnes 1991, 158) and Heathrow Terminal 5 (Leivers 2010b).

The assemblage includes 35 rim sherds, which derive from a maximum of 13 vessels (a maximum of three from feature G2004 on ICSG). Using the tripartite rim typology of *plain*, *rolled*, and *heavy* as applied to the assemblage from the Staines causewayed enclosure (Robertson-Mackay 1987, fig. 37), four different rim forms were identified (other fragments were too small to identify accurately):

Plain
1. Plain (two examples)
2. Everted (30 examples, eg, Fig. 6.1, 1–2)

Rolled
3. Rolled over (two examples)

Heavy
4. T-sectioned (one example)

Although most are rather small fragments (with the consequent uncertainties of orientation and profile) and it is therefore not possible to place the vessels in any classificatory scheme such as Cleal's (1992), there does appear to be a slight prevalence of closed forms. Eight vessels appear to be closed, with five open or neutral (only one of these definitely neutral). At least one is vessel is carinated (pottery record number (PRN) 193; 'quarry' G2004; Fig. 6.1, 3) and has a burnished exterior surface which – together with the rim form and suggestions of a sharp angled shoulder – suggests a Carinated Bowl (Herne 1988). Another vessel from the same context has a much straighter profile, with only a vestigial shoulder (PRN 190; feature G2004; Fig. 6.1, 1).

Distribution

The largest proportion of this group derived from a single feature on ICSG (feature G2004: 255 sherds; 2912 g), with the remainder from five tree-throw holes four on ICSG (17072, 19382, 30044 and 30478; 66 sherds; 268 g); one on RMC Land (4478; 1 sherd; 12 g) and penannular ditch G3002 on ICSG (11 sherds; 32 g). Other sherds were redeposited in small numbers in later features on both sites (32 sherds; 218 g).

In general the condition of this material varies but is generally moderate to poor. That there are some large sherds present (particularly within feature G2004) amongst quantities of smaller, more heavily abraded material demonstrates varying degrees of post-depositional movement and redeposition perhaps commensurate with the burial of previously middened material.

Discussion

Several sizeable assemblages of comparable Early Neolithic pottery are known from the locality – for instance at Staines (Robertson-Mackay 1987) and Runnymede Bridge (Kinnes 1991; Longworth and Varndell 1996; Needham 2000), with smaller groups from Heathrow Terminal 5 (Leivers 2010b), Horton (Barclay, in prep.) and Shepperton (Jones 2008). The range of forms and relatively fine flint-tempered fabrics is best matched at Runnymede, where the ceramics tend to be finer with a greater proportion of carinated forms than the Staines material. These differences are perhaps chronological, with the Runnymede material earlier.

One notable trait of the material from Harlington is the absolute absence of decoration. Other sites in the locality have assemblages in which decorated vessels are very much in the minority (1:17 at Heathrow Terminal 5; 1:23 at Staines; totals for Runnymede are not available). In this respect the Harlington assemblage is at the extreme of a phenomenon noted in other regional comparanda such as the material from Cippenham, Slough (Ford and Taylor 2004; Raymond 2003a), Manor Farm, Horton (Raymond 2003b) and Charvil, Berkshire (Lovell and Mepham 2000). It is worth stressing however that the assemblage is small, and with only a few exceptions, highly fragmentary, and that it is therefore quite possible that decoration was present (on shoulders, for instance, which are markedly under-represented).

Middle Neolithic

Middle Neolithic Impressed Wares (Peterborough Ware) were represented by 1867 sherds weighing 19,996 g in eight fabrics: six flint-tempered (FL8–FL13) and two grog with flint (GR4 and GR5). All appear to be of local manufacture. With a very few exceptions noted in the text, all identifiable vessels belong to the Mortlake type, in a range of bowl and jar forms.

For the most part, rims tend to be restricted to more or less elaborate variations on 'T' shapes, ranging from simple internal and external thickening (for instance Fig. 6.2, 4 PRN 221) which can be so slight as to be almost lacking (for instance Fig. 6.4, 27 PRN 704; Fig. 6.3, 24 PRN 762; Fig. 6.3, 19 PRN 782), to a more pronounced expansion inwards or both inwards and outwards.

Decoration is very common, mostly formed by impression: whipped cord maggots; finger ends, usually deep depressions with obvious nail marks; finger tips, usually raised crescents; finger nail; twisted cord, mostly single horizontal lines, rare instances of much more elaborate patterns; and various bones, sticks and (doubtless) other implements; but also incised line and moulding, the

Table 6.3 Middle Neolithic pottery: decoration by type and location

Location	Whipped cord maggots	Finger ends	Finger tips	Finger tips	Twisted cord	Bone/ stick	Incision	Moulding
Rim (top)	x	x	-	x	x	x	x	-
Rim (int.)	x	-	x	-	-	-	-	-
Neck (ext.)	x	x	-	x	-	x	x	-
Neck (int.)	x	x	x	x	-	x	x	-
Body (ext.)	x	x	x	x	x	x	x	x

latter restricted to horizontal ribs. The location of the various types is tabulated above (Table 6.3), and the range of motifs best seen in the accompanying illustrations (Figs 6.2–4).

Distribution

Sherds were recovered from a range of contemporary feature types (including the ditch of rectangular enclosure G3001 and ring ditches G2007 and G2008 at ICSG; and assorted tree-throw holes, spreads, ditches and gullies. The most numerous features on both sites to contain Middle Neolithic ceramics however were pits (Tables 6.4–5).

On both sites there is a broad distinction between pits containing a very few small sherds and those containing much larger assemblages.

Several of these pits occur in pairs or small groups. Group N pits G344 and G345 between them contained a substantial assemblage comprising 102 sherds weighing 1292 g from a minimum of 14 Mortlake-type vessels in two fabrics spread through the sequences of fills of both features. Decoration includes finger-impressed raised crescents; short lengths of impressed twisted cord; and whipped cord maggots in lines and chevrons. Two less common forms were present: a very simple undecorated rim and a very thin simple rim with whipped cord maggots that must derive from a small cup (the single sherd weighing only one gram was too small to provide a diameter for the vessel). The ubiquity of fabric type and decoration and the relatively small size of the rim sherds makes confident assignation of individual sherds to vessels difficult, but there is at least one demonstrable occurrence of refitting sherds between the two features (Fig. 6.2, 5 PRN 247 from G344 joins body sherds in G345).

Table 6.4 Middle Neolithic pits with ceramics (ICSG)

Group	Pit	No. sherds	Weight (g)	ASW (g)
N	G344	49	445	9.08
N	G345	53	847	15.98
O	10236	3	15	5.00
O	10238	2	69	34.50
P	10298	1	3	3.00
Q	10821	219	1,088	4.97
Q	11018	2	3	1.50
Q	11024	35	128	3.66
Q	11026	6	28	4.66
R	16031	14	46	3.28
R	16033	33	129	3.91
R	16109	56	330	5.89
-	01962	4	23	5.75
-	04081	32	211	6.59
-	10480	11	230	20.91
-	11062	6	23	3.83
-	11340	25	133	5.32

Pits 16031, 16033 and 16109 formed a short row (group R). Pit 16031 contained 14 sherds (46 g) from two vessels: one (Fig. 6.2, 7 PRN 276) with alternating rows of finger nail impressions and whipped cord maggots on the rim, neck and body; the other a vessel with whipped cord decoration. Pit 16033 contained 33 sherds (139 g) from four vessels: three represented only by body sherds, one with finger nail impressions, one with whipped cord, and one with raised crescents; and a fourth represented only by fragments of the rim. Pit 16109 contained 56 sherds (330 g) representing a minimum of nine vessels. Most consisted only of a few small abraded sherds and crumbs, with the exception of a large portion of one unusual vessel (Fig. 6.2, 9 PRN 298) with a complex decorative scheme involving whipped cord chevrons inside the rim, horizontal lines of twisted cord impressions on the outside of the rim and above the shoulder, stabbed bone or stick impressions in the neck, panels of alternating decoration on the upper body (surviving panels include impressed finger nail crescents and horizontal lines of twisted cord, with fragments of diagonal twisted cord), whipped cord chevrons on the lower body and fragments of curving lines of twisted cord and finger nail, probably from the lower body.

Pits 10821, 11018, 11024 and 11026 formed a cluster (group Q). Pit 10821 contained 219 sherds (1088 g) from a minimum of four vessels: a bowl with pronounced raised crescents below the sharp shoulder (Fig. 6.2, 11 PRN 300); 60% of the rim of a vessel in remarkably good condition (Fig. 6.2, 10 PRN 299) decorated with whipped cord and finger end impressions; some very abraded rim sherds decorated in a very similar fashion (but clearly from a different vessel); and the shoulder of another rather abraded vessel, again with whipped cord decoration. Pit 11024 contained 35 sherds (128 g) from a minimum of four vessels, including a rim with internal incised cross-hatched lines and external whipped cord maggots (Fig. 6.2, 6 PRN 271). Pit 11018 contained only two sherds (3 g) from two vessels, and pit 11026 only six sherds (28 g) from two vessels.

Not all pit groups contained large ceramic assemblages. One group of three (group O) contained three sherds (10236), two sherds (10238) and no sherds (10459). A second pair (group P) contained one sherd (10298) and no sherds (10300).

Individual pits tended to contain smaller quantities of ceramics than the groups. For instance, pit 1962 contained four sherds (23 g) from two vessels, and pit 11062 contained six sherds (23 g) from one vessel. Some contained slightly larger assemblages: pit 10480 had eight sherds (114 g) from a bowl with raised crescentic decoration, along with two plain sherds (9 g) from a second vessel from fill 10478, and a single large rim sherd (107 g) from 10479 (Fig. 6.2, 8 PRN 291). Pit 4081 (east of enclosure G3001) contained 32 sherds weighing 211 g from a minimum of six vessels. The sherds were small and in rather poor condition. One very abraded rim (Fig. 6.2, 4 PRN 221) is from a vessel which has certain similarities to the Ebbsfleet type. Seven sherds from a vessel with raised crescents were burnt. The remaining sherds were of usual type. Pit 11340 contained 25 sherds (133 g) from a single vessel with whipped cord maggots on the body and rim.

The same broad distinction can be seen on RMC Land, between features with very few sherds, and those with very much more substantial quantities of ceramics. The distribution of pits containing Middle Neolithic pottery is very much more diffuse at RMC Land than ICSG, although some groupings can be identified.

The largest quantity of pottery came from the group A pits 2752 (226 sherds weighing 4799 g) and 2817 (145 sherds weighing 1748 g). Pit 2752 contained parts of a minimum of 24 vessels: PRN 765/6 (Fig. 6.2, 12) was a bowl with a rim diameter of 320 mm, decorated with finger ends and whipped cord impressions; PRN 767/8 (Fig. 6.2, 13) a slightly smaller bowl at 280 mm diameter, with a much finer impressed decoration, again of whipped cord and finger ends, and also incised lines inside the neck; substantial portions of the lower body of a vessel with all-over closely spaced bone/stick impressions; large portions of the body of a vessel with lines of whipped cord maggots interspersed with a line of finger-impressed crescents every fourth row; PRN 790 (Fig. 6.2, 14); PRN 795 (Fig. 6.2, 15), a small bowl 165 mm in diameter with whipped cord maggots on the rim, in the neck and on the body, bone impressions inside, and horizontal lines of twisted cord on the shoulder and dividing the body into strips; PRN 800 (Fig. 6.3, 16), a bowl of 200 mm diameter, with whipped cord on and inside the rim, in the neck and on the body, and finger end impressions in the neck; approximately half of vessel PRN 801 (Fig. 6.2, 17), a bowl 175 mm in diameter, with the body divided into bands by horizontal plastic moulding, between which are impressed whipped cord maggots (also present on and inside the rim); and smaller fragments of at least 15 other vessels.

A number of sherds in 2752 derive from vessels that are also present in pit 2817; PRN 771/2/3 in 2752 belong to the same vessel as PRN 734–7 in 2817 (Fig. 6.3, 18), a fine grog-tempered bowl with

Table 6.5 Middle Neolithic pits with ceramics (RMC Land)

Group	*Pit*	*No. sherds*	*Weight (g)*	*ASW (g)*
A	0719	10	98	9.80
A	0733	26	167	6.42
A	1118	17	102	6.00
B	2752	226	4799	21.23
B	2817	145	1748	12.06
C	4400	11	230	20.91
C	4411	77	1369	17.78
C	4422	79	832	10.53
C	4476	6	27	4.50
D	4425	12	26	2.17
D	4428	6	65	10.83
E	4471	1	12	12.00
E	4481	13	94	7.23
F	4593	12	73	6.08
F	4625	2	10	5.00
G	4615	10	265	26.50
G	4621	3	26	8.67
G	4628	6	27	4.50
G	4638	7	70	10.00
H	4652	3	13	4.33
H	4654	12	53	4.42
H	4657	2	8	4.00
H	4664	12	57	4.75
I	5783	62	1587	25.60
J	5035/5041	14	46	3.29
J	5088	13	88	6.77
K	5376	1	3	3.00
K	5386	12	138	11.50
K	5388	3	22	7.33
L	5381	21	212	10.09
L	5392	47	489	10.40
M	5912	17	152	8.94
M	5923	12	125	10.42
M	5961	35	251	7.17
-	0683	1	3	3.00
-	1153	14	215	15.36
-	2003	14	105	7.50
-	2026	3	8	2.67
-	2158	4	9	2.25
-	2162	2	2	1.00
-	2169	5	26	5.20
-	2187	106	842	7.94
-	2199	1	3	3.00
-	2253	2	3	1.50
-	2260	1	2	2.00
-	2265	2	4	2.00
-	3630	5	11	2.20
-	4485	2	15	7.50
-	4623	10	141	14.10
-	5101	1	4	4.00
-	5352	2	4	2.00
-	5369	2	2	1.00
-	5393	10	23	2.30
-	5616	6	31	5.17
-	5950	1	9	9.00

diagonal lines of bone impressions on the rim and larger bone impressions on the body. PRN 782 (Fig. 6.3, 19) in 2752 comes from the same vessel as PRN 752 in 2817, a bowl of 280 mm diameter, with impressed cord decoration; PRN 774 in 2752 consists of a pair of sherds which join a sherd belonging to PRN 739 in 2817 – this vessel is a large jar decorated with alternating horizontal lines of finger-tip impressions and whipped cord maggots.

As well as these vessels that occur in both pits, 2817 contained fragments of a minimum of a further 14 vessels. PRN 763/4 (Fig.6.3, 20) consisted of a bowl of 190 mm diameter, with whipped cord on the rim, on and inside the neck, and in chevrons on the body above at least one line of finger-tip impressions. PRN 740/742 (Fig. 6.3, 21) is a jar of unknown diameter with diagonal lines of bone or stick impressions on the rim, whipped cord maggots in the neck, and bone impressions on the body. Small numbers of sherds derive from at least 12 other vessels (including PRNs 755, 756/7 and 762, Fig. 6.2, 22–4).

One sherd (PRN 781) is visually indistinguishable from the sherds making up PRN 703 (Fig. 6.3, 25) in pit 5783 (group I), some 43 m to the north-east. Although the sherd does not join any in that feature, the fabric and surface treatment are identical, and it is at least possible that it derives from the vessel, a substantially complete jar of 215 mm diameter with whipped cord maggots on and inside the rim and neck and in chevrons on the body, above horizontal lines of impressions, below which are two rows of finger-tip impressions. A zone with some light incision which may result from a heavy wipe rather than being decorated takes up most of the lowest part of the wall, except for areas where the finger nail decoration on the base extends up onto the lower wall.

Aside from these pits and pit groups, Impressed Ware ceramics are not frequent in any contemporary feature type, indicating a very restricted set of contexts of deposition. On ICSG, the ditches of rectangular enclosure G3001 contained only 24 sherds weighing 49 g, while ring ditches G2007 and G2008 contained only five sherds weighing 7 g between them. A further three sherds weighing 14 g came from other feature types.

On RMC Land, Impressed Wares are present in a wider range of features, although again the majority of these (spreads, a quarry, gullies, ditches) contained no more than five sherds. Tree-throw holes contained more substantial quantities (although, again, the quantities are not great, with the single largest group being 15 sherds weighing 52 g in 3606 – a feature which probably has more in common with the pits and pit groups). The only other notable instance among the tree-throw hole material were sherds from a single vessel (Fig. 6.3, 26 PRN 894/896) recovered from adjacent features 5638 and 5641.

Discussion

Middle Neolithic ceramics are not uncommon in the locality, and this assemblage fits very well amongst emerging trends, both in terms of form and decoration as well as context of deposition. This material attests to a fairly dense use of the area on the eastern side of the Colne, north of the Thames. As with the Harlington assemblage, this wider group of material derives from both earthworks (mostly secondary contexts in earlier Neolithic structures) and small features such as pits. There is seldom a repeated difference in the ceramics recovered from the different locations, and in these terms it is worth noting the similarities between the material from the Harlington pits and the ring ditch at Shepperton (Jones 2008).

Although there are ceramics from earthworks and other features, the prevalence of Middle Neolithic ceramics in pits fits within the pattern noted by Cotton, that Impressed Ware's broad depositional associations are:

> … in secondary contexts on established monumental sites, in low-lying and/or wet places, and in small pits, the latter far and away the most numerous … usually (but not always) at some remove from monuments like the Stanwell 'cursus' (Cotton with Johnson 2004, 145).

The pits containing substantial portions of individual vessels or sherds of several vessels can be paralleled within the immediate vicinity, especially in the pair of pits within the later Caesar's Camp enclosure (Grimes 1960). Similar pits containing either Mortlake or Ebbsfleet-type ceramics (but seldom if ever both) are known from the wider area, including Mixnam's Pit, Thorpe (*ibid.*, 181–5); Cranford Lane, Harlington, Holloway Lane and Sipson Lane immediately north of the airport (Cotton *et al.* 1986); Petters Sports Field, Egham (O'Connell 1986), Heathrow Terminal 5 (Leivers 2010b), and Iver, Buckinghamshire (Lacaille 1937).

Late Neolithic

Late Neolithic pottery has seldom been encountered in large quantities on excavations in the area, and in this sense the Harlington assemblage is entirely typical, with only 41 vesicular (probably shell-tempered) sherds weighing 109 g being recovered from three features (all on RMC Land). Two (pit 2720 and tree-throw hole 5603) contained only three and one sherds respectively (the three sherds from pit 2720 are not certainly Grooved Ware, being plain body sherds which could as easily derive from an Early Iron Age vessel in the virtually identical fabric V3).

Only pit 5732 contained Grooved Ware in any quantity. Here, 37 sherds weighing 82 g came from the rim and body of a single vessel probably of Durrington Walls type: parts of the exterior were decorated with incised horizontal lines, and there was a horizontal moulding inside the rim.

Discussion
Although not common, Grooved Ware is well-enough known in the area for some patterns to emerge. The larger assemblages – 564 sherds from Heathrow Terminal 5 (Leivers, 2010b); over 500 sherds from Holloway Lane, Harmondsworth (Cotton *et al.* 1986, 36 and fig. 22b; Field and Cotton 1987; Merriman 1990, 24–5); 120 sherds from at least three vessels in a hollow at Prospect Park, Harmondsworth (Laidlaw and Mepham 1996c); an unspecified quantity of material from a feature at Sipson Lane, Harmondsworth (Longworth and Cleal 1999, 185) – tend to be dominated by vessels of Durrington Walls type (although Clacton, Woodlands and hybrid vessels are known), and to occur in single or isolated features, primarily pits.

Early Bronze Age
Early Bronze Age ceramics have been identified predominantly on the grounds of fabric alone. Although more common than Grooved Ware, pottery of this period remains elusive, with only 140 sherds weighing 1252 g identified (compared to 156 sherds weighing 846 g from Heathrow Terminal 5). All sherds are grog-tempered, and have been assigned to four fabric groups (GR1, 2, 3 and 6). With the exception of three vessels and a single sherd from ICSG, all are undiagnostic grog-tempered body sherds which may derive from Collared Urns. All occur as single sherds (the largest of which weighs 12 g) or very small groups (up to four, weighing no more than 17 g) in isolated features.

Four instances from ICSG were more diagnostic. A Collared Urn rim sherd decorated with filled triangles and finger-tip impressions (Fig. 6.5, 33 PRN 323) came from pit 1215. An almost complete (but fragmentary) Collared Urn came from cremation grave 16669 (Fig. 6.5, 34 PRN 332). This vessel was only 97 mm tall with a diameter of 90 mm at the mouth. The vessel is in poor condition and the surfaces very abraded, but the collar appears to be decorated with diagonal rows of twisted cord, while the top and inner edge of the rim has diagonal nicks. There is a single horizontal row of shallow oval impressions towards the base of the neck. Cremated human bone from this burial was dated to 1940–1740 cal BC (NZA-30925, 3516±30 BP, 95% confidence).

Feature 40016 contained portions of a pair of vessels. One (Fig. 6.5, 35 PRN 327–9) consisted of the entire rim and most of the collar of a vessel of unknown height (very little of the body or base was present), with a diameter of 170 mm at the mouth. The sherds are in a similarly poor condition to PRN 332, but the decoration (confined to the collar as far as can be ascertained) consists of filled triangles of twisted cord. The other (Fig. 6.5, 36 PRN 330/1) consists of the base and lower body of a small vessel of unknown dimensions. Only the base of the collar survives, but this also appears to have been decorated with filled triangles of twisted cord. This feature is undated, but cremation grave 40017 3.4 m to the south-east contained human bone dated to 1880–1650 cal BC (NZA-31066, 3439±35 BP, 95% confidence).

Discussion
The very small quantity of Early Bronze Age ceramics (and particularly the absence of Beakers) is consistent with the wider pattern in west London, where pottery of this period is noticeably scarce. Given the lack of contemporary vessels (and indeed for evidence of any particular inhabitation of the gravel terraces at this time) the presence of the Collared Urns in dated cremation graves is of some significance in indicating a more definite human inhabitation of the plateau than was previously indicated.

Middle Bronze Age
Middle Bronze Age ceramics were not especially common, with only 511 sherds weighing 6865 g identified in four fabric groups, all flint-tempered (FL7 and FL14–16). All of the fabrics can be considered locally-manufactured: the standard tempering agents neither prove nor preclude this, but the absence of non-local materials indicates a local clay source is possible, and petrological studies of other ceramics from the area have shown similar fabrics (Williams 1993).

The assemblage divides into two basic vessel types, which correspond to the standard division of Deverel-Rimbury ceramics into coarser Bucket-shaped and finer Globular vessels.

The largest portion of the assemblage consists of Bucket-shaped jars, which tend to have the thickest walls and to be most coarsely tempered. Surfaces can be slipped, smoothed or wiped, but are more often left rough, with temper protruding through the surface even on many of the better-finished examples. The assemblage is for the most part very fragmentary (in spite of the high average sherd weight, which is skewed by a small number of very large pieces) and consequently forms are difficult to determine. Walls are usually straight, but a few are convex-profiled. Usually there is no differentiation in wall angle, but a small number of vessels are bipartite. Body sherds can have finger-tip impressions below the rim; raised bosses; and cordons (some of which are decorated with finger-tip impressions) applied around the shoulder and occasionally in 'horseshoe' arcs below the rim.

Rims are generally simple and upright, with rounded and flattened forms present. Decoration on the tops of rims is limited to finger tip and other sub-circular impressions. Bases are flat in every discernible instance, and feet at the base/wall angle slight or lacking.

Globular vessels are not a common element, but the few fragments present are typically thinner-walled in better-sorted fabrics, with smoothed or burnished surfaces. None are decorated.

The third element of the standard Deverel-Rimbury repertoire – the Barrel-shaped jars (as defined by Calkin 1962, 19–24) – do not appear to be represented here, which fits the general pattern in the Lower Thames Valley (Ellison 1975).

In addition to these basic types there are two small lugged sherds which appear to derive from one of the small 'knobbed cups' known in Surrey, from the London Thames (Needham 1987, 111), and from Heathrow Terminal 5 (Leivers 2010b).

Distribution

Middle Bronze Age ceramics were recovered from a limited number of locations. On RMC Land quantities were too small to allow any meaningful patterns to be identified, but all the ceramics recovered from contemporary features came from elements of the farmed landscape (ditches and a waterhole) along the northern edge of the excavations.

On ICSG, the distributions are perhaps more significant. Discounting the scatter of sherds redeposited in later features (the distribution of which did not reveal any particular patterning), Deverel-Rimbury material clustered for the most part in three groups. On the eastern edge of the excavated areas a number of sherds from ditches, pits and (particularly) well/waterhole G545 suggest a concentration of activity in this area (perhaps a farmstead). Amongst the ceramics in the waterhole were portions of the rim and upper body of a Bucket-shaped jar with deep finger-tip impressions on the rim top and on the applied cordon (Fig. 6.6, 40, PRN 374). At the very northern end of this area, pit 1982 contained approximately 30% of the rim and upper body of a closed-profiled thin-walled bipartite vessel with a slight pinched-up horizontal cordon decorated with finger-tip impressions, above which was a single (but presumably paired or quadrupled) horseshoe cordon or vestigial strap handle (Fig. 6.7, 41, PRN 377).

To the west (and separated by a short length of ditch which may represent the remains of a small enclosure) a small cremation cemetery included five burials in urns. In grave 1100, approximately 30% of the rim and corresponding portions of the upper wall survived from a closed-profiled vessel in the region of 240 mm diameter at the mouth with a row of applied bosses and at least one post-firing drilled perforation (Fig. 6.6, 37, PRN 341). Grave 1104 contained slightly less than half of a fragmentary closed-profiled vessel 190 mm diameter at the mouth. This pot was densely tempered with unusually well-sorted flint, and was entirely plain (Fig. 6.6, 38, PRN 343). Grave 1107 contained sherds of a very fragmentary vessel which could not be reconstructed, while in EV171 (evaluation trench 96) a substantial portion of the rim and upper body of an open-profiled urn 320 mm in diameter at the mouth was found in an inverted position. This vessel was decorated with finger-tip impressions on the top of the rim and on the applied cordon (Fig. 6.6, 39). Grave 1303 contained approximately 20% of the rim and upper wall of a large straight-sided vessel 360 mm in diameter at the mouth. The surface appears to have been smoothed and wiped or perhaps slip-coated, and there is a low applied cordon 190 mm below the rim (Fig. 6.7, 42, PRN 349). The repeated survival of portions of the rims of these vessels, and the complete lack of base and lower wall sherds strongly suggests that vessels were placed with their mouths on the ground and were subsequently truncated.

South of the cemetery (at the southern limit of excavation) lengths of ditch and a scatter of pits and wells/waterholes suggest the location of a second farmstead, within the boundaries of which was an isolated cremation burial (10001).

Discussion

The range of fabrics and forms is typical of Deverel-Rimbury assemblages of the Middle and Lower Thames, and there are numerous parallels in the west London area and beyond. In the immediate area, for example, assemblages have been recovered from Heathrow Terminal 5 (Leivers 2010b), Wall Garden Farm, Sipson (MoLAS 1993), and Prospect Park, Harmondsworth (Laidlaw and Mepham 1996). The T5 and Wall Garden Farm material appears to be entirely domestic (or at least to contain no urned cremation burials), whereas at Prospect Park the material is largely funerary, coming from a cremation cemetery. Funerary contexts for Deverel-Rimbury ceramics are known elsewhere within the west London area (Gardner 1924; Barrett 1973).

The Harlington assemblage is of interest given that it contains material from both funerary and domestic contexts. As well as the aforementioned, domestic assemblages in the locality have been identified nearby at Stanwell (O'Connell 1991), Mayfield Farm, East Bedfont (Jefferson 2003), at Staines (Barrett 1984), Sipson and Iver (Cotton *et al.* 1986), Yeoveney Lodge (Robertson Mackay 1987), Osterley (Cotton 1981), Harefield Road, Uxbridge (Barclay *et al.* 1995) and further east at Isleworth (Hull 1998).

In general there is no distinction between vessels occurring on settlement sites and those recovered from cemeteries, and this is confirmed by the material here. The same kinds of Bucket-shaped and Globular vessels tend to occur in both, in the same fabrics, and decorated in the same manner: the cemeteries manifest a selection from the available ceramic repertoire.

Late Bronze Age–Iron Age

In total 3419 sherds weighing 20,365 g have been identified as broadly Late Bronze–Iron Age. Changes in fabric type allow a reasonably certain distinction to be drawn between Middle and Late Bronze Age flint-tempered sherds, but the distinctions between the latest Bronze Age and earliest Iron Age ceramics are not entirely clear-cut. Where diagnostic form traits emerge at this time the assignation of certain vessels (and by extension certain sherd groups) to one or other period is possible with some degree of certainty. However, some of the fabrics that appear in the Late Bronze Age appear to continue in use into the Middle Iron Age, and in the absence of diagnostic forms sherds belonging to these fabric groups cannot be dated with any certainty.

Nine fabric types have been defined, four flint-tempered (FL3–6), three sandy (QU1, QU3–4) and two vesicular (V1, V3, both probably shell-tempered). Within the flint-tempered group there is a wide range of coarseness, and a very broad distinction between finewares – defined here on the basis of a combination of fabric type (FL6 has fewer, finer, and better-sorted inclusions), surface treatment (eg, smoothing, burnishing, coating with surface slip or slurry to disguise inclusions) and the presence of decoration (which is rare) – and coarsewares. Finewares are typified by fabric groups FL6 and the sandy wares. The vesicular fabrics are harder to typify, falling somewhere between the two. The range of inclusion types is for the most part consistent with a local source of raw materials.

It is not possible to distinguish between Late Bronze Age and Early Iron Age ceramics entirely successfully on fabric grounds, and it is likely that there was no radical alteration in potting at this time. As a general trend, the sandy fabrics which emerge in the Late Bronze Age become predominant by the Early Iron Age (a phenomenon noted throughout the Thames Valley by Longley (1991, 163), who also noted an associated thickening of vessel walls. Consequently, some of the sherds and groups discussed here could be either Late Bronze Age or Early Iron Age. As noted above, a small number of vessels can be considered as Early Iron Age on the basis of a limited number of morphological traits, and these are noted below.

Identifiable vessel forms are for the most part limited to jars and bowls. A few other small sherds may derive from small vessels such as crucibles or (less certainly) cups, but these are mostly highly fragmentary and no profiles or forms can be identified.

Jars are predominantly within Barrett's Class I (1980, 302–3) – ie, coarser, with limited surface finish (some smoothing, more often rusticated with a coarse fingered smear) and limited or no decoration (mostly finger-impressed or slashed rims and shoulders).

There are few reconstructable jar profiles but forms are likely to have been mainly tall and convex-walled. One almost complete profile from 17562 (Fig. 6.8, 43, PRN 624) is a vertically finger-smeared jar with a flat base and slight foot. The rim diameter is approximately 240 mm. Variations on this form are the most common element of the later prehistoric assemblage. Surface finishes include rustication and finger pinching/smearing. Bases are sometimes gritted, but only infrequently.

Less common are jars of similar form but with more pronounced necks and bipartite profiles (often with flat-topped or T-shaped rims – Fig. 6.8, 44, PRNs 584/593), and jars with inturned or 'hooked' rims (some of which have a decorative diagonal finger smear below the rim); again, these are likely to have been bipartite. Short-necked forms are the most common amongst this element, some of which are rusticated. Others have post-firing perforations in the neck. Some vessels were handled – for instance, a jar from 17562 (Fig. 6.8, 45, PRN 628).

Bowls are present, but are not always identifiable to type on the basis of small sherds (the average sherd weight for the group is only 5.59 g). Fineware bowls of Barrett's Class IV occur with short upright or everted rims and rounded (Fig. 6.8, 46, PRN 520) or carinated (Fig. 6.8, 47, PRN 646) shoulders, in finer flint and quartz-tempered fabrics and with well finished surfaces (including several examples with finely burnished exterior and/or interior surfaces). Bases are generally without feet, and on the heavier examples tend to be heavily gritted with fine flint. Decoration includes diagonal slashes under the rim, single incised horizontal lines externally, tooled lines on the interior of the rim and incised geometric patterns in the neck.

A few bowls have forms or decorative schemes which suggest they may lie later in the sequence, and be fully Iron Age. One (PRN 810 from hollow 1359, context 1358, ICSG) was a burnished vessel decorated with at least two horizontal lines of impressed dots. This vessel occurs in a fine variant of fabric group QU4. Other vessels in this fabric include a shouldered vessel of indeterminate form with burnish above the shoulder both internally and externally, and finger presses inside the shoulder angle inside. Another noteworthy vessel was a tripartite bowl burnished on both surfaces, with raised horizontal lines at both angles and two lines of stamped circles between (Fig. 6.8, 48, PRNs 920–4, 938–9). Sherds of this vessel were recovered from well 4240 (contexts 2398 and 2471) on RMC Land, in a feature which also contained sherds from jars with diagonal slashes on the rims and shoulders.

Distribution

Late Bronze and Early Iron Age pottery was recovered from a wide variety of feature types – ditches, pits, wells/waterholes, postholes – with a distribution extending across the excavated areas, with no notable concentrations of features in any area or areas. Only in the case of fabric group QU4 was any particular clustering seen, with the majority of sherds in this fabric occurring in and around the square enclosure towards the eastern side of ICSG. Although – with the exception of the decorated bowl mentioned above – there are no morphological traits to demonstrate it, it is likely that this fabric type is a later introduction of the Early Iron Age, and predominantly of Middle Iron Age date.

Throughout the period pottery is found widely in field system ditches (446 sherds weighing 2592 g). The mean sherd weight (5.81 g) is low, suggesting that much of this material may have been incorporated as secondary refuse, or have entered features through natural processes of silting. Although more pottery is found in pits (621 sherds weighing 3697 g), mean sherd weight is still only 5.95 g. Again, these sherds are likely to have been incorporated in pits as secondary refuse, with only a single example of the deposition of a substantial quantity of pottery (157 sherds from at least seven vessels, weighing 1736 g) in feature 17561 (ICSG), including portions of a vertically finger-smeared jar and four rusticated jars, a handle, and a fineware bowl.

Discussion

Parallels for the later Bronze and Iron Age assemblages from Harlington are numerous within the west London area. In terms of immediately local parallels, the Harlington assemblage is most similar to the material recovered from Heathrow Terminal 5 and Caesar's Camp, both of which have a similar emphasis on coarseware jars and short-necked fineware bowls (Leivers 2010b; Grimes and Close-Brooks 1993). In contrast, the assemblage from Canham's Site K to the west end of Heathrow Runway 1 contains similar jars but accompanied by fineware bowls with consistently tall necks (Canham 1978); although there are a number of parallels between the Site K jar forms and the Harlington material, the bowls are for the most part obviously different. These differences are also visible in other assemblages: at Runnymede Bridge and Petter's Sports Field, Egham, there is a much higher proportion of decorated vessels (Longley 1991; O'Connell 1986). The Petter's Sports Field material shows a similar shift to sandy fabrics, generally a later development within the sequence extending into the Iron Age.

Barrett's sequence for the post-Deverel-Rimbury ceramic tradition (1980) has simple, largely undecorated jars and bowls developing directly from Middle Bronze Age forms at the end of the 2nd millennium BC, succeeded by 'plainware' assemblages with a greater variety of forms, and finally, around the 8th or 7th century BC, by 'decorated' assemblages. Needham's more recent reappraisal of Bronze Age chronology places the emergence of Late Bronze Age forms around 1200 BC, with the decorated phase beginning at perhaps 750 BC, making it an Early Iron Age innovation (Needham 1996).

The Caesar's Camp assemblage was dated to the 9th to 8th centuries BC; that from Canham's Site K has been placed on typological grounds at the end of the sequence, in the 7th–6th centuries BC (Grimes and Close-Brooks 1993, 355); at Heathrow Terminal 5 the assemblage appears to begin prior to that at Caesar's Camp and to continue into the period of Site K's occupation. On balance, the Harlington material is most likely to be broadly contemporary with the Caesar's Camp assemblage, with the very few angular bowls lying in the Early Iron Age and the sandy Q4 fabric predominantly a later (Middle Iron Age) element.

On morphological grounds, the bulk of the identifiable forms are likely to lie at the end of the plainware sequence around the 9th century BC. Radiocarbon dating is of limited use in refining the sequence, as only three dates were returned on overlapping groups of fabrics and together giving a possible range of 1110–480 cal BC.

List of illustrated sherds

Early Neolithic (Fig. 6.1, 1–3)

1. ICSG, PRN 190, Early Neolithic feature G2004 (cut 30064, context 30055).
2. ICSG, PRN 191, Early Neolithic feature G2004 (cut 30066, context 30661).
3. ICSG, PRN 193, Early Neolithic feature G2004 (cut 30066, context 30661).

Middle Neolithic (Figs 6.2–4, 4–32)

4. ICSG, PRN 221, Middle Neolithic pit 4081 (context 4082).
5. ICSG, PRN 247, Middle Neolithic pit G344 (context 4421).
6. ICSG, PRN 271, Middle Neolithic pit 11024 (context 11023).
7. ICSG, PRN 276, Middle Neolithic pit 16031 (context 16030).
8. ICSG, PRN 291, Middle Neolithic pit 10480 (context 10479).
9. ICSG, PRN 298, Middle Neolithic pit 16109 (context 16110).
10. ICSG, PRN 299, Middle Neolithic pit 10821 (context 10820).
11. ICSG, PRN 300, Middle Neolithic pit 10821 (context 10820).
12. RMC Land, PRNs 765/6, Middle Neolithic pit 2752 (context 2753).
13. RMC Land, PRNs 767/8, Middle Neolithic pit 2752 (context 2753).
14. RMC Land, PRN 790, Middle Neolithic pit 2752 (context 2753).
15. RMC Land, PRN 795, Middle Neolithic pit 2752 (context 2754).
16. RMC Land, PRN 800, Middle Neolithic pit 2752 (context 2754).
17. RMC Land, PRN 801, Middle Neolithic pit 2752 (context 2754).
18. RMC Land, PRNs 734–7, Middle Neolithic pit 2817 (context 2815).
19. RMC Land, PRN 782, Middle Neolithic pit 2752 (context 2753).
20. RMC Land, PRNs 763/4, Middle Neolithic pit 2817 (context 2863).
21. RMC Land, PRNs 740–2, Middle Neolithic pit 2817 (context 2815).
22. RMC Land, PRNs 755, 756/7, 762, Middle Neolithic pit 2817 (context 2814).
23. RMC Land, PRNs 755, 756/7, 762, Middle Neolithic pit 2817 (context 2814).
24. RMC Land, PRNs 755, 756/7, 762, Middle Neolithic pit 2817 (context 2814).
25. RMC Land, PRN 703, Middle Neolithic pit 5783 (context 5784).
26. RMC Land, PRNs 894/896, tree-throw holes 5638 (context 5639) and 5641 (context 5642).
27. RMC Land, PRN 704, Middle Neolithic pit 4422 (context 4424).
28. RMC Land, PRNs 709/716, Middle Neolithic pit 4422 (contexts 4424/4414).
29. RMC Land, PRN 707, Middle Neolithic pit 4422 (contexts 4424).
30. RMC Land, PRN 712, Middle Neolithic pit 4422 (contexts 4424).
31. RMC Land, PRN 722, Middle Neolithic pit 4411 (context 4414).

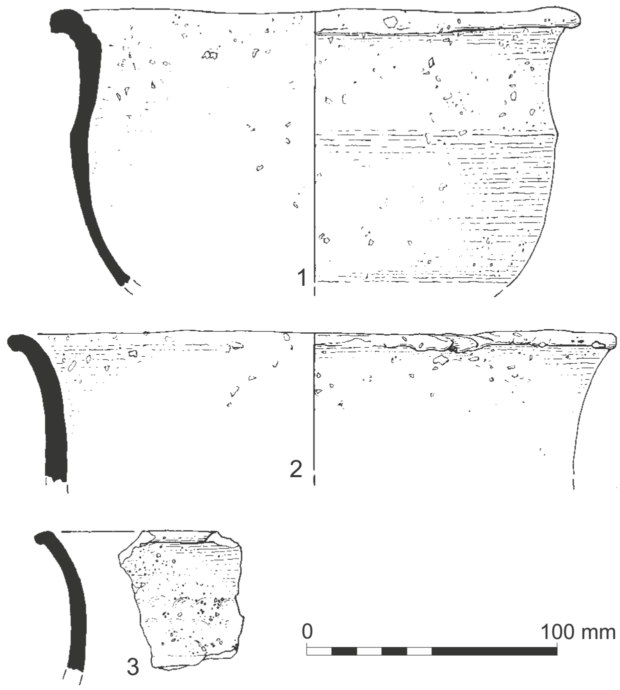

Figure 6.1 Early Neolithic pottery: 1–3

32. RMC Land, PRN 876, Middle Neolithic pit 5386 (context 5387)

Early Bronze Age (Fig. 6.5, 33–35)

33. ICSG, PRN 323, Early Bronze Age pit 1215 (context 1213).
34. ICSG, PRN 332, Early Bronze Age cremation grave 16669 (context 16670).
35. ICSG, PRN 327–9, Early Bronze Age pit 40016 (context 40060).
36. ICSG, PRN 330/1, Early Bronze Age pit 40016 (context 40060).

Middle Bronze Age (Fig. 6.6–7, 37–42)

37. ICSG, PRN 341, Middle Bronze Age cremation grave 1100 (context 1101).
38. ICSG, PRN 343, Middle Bronze Age cremation grave 1104 (context 1105).
39. ICSG, Middle Bronze Age cremation grave EV171 (context EV172) (evaluation trench 96).
40. ICSG, PRN 374, Middle Bronze Age well G545 (context 1916).
41. ICSG , PRN 377, Middle Bronze Age pit 1982 (context 1983).
42. ICSG, PRN 349, Middle Bronze Age cremation grave 1303 (context 1302).

Late Bronze Age/Early Iron Age (Fig. 6.8, 43–48)

43. ICSG, PRN 624, Late Bronze Age/Early Iron Age pit context 17562 (context 17561).

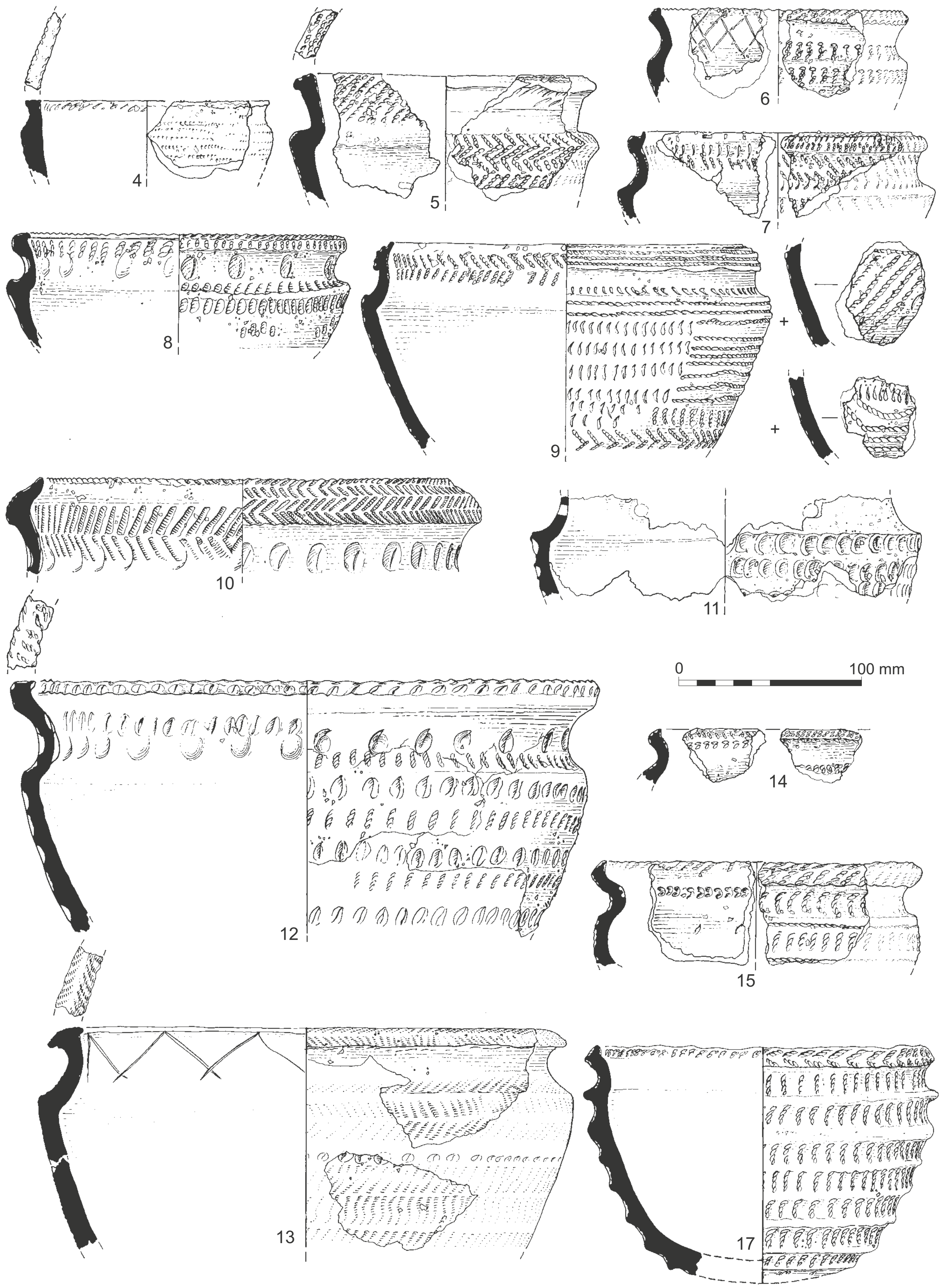

Figure 6.2 Middle Neolithic pottery: 4–15, 17

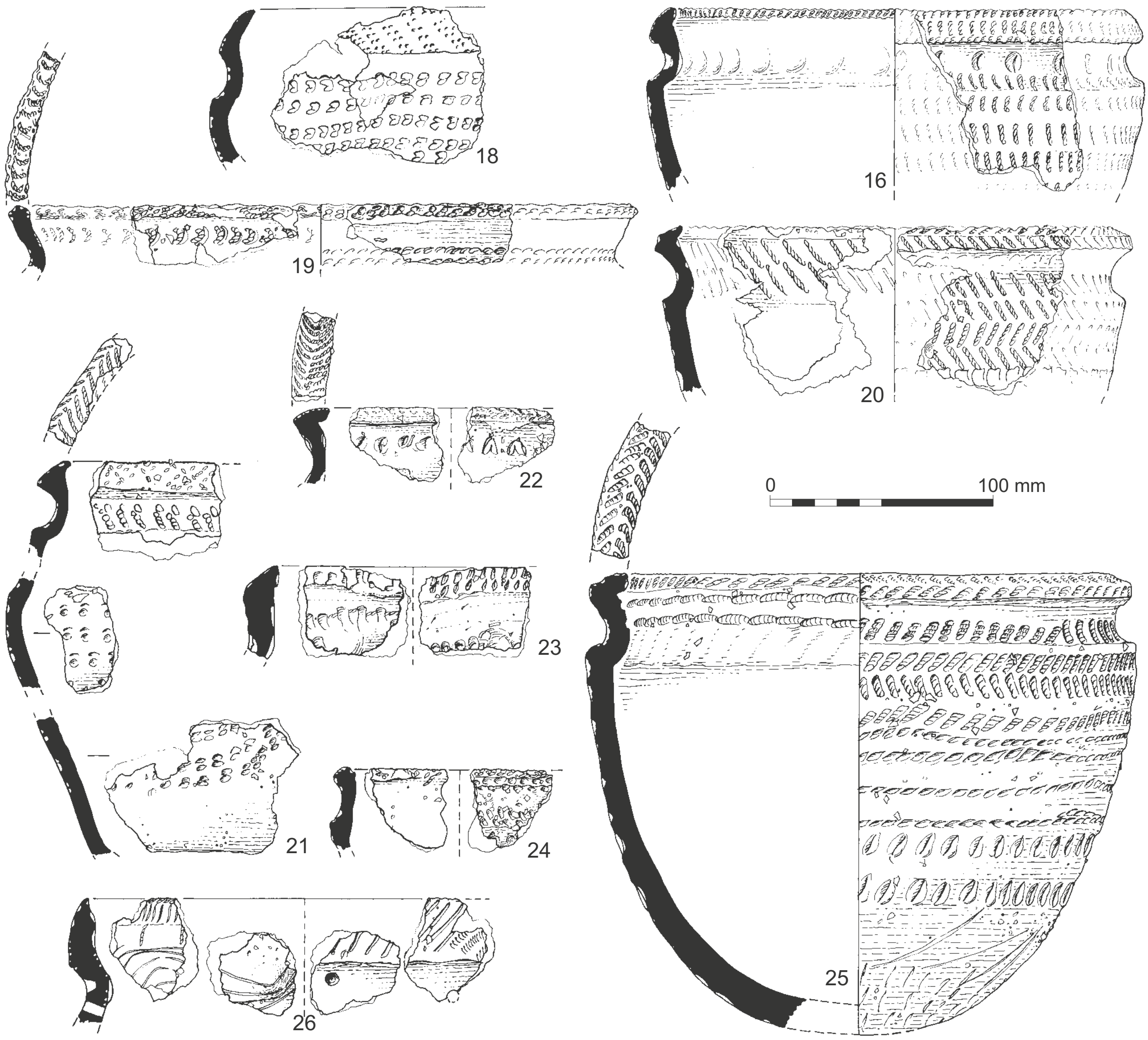

Figure 6.3 Middle Neolithic pottery: 16, 18–26

44. ICSG, PRNs 584 and 593, Late Bronze Age/Early Iron Age feature 17269 (contexts 17262 and 17267).
45. ICSG, PRN 628, Late Bronze Age/Early Iron Age pit context 17562 (context 17562).
46. RMC Land, PRN 520, Late Bronze Age/Early Iron Age pit 2266 (context 2267).
47. ICSG, PRN 646, Late Bronze Age/Early Iron Age well G2156 (context 17581).
48. RMC Land, PRNs 920–4, 938–9, Late Bronze Age/Early Iron Age well 4240 (contexts 2471 and 2398).

Appendix 1: Fabric descriptions

FL1 moderate medium to coarse sub-angular to angular poorly-sorted calcined flint; slightly sandy matrix.

FL2 moderate fine to coarse quite well-sorted crushed calcined flint; sandy matrix.

FL3 moderate fine to coarse reasonably well-sorted calcined flint; soft only slightly sandy matrix.

FL4 moderate fine to medium well-sorted crushed calcined flint; sandy matrix, occasional iron minerals.

FL5 abundant fine and medium well-sorted crushed calcined flint; quartz sand.

FL6 abundant very fine and fine well-sorted crushed calcined flint.

FL7 moderate fine to very coarse not very well-sorted calcined flint; soft, only slightly sandy matrix.

FL8 moderate, fine to very coarse poorly-sorted angular calcined flint; slightly micaceous sandy matrix.

FL9 sparse fine flint in a micaceous sandy matrix.

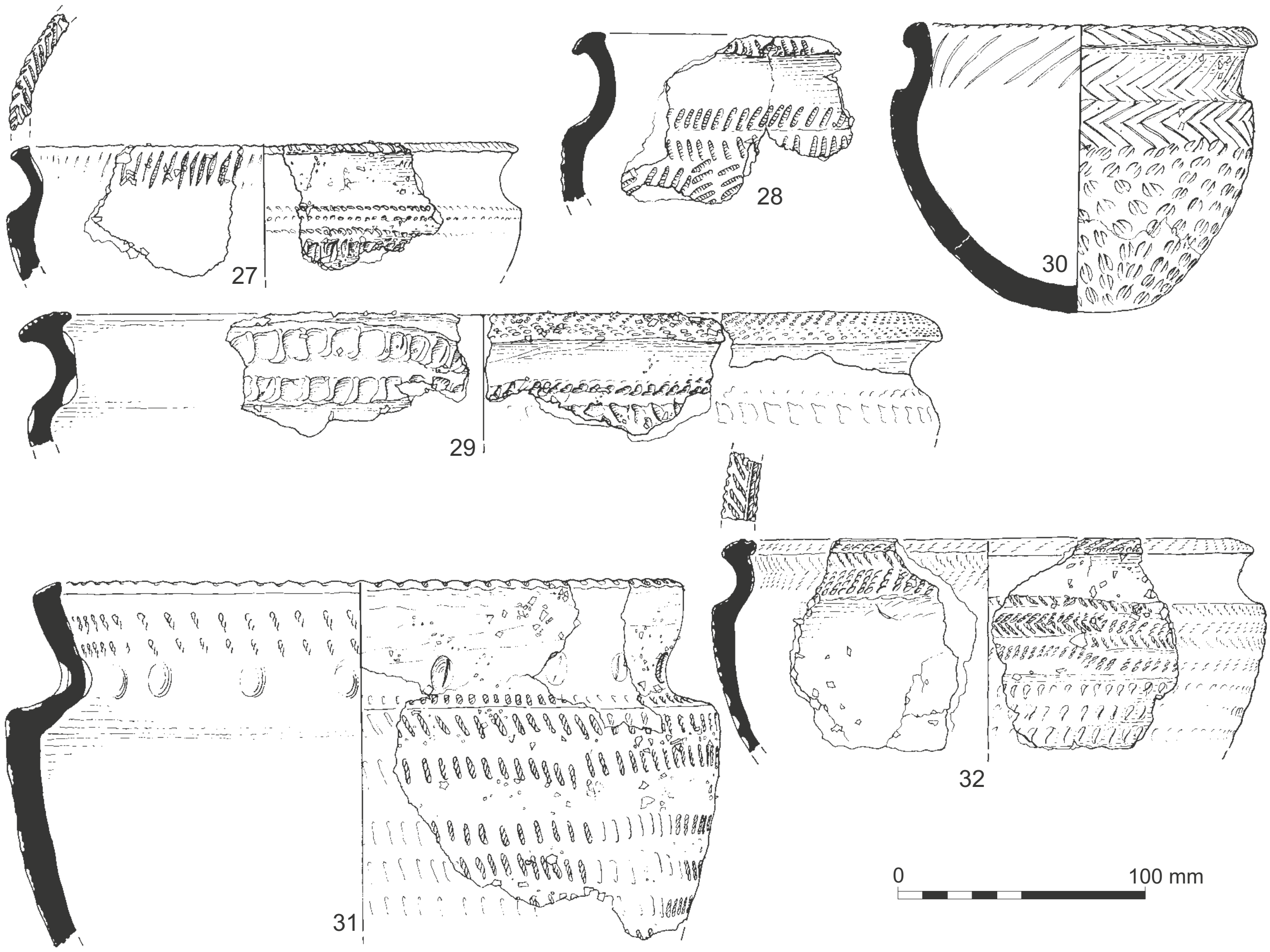

Figure 6.4 Middle Neolithic pottery: 27–32

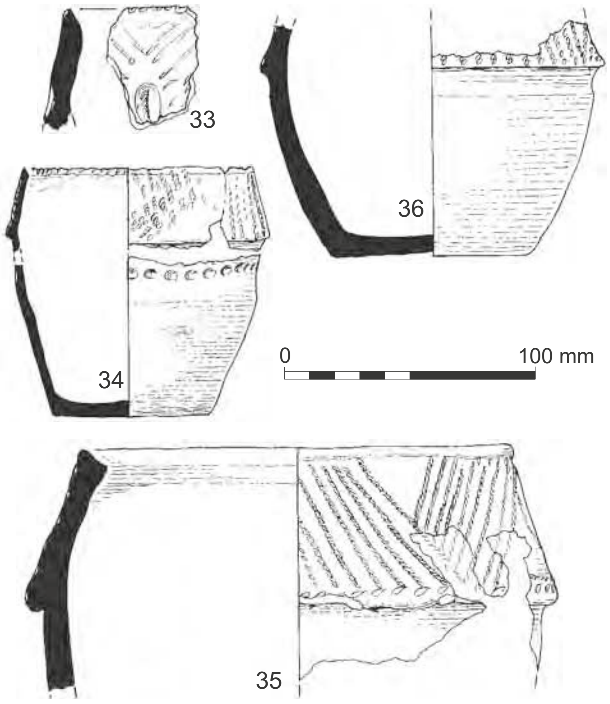

Figure 6.5 Early Bronze Age pottery: 33–35

FL10 frequent poorly-sorted fine to very coarse calcined flint; some grog; no sand visible in matrix, which tends to laminate.

FL11 moderate fine to medium flint in a micaceous sandy matrix.

FL12 moderate coarse flint and moderate coarse grog in a micaceous sandy matrix.

FL13 sparse fine and coarse flint, matrix is micaceous but is not especially sandy.

FL14 abundant fine to medium well-sorted angular crushed calcined flint; microscopically micaceous matrix.

FL15 moderate fine and medium well-sorted angular crushed calcined flint.

FL16 moderate well-sorted fine to coarse calcined flint; rare rounded quartzite probably naturally occurring.

FL99 indeterminate flint-tempered sherds of uncertain (prehistoric) date.

GR1 abundant medium and coarse sub-rounded grog; slightly sandy matrix.

GR2 sparse fine grog; slightly micaceous sandy matrix.

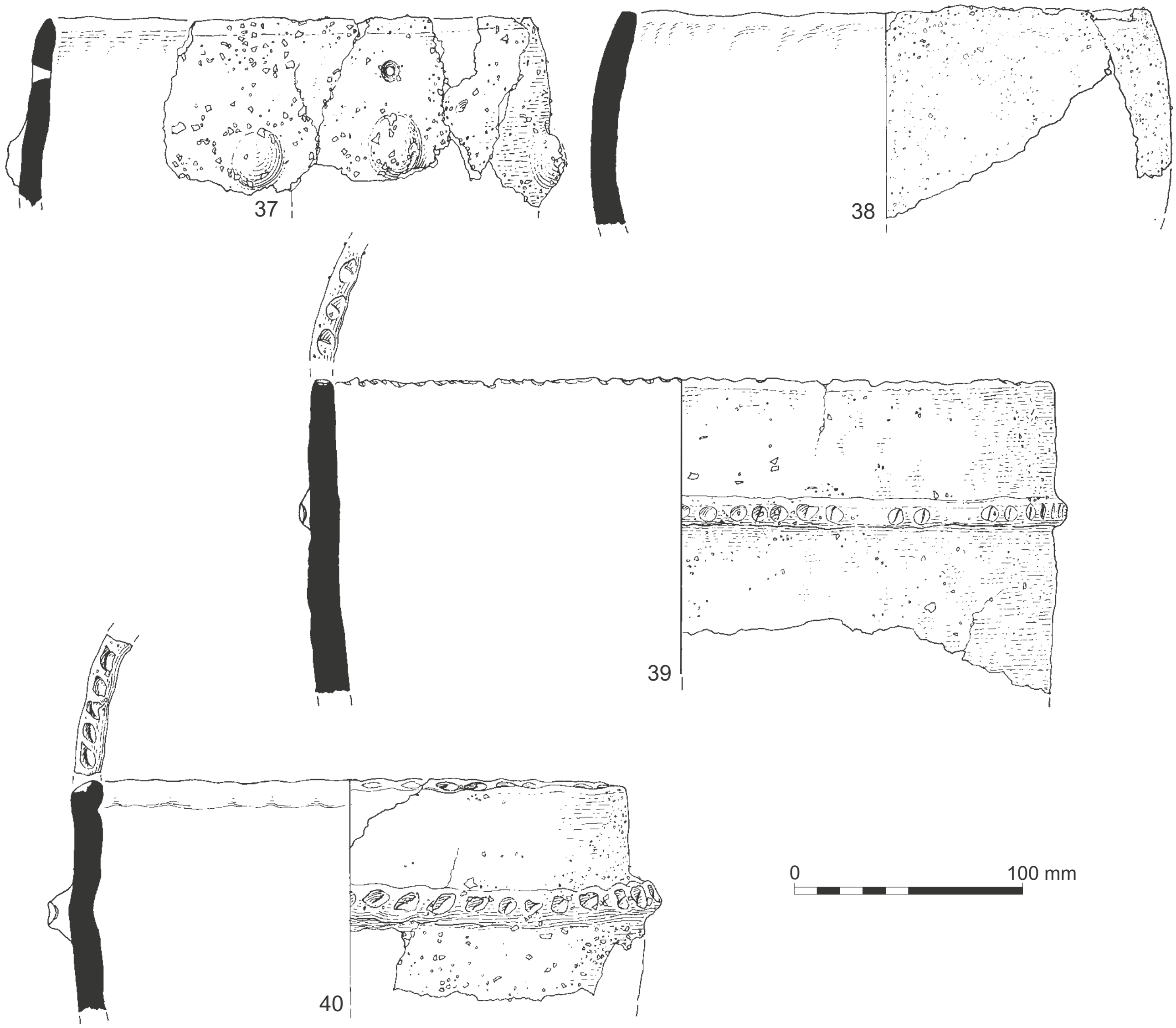

Figure 6.6 Middle Bronze Age pottery: 37–40

GR3 sparse medium to coarse grog; fine slightly micaceous sandy matrix.
GR4 moderate coarse grog; highly laminar fabric.
GR5 moderate coarse grog; sparse poorly-sorted medium to very coarse flint; laminar fabric.
GR6 moderate medium to coarse grog; sparse crushed calcined flint; micaceous sandy matrix.
QU1 very slightly micaceous fine sand; very occasional flint is probably an accidental inclusion.
QU2 moderate fine rounded quartzite grains probably naturally occurring.
QU3 soft only very slightly micaceous fine sand; some grog; some ?iron minerals.
QU4 quite coarse micaceous sand; very sparse fine flint and voids, both probably accidental inclusions.
U1 unidentified heterogeneous inclusions.
V1 sparse voids, soft silty fabric.
V2 frequent large linear angular voids, a little grog; soft fabric without sand; voids are probably shell.
V3 frequent large short linear angular voids probably shell.

Later Prehistoric and Romano-British Pottery

by Rachael Seager Smith

This assemblage spanned the period from the Middle Iron Age to the end of the Romano-British period. Few of the sherds survived well in the harsh, abrasive, gravel soils of the area and most were very small with rolled, battered edges and few original surfaces. Overall, the average sherd weight was just 8.5 g, but some of the later Romano-British groups survived in

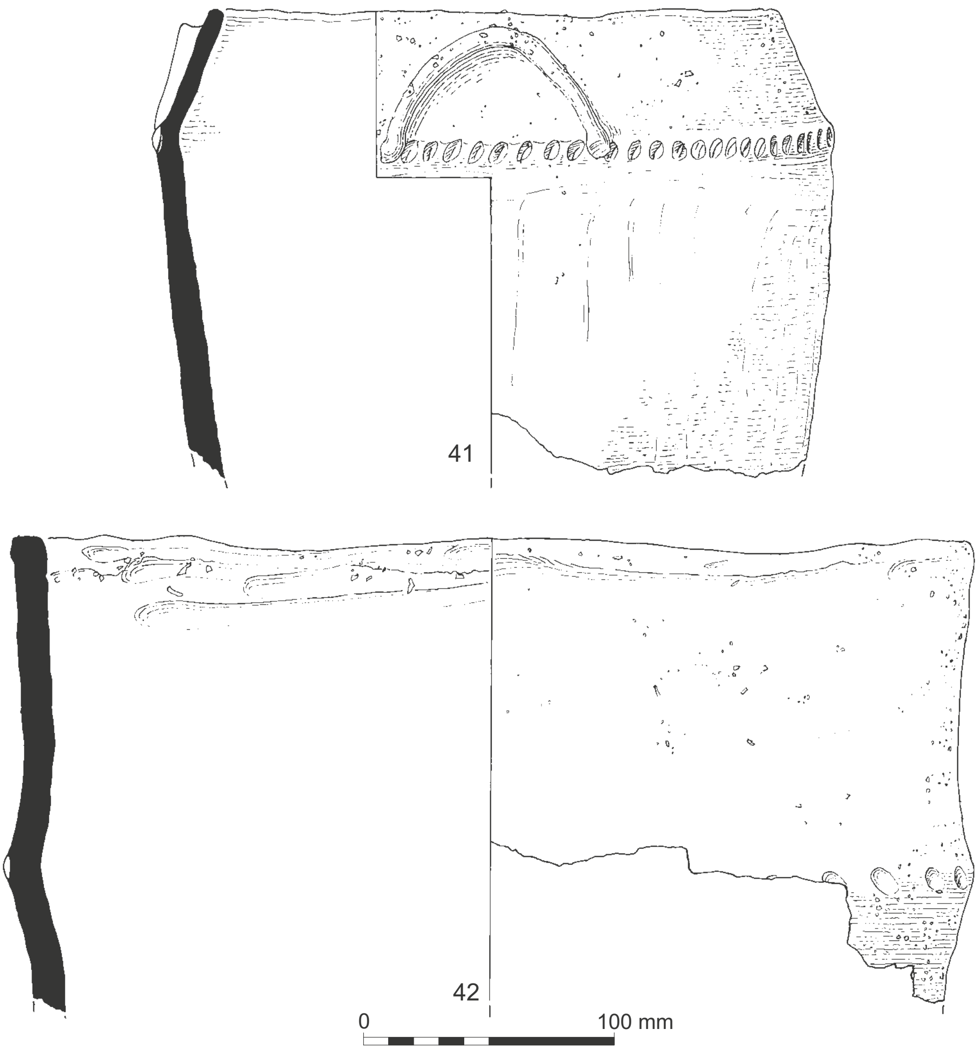

Figure 6.7 Middle Bronze Age pottery: 41–42

relatively good condition. Unless otherwise stated, contexts refer to ICSG from where the bulk of the assemblage was recovered.

The poor condition of the assemblage limited the level of analysis to a detailed scan, conforming to the Study Group for Roman Pottery's minimum standards (Darling 1994). Within each context, sherds were divided into fabrics of known type or source (eg, samian, Oxfordshire wares) or 'catch-all' groups based on predominant inclusion type (eg, sandy grey wares, grog-tempered wares), and quantified by the number and weight of sherds. The number and type of vessel forms, unusual features such as perforations or graffiti and the date range of the sherds themselves and for the context as a whole were also recorded. Where appropriate, terminology from published corpora (such as Timber and Dore 1998; Davies *et al.* 1994; Tyres and Marsh 1979; Lyne and Jefferies 1979; Young 1977; Thompson 1982) was employed. This information was recorded in an Access database for each site (held within the archive) and the range and quantities of the fabrics are summarised in Table 6.6 and by phase in Table 6.7.

Middle to Late Iron Age

Pottery of Middle to Late Iron Age date was markedly absent at RMC Land and only poorly represented at ICSG. Fabrics were dominated by a range of sandy wares, with smaller quantities of shelly, flint- and grog-tempered wares. The shelly fabrics in particular, were much leached, friable and fragmentary. Diagnostic sherds were scarce and recognisable vessel forms restricted to a range of small to medium sized jars and bowls, most with proto-bead rims (eg, Fig. 6.9, 1–2). Other forms included a modified bead rimmed jar/bowl (Fig. 6.9, 3) and a single saucepan pot (Fig. 6.9, 4). Surfaces were wiped, smoothed or burnished, and with the exception of one or two

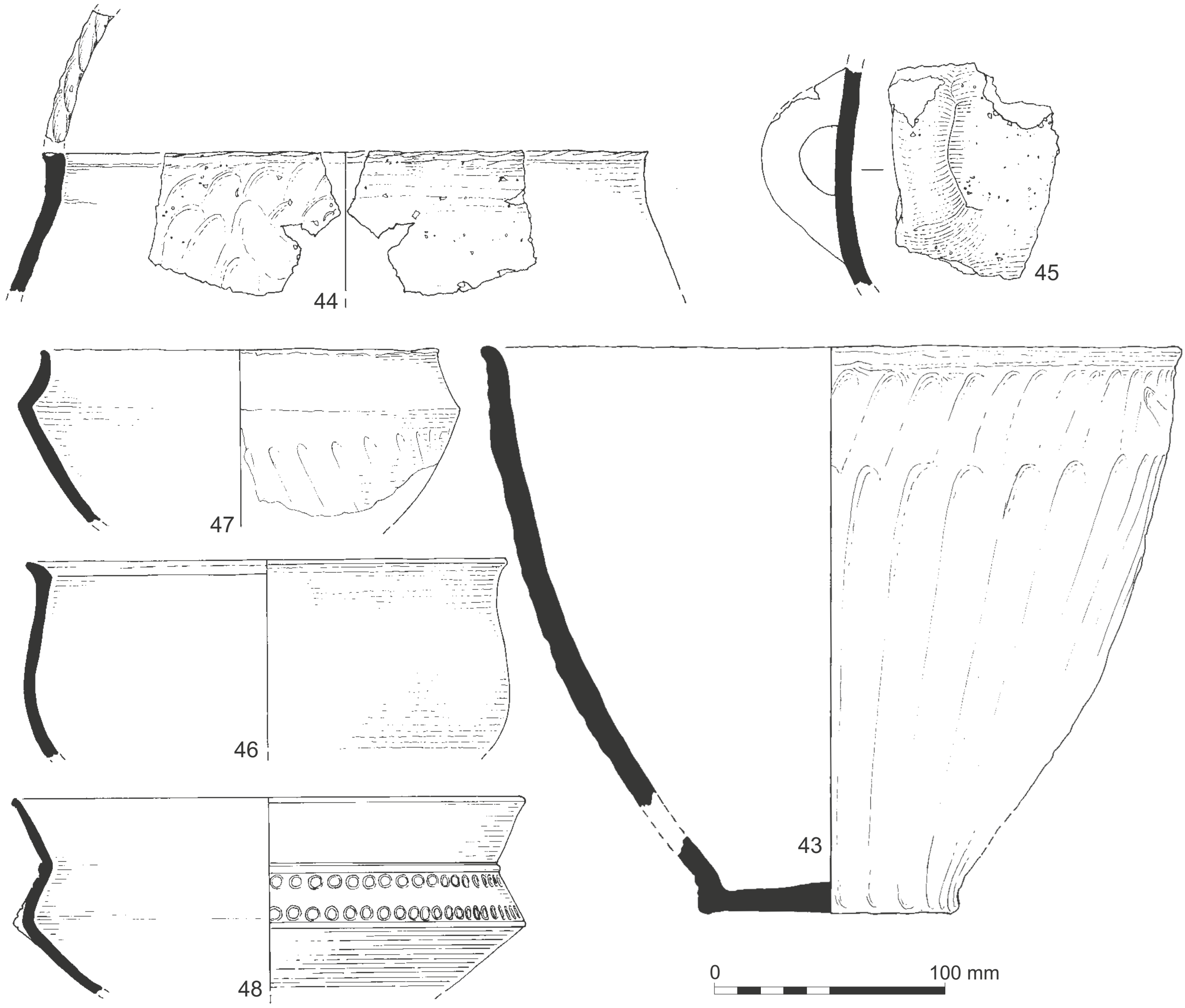

Figure 6.8 Late Bronze Age and Early Iron Age pottery: 43–48

pieces with deliberate external scoring (eg, Fig. 6.9, 1), decoration was absent. Although its flared rim was highly fragmentary, a group of thick-walled sherds in a shell-tempered fabric found in Late Iron Age pit 11480 indicated the presence of larger jar forms, presumably for long-term or bulk storage. Other pieces from this feature included rims from two shell-tempered proto-bead rimmed jars, also of Middle to Late Iron Age date, as well as a handful of small residual Late Bronze Age and Early/Middle Iron Age sherds and 16 intrusive Romano-British pieces present in its upper fill.

Overall, the Middle to Late Iron Age assemblage is directly comparable with that from contemporary adjacent sites such as Caesar's Camp (Grimes and Close Brooks 1993), Brooklands, Weybridge (Haworth and Tomalin 1977) and Perry Oaks (Every and Mepham 2006). Like them, it probably spans the period between *c.* 400–100/50 BC although more precise dating is prevented by the small size and poor condition of the assemblage. Sherds belonging to this period were largely confined to the eastern part of the site (Areas A and B), associated with a group of roundhouses. The paucity of material belonging to this period, compared with the preceding Late Bronze Age/Iron Age phase (see Leivers, above), suggests that the focus of activity had shifted to a more distant location or continued on a much reduced scale.

Latest Iron Age/Romano-British

As at Perry Oaks (Every and Mepham 2006, 19), it was not possible to identify a distinctive pre-Roman Iron Age ceramic horizon. Sherds in the grog-tempered, Late Iron Age/early Romano-British shelly fabrics and even some of the miscellaneous sandy grey wares could include pieces of pre-Conquest date, but the use of these fabrics, made into a similar range of bead rimmed and necked, shouldered jars, continued

Table 6.6 Overall quantities of later prehistoric and Romano-British pottery fabrics

	ICSG		*RMC Land*	
	No.	*Wt. (g)*	*No.*	*Wt. (g)*
Later prehistoric				
Sandy wares	52	361	5	24
Shelly wares	37	296	4	15
Flint-tempered wares	3	34	2	6
Grog-tempered	1	12	3	18
Subtotal	*93*	*703*	*14*	*63*
Romano-British				
Samian	28	402	1	1
Argonne colour-coated ware	2	7		
Amphora			1	1
Verulamium region whiteware mortaria	5	252	-	-
White-slipped mortaria	2	137	-	-
Oxon colour-coated mortaria (OXCC)	11	84	2	178
Oxon white colour-coated mortaria (OXWC)	3	125	-	-
Oxon whiteware mortaria	3	139	-	-
Nene Valley colour-coated (NVCC)	19	536	-	-
Oxon colour coat (OXCC)	131	1524	8	39
Verulamium region white ware (VRW)	149	1159	4	5
Verulamium white slip (VCWS)	46	166		
Misc. oxidised wares (OXID)	95	1374	8	43
Oxon white colour-coated ware (OXWC)	3	39	-	-
Misc. sandy greyware (SAND)	1325	13385	132	827
Grog-tempered wares (GROG)	492	6511	9	32
LIA/ERB shelly wares	82	923	-	-
Late Roman shelly ware (CALC)	171	1174	1	24
Overwey/Tilford ware (PORD)	67	659	3	8
South-east Dorset BB1 (BB1)	30	258	-	-
Subtotal	*2664*	*28854*	*169*	*1158*
Overall total	2757	29557	183	1221
Mean sherd weight	10.7 g		6.4 g	

well into the late 1st/early 2nd century AD. Consequently, the period from *c.* 50 BC to the end of the Romano-British period is considered here as a single entity.

Composition of the assemblage

Imported wares were scarce, accounting for less than 1% of the sherds. The samian was predominantly from Central Gaul with only a single, abraded Southern Gaulish piece, from midden deposit 10662. Sherds from a form 31 bowl and five vessels belonging to the form 18/31 series of bowls/dishes, two form 37 bowls and three form 33 cups were recognised, suggesting a 2nd-century AD date for most of the samian. The only other imports were two sherds of Argonne colour coated ware (dated to *c.* AD 80–135), one with roughcast clay decoration from hollow G409 and a beaker rim (*cf*, Anderson 1980, figs 11 and 12) from ditch G314. One tiny flake of amphora (Dressed 20) was found in early medieval ditch 1202 (section 696) at RMC Land but imported mortaria were entirely absent.

The earliest British mortaria were from the *Verulamium* region. All three rims (two from hollow G409 (contexts 10351 and 10358) and one from ditch G696 (context 11240) were of the high, prominently beaded type characteristic of the period between *c.* AD 120/140–180/220 (Davies *et al.* 1994, 47, type BEF, fig. 40, 214) and indicate that products of this region were not reaching the site until the 2nd century AD. The two unsourced white-slipped mortaria probably belonged to a similar period. One, from pit 4651 (context 4645), was from a high-beaded form, while the other, a body sherd found in ditch G427 (context 10623), had a small, post-firing perforation, indicating the repair of this vessel with metal staples or organic thongs. Similar vessels have been found at Perry Oaks (Brown 2006) and Staines (McKinley 2004a). Late Romano-British mortaria were all from the Oxfordshire region (Table 6.6), but only two forms (Young 1977, types WC 7 (Fig. 6.9, 6) and C100) were recognised, both likely to be of 4th-century AD date.

The British finewares comprised sherds of Nene Valley (Hartley 1960; Perrin 1999, 87–106) and Oxfordshire (Young 1977, 123–84) colour-coated wares. The Nene Valley wares included part of a Castor box lid (Fig. 6.9, 7), probably of later 2nd to 3rd centuries AD date (Perrin 1999, 98) and a 4th-century AD globular-bodied flagon or jug (Fig. 6.9, 8). The Oxfordshire colour-coated forms including a handled jar or jug (Young 1977, 150, type C13) and a variety of bead-rimmed (*ibid.*, types C44, C45, C55 and C68), rolled rim (type C48), flanged (types C51 and 52 (Fig. 6.9, 9) and necked (types 75 and 78 (Fig. 6.9, 10) bowls spanning the period between *c.* AD 240 and 400.

The oxidised wares largely comprised whiteware and white-slipped ware vessels probably made in the *Verulamium* region between *c.* AD 60–150/160, as well as two sherds from an Oxfordshire white-slipped ware carinated bowl (Young 1977, 120, type WC3; *c.* AD 240–400). The *Verulamium* products included lid-seated and moulded rim jars of 2nd-century AD date (Tyres and Marsh 1979, 562, fig. 237, IIG and IIH) as well as a few jug/flagon sherds. Although limited production may have occurred after AD 150/160, similar wares may have been made in the Milton Keynes area (Marney 1989, 112), in Northamptonshire (perhaps around Stanwick) or possibly at Godmanchester (R. Perrin pers. comm.), during the late Antonine period, but no attempts were made to differentiate these fabrics due to the poor condition of the sherds. Most of the unsourced fabrics were probably of local origin, although some of the finer ones may be degraded Oxfordshire colour-coated wares and at least two pieces of the distinctive ‘salt-and pepper’ fabric from Hadham were present in midden G325. Jar, bowl and lid forms were identified

Table 6.7 Later prehistoric and Romano-British pottery by phase (ICGS)

	Middle Iron Age		*Late Iron Age*		*Early Romano-British*		*Later Romano-British*		*Romano-British*		*Total from all phases*	
	No.	*Wt. (g)*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*
Later prehistoric												
Sandy wares	17	57	5	40	10	33	-	-	5	29	52	361
Shelly wares	1	8	6	70	30	218	-	-	-	-	37	296
Flint-tempered wares	-	-	-	-	-	-	-	-	2	32	3	34
Grog-tempered	-	-	-	-	-	-	1	12	-	-	1	12
Romano-British												
Samian	-	-	-	-	2	30	16	321	6	34	28	402
Argonne colour-coated ware	-	-	-	-	-	-	1	2	1	5	2	7
Verulamium region white ware mortaria	-	-	-	-	-	-	4	211	1	41	5	252
White-slipped mortaria	-	-	-	-	1	37	-	-	1	100	2	137
Oxon colour-coated mortaria (OXCC)	-	-	-	-	-	-	8	78	2	3	11	84
Oxon white colour-coated mortaria (OXWC)	-	-	-	-	-	-	3	125	-	-	3	125
Oxon whiteware mortaria	-	-	-	-	-	-	1	62	2	77	3	139
Nene Valley colour-coated (NVCC)	-	-	-	-	-	-	18	524	-	-	19	536
Oxon colour coat (OXCC)	-	-	1	6	-	-	89	1171	29	175	131	1524
Verulamium region white ware (VRW)	1	7	-	-	6	92	118	896	17	122	149	1159
Verulamium white slip (VCWS)	-	-	-	-	44	152	1	1	1	13	46	166
Misc. oxidised wares (OXID)	-	-	1	2	14	89	38	878	26	274	95	1374
Oxon white colour-coated ware (OXWC)	-	-	-	-	-	-	3	39	-	-	3	39
Misc. sandy greyware (SAND)	3	4	5	50	147	1005	671	8715	348	2745	1325	13,385
Grog-tempered wares (GROG)	-	-	36	546	130	1700	58	1012	196	2531	492	6511
LIA/ERB shelly wares	-	-	2	28	26	413	20	111	19	229	82	923
Late Roman shelly ware (CALC)	-	-	-	-	-	-	171	1174	-	-	171	1174
Overwey/Tilford ware (PORD)	-	-	-	-	-	-	55	479	8	124	67	659
South-east Dorset BB1 (BB1)	-	-	-	-	1	9	26	189	1	26	30	258
Overall total	22	76	56	742	411	3778	1302	16,000	665	6560	2757	29,557

but diagnostic sherds from jugs/flagons, normally the mainstay of the oxidised wares across much of southern England, were scarce. The only definite examples were a more or less complete jug from well 1087 (Fig. 6.9, 11), a collared flagon rim from midden deposit 11613 and the base of a relatively small vessel from midden G325.

Overall, the Late Iron Age/Romano-British pottery was dominated by the sandy greyware 'catch-all' group (60% of all sherds) and, to a lesser extent, the grog-tempered wares (14% of the sherds). Although no attempts were made to source these fabrics, local kilns situated in the Colne (Crouch and Shanks 1984) and Lower Thames Valleys probably contributed to this group while at least some the grog-tempered wares may derive from the Highgate Wood kilns (Davies *et al.* 1994, 74–82). Highgate C ware poppy-head beaker sherds (Tyres and Marsh 1979, 569, type IIIF3) were found in pit 10067 (ICSG) and pit 3080 (RMC Land), highlighting the possibility of greater quantities of this ware among the less diagnostic greyware sherds. A similar range of Iron Age/early Romano-British shelly wares is known from London, probably derived from the Oxford Clay and sources along the Thames estuary, in Essex and Kent (Davies *et al.* 1994, 101). Here, the sherds survived in poor, leached condition and the only identifiable forms were bead-rimmed jars. The Alice Holt industry (Lyne and Jefferies 1979) was the major supplier throughout the Romano-British period, and the distinctive 4th century variant of this fabric, Overwey/Tilford ware, was identified in limited quantities (2% of all sherds). Other regional industries contributing vessels to this coarseware group were the South-east Dorset Black Burnished ware industry and, during the 4th century AD, shell-tempered jars (eg, Fig. 6.9, 22) characteristic of the Harrold region of Bedfordshire (Brown 1994) were also reaching the site.

Early (1st–early 2nd century AD) forms predominantly consisted of bead rimmed (Tyres and Marsh 1979, 554–57, type IIA; Thompson 1982, 217–21, type C1–2) and necked, cordoned jars (*ibid.*, type IID; type B1–1) and, less commonly imitation Gallo-Belgic platters (*ibid.*, 578, type VA), made in both grog-tempered and the more Romanised sandy wares. Among the grog-tempered wares, other less common forms included storage jars (Thompson 1982, type C6–1), a jar with a rippled, corrugated shoulder (*ibid.*, type B2–2) and an imitation butt beaker (*ibid.*, type G5–6) while Atrebatic (Lyne and Jefferies 1979, 30, class 5) and round-bodied (Tyres and Marsh 1979, 575, type IVF) bowls occurred in the greyware fabrics. Later forms included necked and moulded rim jars (*ibid.*, types IIG, IIH and IIN-Q) and the standard range of flat- and triangular-rimmed bowls/dishes (*ibid.*, types IVG and IVH) introduced around AD 120/130. At least some of the shallow plain rimmed dishes (*ibid.*, type IVJ; Lyne and Jefferies 1979, 48, class 6A) may also belong within the 2nd century AD, although this form became more common during the 3rd and 4th centuries AD. Other late Romano-British forms included jars (Lyne and Jefferies 1979, classes 1, 1A (eg, Fig. 6.9, 19), 3B (eg, Fig. 6.9, 12–13) and 3C), together with storage jars (*ibid.*, classes 4 and 10), straight-sided bowls and dishes (*ibid.*, classes 5B (eg, Fig. 6.9, 20) and 6A (eg, Fig. 6.9, 21), jugs (*ibid.*, class 8; eg, Fig. 6.9, 14–17) and strainers (*ibid.*, class 5C; eg, Fig. 6.9, 5 and Fig. 6.9, 18) present in smaller numbers.

Distribution

While broad trends and changes in the ceramic supply can be traced through time, detailed considerations were hampered by the poor condition of the sherds. At RMC Land and LEWGF, all the later prehistoric and Romano-British pottery occurred as small, stray sherds in earlier or later features and there were very few diagnostic pieces. The distribution of this material will not be considered further. Considerable degrees of residuality and intrusion were also apparent within the Late Iron Age/Romano-British assemblage from ICSG and the dating of the various features and deposits on ceramic grounds was often tentative. Although 89% of the later prehistoric and Romano-British sherds (92% by weight) were attributed to contemporary phases (Table 6.7), 24% (22% by weight) of them were from the 52 features and deposits which could only be assigned a generalised 'Romano-British' date. Overall, the sherds occurred in relatively small numbers in a wide range of contexts and there were few large groups – pottery of this date occurred in 161 feature groups, but 103 of these contained fewer than 10 pieces while only 24 groups, mostly from Areas A and B at the eastern end of the site, comprised more than 30 sherds. In the following discussion, these larger groups have been identified and used to illustrate the changing trends in ceramic supply through time.

Miscellaneous groups

The earliest feature containing more than 30 sherds was Early/Middle Iron Age ditch G383. In addition to contemporary prehistoric sherds (see Leivers, above), seven Middle/Late Iron Age sandy ware sherds (including Fig. 6.9, 1–2) were recovered from sections 10043 and 10645 while 39 intrusive pieces spanning the entire Romano-British period, were found in sections 1284 and 1665 where this feature was cut by later Romano-British ditch G381. An unphased tree-throw hole (1694) also contained 69 sherds of mixed Romano-British date as well as a residual piece of Late Bronze Age/Early Iron Age flint-tempered ware, while of the 52 features and deposits assigned to the general 'Romano-British' phase, only two, middens G325 and G407, contained more than 30 sherds.

Late Iron Age and early Romano-British

Overall, the grog-tempered wares accounted for around two-thirds of all the sherds from the Late Iron Age features (Table 6.7), but within the early Romano-British assemblage, the grog-tempered and sandy greywares occurred in approximately equal proportions (31% and 36% of the sherds respectively). The Late Iron Age/early Romano-British shelly wares represented 7% of the sherds from this phase, products of the *Verulamium* region 14% and miscellaneous oxidised wares 4%. In total, 16 feature groups were assigned to this early Romano-British phase. There were only three instances (gully 10076, posthole 10668 and pit 19127) where the shelly and/or grog-tempered fabrics occurred alone, without sandy grey or other more Romanised wares potentially indicative of a pre-Conquest date, but too few sherds were recovered (nine sherds from posthole 10668 and single pieces only from the other two) to be sure of this. Only three of these features, pit 10067 and ditches G382 and G694, contained more than 30 sherds.

The earliest material, probably dating to around the middle of the 1st century AD, came from ditch G694. This assemblage was split between grog-tempered (69% of the sherds) and shelly (29%) wares including bead-rimmed and necked, cordoned jar and imitation butt beaker rims. Only one piece of sandy grey ware was recovered, in addition to a handful of residual Late Bronze Age flint-tempered and Early/Middle Iron Age shell-tempered sherds (not included on Table 6.7).

The assemblage from pit 10067 was also heavily reliant on the grog-tempered wares (61%), including bead rimmed and large storage jar sherds (Thompson 1982, 217, C1–2 and 257, C6–1), but here the sandy grey wares represented 31% of the sherds. These included necked, cordoned jars (Tyres and Marsh 1979, 557–9, types IIC or D) as well as a probable Highgate C ware poppy-head beaker rim (*ibid.*, 568–70, type IIIF3). Other fabrics included small abraded body sherds of fine, oxidised ware as well as a Verulamium region whiteware flagon handle; a late Flavian or Trajanic date is suggested for this feature.

A late 1st or early 2nd century AD date is also likely for ditch G382 although the fabric proportions in this group were somewhat distorted by 44 pieces (42% of the sherds) from the base and lower body of a single Verulamium region whiteware jar or flagon. Sandy greywares accounted for 32% of the sherds and grog-tempered wares only 15% but the only diagnostic pieces consisted of two bead rimmed and two necked, cordoned jar rims in grog-tempered ware and a beaker/small jar rim fragment in sandy greyware.

Later Romano-British

Sherds from the later Romano-British features (here dated from *c.* AD 120/130 into the later 4th century AD) accounted for approximately half the total number of later prehistoric and Romano-British sherds overall and 57% of the weight. Fifteen groups contained more than 30 sherds.

2nd–3rd centuries AD

Although stratigraphically late, all the sherds from midden deposit 10662 were all of later 1st or early 2nd-century AD date and may be derived from the disturbance of the early Romano-British features in this area. The grog-tempered wares continued to dominate this group, accounting for 65% of all the sherds, and included bead-rimmed, neck cordoned and storage jar forms (Thompson 1982, types B1–1, C1–2 and C6–1). There were no diagnostic pieces present among the sandy grey and oxidised wares, but the samian, a plain body chip of uncertain form, was from a southern Gaulish source, also indicative of a 1st-century AD date.

Three of the larger ceramic groups date from *c.* AD 120/130 to the early/mid-3rd century AD, indicating the continuation of activity, albeit on a limited scale, throughout this middle Romano-British period. Cremation grave 16427 contained the base and lower body of a very crushed, abraded Verulamium region type whiteware jar and sherds from a shallow, plain-rimmed dish in South-east Dorset Black Burnished ware. The upper part of the jar was missing, precluding more precise dating, but production of this fabric declined sharply around AD 140–160 although vessels in similar wares, perhaps made elsewhere, continue to be found at *Verulamium* (eg, Wilson 1984, fig. 82, 1943; fig. 93, 2244–6, 2249–51 and 2254) well into the late Antonine period and beyond. Only a small part of the Black Burnished ware dish was present (less than 15% of its circumference) but the sherds were burnt, suggesting that the vessel had been placed on the pyre and that not all parts were collected for burial. The vessel probably dates to the second half of the 2nd century AD at the earliest, for although rare examples are known in London from the Trajanic period onwards (Davies *et al.* 1994, 111, fig. 95, 618), the type was only exported in quantity from around the middle of the 2nd century AD (Holbrook and Bidwell 1991, 99).

With the exception of a single, probably intrusive, sherd from an Oxfordshire red colour-coated ware flanged bowl (Young 1977, 160, type C51, *c.* AD 240–400) from the basal fill of gully G410, the assemblages from related features G409 and ditch G410 also belong firmly within this middle Romano-British period. Imported finewares included a piece of Argonne roughcast colour-coated ware (*c.* AD 80–135) and samian cup and bowl forms 33, 18/31 and 37, from Central Gaul. Verulamium region whitewares from feature G409 included rims from two mortaria with high prominent beads dated from *c.* AD 120/140–180/220 (Davies *et al.* 1994, 47, fig. 40, 213–14) and four necked jars (Tyres and Marsh 1979, 562, fig. 237, IIG.3), also of 2nd-century AD date, while sherds from the base of an unsourced oxidised ware unguent jar or pear-shaped flagon came from ditch G410. Both groups were dominated by sandy greywares, mostly from Alice Holt and including everted rim jar and bead-rimmed storage jar forms (Lyne and Jefferies 1979, types 3B and 4), while, although perhaps residual, a flanged bowl more akin to those found in London (Tyres and Marsh 1979, 573, fig. 241, type IVF) highlights the possibility of products from other sources. The South-east Dorset Black Burnished ware included everted rim jars and flat-flanged bowls/dishes, also characteristic of the 2nd century AD (Seager Smith and Davies 1993, types WA2/3 and 22).

Late 3rd–4th centuries AD

Despite the lack of settlement features clearly associated with the later Romano-British phase, the later 3rd and 4th centuries AD witnessed a huge increase in the quantity of ceramics deposited, presumably coinciding with an increased level of settlement and/or its proximity, even if located beyond the limits of the excavation. Three of the larger ceramic groups, from hollow 11752 and ditches G305 and G413 (Fig. 6.9, 5), date from the late 3rd–4th centuries AD, while the presence of late Roman shelly ware and the Overwey/Tilford fabric among the sherds from wells 1087 (Fig. 6.9, 6–18) and 11313, pit 11612 and ditches G306, G327, G332, G355 (Fig. 6.9, 19–22) and G381 indicates that they all extended into the second half of the 4th century AD.

These groups were dominated by the sandy grey coarsewares, mainly from the Alice Holt industry which supplied the full range of utilitarian food preparation, cooking, and storage vessels as well as jugs and lids (eg, Lyne and Jefferies 1979, classes 1, 1A, 3B, 3C, 4, 5B, 5C, 6A, 8 and 10). Although a relatively uncommon type at least until after *c.* AD 270, the presence of four Alice Holt jugs (*ibid.*, 51, class 8; Fig. 6.9, 14–17) as well as the Nene Valley flagon (Fig. 6.9, 8) and the small, unsourced oxidised jug (Fig. 6.9, 11) in well 1087 may perhaps indicate that these vessels were being used either to draw water or that water was being tipped into them from a bucket or other receptacle at the wellhead, with the inevitable breakages being immediately disposed of back down the well. Curiously, South-east Dorset Black Burnished ware was not found in any of the larger late Romano-British groups although it was present in small amounts in contemporary groups from Perry Oaks (Brown 2006) and Staines (Crouch and Shanks 1984, 59; McKinley 2004a, 55). In London, its market share can be seen declining from 7% of a group dated *c.* AD 270–350/60 from the Dowgate Hill (Symonds and Tomber 1992, 73) to 3% of the Billingsgate bath-house group of *c.* AD 350–400 (*ibid.*, 77) as the importance of the Alice Holt industry increased.

The majority of finewares and all the mortaria present in these late Romano-British ceramic groups were supplied by the Oxfordshire industry, with forms such as the necked bowl (Young 1977, 164, type C75) from ditch G413, the flanged bowl with white-painted decoration (*ibid.*, 160, type C52; Fig. 6.9, 9), a necked bowl with stamped decoration (*ibid.*, 166, type C78; Fig. 6.9, 10) both from well 1087, and a mortaria (*ibid.*, 174, type C100) from ditch G332 being of 4th-century AD date. The Nene Valley colour-coated wares too were predominantly from well 1087 (eg, Fig. 6.9, 7–8), together with a rouletted sherd from a beaker or flagon, while single sherds were found in well 11313, Romano-British gully 01486 and, residually, in medieval deposit G732 (context 12681).

Other aspects of the assemblage

Three grog-tempered ware jars, from feature G314, midden G325 and a feature (11152) by the midden, had between one and eight post-firing perforations drilled through their flat bases, presumably indicative some sort of change of use. This practice is well-known in contexts dated from the Late Iron Age to the third quarter of the 1st century AD across southern England (eg, Booth 1997, 123; Evans 2007, 179), traditionally associated with the production of cheese (Harding 1974, 88). Other possible uses may include the draining/straining of solids from liquids in both industrial and domestic situations (eg, food preparation or brewing), as time-pieces or flower pots (Fulford and Timby 2001, 294). A white-slipped ware mortaria sherd from early Romano-British gully G427 also had a single, small, post-firing perforation through the vessel wall, but this is more likely to indicate the repair of an otherwise broken vessel using metal staples.

Post-firing scratched graffiti was also noted on two sandy greyware body sherds from later Romano-British ditch G380 (vertical line with two shorter, deeper diagonals forming a Y; the right arm with another diagonal crossing it from upper left to lower right) and Romano-British gully G524 (a scratched +). Such marks are generally interpreted as indicative of ownership.

Discussion

Overall, the condition and composition of the later prehistoric and Romano-British assemblages was directly comparable with that from the adjacent Perry Oaks site (Brown 2006), showing the same changes and fluctuations in supply. Initially, the assemblages were dominated by the grog- and shell-tempered wares, continuing in the native ‘Belgic’ traditions of the area and probably made fairly locally. By the late 1st century AD, these had been largely replaced by the more Romanised sandy wares, supplied by the early Alice Holt industry as well as producers in Colne and Thames Valleys and the London region. Finewares, other imports and specialist wares dating to the early Romano-British period were scarce, a situation paralleled at Perry Oaks (Brown 2006), Mayfield Farm, East Bedfont (Jefferson 2003) and on sites such as Binfield Park (Booth 1995, 114) in the Lower Kennet Valley. A far wider range of ceramics was, however, available within the nearby urban centre of Staines (Crouch and Shanks 1984; McKinley 2004a, 24, 30–31). The relative paucity of early Romano-British pottery at ICSG implies only limited pottery-using activities in the vicinity at this time, the enclosures and trackways identified as belonging to this period being mainly used for agriculture and/or animal husbandry rather than settlement.

This reliance on sandy coarsewares (both grey and oxidised fabrics) continued throughout the Romano-British period, with the Alice Holt industry being the major supplier. By the mid-2nd century AD, these were supplemented by a few Black Burnished ware vessels from the Wareham/Poole Harbour region of Dorset, although these never formed a major component of the assemblage. Although at a relatively low intensity, the ceramics show continued activity during the later 2nd and early 3rd centuries AD, although its focus at this time was clearly beyond the limits of the excavation. As at Staines (Crouch 1976, 98–101; Crouch and Shanks 1984, 68; McKinley 2004a, 55), the quantity and diversity of the ceramics increased during the later 3rd and 4th centuries AD. During this period, a variety of finewares and mortaria were obtained from the Oxfordshire kilns, with a few vessels from the more distant Nene Valley industry, while the Alice Holt potters continued to supply the basic coarsewares. The Hadham,

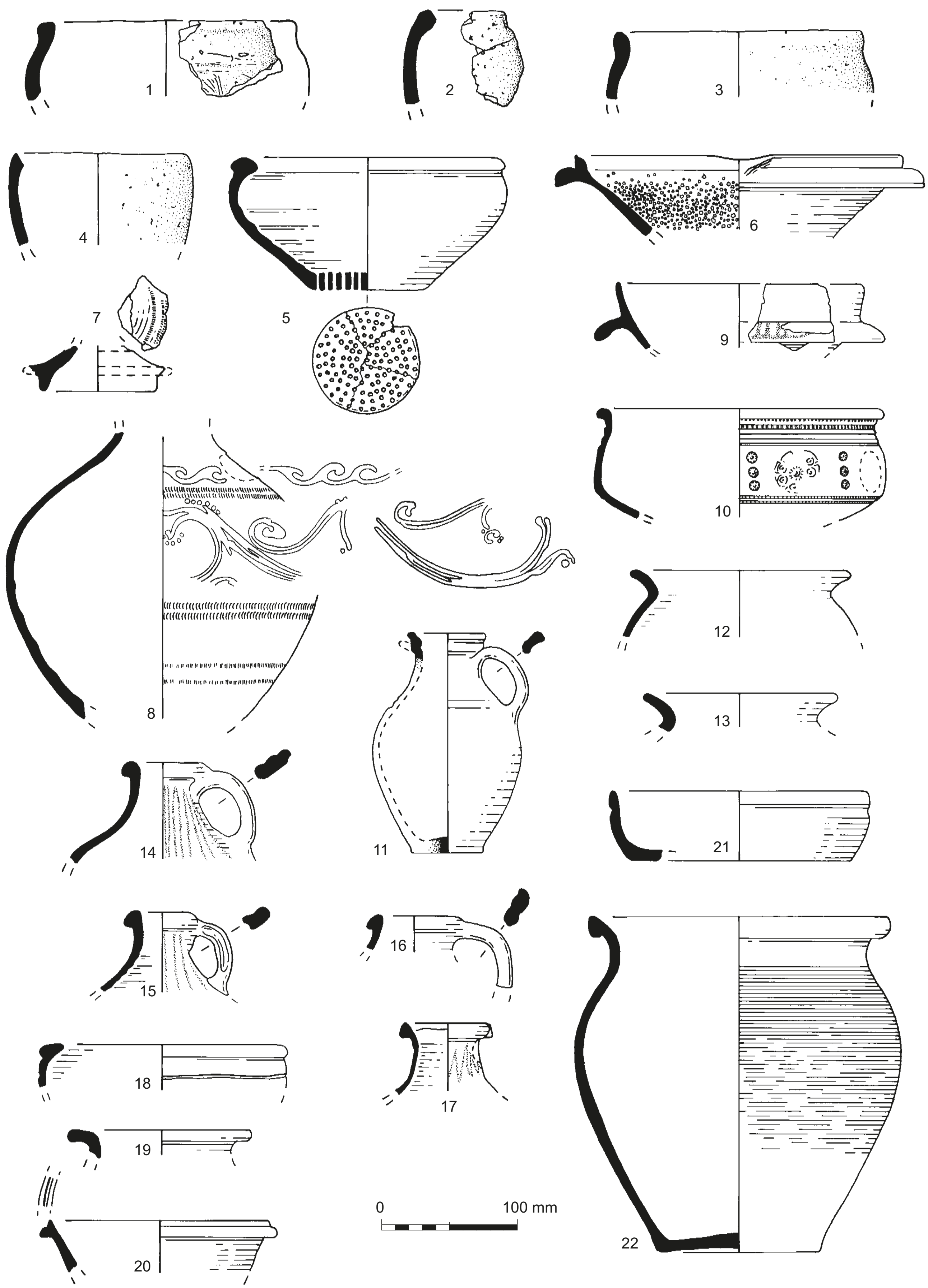

Figure 6.9 Romano-British pottery: 1–22

Overwey/Tilford and the late Romano-British shell-tempered wares indicate continued activity well into the second half of the 4th century AD.

Throughout the Romano-British period, the assemblages were dominated by utilitarian 'kitchen' wares, with storage vessels well represented, and there was nothing within the ceramics to suggest that the sites represented anything other than simple farming communities of relatively low status.

List of illustrated vessels

Middle to Late Iron Age (Fig. 6.9, 1–4)

1. Proto-bead rim jar; sandy ware. Early/Middle Iron Age ditch G383 (section 10043, context 10044).
2. Proto-bead rim jar; shelly ware. Late Iron Age ditch 11534 (sealed by midden G0325) (context 11533).
3. Modified bead rim jar; sandy ware. Intrusive find in Middle Bronze Age cremation grave 1206 (context 1205).
4. Saucepan pot; shelly ware. Late Iron Age posthole 1355 (context 1357).

Later Romano-British (Fig. 6.9, 5–22)

5. Strainer (Lyne and Jefferies 1979, class 5C); coarse greyware. Later Romano-British ditch G413 (section 1082, context 1081).
6. Mortaria with upstanding bead and squat flange (Young 1977, type WC7). Later Romano-British well 1087 (context 4830).
7. Castor box lid; Nene Valley colour-coated ware. Later Romano-British well 1087 (context 4830).
8. Globular-bodied flagon with white painted decoration. Later Romano-British well 1087 (context 4817).
9. Flanged bowl with white painted decoration (Young 1977, type C52). Later Romano-British well 1087 (context 4817).
10. Necked bowl with rouletted and stamped decoration (Young 1977, type C78). Later Romano-British well 1087 (context 4830).
11. Jug; unsourced oxidised sandy ware. Later Romano-British well 1087 (context 4817).
12. Everted rim jar (Lyne and Jefferies 1979, class 3B); coarse greyware. Later Romano-British well 1087 (context 4817).
13. Everted rim jar (Lyne and Jefferies 1979, class 3B); coarse greyware. Later Romano-British well 1087 (context 4817).
14. Single handled flagon (Lyne and Jefferies 1979, class 8); coarse greyware. Later Romano-British well 1087 (context 4817).
15. Single handled flagon (Lyne and Jefferies 1979, class 8); coarse greyware. Later Romano-British well 1087 (context 4817).
16. Single handled flagon (Lyne and Jefferies 1979, class 8); coarse greyware. Later Romano-British well 1087 (context 4817).
17. Single handled flagon (Lyne and Jefferies 1979, class 8); coarse greyware. Later Romano-British well 1087 (context 4830).
18. Strainer (Lyne and Jefferies 1979, class 5C); coarse greyware. Later Romano-British well 1087 (context 4804).
19. Narrow-necked, flat-rimmed jar (Lyne and Jefferies 1979, class 1A); coarse greyware. Later Romano-British gully G355 (section 1255, context 1253).
20. Bead and flanged bowl (Lyne and Jefferies 1979, class 5B). Later Romano-British gully G355 (section 1255, context 1253).
21. Shallow, bead-rimmed dish (Lyne and Jefferies 1979, class 6A). Later Romano-British gully G355 (section 1255, context 1253).
22. Hooked rim jar; late Roman shelly ware. Later Romano-British gully G355 (section 1255, context 1253).

Post-Roman Pottery

by Lorraine Mepham

Introduction

The combined post-Roman assemblage from RMC Land and ICSG totals 1457 sherds (17,995 g), and includes material of Saxon, medieval and post-medieval date. The breakdown between the two sites is given in Table 6.8; the two sites have different chronological emphases, which will emerge from the following discussion.

Overall, the condition of the pottery varies; there are few large context groups, and these are restricted to RMC Land. These larger groups tend to contain larger, unabraded sherds, while elsewhere the tendency is towards smaller sherds with heavier edge and surface abrasion; this is particularly true for ICSG. Burial conditions (in acidic soils) have led to the leaching of calcareous inclusions through the assemblage, leaving many sherds pitted and vesicular. Mean sherd weight overall is 12.4 g, and the differences in condition between the two sites are demonstrated by a mean sherd weight of 13.2 g for RMC Land, compared with 10.2 g for ICSG.

Methods of analysis

The two assemblages have been analysed together, using a single type series. Methods of analysis have followed the standard Wessex Archaeology recording system for pottery (Morris 1994), which fulfils the recommended minimum archive standards for medieval pottery (MPRG 2001). The analysis has focused on a detailed examination of fabric and form; details of manufacturing technique, surface treatment, decoration and evidence for use have also been recorded. Definitions of vessel forms follow nationally recommended nomenclature for medieval ceramics (MPRG 1998). All data are held on the respective project databases (Access) for RMC Land and ICSG, which form part of the project archives.

Fabric analysis has resulted in the definition of 33 fabric types, divided between the early Saxon period (three fabrics), middle Saxon period (two fabrics), late Saxon and medieval periods (17 fabrics), and the post-medieval period (11 fabrics). Where possible, fabrics have been correlated with the London fabric type series, and also with the type series used for Surrey (Jones 1998). Table 6.8 gives the full quantified breakdown of the assemblage by fabric type for each site. Post-medieval pottery (60 sherds) is not discussed further here.

Early Saxon

Early Saxon pottery (243 sherds; 2784 g) was recovered from both sites, on each site occurring in both organic-tempered (CHAF, CHFS) and sandy fabrics (ESAN). All three fabric types are well paralleled in the London area; the sandy variant organic fabric CHFS is observed as being far less common than the abundantly organic-tempered CHAF (Blackmore 2008a, 179), as it is here. It is assumed that all three fabrics are of local manufacture; at least, there is nothing to suggest a non-local source.

Table 6.8 Post-Roman pottery fabric totals by site

			RMC Land		*ICSG*		*Total*	
Description	*London*	*Surrey*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*	*No.*	*Wt. (g)*
Chaff-tempered ware	CHAF		113	1708	63	590	176	2298
Chaff-tempered/sandy ware	CHFS		11	101	29	119	40	220
Sandy ware	ESAN		20	205	7	61	27	266
Sub-total early Saxon			*144*	*2014*	*99*	*770*	*243*	*2784*
Ipswich-type ware	IPS		18	592	-	-	18	592
Grog-tempered ware	SGRG		1	47	-	-	1	47
Sub-total mid-Saxon			*19*	*639*	-	-	*19*	*639*
Early medieval chalky ware	EMCH		3	18	36	156	39	174
Early medieval flint-tempered ware	EMFL		26	355	19	382	45	737
Early medieval sandy ware	EMS		223	3099	36	551	259	3650
Early medieval shelly ware	EMSH	S2	4	29	8	78	12	107
Early medieval sandy/shelly ware	EMSS		3	9	-	-	3	9
Early Surrey ware	ESUR	IQ	98	1631	20	325	118	1956
Early Surrey ware with flint	ESUR+FL		19	247	-	-	19	247
Early medieval iron-rich sandy ware	EMIS		14	112	-	-	14	112
Kingston-type ware	KING		5	38	90	898	95	936
Local greyware	LOGR		2	37	-	-	2	37
London-type ware	LOND		2	6	1	7	3	13
London-type coarseware	LCOAR	QFL	5	46	51	479	56	525
Late Saxon shelly ware	LSS	S1	334	3846	-	-	334	3846
St Neots-type ware	NEOT		91	930	-	-	91	930
Late medieval sandy redware	LMSR		-	-	2	7	2	7
S Herts/Limpsfield greyware	SHER		5	29	8	67	13	96
Thetford-type ware	THET		5	76	-	-	5	76
Sub-total late Saxon/medieval			*839*	*10,508*	*271*	*2950*	*1110*	*13,458*
Bone china	BONE		2	2	-	-	2	2
Refined whiteware	REFW		16	43	5	36	21	79
Stoneware blacking bottle	SBLB		8	244	-	-	8	244
Creamware	CREA		-	-	4	22	4	22
English stoneware	ENGS		-	-	1	2	1	2
London stoneware	LONS		-	-	3	28	3	28
Late post-medieval fine redware	LPFR		-	-	1	2	1	2
Early post-medieval redware	PMRE		22	354	-	-	-	-
Post-medieval redware	PMR		7	105	14	246	19	289
Border ware	BORD		1	1	-	-	-	-
Yellow ware	YELL		-	-	1	29	1	29
Sub-total post-medieval			*56*	*749*	*29*	*365*	*85*	*1114*
Total			1058	13,910	399	4085	1457	17,995

Fifteen rim sherds were recovered, of which nine could not be assigned to specific form. The remaining six rims fall into five vessel forms:

- Type 1: Everted rim on large, rounded jar (Fig. 6.10, 1);
- Type 2: Everted or upright rim on a small to medium, rounded jar (Fig. 6.10, 2);
- Type 3: Upright or slightly everted rim on a medium to large, convex vessel (Fig. 6.10, 3, 4);
- Type 4: Upright rim on a small, shouldered vessel (Fig. 6.10, 5);
- Type 5: Upright or slightly everted rim on a small convex cup; single example is bossed (Fig. 6.10, 6).

The fact that five separate forms were defined from six rim sherds demonstrates the problem facing any attempt to classify Saxon vessel forms (see, for example, Hamerow 1993, 37–41), which are handmade, irregular and non-standardised, and in which jars cannot always be clearly distinguished from bowls. This is compounded by the fact that diameters could only be calculated for four of the classifiable rim sherds. Little further comment is possible on the basis of this very small sample, beyond the observation that it fits within the known range of early to middle Saxon vessel forms for the region.

There is little here to indicate a close date range for this small assemblage. The vessel forms are not chronologically distinctive; the absence of specifically ‘early’ forms such as carinated bowls can be observed, although firm conclusions should not be drawn from such a small sample. Comparable organic-tempered and sandy fabrics have been found in recent excavations at Heathrow (Mepham 2010), but none of the more distinctive (apparently non-local) fabrics identified at the nearby late 5th/6th-century settlement site at Prospect Park were recognised here (Laidlaw and Mepham 1999). In general, organic-tempered fabrics are considered to date in the London area from the late 5th century, becoming dominant in the 6th century and continuing in use until at least the 8th century (Blackmore 2008a, 179); there is evidence from a few nearby sites that they may have remained in use as late as the 11th century (Astill and Lobb 1989, 102). While some organic sherds were found at RMC Land together with late Saxon and medieval fabrics, there is nothing to suggest in this instance that these were anything other than residual occurrences, and a date range between the 6th and 8th century is preferred.

Distribution

At ICSG early/middle Saxon sherds were largely restricted to three features: an isolated pit (1988) in Area A (10 sherds), and from two features in Area E, probable SFB EV620 (40 sherds) and ditch 40267 (17 sherds). Single sherds were also recovered from Romano-British pit 11612, ditch 30015 and context 40072 (unstratified?).

Early/middle Saxon pottery was more commonly encountered at RMC Land. Sherds came from 76 separate features (pits, postholes, ditches and waterholes), and in at least 28 of these can be considered as residual, occurring alongside late Saxon or medieval wares. Sherds from several ditches are also of dubious status and, given the position of these ditches within the field system, are also likely to be residual in late Saxon or medieval features. This leaves perhaps around 62 sherds from discrete features which can be at least tentatively phased as early/middle Saxon. These features were distributed across the northern part of the site, with a decrease towards the eastern end, but the pottery frequency generally is extremely low level; no feature produced more than 13 sherds, and most yielded less than 10.

Middle Saxon

The presence of middle Saxon wares is more ephemeral, but is affirmed by 18 sherds of Ipswich ware, and one sherd in an unusual grog-tempered fabric (close to London fabric SGRG; Blackmore 1988, 88; Blackmore 2003, 236), all from RMC Land. Ipswich ware is a hard, sandy greyware which appears wheelthrown but which is in fact handmade and finished on a turntable. The only known kilns are in Ipswich, and recent research suggests a date range for the production of Ipswich ware of *c.* 720–850 (Blinkhorn 2012, 8). The ware first appeared in London in *c.* AD 730, and dominated the market from *c.* AD 750 to *c.* AD 850 (Blackmore 2008a, 181). Outside central London, sherds have been recorded from Kingston, Staines and Old Windsor (Roberston-Mackay *et al.* 1981, 120–2), but the ware is rarely found upstream from London (Cowie and Blackmore 2008, 109; Blinkhorn 2012, fig. 36). The 18 sherds from RMC Land are divided between the coarse variant (*ibid.*, group 2; London fabric IPSC: five sherds, all from one vessel) and the medium-grained variant (group 1; IPSM: 13 sherds). Three diagnostic forms are present: the complete profile of a small jar with an everted, thickened rim, in IPSC (Fig. 6.10, 8), and the rims from two larger jars, also with everted, slightly thickened rims, both in IPSM (Fig. 6.10, 7). All these forms are well documented within the Ipswich ware repertoire (Blinkhorn 2012, fig. 12). The small jar can be compared to an example from the Royal Opera House, although the latter is slightly larger and less squat (Malcolm *et al.* 2003, fig. 104, P129), and the other two jars are also typical forms.

The grog-tempered sherd contains, in addition to sparse angular inclusions of grog, possibly crushed Roman tile (<2 mm), a moderate quantity of poorly-sorted, dark red and black inclusions (<3 mm), which include probable iron-rich compounds as well as possible rock fragments. Middle Saxon grog-tempered wares are very rare; at the Royal Opera House, for example, only seven sherds were recovered, from five later 8th- or 9th-century contexts (Blackmore 2003, 236), and a single sherd from Maiden Lane (Blackmore 1988, 88).

In terms of distribution, the middle Saxon sherds occurred in five features – five sherds from the small coarse Ipswich ware jar in pit 1302, three in waterhole 3628 (including one jar rim), two in pit 6428, two in waterhole 6658, and seven in pit 6046, including another jar rim. One of these features is in Area 1, one in Area 2 and three in Area 3. Of the five features, one can be relatively confidently phased as middle Saxon (pit 1302), and possibly also waterhole 3628, where the Ipswich ware (and the single sherd of SGRG) occurred in the lower fills (the upper fills produced late Saxon sherds). The latter feature was located at the southern end of (although slightly off-set from) fenceline 4150, which yielded a radiocarbon date of *AD 890–990 (NZA-31078 at 95% probability)*. Sherds in the three other features, in Area 3, can be regarded as redeposited. It may be observed that pit 6229, also in Area 3, produced a radiocarbon date of *AD 680–880 (NZA-31080 at 95% probability)*, although no pottery later than Romano-British.

Late Saxon/Medieval

Seventeen fabric types were identified amongst the medieval assemblage (1110 sherds; 13,458 g). These will be discussed within the following seven groups, including both local and non-local types:

- Late Saxon and early medieval shelly wares (LSS, EMSH, EMSS);
- Late Saxon regional imports (NEOT, THET);
- Surrey types, from early to late medieval, characterised by pale-firing fabrics and iron-stained quartz (ESUR, ESUR+FL, EMIS; KING);
- Other early medieval types (EMFL, EMCH, EMS);
- Greywares falling within the Limpsfield/South Hertfordshire greyware tradition (SHER);
- London-type wares (LCOAR, LOND);
- Other wares not as yet assigned to groups (LOGR, LMSR).

Late Saxon and early medieval shelly wares

Three wares make up this group. The earliest is Late Saxon Shelly ware (LSS), characterised by prominent fossil shell inclusions which have been identified as of Jurassic species, and with a potential source area in Oxfordshire (Vince and Jenner 1991, 49; Blackmore and Pearce 2010, 22). Late Saxon Shelly ware has a wide distribution area, centred on the Upper Thames Valley; it is equivalent to Surrey fabric S1 (Jones 1998) and is very similar to, but not necessarily the same as, Oxfordshire fabric OXB (Mellor 1994, 37–44). It occurs in London from the late 9th to the mid-11th century. In contrast to the known corpora from Oxfordshire and London, however, in which jars predominate, at Harlington bowls are the commonest vessel form (14 examples), with jars the only other form identified (12 examples). The bowls are all of similar type, flared and with a flattened and externally expanded rim and a sagging base (Fig. 6.10, 9, 10); diameters range from 240 mm to 340 mm (Mellor 1994, fig. 7). The jars have plain or thickened everted rims; there are no reconstructable profiles but the illustrated examples from London are likely to be comparable (Vince and Jenner 1991, fig. 2.23). Sherds of LSS were confined to RMC Land; there were no examples from ICSG.

Body sherds of Early Medieval Shelly ware (EMSH) can be difficult to distinguish from late Saxon Shelly ware in hand specimen, but the shell inclusions are bivalve, and the fabric can also contain varying quantities (although generally sparse) of quartz and flint. It equates to Surrey fabric S2 (Jones 1998). Vessels tend to be thinner-walled than those in Late Saxon Shelly ware. In London the ware has a currency from the mid-11th century to mid-12th century (Vince and Jenner 1991, 64; Blackmore and Pearce 2010, 23–4). Sherds were found at both Harlington sites, but the ware was not particularly common at either, and no diagnostic forms were identified. This scarcity might be considered unusual, given the ubiquity of S2 in north-west Surrey, and it is entirely possible that some undiagnostic body sherds have been misidentified as LSS.

Early Medieval Sandy/Shelly ware (EMSS) is very similar in appearance to Early Medieval Sandy ware, and the two are likely to share a source area close to London and near to the Thames. Early Medieval Sandy/Shelly ware was in use in London by *c.* 1000, and continued in use until the mid-12th century (Vince and Jenner 1991, 59–63; Blackmore and Pearce 2010, 23). Sherds of this ware were found only at RMC Land, where it formed a minor component of the early medieval assemblage. A single rim sherd came from a jar with an everted, thickened rim.

Regional imports

Two ware types represent regional imports: Ipswich ware, St Neot's-type and Thetford-type wares. Both occurred only at RMC Land.

St Neot's-type ware has a wide distribution across the east and south Midlands, but is rarely found in London. Earlier identifications from Staines were admitted to be largely dubious – body sherds can be visually identical to late Roman shelly wares (Jones 1982, 205) – but more recent finds from the town are of greater certainty, and a spouted bowl from Shepperton has been re-examined and confirmed as being of St Neot's-type ware (Canham 1979, fig. 12, no. 36; P. Jones pers. comm.). The ware is distinctive here by its abundance of fine fossil shell inclusions, and eight distinctive rim forms, five from everted rim jars, the rims either plain and flared (one example) or expanded (four examples), and three from bowls. One of the bowls has a markedly inturned rim; the other two have at least a slight internal expansion, and one of these vessels has two post-firing perforations below the rim (Fig. 6.10, 17). St Neot's-type ware has a broad date range of late 9th to 12th centuries, with a *floruit* in the 10th century. Outside its core distribution area, however, its period of ascendancy is generally later; in London, for example, the rare examples seem to indicate a largely 11th-century date, and across Buckinghamshire and Hertfordshire it occurs alongside Late Saxon Shelly ware (Vince and Jenner 1991, 55–6).

Thetford-type ware is a fine, wheelthrown greyware; various sources are known in Norfolk, including Thetford itself, and Ipswich in Suffolk. Production in East Anglia continued from the mid-9th to the mid-12th century, and the ware is found in London rarely from the late 9th century and more commonly in the 11th century (Vince and Jenner 1991, 89). Again finds are known from Staines (P. Jones pers. comm.). The ware is represented at Harlington by five sherds, all from RMC Land, four deriving from a single jar of typical everted rim form (Fig. 6.10, 11); the parallel-sided rim profile is dated in Thetford as mid-10th to early 11th century (Anderson 2004, fig. 43, type 4). The jar came from a waterhole dated on ceramic grounds as mid- to late 11th century.

Surrey types

Unsurprisingly, Surrey wares are the most commonly occurring within the early medieval assemblage. Three variants have been identified here: the more common variant containing abundant iron-stained quartz (London type ESUR), the second also containing angular flint fragments (ESUR+FL), and the third containing abundant iron-rich compounds (EMIS). These wares utilised white firing clays, presumably from the Reading Beds, and sand composed mainly of weathered iron-rich sandstone, for which a common source in western Surrey, north-east Hampshire or east Berkshire is most likely (Vince and Jenner 1991, 44). A possible source in the area around Tongham village in south-west Surrey has been suggested, on the basis of frequency of the ware in 12th-century deposits here, the co-occurrence of outcrops of both Reading Beds clay and tempering material (sands and sandstones of the Folkestone Beds), and a documented history of medieval tile-making although not apparently potting (Jones 1998, 233). In London ESUR appears around the middle of the 11th century, remaining in use at least until the mid-12th century (Vince and Jenner 1991, 75); in north-west Surrey it seems to have survived longer, until the late 12th century (Jones 1998, 220). The only diagnostic vessel forms present at Harlington are jars (12 examples), all with everted rims, either plain or thickened (Fig. 6.10, 12, 15). Two body sherds have curvilinear combing.

Of the later medieval types within the Surrey whiteware industry, only Kingston-type ware (KING) is represented at Harlington, mainly from ICSG. Vessel forms are confined to jars, with developed rims. Kingston-type ware is generally dated, on evidence from the City of London, from the second quarter of the 13th century until the middle of the 14th century.

Other early medieval wares

Apart from ESUR, three other early medieval wares were identified at Harlington – Early Medieval Chalky ware (EMCH), Early Medieval Flinty ware (EMFL) and Early Medieval Sandy ware (EMS). In London all three types appear first in early to mid-11th-century contexts, with flinty and sandy wares rarely found later, while chalky wares continued in use until the mid-12th century (Vince and Jenner 1991). Diagnostic forms consist almost exclusively of jars, with either plain everted (seven examples) or everted and thickened rims (12 examples; Fig. 6.10, 13–14); there is one dish/bowl in EMS, and one finger-impressed pitcher handle in EMCH. Seven sherds in EMS, including one jar rim, carry stamped decoration, in the form of rosettes or rectangular grids (Fig. 6.10, 16).

A potential source for Early Medieval Chalky ware in south Hertfordshire has been suggested (*ibid.*, 44, 70), although comparable wares in Surrey, including examples seen at Staines, seem to cover quite a wide variation, and include wares with tufaceous inclusions as well as chalk, suggesting a more diverse ceramic tradition (Jones 1998, 228–9). Likewise the shelly wares found across Surrey are considered unlikely to have originated exclusively in north-west Kent, the suggested source for the Early Medieval Shelly ware seen in London (Vince and Jenner 1991, 44, 63–4; Jones 1998, 230).

Greywares

Wheelthrown greywares of various types are present in relatively small quantities, and are likely to represent the products of various sources within a widespread ceramic tradition covering south Hertfordshire, Buckinghamshire, Middlesex and Surrey. Recent petrological analysis has identified at least three broad groups: one covering south Hertfordshire, north Middlesex and south Buckinghamshire, which can be distinguished from both the kiln products of Limpsfield Chart in east Surrey, and from greywares made in west Surrey and north of the Thames (Blackmore and Pearce 2010, 84). The closest known kiln to Harlington is at Uxbridge, about 6 km to the north, although this seems to have been producing an early variant, ESHER (Knight and Jeffries 2004). It is also possible, although less likely given the distance, that some of the greyware sherds found at Harlington originate from the Camley Gardens production centre at Maidenhead (Pike 1965). For the purposes of discussion here, the greywares have been grouped together under one fabric code (SHER), with a date range of mid-12th to 14th century. There are three diagnostic vessel forms at Harlington, all jars, with developed rims. Comparable vessel forms can be found amongst the products of the south Hertfordshire and Middlesex kilns (Blackmore and Pearce 2010, figs 50–61).

London-type wares

The distribution of London-type wares, in use from the mid-12th to mid-13th century, suggests a production centre close to the city, as yet unlocated, which apparently supplied an area of the Lower Thames Valley as far upstream as Henley, and the surrounding counties. Fabric variants and range of vessel forms have been well explored (Pearce *et al.* 1985). At Harlington the coarseware variant (LCOAR) is the most common, particularly at ICSG, although only three diagnostic forms (all jars) were observed.

Other wares

Two wares do not apparently belong to the ceramic traditions described above, and comprise small quantities of miscellaneous sandy wares: two sherds of greyware (LOGR), including one jar rim, from RMC Land; and two sherds of late medieval sandy redware (LMSR) from ICSG.

Chronology

Given the apparent close correlation of ware types with the type series developed for the London area, the chronology suggested for the latter has been adopted here for both RMC Land and ICSG, with a few *caveats*. An eight-fold ceramic phasing has been defined, largely based on the ceramic sequence established for Saxo-Norman London (Vince and Jenner 1991, 24–5):

- Ceramic phase (cp) 1: early/middle Saxon; predominantly sandy and organic wares (CHAF, CHFS, ESAN);
- Ceramic phase 2: middle Saxon (mid-7th to mid-9th century), characterised by the presence of Ipswich ware (IPS);
- Ceramic phase 3: late 9th to 10th century; characterised by use of late Saxon Shelly ware (LSS) alone;
- Ceramic phase 4: mid-10th to mid-11th century; use of LSS with Early Medieval Sandy ware (EMS), Early Medieval Flinty ware (EMFL), and Early Medieval Shelly-Sandy ware (EMSS). A bracketed assignation of cp3/4 has been used for features that produced LSS only, but in small quantities, or with NEOT, which has a currency from late 9th to early 11th century;
- Ceramic phase 5: mid- to late 11th century; LSS absent, superseded by Early Surrey wares (ESUR) and Early Medieval Chalky ware (EMCH);
- Ceramic phase 6: late 11th to mid-12th century; introduction of London-type (LOND) and Coarse London-type wares (LCOAR) alongside types found in cp5;
- Ceramic phase 7: mid-12th to late 14th century; use of Kingston-type wares (KING) and greywares within the South Hertfordshire tradition (SHER);
- Ceramic phase 8: post-medieval and modern.

This ceramic phasing was applied to all stratified features on both sites, although the accuracy of this approach, and the confidence which can therefore be placed on the results, is limited by the low overall frequency of pottery within features (see below). A programme of radiocarbon dating offered some opportunity for a comparison of scientific and ceramic dating. Of the nine post-Roman features (eight from RMC Land and one from ICSG) for which radiocarbon dates were obtained, however, only two also produced post-Roman pottery – waterhole 6632 at RMC Land, and well 16220 at ICSG. Nevertheless, the radiocarbon dates as a whole

Table 6.9 Post-Roman pottery totals by ceramic phase (cp)

cp	*Date range*	*RMC Land*	*ICSG*	*Total*
1	Early Saxon	103	99	202
2	Middle Saxon	4		4
3	Late 9th to 10th century	46		46
3/4	Late 9th to mid-11th century	180		180
4	Mid-10th to mid-11th century	309	26	335
5	Mid- to late 11th century	333	44	377
6	Late 11th to mid-12th century	5	29	34
7	Mid-12th to 15th century	15	172	187
8	Post-medieval and modern	61	29	90
Total		1058	399	1457

confirmed the general focus of activity at RMC Land as 10th to 11th century (see *Radiocarbon*, Chapters 5 and 11), which accords with the emphasis of the ceramic sequence on cps 3/4, 4 and 5 (Table 6.9; 822 sherds came from features assigned to these cps). In contrast, the chronological emphasis of the ICSG assemblage lies later, from mid-12th to 14th century – 172 sherds, almost half the total, came from features phased to cp7.

Distribution

Late Saxon and medieval pottery recovered from RMC Land amounts to 839 sherds (see Table 6.8). This was distributed across 168 features (pits, postholes, tree-throw holes, waterholes and ditches). The distribution is very low level – the highest total from a single feature was 81 sherds (ditch 4083), and only five other features produced 25 sherds or more (25 sherds from pit 3722, 25 sherds from ditch 7873, 29 sherds from waterhole 7019, 38 sherds from pit 1756, 57 sherds from waterhole 879). Understandably, this has led to difficulties in assigning dates to features (see above).

The amount of late Saxon and medieval pottery recovered from ICSG was considerably less than at RMC Land (271 sherds). This total came from 53 features, concentrated across the southern part of the site. As for RMC Land, the frequency of pottery within features was low. Only one feature yielded more than 25 sherds (41 sherds from well 1286). Phasing on the basis of the pottery has proved equally difficult.

Despite the low quantities of material involved, the distribution of pottery on both sites does show some interesting variation between feature types. Table 6.10 gives the quantities of pottery recovered from the three most common feature types: ditches, pits and wells/waterholes. This shows that while pottery was most commonly deposited within ditches on both sites, the mean sherd weight (ASW) was smaller, whereas pottery from pits showed a higher mean weight, noticeably so at RMC Land. In other words, the pottery within the ditches is likely to have suffered a higher level of post-depositional movement than that within pits. Pottery within pits (and probably also within wells) is more likely to represent primary refuse deposition, while the pottery within ditches may have undergone reworking prior to final deposition, perhaps through the redistribution of midden material. This, of course, places further limitations on the reliability of the ceramic dating applied to the ditches. The mean sherd weight for wells varies between the two sites, but this is based on relatively low sherd counts and may not, therefore, be reliable; it might be expected that the pattern might be similar to that for pits, as indeed seems to have been the case at RMC Land. In two out of three cases, the mean sherd weight for ICSG is lower than that for RMC Land, and this reflects the generally poorer condition of the material from the former site (see above, *Introduction*).

Discussion

These two sites have made a moderately sized but significant addition to the Saxon and medieval ceramic sequence for west London. Perhaps of most interest is the identification of middle Saxon ceramics at RMC Land, albeit as just a handful of sherds, but augmenting the findspots of Ipswich ware west of London (the significance of this is discussed further below, Chapter 12). Given the concentration of early Saxon sites around Harmondsworth and Harlington, the absence of middle Saxon pottery from this area is perhaps surprising, but may be a reflection of the later

Table 6.10 Post-Roman pottery totals by feature type

	RMC Land			*ICSG*		
Feature type	*No. sherds*	*Wt. (g)*	*ASW*	*No. sherds*	*Wt. (g)*	*ASW*
Ditch	409	4118	10.1	169	1769	10.5
Pit	272	4269	15.7	56	724	12.9
Well/waterhole	124	1861	15.0	73	713	9.8

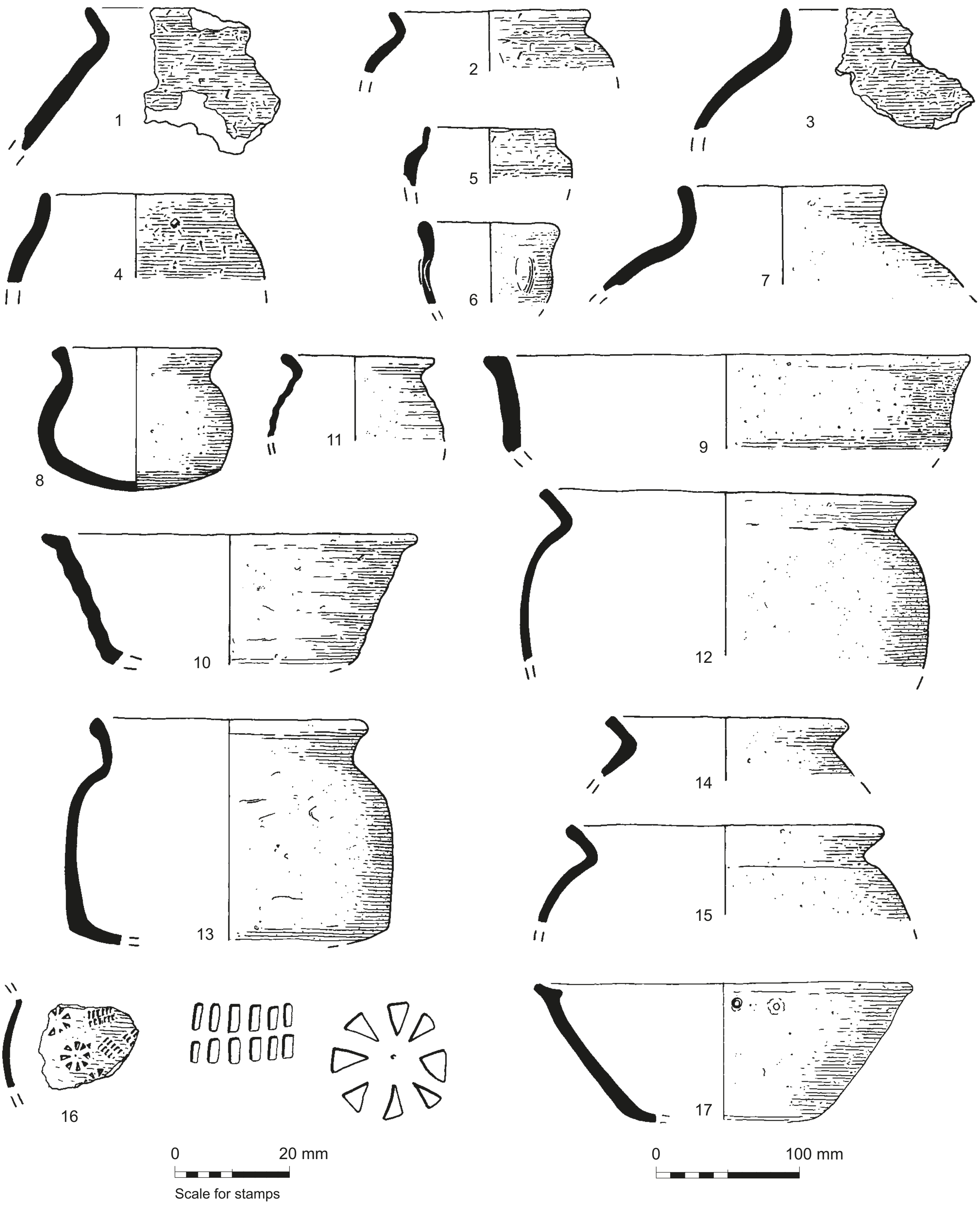

Figure 6.10 Saxon pottery: 1–17

nucleation of settlement within the present-day village locations. The small concentration of the middle Saxon ware sherds from RMC Land at the eastern end of the site, closest to Harlington village, may not, therefore, be coincidental. A radiocarbon date from the same part of the site confirms a middle Saxon presence. Harlington is mentioned in the boundary clause of a charter of 831.

Whatever the precise nature and location of middle Saxon activity at Harlington, from the late 9th or 10th century the settlement did apparently extend beyond the confines of the present village, although it seems to have been fairly short-lived, not continuing at any significant level beyond the 11th century; this is confirmed by the suite of radiocarbon dates obtained for the site. At this period the sources of supply for pottery appear to have been in a state of transition, from regional (Thetford ware from east Anglia, St Neot's-type ware from the Midlands, shelly wares possibly from Oxfordshire) to more local (sandy and shelly wares from the London area and from Surrey), and the pattern changes further at ICSG. There appears to be little chronological overlap between the pottery from RMC Land and ICSG, the latter having relatively little that pre-dates the mid-12th century, and focusing on wares from London and the Surrey whiteware industry. Both sites, however, did yield sherds of chalk-tempered and early Surrey wares from the mid- to late 11th century. A further link between the two sites is provided by the recently excavated assemblage from Heathrow, with a proposed date range from the mid-11th century onwards, which produced chalk-tempered and early Surrey wares, as well as a range of later wares including Surrey whitewares, South Hertfordshire-type greywares and London types, and also showing a depositional variation similar to the Harlington sites (Mepham 2010). Further west, just over the Berkshire border, a site at Horton has produced a pottery assemblage similar to that from Heathrow and ICSG, but with perhaps more local variation (Mepham forthcoming). Pottery from Staines shows some overlap with the Harlington sites, but with more emphasis on local Surrey products (Jones 1982; 1984).

List of illustrated vessels

Fig. 6.10, 1–17

1. Jar rim (type 1); CHAF. RMC Land, PRN 67, context 1301, pit 1302.
2. Jar rim (type 2); CHAF. RMC Land, PRN 358, context 5661, well 5660.
3. Jar rim (type 3); CHAF. RMC Land, PRN 380, context 6056, pit 6046.
4. Jar rim (type 3); CHAF. ICSG, PRN 157, context 40197, EV620.
5. Jar rim (type 4); CHAF. RMC Land, PRN 3, context 525, waterhole 524.
6. Bossed cup (type 5); ESAN. RMC Land, PRN 144, context 1987, pit 1988.
7. Jar; Ipswich ware. RMC Land, PRN 379, context 6056, pit 6046.
8. Jar; Ipswich ware. RMC Land, PRN 69, context 1301, pit 1302.
9. Bowl rim; LSS. RMC Land, PRN 42, context 876, waterhole 879.
10. Bowl rim; LSS. RMC Land, PRN 277, context 3726, pit 3722.
11. Jar rim; THET. RMC Land, PRN 260, context 3629, waterhole 3628.
12. Jar rim; ESUR. RMC Land, PRN 304, context 3920, ditch 3919, group 4084.
13. Jar profile; EMS. RMC Land, PRN 94, context 1758, pit 1756.
14. Jar rim; EMS. RMC Land, PRN 179, context 3328, ditch 3327, group 4084.
15. Jar rim; ESUR. RMC Land, PRN 196, context 3360, pit 3358.
16. Decorated body sherd; stamped rosettes and discrete rouletted rectangles; EMS. RMC Land, PRN 303, context 3920, ditch 3919, group 4084.
17. Bowl rim; NEOT; two post-firing perforations below rim. RMC Land, PRN 50, context 7020, waterhole 7019.

Fired Clay

by Kayt Brown and Lorraine Mepham

Fired clay was recovered from both RMC Land (1829 fragments, 23,817 g) and ICSG (2748 fragments, 47,329 g). Both assemblages comprise predominantly abraded, featureless fragments of uncertain origin, although a small number with one or more flattish surfaces and/or possible wattle impressions may derive from domestic structures. Identifiable objects comprised a spindle whorl, perforated clay tablets, a possible crucible body sherd and loomweights.

All the fragments were recorded by type, count and weight within each context. No detailed fabric descriptions were undertaken for the amorphous, unidentified fragments, although broad fabric groups were noted for the objects.

Spindle Whorl

The single spindle whorl (Fig. 6.11, 1) was found in a topsoil context (10803) at ICSG. It was made from a sandy/flint-tempered fabric, decorated with regularly spaced, vertical impressions around the circumference. The outer diameter is 45 mm, with a central perforation of 5 mm.

Loomweights

Loomweights, used for tensioning the vertical warp threads on simple upright looms, have been found on sites from the Bronze Age onwards, with a progression in terms of shape from the Bronze Age to the Saxon period (Fig. 6.11, 2–5). Fragments from 24 loomweights were found at ICSG, including a group of at least nine complete or near complete cylindrical weights and five possible pyramidal weights from a single Late Bronze Age pit 17776 (Table 6.11). Pieces from two further cylindrical weights, three triangular loomweights and three highly fragmentary weights of uncertain form were also recovered. Ten loomweights were recorded from RMC Land, comprising two Bronze Age cylindrical weights and eight weights of Saxon date.

Late Bronze Age

The cylindrical weights from pit 17776 at ICSG (Fig. 6.11, 2) were all made in a sandy fabric tempered with fine flint. The weights displayed considerable uniformity of size (Table 6.11), ranging from only 85–130 mm in height, peaking between 90–100 mm, whilst the diameters were all within the 110–130 mm range. The central perforations were between 20–30 mm in diameter, with a peak at 25 mm. Although to some extent affected by spalling and fragmentation due to variable firing conditions, the weights of the six most complete loomweights varied from 1650 g to 1972 g. A wider survey of the range of weights recorded for cylindrical loomweights shows even greater variability, with examples from Black Patch, Sussex varying from 435 g to 1200 g (Drewett 1982, 371 and fig. 34) while examples from Aldermaston exceeded 2000 g (Bradley *et al.* 1980, fig.19.5) and a weight from Yarnton was estimated at 1670 g (Barclay and Edwards in prep). Although slightly lighter (the most complete example weighing 1376 g), six cylindrical loomweights from Heathrow Terminal 5 were more or less the same size those from ICSG (110 mm high, 100 mm in diameter with a 25 mm diameter perforation) and were made in similar sand with fine flint-tempered fabrics, perhaps from the same source (Brown 2010). Poor firing also seems to have been a repeated feature of cylindrical loomweights from this area, with four of the five examples from Carshalton, for instance, being recorded as badly fired (Adkins and Needham 1985, 35, fig. 14, 399–402).

Cylindrical loomweights first appeared during the Early Bronze Age and continued to be used until the 9th or 8th century BC when pyramidal forms began to occur, perhaps with a gradual progression of shapes as suggested at Carshalton (Adkins and Needham 1985). The five possible pyramidal weights from ICSG were all fragmentary, but appeared to have a single perforation in the upper segment or apex of the weight (Fig. 6.11, 3). They were all found in the same deposit as the cylindrical weights in pit 17776, suggesting a period of overlap between the types.

One of the triangular loomweight fragments, from gravel quarry G606, had a perforation through each corner of the base (Fig. 6.11, 4). A curved corner fragment, found in segment 1665 of Middle Iron Age enclosure ditch G383, is most likely but not definitely derived from a similar weight, while the third example, another apex fragment, was found during the MoLAS evaluation at ICSG. Triangular loomweights were used throughout the Iron Age and into the early Romano-British period (Wild 2002, 10).

Saxon

Up to 10 Saxon loomweights were found, eight from RMC Land and a maximum of two from ICSG

Table 6.11 Loomweights from pit 17776 (context 17775), ICSG

Form	*Count*	*Weight (g)*	*Height (mm)*	*Diameter (mm)*	*Perforation diameter (mm)*	*Comments*
Cylindrical	1	1650	85	-	25	-
Cylindrical	1	1758	100	110	25	Complete
Cylindrical	1	1876	95	120	25	Slightly spalled
Cylindrical	1	1972	100	130	25	Illustrated
Cylindrical	1	1440	110	-	21	*c.* 50% present
Cylindrical	1	1360	95	115	30	-
Cylindrical	1	1688	90	130	25	Slightly spalled on sides and one end
Cylindrical	1	1890	93	130	25	Illustrated
Cylindrical	1	1391	95	125	25	-
Pyramidal	1	1948	-	-	-	Fragmentary
Pyramidal	1	1537	130	-	25	Illustrated
Pyramidal	1	1473	-	-	20	-
Pyramidal	1	1040	105	-	20	-
Pyramidal	1	1386	-	-	-	Fragmentary
Uncertain	1	696	-	-	-	Fragmentary
Uncertain	1	673	-	-	-	Fragmentary

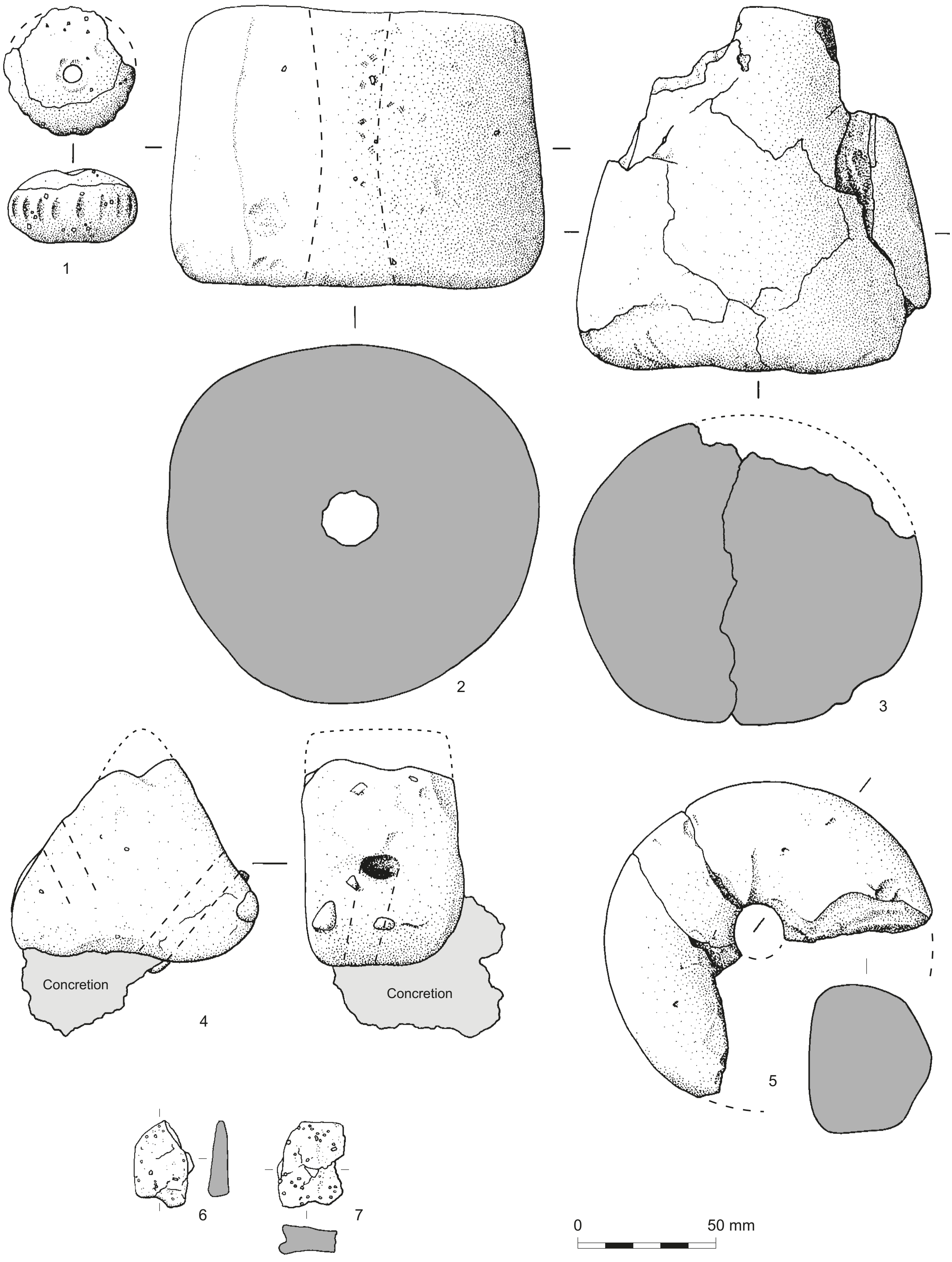

Figure 6.11 Fired clay: 1–7

(Table 6.12) (Fig. 6.11, 5). The loomweights from ICSG are of annular form, while at least six of the weights from RMC Land fall into the category of bun-shaped weights, within the three-fold classification first proposed by Hurst (1959). One other weight from RMC Land is probably bun-shaped, on the basis of the outer profile (only the edge is present), and one is too small to ascertain form. Bun-shaped weights were formed from balls or discs of clay, with narrow, pierced central perforations, as opposed to annular weights, which were formed from 'sausages' of clay, joined to form rings with large central holes. There are no examples here of the 'intermediate' form, in between annular and bun-shaped.

Although there was clearly a period of chronological overlap between annular and bun-shaped weights, the former are generally considered to be typical of the early Saxon period, while bun-shaped weights are most common during the middle and late Saxon periods. They are well represented, for example, in 8th and 9th century contexts in *Lundenwic* (Blackmore 2008b, 196). The weight(s) from ICSG were associated with early/middle Saxon chaff-tempered pottery. At RMC Land, however, pottery associated with the bun-shaped weights is mostly either earlier than this date range (early/middle Saxon chaff-tempered wares in pits 4467 and 5541) or later (early medieval chalk-tempered and Surrey wares: pit 3358, ditch 3892). The best fit for the pottery and loomweight evidence is offered by two features (waterhole 6244, pit 6447) of ceramic phase 3 (mid-10th to early 11th century).

The weights from the two sites differ slightly in their fabrics. The weight(s) from ICSG are in a relatively coarse, slightly sandy fabric with a gritty feel, while the weights from RMC Land are in relatively fine, silty clay fabrics, with a smooth, slightly powdery feel, and with virtually no visible inclusions apart from occasional pellets of iron oxides; one weight has rare, very coarse (<10 mm) flint inclusions. In all cases the fabric is consistent with manufacture utilising the local brickearth, a conclusion drawn for other loomweights from the London area, but there is no sign here of the addition of organic material seen in other weights (Goffin 2003, 216).

None of the weights are complete; external diameter can be estimated in six cases (Table 6.12). Diameters, where these could be estimated, fall within the range of 120 mm to 160 mm. This is broadly comparable to the weights listed by Blackmore from the London area, most of which are within the range of 100–140 mm, which appears to be the standard size until the 9th century (Blackmore 2008b, 196).

Two weights came from one pit (5541) at RMC Land, alongside a bone pin beater (see Chapter 8). The four fragments from ICSG join to form a maximum of two weights; all came from the possible SFB EV620. Other weights were found singly in separate features across RMC Land (see Table 6.12).

Crucible

A possible crucible fragment was made in a vesicular sandy fabric with evidence of exposure to high temperatures (Fig. 6.11, 6). It was found in pit 17234, associated with burnt flint and three pieces of Late Bronze Age–Early Iron Age pottery and is probably, therefore, of similar date.

Perforated Clay Slabs

Fragments from perforated clay slabs were found in hearth 17605, within the possible Middle Bronze Age roundhouse (G2069), and in Bronze Age field system gully 17205, both at ICSG (Fig. 6.11, 7). They were 20–22 mm thick with a groove around the circumference and circular holes made at the leather hard stage. The edges of a third circular object, from Late Bronze Age–Early Iron Age pit 17917, varied from 6–12 mm thick where it had been held and flattened slightly while leather hard, but it lacked

Table 6.12 Saxon loomweights

Site	*Form*	*Obj. No.*	*Feature*	*No. frags*	*Weight (g)*	*Ext. diam. (mm)*
RMC Land	Bun-shaped	11585	Waterhole 2054	1	160	120
	Probably bun-shaped	11786	Pit 3358	9	463	? *c.*160
	Unknown	11900	Ditch 3892	2	14	-
	Bun-shaped	12011	Pit 4467	2	226	*c.*140
	Bun-shaped	12085/12087	Pit 5541	3	487	120
	Bun-shaped	12126	Pit 5541	1	128	-
	Bun-shaped	12119	Pit 6447	1	154	-
	Bun-shaped	-	Waterhole 6244	6	209	-
ICSG	Annular	-	?SFB EV620	2	139	120
	Annular	-	?SFB EV620	2	168	120

perforations and the circumference groove. All three were made in a distinctive oxidised fabric containing sand, sparse to moderate flint and ferruginous inclusions. Similar fabrics probably were used for a number of other perforated slabs found on the adjacent Heathrow Terminal 5 site, the most complete being associated with over 1500 g of post-Deverel-Rimbury pottery (Framework Archaeology archive). A perforated clay slab was also noted at RMC Land, in field system ditch 1216. Other examples have been recognised on a number of other Late Bronze Age sites in the Lower Thames Valley, including Carshalton (Adkins and Needham 1985, 37–8, figs 12 and 13), Runnymede and a group of five from Yiewsley (Champion 1980). Various possible uses have been suggested, such as in cooking, salt production, or as parts of domestic ovens (*ibid.*, 237–8), for ventilation or within bonfire kilns (Adkins and Needham 1985, 38).

Ceramic Building Material

by Kayt Brown

Small quantities of ceramic building material were found at both sites (74 fragments from RMC Land and 225 from ICSG), including pieces of Romano-British, medieval and post-medieval date. The assemblages were very fragmentary and no complete lengths/widths were present, while overall, more than half the Romano-British assemblage occurred as residual finds. Given the size and condition of the ceramic building material, no detailed fabric analysis was undertaken but the basic brick/tile types were quantified by count and weight within each context.

Romano-British types were prevalent at ICSG (132 pieces, 10,929 g), and represented just over half the total assemblage from both sites. Twelve *tegulae* (no cut-aways), two *imbrices* and two box-flue fragments with combed keying were identified, although the bulk of the assemblage could not be attributed to specific types. Fragments of particular interest include a *tegula* (from topsoil at ICSG) with a paw print of a large dog on the top of the flange. In addition, a flat fragment, probably from one of the smaller, thinner types of Roman brick (eg, *bessalis* or *lydion*; Brodribb 1987, 3, fig.1), found in well 1087 had a finger-smeared signature mark consisting of two concentric semi-circles. Such ‘rainbow’ marks are common on both bricks and *tegulae* (*ibid.*, 99), with numerous local examples from London (eg, Betts 1986, 251) and Staines (Jones 2010; archive for McKinley 2004a).

Most of the Romano-British ceramic building material from ICSG came from features of later Romano-British date (98 pieces, 9114 g) but only three contained more than 10 pieces – hollow G369 (18 pieces, 756 g), ditch G306 (17 pieces, 1667 g) and well 11313 (12 pieces, 1738 g). Earlier features (early Romano-British pit 10067 and middle Romano-British ditch G583) contained only three pieces, while a further 26 fragments were from the less precisely dated Romano-British features. Overall, similarly small quantities of Romano-British ceramic building material have been noted at other sites in the area (eg, Jefferson 2003; Laidlaw 1996a, 40; 1996b, 92). Rather than indicating the presence of substantial Romanised structure(s) in the immediate vicinity, it is possible these small amounts of material were brought in as hardcore or accidentally, with manuring debris for example, from further afield, perhaps from the more sophisticated, urban area of Staines, during the period after *c.* AD 150.

The remainder of the assemblage consisted of peg-hole roof tile, brick and field-drain fragments of medieval or post-medieval date. Only two features, ditch 10593 and ditch recut G563 (ICSG), both of post-medieval/modern date, contained more than 10 fragments.

Chapter 7
Worked Flint and Worked Stone

Worked Flint

by Philippa Bradley

Introduction

Substantial assemblages of worked flint (5329 pieces) of Palaeolithic to Bronze Age date were recovered from ICSG and RMC Land (Table 7.1). Burnt unworked flint (162 kg) was also recovered from both sites. These assemblages add to an extensive body of material from a number of sites in the locality including Three Ways Wharf (Lewis 1991; Lewis with Rackham 2011), Staines (Robertson-Mackay 1987), Heathrow (Cramp 2006; Cramp and Leivers 2010), Kingsmead, Horton (Bradley forthcoming), Manor Farm Horton (Ford and Pine 2003), Staines Road Farm, Shepperton (Cotton 2008), West London Gravels Project (Rayner and Elsden in prep.), and Runnymede Bridge (Saville 1991; Higbee 1996; Bevan in prep). The assemblages from ICSG and RMC Land are discussed together in order to examine activities across the landscape. Certain features or groups of features have been examined in more detail (eg, Neolithic pits, Neolithic monuments). Selected flint is described in the catalogue and illustrated in Figures 7.1–5; further details may be found in the archive.

Methodology

The flint was examined and recorded by broad category onto an Access database, which forms part of the archive. Retouched forms were classified using standard morphological descriptions (eg, Bamford 1985; Healy 1988; Saville 1981a). Selected groups were examined in more detail (eg, Neolithic pits and monuments). Comparative analysis was undertaken on the material from the Neolithic pits from both sites although metrical analysis was not undertaken. It was felt that a visual comparison would provide sufficiently detailed information to characterise the material.

Raw materials and condition

Much of the assemblages from both sites utilises relatively small, poor quality nodules from the local gravels, weighing around 20–50 g, and has been extensively reduced (eg, Fig. 7.1, 11). A couple of much larger nodules, weighing 1409 g and 1734 g, came from a flint scatter of apparently mixed date (1100) at RMC Land (contexts 1978 and 1977) and another weighing 2215 g was recovered from context 4804 (in Romano-British well 1087, ICSG). These nodules have not been reduced to remove the maximum number of flakes and they could all have been reduced further but for some reason were abandoned at a relatively early stage of reduction. It is likely that they are of later prehistoric date or possibly even later. A small proportion of material (including a number of well-made scrapers, piercers, knives and other tools) was made from larger nodules of good quality flint. A number of pieces of Bullhead flint (Shepherd 1972) were identified; this has most probably come from local gravel, being incorporated from the Reading Beds in the Thames Valley rather than the Bullhead Beds of Kent and Essex. A few Bullhead cores were recovered from each site as well as flakes and a limited range of retouched pieces (eg, Fig. 7.4, 40, 49). A core rejuvenation flake in Bullhead flint shows that these cores were worked on site. At Terminal 5, Heathrow Bullhead flint seems to have been brought to the site in a prepared state (Cramp and Leivers 2010) although further up the Thames at Radley, Oxfordshire it seems to have been worked down from small nodules which would have been imported (Bradley 1999, 218).

Table 7.1 Summary of worked flint from ICSG and RMC Land

Site	*Flakes*	*Blades, bladelets*	*Chips*	*Cores, core frags*	*Irregular waste*	*Retouched pieces*	*Total*	*Burnt unworked flint (kg)*
ICSG	1921*	62	431**	71	85	125	2695	*c.* 84
RMC Land	1960†	97	121	95	123	238	2634	*c.* 78
Total	3881	159	552	166	208	363	5329	162

* Includes flakes from polished implements and core rejuvenation flakes
** Includes a microburin
† Includes axe thinning flakes, core rejuvenation flakes and flakes from polished implements

Table 7.2 Summary of retouched forms

Site	*Scrapers*	*Piercers*	*Knives*	*Serrated, retouched flakes*	*Fabri-cator*	*Saw*	*Micro-liths*	*Dentic-ulates*	*Arrow-heads*	*Core tools*	*Notch*	*Hammer-stones*	*Misc. retouch*	*Total*
ICSG	35	4	8	43 (27 serrated, 16 retouched)	-	1	-	2	5 (2 leaf-shaped, 3 chisel)	3 (1 burnt axe/ chisel, 1 unfinished axe, 1 ?battle axe frag.)	-	1	23	125
RMC Land	58	16	17	60 (17 serrated 43 retouched)	1	-	3	4	10 (8 chisel, 1 oblique, 1 barbed and tanged)	6 (1 Y-shaped tool, 4 frags polished axe, 1 polished mace-head)	6	4	53	238

The condition of the worked material varies, with some pieces showing edge damage consistent with reworking from surface spreads or ploughsoils, and others in very fresh or even mint condition. Some usewear was noted but not quantified. This included a flake from RMC Land which has a ground edge that has resulted from wear rather than deliberate grinding or polishing. Cortication also varies across the assemblage but there was no apparent correlation between the age of the piece and the density of cortication. A few pieces of flint were iron-stained including one of the Palaeolithic flakes from ICSG (see below).

A significant number of pieces (flakes, larger fragments, and tools) from polished implements, most likely to be axes, were recovered from both sites (Table 7.6, Figs 7.1–4, 10, 13, 20–25, 45 and Pl. 7.2). It is unclear how many axes are represented but examination of this material has shown that it could be five or fewer. Limited refits were found amongst this material but very similar raw materials were identified in a number of cases, including one example between the two sites (Middle Neolithic pit 4534 on RMC Land, and ditch G4003, section 40308 on ICSG). The majority of the axe flakes and fragments are a light grey flint with some inclusions. A single grey very cherty piece came from a tree-throw hole (17073, ICSG) also containing Early Neolithic pottery, and may possibly represent variation within the flint as opposed to a different source. Other than slight variations this material is all very similar and could perhaps have come from a couple of axes. A mined source, perhaps one of the Sussex mines, seems likely for this material. A very cherty dirty cream coloured fragment that has been re-used as a core (Middle Neolithic pit G345, ICSG) seems to come from a different source. In addition to this material there are a few brown or green-brown pieces (eg, context 3889, from a tree-throw hole 3888, RMC Land) which may represent another one or two axes. The flakes and fragments were quantified by broad type to see if any further light could be shed on the numbers of axes represented (Table 7.6), although this was of limited use.

Burnt unworked flint was recovered from both sites in some quantity (Table 7.1). It was recovered from contexts dating from the Neolithic to more recent features. Generally this material has been very heavily burnt to a grey or white colour, and although it is intrinsically undatable a significant proportion of the material came from Late Bronze Age/Early Iron Age contexts. The distribution of burnt unworked flint is fairly low-level across the sites with only 11 contexts at RMC Land and 13 contexts at ICSG producing more than 1 kg. An exception is feature 17561 (ICSG) where over 12 kg of burnt unworked flint and some structural fired clay were found.

Flint working

Typologically distinctive pieces dating from the Palaeolithic to Early Bronze Age were recovered from a range of contexts (Tables 7.2–3). Some of these diagnostic pieces are clearly redeposited but secure groups of flint were recovered. For example Middle Neolithic material, often associated with Peterborough Ware, came from a number of pits but also as redeposited finds; they are discussed in greater detail below. Prior to the Middle Neolithic, activity seems to have been quite limited. Similarly very limited evidence was identified for Early Bronze Age activity; diagnostic tools include plano-convex knives from ditch G156 (section 17213), and pits 1953 and

Table 7.3 Summary of core types

Site	*Single platform blade*	*Single platform flake*	*Multi-platform flake*	*Keeled and discoidal*	*Cores on polished axe fragments*	*Roughly worked nodules/chunks*	*Fragments*	*Total*
ICSG	-	12	18	9	2	6	24	71
RMC Land	2	8	24	9	1	5	46	95
Total	2	20	42	18	3	11	70	166

1739 (Fig. 7.5, 54–6), and a piercer from undated gully G857, all on ICSG, and a barbed and tanged arrowhead from the subsoil on RMC Land (context 4398, Fig. 7.5, 59). Technologically much of the assemblage would appear to be of Middle and Late Bronze Age date. This material has generally been fairly expediently knapped and shows little evidence for core preparation and care taken during knapping. Typically, relatively small pebble nodules have been roughly worked which has provided crude, thick often cortical flakes. These have been used either unmodified or they have been roughly retouched into a fairly restricted range of tools (scrapers, denticulated and retouched flakes, piercers). Much of this later prehistoric flintwork is dispersed across the sites but a single pit (1762, ICSG) produced a substantial assemblage (over 900 pieces) of worked flint, providing the opportunity to examine this material in a little more detail.

Generally a relatively restricted range of core types was present (Table 7.3). Very few blade cores were found, which correlates to the limited Mesolithic and Early Neolithic activity. The relatively small nodules that were used for much of the assemblage may have restricted the type of core. Simple single and multi-platform flake cores predominate but a few discoidal and keeled examples were recovered. Evidence for core preparation and maintenance was limited with few cores displaying platform edge abrasion. A few core rejuvenation flakes and a crested flake were identified, indicating that some care was taken during knapping. For the Middle to Late Bronze Age assemblages it can be seen that nodules were very roughly worked, often being discarded after one or two flakes were removed, suggesting flakes were made on an *ad hoc* basis when they were required.

Palaeolithic

Two flakes (ON 13046 and ON 13049) were recovered from the natural gravel (10810) on ICSG and are of Palaeolithic date (Pl. 7.1). One (ON 13046) is heavily iron stained and has battered edges; the other (ON 13049) is quite rolled but is not stained. Palaeolithic material has been recovered from the vicinity of the site (Wymer 1999) both from the Lynch Hill and Taplow Gravels.

Mesolithic

Very little diagnostic Mesolithic flint was identified from either site and consists of a microburin from a tree-throw hole on ICSG (10313), which also contained 10 flakes together with Middle Neolithic and Bronze Age pottery, and three microliths from RMC Land (tree-throw hole 3872; Late Bronze Age/Early Iron Age pit 2266; and 1100, a flint scatter of apparently mixed date). The first two microliths are simple edge blunted types (Fig. 7.1, 1–2) (*cf* Saville 1981b, fig. 4, nos.152, 160; fig 5, no. 234), whose size suggests a Late Mesolithic date. The third, also of Late Mesolithic date, is a geometric type, classified by Saville (1981b, fig. 9, no. 155) as a quandrangular form (Fig. 7.1, 3). A small number of blades and blade-like flakes were also recovered from both sites may also be contemporary. A small opposed platform blade core (22 g; Fig. 7.1, 4) of probable Mesolithic date was recovered from late Saxon/early medieval ditch 3507 (RMC Land). A small blade core (18 g) came from Iron Age pit 1109 (RMC Land). This has been quite roughly worked and is slightly irregular, although this is largely due to the small pebble on which it was made. It was found with a number of rough flakes and is not certainly Mesolithic. A crested flake of probable Mesolithic date was recovered from a Saxon feature (G2619) at RMC Land. A core rejuvenation flake, removing the working face of a blade core, came from tree-throw hole 2291 (RMC Land). It was found with a possible axe thinning flake, which had been subsequently retouched.

Plate 7.1 Palaeolithic flakes from ICSG

Neolithic

Early Neolithic tree-throw holes and 'quarry'

A little diagnostically Early Neolithic flint was recovered from ICSG but most of this material came from later features, tree-throw holes or other natural features. Two very finely worked leaf-shaped arrowheads were recovered from Bronze Age features (ON 18109 from ditch G1211, context 16435; and ON 13085 from well 11093, context 11092, Fig. 7.1, 5–6). The arrowhead from well 11093 was found together with a small group of flints of apparently mixed date, including a single platform flake core which had been used as a hammerstone. A sarsen hammerstone was also recovered from this feature (see below). It is likely that this core and a scraper, a serrated flake and a broken blade are probably contemporary with the arrowhead. Other much more roughly worked flakes and a crude end scraper would appear to be later, and probably contemporary with the well (see below). Similarly, section 16439 of ditch G1211 contained a small number of crude flakes and a core, the arrowhead clearly being redeposited.

Twelve pieces of flint were recovered from the fills of the Early Neolithic 'quarry' G2004, most of which consisted of flakes but included two blades and an end scraper made on a long blank. The scraper has been neatly retouched and is probably of Early Neolithic date, although the dating is tentative due to the size of the group. A single flake of Bullhead flint was recovered from this feature indicating the use of this source from at least the Early Neolithic.

Small assemblages of flint were recovered from tree-throw holes and natural hollows, some of which also contained Early Neolithic pottery. Apart from tree-throw hole G2005, which contained 49 pieces of flint (flakes, blades, bladelets, two end scrapers and a rough flake core), these groups are quite small and consist mainly of undiagnostic debitage. A couple of other features contained some slightly more diagnostic pieces, for example two flakes from polished implements were found with seven flakes in tree-throw hole 17072 and a possible knife fragment made on a Bullhead flint blade came from natural hollow 11095. These assemblages would appear to be consistent with the associated ceramics, perhaps suggesting a phase of Early Neolithic clearance.

Other probable Early Neolithic material

Less certainly datable Early Neolithic material was identified and included some finely made scrapers including two from the RMC Land topsoil (context 601), one of which had been made on a long blade-like blank. It is probable that some of the more finely made tools such as scrapers, knives, serrated flakes and piercers that were recovered from late contexts are also of Neolithic date (eg, Fig. 7.4, 40, 48–52). One neatly retouched scraper from a possible medieval ditch (4108, RMC Land) seems to have been notched and has a slight tang which would have facilitated hafting (Fig. 7.4, 50).

Neolithic monuments

Apart from the double ring ditch (G2007), the Neolithic monuments on ICSG (penannular

Table 7.4 Summary of worked flint from the Neolithic monuments from ICSG

Monument	*Context*	*Flakes, blades*	*Chip*	*Cores, core fragments*	*Retouched pieces*	*Total*
Double ring ditch G2007 and cremation grave 19006	inner ditch	5	-	-	1 burnt axe or chisel frag.	6
	outer ditch	66	1	4 (1 multi-platform, 1 keeled, 1 single platform, 1 fragment)	7 (1 end and side scraper, 1 misc. retouch, 3 serrated flakes, 1 retouched flake, 1 chisel arrowhead)	78
	19007	1	-	-	-	1
Penannular ditched monument G2008	17598	1	-	-	-	1
	17872	1	-	-	-	1
	17885	-	-	-	1 piercer	1
	17938	1	-	-	-	1
	17944	1	-	-	-	1
	19005	-	-	-	1 ?knife fragment	1
Penannular ditched monument G3002 and ?associated pit G151	19507	1	-	-	-	1
	19522	6	-	-	-	6
	19524	1	-	-	-	1
	19528	8	-	-	1 end and side scraper	9
	19539	-	-	-	1 knife fragment	1
	19542	1	-	-	-	1
	19504	1	-	-	-	1
	19531	1	-	-	-	1
	19533	2	-	-	-	2
	19534	1	-	-	-	1
Rectangular enclosure G3001	4303	-	-	-	1 end and side scraper	1
	1068	1	-	-	-	1
	1139	2	-	-	-	2
	1885	1	-	-	-	1
Total		102	1	4	13	120

monuments G2008 and G3002; rectangular enclosure G3001) produced only small assemblages of worked flint. This material was generally sparsely distributed across the fills of these features (Table 7.4) and consisted mainly of relatively undiagnostic pieces.

A heavily burnt fragment from a chisel or small polished axe came from the inner ditch of the double ring ditch (G2007, Fig. 7.1, 7; Pl. 7.4). Its precise form cannot be determined due to burning; however, polishing can be seen in small patches across both faces indicating that it had been originally flaked and at least partly polished. The outer ditch of this monument contained a greater quantity of worked flint although much of this is fairly undiagnostic debitage. The most distinctive piece is a chisel arrowhead (Fig. 7.1, 8), but a variety of cores, a scraper, a possible knife fragment and serrated flakes were also recovered (Table 7.4), which could all be of Neolithic date.

A single flake from the central cremation grave (19006) and a piece of irregular waste recovered from grave 19010 are unlikely to have been a deliberate inclusions.

Other probable Neolithic material includes a possible knife fragment from the penannular ditched monument (G2008) and an end and side scraper from the rectangular enclosure (G3001). The flint from these monuments includes broken, worn and burnt pieces perhaps indicating that this material was used in and around the monument; it seems unlikely that any of it had been specially placed. However, it is possible that the axe/chisel fragment from G2007 was a pyre good that was subsequently deposited in the barrow ditch, particularly in view of its close proximity to cremation grave 19123, which has been radiocarbon dated to 3340–2930 cal BC (NZA-31017).

An end and side scraper from the upper fill (19528, section 19525) of penannular ditch monument G3002 may be Late Neolithic or Early Bronze Age in date. A piercer from the lower fill (17885, section 17886, Fig. 7.5, 63) of penannular ditched monument G2008 has been roughly worked with a minimal point, and would technologically be of Middle or Late Bronze Age date. Its position in the lower fill of the monument may be explained by reworking during the later Bronze Age, indeed Late Bronze Age pottery was also found in this feature (see Leivers, Chapter 6).

Middle Neolithic pits

Worked and burnt unworked flint was recovered from a number of Middle Neolithic pits on ICSG and RMC Land (Table 7.5, Fig. 7.1–3, 9–32). At ICSG 17 pits also contained Peterborough Ware pottery; of the pits that contained worked flint only nine produced 10 or more pieces. At RMC Land 53 pits contained Peterborough Ware and 11 pits contained 10 or more pieces of worked flint (Table 7.5). At ICSG one of the larger assemblages of worked flint came from a pit that did not contain any pottery while at RMC Land all of the larger flint assemblages were associated with pottery.

At RMC Land the quantity and composition of the flint assemblages varied enormously between features (Table 7.5). This pattern seems to match the distribution of pottery where a few pits contained substantial assemblages but the majority have much smaller quantities of material (see Leivers, Chapter 6). Some differences between the composition of the assemblages from these features can be seen, however. On both sites the retouched pieces were dominated by scrapers, knives and serrated or retouched flakes (Table 7.5, Fig. 7.1–3, 12, 14–16, 26–27, 30–31). Polished axe fragments and flakes are also well represented (see below, Pl. 7.2). Knives were more common at RMC Land, where three

Plate 7.2 Selected polished implements and fragmentary pieces

Table 7.5 Summary of flint from Middle Neolithic pits from ICSG and RMC Land

Pit	*Flakes, blades*	*Chips*	*Irreg. waste*	*Cores*	*Retouched pieces*	*Total*
ICSG						
Context 113 IMP96 (MoLAS evaluation) EV114	107	306	-	1 single platform	9 (3 end/end and side scrapers, 4 serrated flakes, 1 retouched flake, 1 hammerstone)	423
G345*	10 (inc. 1 from polished axe)	-	-	2 (1 multi-platform, with natural hole, 1 reworked polished axe fragment)	4 (1 knife, 1?scraper fragment, 1 knife fragment, 1 knife or scraper)	16
4081*	3	-	1	1 flake core fragment	-	5
G344*	48 (inc. 2 from polished axes)	1	3	1 single platform	4 (1 end scraper, 1 retouched flake, 1 scraper, 1 piercer)	57
10245*	6 (inc. ?flake from polished axe)	5	-	-	1 knife fragment	12
10298*	2	-	-	-	-	2
10480*	6 (inc. 1 from polished axe)	5	-	-	1 ?knife fragment	12
10821*	6	-	1	-	1 polished flake with retouched edges	8
11018*	3	-	-	-	2 (1 end scraper, 1 end and side scraper)	5
11024*	1	-	-	-	-	1
11026*	10	-	-	2 (flake cores, 1 is a reworked polished axe frag.)		12
11340*	1	-	-	-	-	1
16033*	2	-	-	-	-	2
17588	13	1	-	1 multi-platform	2 (1 broken serrated flake, 1 ?unfinished axe)	17
4239	20 (inc. 1 from polished axe)	-	-	-	4 (1 backed knife or sickle, 2 knife fragments, 1 serrated flake)	24
40252	10	-	-	1 rough chunk	1 worn serrated flake	12
RMC Land						
EV605	2	-	-	-	-	2
719*	6	1	-	-	-	7
733*	18	1	1	2 (1 discoidal flake core on polished axe frag, 1 discoidal frag)	2 (1 end and side scraper, 1 misc. retouch)	24
753*	26	6	1	3 (1 single platform blade, 1 multi-platform, 1 fragment)	2 (retouched flakes)	38
1118*	13	1	1	-	2 (1 chisel arrowhead, 1 end and side scraper)	17
1153*	8	1	-	1 single platform	2 (1 end and side scraper, 1 retouched flake)	12
2003*	1	-	-	-	-	1
2026*	3	-	-	-	-	3
2158*	7	-	-	1 single platform	-	8
2162*	3	-	-	-	1 end scraper	4
2169*	4	-	-	-	-	4
2184*	1	-	-	-	-	1
2187*	6	-	1	-	1 microdenticulate	8
2199*	5	-	-	-	1 oblique arrowhead	6
2253*	2	-	-	-	1 end and side scraper	3
2260*	1	-	-	-	-	1
2265*	1	-	-	-	-	1
2752*	64 (inc. 12 from polished axes)	47	8	2 (1 multi-platform, 1 core fragment on a polished axe)	2 (1 backed knife, 1 Y-shaped tool on polished axe frag.)	123
2817*	63 (inc. 3 from polished axes)	11	-	-	3 (1 polished mace-head made on naturally holed flint nodule, 1 retouched blade, 1 end scraper)	77
3101*	1	-	-	-	-	1
3165	1	-	-	-	-	1
4400*	1	-	-	-	-	1
4411*	3	-	-	-	1 knife	4

* Associated with Peterborough Ware

Table 7.5 Continued

Pit	*Flakes, blades*	*Chips*	*Irreg. waste*	*Cores*	*Retouched pieces*	*Total*
4422*	36 (inc. 5 from polished axe)	-	7	1 multi-platform	6 (3 misc retouch, 2 knives, 1 hammerstone)	50
4425*	1	-	-	-	-	1
4428*	2	-	-	-	-	2
4476*	2	-	-	-	-	2
4481*	5	-	-	-	1 misc retouch	6
4485*	3	-	-	-	-	3
4534	2	-	-	-	4 (1 hammer, 1 axe fragment, 1 serrated flake, 1 retouched flake)	6
4593*	1 (with ground edge)	-	-	1 discoidal	-	2
4615*	3	-	3	-	-	6
4621*	6	-	-	-	-	6
4623*	3	-	1	-	3 (2 retouched flakes, 1 misc retouch)	7
4625*	1	-	-	-	-	1
4628*		-	2	-	1 knife	3
4632		-	-	1 single platform	-	1
4638*	4	-	1	-	3 (1 end and side scraper, 1 knife, 1 hammerstone)	8
4646	5	-	-	-	1 serrated flake	6
4660	2	-	1	-	-	3
4664*	5	-	-	-	1 piercer	6
5035*		-	1	-	-	1
5088*	14	-	-	-	-	14
5352*	1	-	-	-	-	1
5381*	8	-	-	-	-	8
5386*	4	-	-	-	-	4
5388*	1	-	-	-	-	1
5392*	11	-	-	-	2 (1 end and side scraper, 1 hammerstone)	13
5393*	4	1	-	-	-	5
5616*	2 (inc. 1 from a polished axe)	-	-	-	-	2
5763	8	3	-	1 multi-platform	-	12
5783*	4 (inc. 1 from polished axe)	-	-	-	-	4
5912*	2	-	-	-	1 end scraper	3
5923*	1	-	-	-	-	1
5950*	2	-	-	-	-	2
5961*	10	-	-	-	-	10
5969*	2	-	-	-	-	2
6293	3	-	-	-	2 (1 end scraper, 1 misc retouch)	5
7217	8	-	-	1 single platform	3 (1 scraper , 2 serrated flakes)	12
7177		-	-	-	1 serrated flake	1
Total	654	390	33	23	75	1175

* Associated with Peterborough Ware

hammerstones were also deposited in pits; a type not recorded in the Neolithic pits at ICSG. A single piercer (Fig. 7.3, 32) was recovered from pit 4664 (RMC Land), perhaps suggesting that other tools were used or that piercing activities are not represented amongst this material. Transverse arrowheads were recovered from pits that contained Peterborough Ware (pits 1118 and 2199, RMC Land, Fig. 7.3, 28) and a chisel arrowhead came from a pit that just contained flint (pit 1239, ICSG). The scrapers were generally end or end and side types and have mostly been carefully worked (eg, Fig. 7.3, 30).

Core tools were recovered from both sites and included an unfinished axe (pit 17588, ICSG, Fig. 7.1, 9), a Y-shaped tool made on a fragment of a polished axe (pit 2752, RMC Land, Fig. 7.3, 22), an unusual polished mace-head made on a naturally holed flint nodule (pit 2817, RMC Land, Pl. 7.3), and another possible fragmentary mace-head from pit 4638 (also on RMC Land) (Fig. 7.2, 17–18, Pl. 7.3). Y-shaped tools are not common but do occur in later Neolithic contexts. This example has a fairly pronounced tang with a chisel end; the broader end has a scraper-like retouched working edge. The end of

Plate 7.3 Mace-heads made on naturally holed nodules from RMC Land – pits 2817 and 4638 (left and middle) and also an example from Beddington Sewage works (right)

Plate 7.4 Heavily burnt chisel or small axe from inner ring ditch of G2007

the tang is worn. The function of these artefacts is uncertain as there is quite a range of forms (Gardiner 1988, 57) but in this instance it would appear to have been used as a hand-held scraper/chisel.

The mace-head from pit 2817 (RMC Land) is roughly oval and seems to have been partially polished and flaked around a naturally perforated flint pebble (Fig. 7.2, 17, Pl. 7.3). It is unclear how extensive the original polishing was, as there has been some subsequent flaking. The flint is grey with some yellow staining, the original extent of which is also difficult to determine. The light colour and possibly the staining may have been significant in the selection of this nodule as well as its natural perforation (*cf* Roe 1968a, 149; Thomas 1996, 154). Another possible but fragmentary example of a mace-head was recovered from pit 4638 (RMC Land) (Fig. 7.2, 18). This possible example has not been polished and is roughly shaped. It appears to have broken around the perforation, perhaps whilst it was being shaped.

Roe (1968a, 149) lists eight complete examples of pebble mace-heads made on naturally perforated flint nodules, most of which have come from the River Thames around London (*ibid.*, 157, fig. 34). Some of these mace-heads have been shaped and polished while others are more or less unmodified; a few bear faceting comparable to the antler crown mace-heads (Roe 1968a, 149). A similar mace-head from a surface collection at Down Grange Farm, Hampshire (Gardiner 1988, 109, fig. 3.14 no. 2) also utilises a naturally holed nodule. Another example from Beddington Sewage works, Croydon is much larger and cruder (P. Bradley pers. obs., Pl. 7.3). An example was also found in a ring ditch at Rainham, Essex associated with a little possible Fengate Ware, Mildenhall Ware and Beaker sherds (Jon Cotton pers. comm., Cotton 2004, table 15.1, 142).

Peterborough Ware associations are rare for mace-heads, but at Yarnton, Oxfordshire, a fragment of a very finely polished flint mace-head of uncertain form was found in a pit associated with Fengate Ware and other pieces of worked flint (Bradley and Cramp in prep; Roe in prep.). A pit at Cam, Goucestershire contained a fairly substantial assemblage of worked flint, Peterborough Ware pottery, both Fengate and Mortlake substyles, and the lower portion of a stone mace-head (Roe 1968a, 150, fig. 32, no. 7; Smith 1968, 19, fig. 4; Roe 1968b 22–24). Another similar polished flint mace-head from a Peterborough Ware-associated context was recovered from Ogmore-by-Sea, Mid Glamorgan (Burrow and Walker 2003, 96, fig. 50, no. 1). This example is more extensively polished than the RMC Land example but is of a similar general form. The mace-head and possible fragmentary mace-head from RMC Land are therefore important finds of examples in a secure Middle Neolithic context associated with Peterborough Ware.

Numerous flakes, chunks and larger fragments of polished axes were found in pits from both sites and these occurred in features that contained Peterborough Ware pottery as well as those that just contained worked flint (see above, Tables 7.5–6). Examination of this material has shown that a number of axes were apparently worked down (see above); in some cases fragments were used as cores from which further flakes were struck. Few of these high quality flakes were retouched (Table 7.6), so it would seem that flakes were removed for use elsewhere. However given the quality of this raw material it seems surprising that such large fragments were being deposited; all of the cores made on polished axe fragments could easily have been reduced further as could a blade fragment from pit 4534 (RMC Land). This axe seems to have broken during use; a large flake was removed from its surface

Table 7.6 Summary of flakes, cores, fragments and tools made from polished implements

Site	*Flakes*	*Flakes with side facets/ edges*	*Chips*	*Larger fragments and chunks*	*Cores*	*Tools*	*Total*
ICSG	11 [6]	4			2	1 (?battle axe frag)	18
RMC Land	43 [15]	4 [4]	6 [6]	3 (inc. 1 blade end)	4 (inc. 3 discoidal types) [2]	2 (Y-shaped tool, 1 retouched flake) [1]	62
Total	54 [21]	8 [4]	6 [6]	3	6 [2]	3 [1]	80

Numbers in square brackets = pieces from Neolithic pits

with such force that it broke the implement across its width (Fig. 7.3, 24).

The incidence of flakes, fragments and tools from polished axes from the Neolithic pits from the two sites is summarised in Tables 7.5–6. Most of the polished flint flakes and larger fragments from the Neolithic pits are creamy-grey and grey. A couple of pieces are in a darker grey with a glassy polish, for example a flake from context 2815 (pit 2817) and two non-refitting flakes from context 2754 in pit 2752. Two non-refitting flakes from another axe of mid-grey flint that was also highly polished came from pit 2817 (context 2815). Pit 2752 (contexts 2753–2754) contained quite a few flakes which seem to have come from the original artefact that the Y-shaped tool was made from, including two refitting flakes (ONs 11700 and 11671, context 2754); only ON 11671 had a small patch of polish on it (Fig. 7.3, 23). There were a number of very tiny chips and flakes suggesting that some of this debris is knapping waste from the Y-shaped tool's manufacture. There were also a few unpolished flakes that probably came from same axe originally.

Examination of the core types from these features shows the variety of forms recovered (Table 7.5, Fig. 7.1–4, 10–11, 13, 19–21, 29, 39, 45–47). Only a single blade core was recovered from pit 753 (RMC Land), this was found together with a multi-platform flake core and a flake core fragment. A number of discoidal cores, including one on a polished axe fragment, were recovered from these pits, although they were slightly more common on RMC Land (Table 7.5). It has been suggested that discoidal cores were used for making blanks for transverse arrowheads (Green 1974, 84) although this association has been disputed (Healy 1985, 194). Discoidal cores are more commonly associated with Middle or later Neolithic contexts although this may partly reflect regional patterning (Healy 1985, 193–4). Generally the cores have been fairly carefully worked although there was limited evidence for platform preparation or maintenance in the form of core rejuvenation flakes. A rather curious core made on a naturally holed flint nodule was recovered from pit G345 (ICSG) (Fig. 7.1, 11). This has been fairly extensively worked and the use of a holed stone may be entirely coincidental. However, the polished mace-head from pit 2817 (RMC Land) and another fragmentary core from pit 4638 (RMC Land) were also made on a naturally holed nodules, perhaps suggesting that they were especially chosen. This would obviously be a functional decision for the mace-head but the choice of naturally holed nodules for cores is probably related to the quality of the raw material. An example of a similarly holed core of probable Upper Palaeolithic date was found on the Thames foreshore (Cotton and Merriman 1991, 36–7, fig. 4, no. 4)

The condition of the material from these pits is also varied, as worn, burnt and broken pieces have been deposited together with fresher material; no apparent patterning could be discerned from the condition of the material. Burnt unworked flint was recovered from pits on both sites but the only feature that stands out in terms of quantity is pit 2752 on RMC Land where 1190 g was recovered. A single flake from pit 4593 (RMC Land) has a ground edge, apparently resulting from use rather than deliberate grinding or polishing. Some usewear was noted on pieces from these pits and a few of the serrated flakes have macroscopic gloss indicating their use on silica-rich plant materials (Unger-Hamilton 1988) (eg, Figs 7.2 and 7.4, 16, 40).

The retouched component strongly suggests a domestic origin for the flint; the dominance of scrapers, knives, and serrated and retouched flakes indicates scraping and various processing tasks. Slightly more unusual are the occurrence of the Y-shaped tool, the polished mace-head and the second possible mace-head fragment. The large number of flakes and fragments from polished axes also stands out. The almost complete absence of piercing tools is of note. Knapping was evidently occurring, the residue being deposited in the pits (cores, core fragments, chips, irregular waste and hammerstones). However, the relatively low incidence of chips and smaller flakes may suggest that the residue from these activities was not all collected and deposited, although it is possible that the sampling strategy has skewed these results. There was limited evidence for any spatial patterning or special depositional practices within pits fills. A single instance on ICSG (pit 17057) was identified where the flints were found in a group perhaps indicating that they were originally placed in a container of some sort (see Chapter 2).

There appeared to be some spatial patterning and pairing of these pits and it is of note that the larger assemblages from RMC Land were recovered from paired pits 2752 and 2817 and nearby pit 4422. These features contained some of the largest flint assemblages from either site. The composition of the assemblages from these features is fairly comparable, albeit variable in size (Table 7.5). Two of the most unusual object from the Neolithic pits, the Y-shaped tool and the polished mace-head were found in pits 2752 and 2817, respectively. Pit 5783 contained four flakes including one from a polished axe; this pit also produced a sherd of pottery which is thought to belong to a vessel from pit 2752 (Leivers, Chapter 6). Visually the flint looks very similar to that from pit 2572 – the polished flake from pit 5784 (ON 12105) may be from the same axe as the core on a polished fragment from pit 2752 (ON 11634), although these pieces did not actually refit. Other links between features were noted in the ceramic assemblage: refitting sherds in pits 2752/2817 and 4422/4411. The flint from these features is very similar both in terms of composition, raw materials used and condition. No refits were found, but it is likely that some of this material results from the same knapping episodes. Notably two types of raw material stand out – a dark almost black very high quality flint, flakes of which came from pits 4422 (context 4414) and 2817 (context 2816), and a creamy-grey flint from pit 2817 which is similar to pieces from pit 2752, including the Y-shaped tool.

Some possible distinctions can be made with reference to the distribution of flint at ICSG: the larger assemblages came from pits closest to the rectangular enclosure (G344, G345 and 4239; Table 7.5). This possible pattern is not exclusive, however, as pit 4081, located to the east of the enclosure, contained only five pieces of flint. It may be significant that pits G344 and G345 form a pair. These features contained a greater range of artefacts, including slightly more flakes and fragments from polished axes. This may, however, be due to the greater numbers of flints recovered rather than reflecting a true pattern. Pits 17588 and 40252 were located away from the main area of pits and they contained less diagnostic flint assemblages. However, they are probably contemporary with the main phase of pit digging, and their contents would be entirely consistent with Middle Neolithic date if they were found within the pit clusters.

Pit EV114 (context EV113) (ICSG) contained a fairly large assemblage of worked flint (Table 7.5). The flint was in a fresh condition and included over 300 small flakes and chips, the greatest single quantity from any of the Neolithic pits. This is clearly the residue of knapping, although no refits could be found, the raw material is very similar. This feature contained a number of neatly retouched scrapers and worn serrated flakes and although none of these is particularly distinctive the general typology of this material would suggest a Middle Neolithic date. Two flakes from polished axes of a grey flint are very similar to the material found on both ICSG and RMC Land.

Tree-throw holes

Worked and burnt unworked flint was found in several tree-throw holes on RMC Land, although only a few contained any quantity of material or diagnostic pieces. An inversely retouched blade from tree-throw hole 2683 (context 2684) may be of Neolithic date, and flakes from polished axes came from tree-throw holes 4443 (context 4444), 4595 (context 4596) and 3606 (context 3610). The assemblages from 4443 and 4595 consisted mainly of undiagnostic flakes. A little more variety was recorded in the assemblage from tree-throw hole 3606, where a Bullhead flake core, an end and side scraper and two retouched flakes were recovered together with flakes and pieces of irregular waste. Although not particularly diagnostic, this material would seem to be of Neolithic date. Less diagnostic material was recovered from tree-throw hole 1663 (blades and flakes) but this was associated with Peterborough Ware.

Two tree-throw holes (5638 and 3493), however, contained more substantial assemblages together with other artefacts perhaps indicating deliberate rubbish disposal. Tree-throw hole 5638 contained 17 flakes, a blade and a small chisel arrowhead (Fig. 7.3, 35). The same context also contained 20 pieces (154 g) of burnt unworked flint. A substantial assemblage of almost 100 pieces of worked flint was recovered from tree-throw hole 3493. This material came from contexts 3492 and 3494 and included flakes, a flake core, irregular waste and chips. A chisel arrowhead, a retouched flake and a piercer (Fig. 7.3, 33–34) were the only retouched pieces recovered from the feature. It may be significant that the two tree-throw holes (5638 and 3493) that contained the largest quantity of worked flint were located adjacent to pit 5638 from which Peterborough Ware was recovered, located in an area where there were few other pits (3493).

Redeposited Neolithic flint

At both sites there is evidence for redeposition of flint within later features. This presumably results from reworking surface material, although a number of the very finely worked pieces are in a very fresh condition indicating that it had not been lying on the surface for any length of time. A number of diagnostic Middle to Late Neolithic pieces were recovered as redeposited material from ICSG, including a chisel arrowhead from Romano-British quarry G1235 (Fig. 7.4, 42), a chisel arrowhead from Bronze Age ditch G4150 (section 40270) (Fig. 7.4, 43), and a chisel arrowhead, discoidal core fragment and a flake from pit 16131 (Fig. 7.4, 44).

At both sites diagnostic Neolithic artefacts were recovered from Late Bronze Age features including some very finely worked pieces (leaf-shaped arrowhead, possible square sectioned axe or battle axe fragment, serrated flakes, scrapers; see Table 7.7, Figs 7.1, 5–6 and 7.4, 53). The significance of this material is discussed further below. At RMC Land less diagnostic flint associated with Peterborough Ware came from pit 2690 (four flakes and a retouched flake); lava quern fragments from this feature indicate that these finds were redeposited.

A number of large features, possibly waterholes, on RMC Land contained small quantities of worked and burnt unworked flint much of which is relatively undiagnostic. However, a backed knife and a neatly retouched fragmentary scraper (waterhole 5391, context 5411 and recut 5442, context 5414) may be of Neolithic or Early Bronze Age date. Although these small assemblages are not firmly dated as no other datable material was recovered, the flint appears to be relatively fresh, perhaps suggesting that it has not been lying on the surface for any length of time prior to its incorporation into these features.

Late Neolithic

A small flint assemblage was found associated with Grooved Ware from RMC Land, from pit 5732 (20 flakes, a multi-platform flake core, a core fragment, four serrated flakes, a piece of miscellaneous retouch and a broken sub-discoidal knife, Fig. 7.3, 36–39). The knife has been very neatly and invasively retouched around much of the remaining portion of its circumference. A patch of cortex may have been left intentionally to provide backing. This form of knife is allied to the extensively retouched and sometimes polished discoidal knives of Late Neolithic date (Clark 1929; Manby 1974; Saville 1981a, 108, F129–130) and its recovery from a secure context associated with Grooved Ware pottery is of some importance. Gloss was noted on some of the serrated flakes indicating their use probably for cutting silica-rich plant materials (Unger-Hamilton 1988).

Smaller quantities of undiagnostic flint were recovered from the fills of tree-throw hole 5603 (11 flakes) and pit 2720 (16 flakes and a piece of irregular waste), which were associated with small amounts of possible Grooved Ware (Leivers, Chapter 6).

Bronze Age

Early Bronze Age

Very few pieces of diagnostic Early Bronze Age flint were recovered from either RMC Land or ICSG, and what little material was recovered was redeposited in later features. A single barbed and tanged arrowhead (ON 12013, Fig. 7.5, 59) was recovered from subsoil on RMC Land (context 4398). It has been made on a fairly thick, hinge fractured blank and has not been retouched over all of the bulbar face. One barb is damaged but it does appear to have a slightly asymmetrical profile. It would certainly seem to have been for hunting rather than a more fancy type, perhaps Green's Sutton B (*cf* Green 1980, 122, fig. 45). Other diagnostic pieces including a plano-convex knife (described below), some piercers, other knives and scrapers are probably also Early Bronze Age. A neatly retouched piercer from feature 7814 (WGA) and an elaborately flaked knife, or possibly the tang from a dagger, from the evaluation at WGA (Tr 4) (Fig. 7.5, 62) are of Early Bronze Age date. Two broken and burnt blades came from cremation grave 16669 on ICSG and were associated with a Collared Urn (Leivers, Chapter 6). Despite being burnt there is nothing to suggest that these pieces are anything other than incidental inclusions.

A fragment of polished chert or quartzite (Fig. 7.4, 53) was recovered from Late Bronze Age pit 17561. This fragment, which has also been burnt, is polished and bevelled. It may be from the end of a battle axe or possibly a square sectioned axe, although it is not possible to be certain due to its fragmentary nature.

A small assemblage of 17 pieces of worked flint was found with some burnt unworked flint in feature G288, a wide hollow and central 'shaft' on ICSG, of uncertain date, but producing a radiocarbon date from an upper fill of 2130–1820 cal BC (at 95% confidence) (NZA-32685). The material comprises flakes, a bladelet, a multi-platform flake core and a few simple retouched tools (a possible end scraper, serrated flakes and a retouched flake). None of this material is particularly diagnostic but could be Neolithic in date.

Middle and Late Bronze Age

The characterisation of later Bronze Age flint-working is well established (eg, Ford *et al.* 1984; Young and Humphrey 1999; Brown and Bradley 2006, and see above), and at RMC Land and ICSG a fairly substantial proportion of the assemblage was either securely stratified in Middle and Late Bronze Age features or could be identified as this date on the basis of technological traits. Groups of flint were found in the field ditches and a range of discrete features such as pits, postholes, wells and waterholes. A few pieces also came from cremation graves but it

Table 7.7 Summary of worked flint from Middle and Late Bronze Age discrete features from ICSG and RMC Land

Feature	*Flakes, blades*	*Chips*	*Irreg. waste*	*Cores and fragments*	*Retouched pieces*	*Total*
Middle Bronze Age						
ICSG						
1320	4	-	-	1 keeled core, ?Neolithic	-	5
1809	3	-	-	-	-	3
4717	6	-	-	1 flake core fragment	-	7
10009	2	-	-	1 multi-platform flake core	-	3
11093	17	-	-	2 (1 single platform, ?Neolithic, 1 core fragment)	4 (1 leaf-shaped arrowhead, 1 serrated flake, 1 end and side scraper, Neolithic; 1 end scraper, LBA)	23
17017	1	-	-	-	-	1
30814	15	-	-	-	-	15
40189	5	-	-	-	-	5
G468	5	-	-	1 discoidal core, ?Neolithic	-	6
G545	19	-	-	-	-	19
RMC Land						
3918	2	-	-	-	-	2
Late Bronze Age						
ICSG						
1153	1	-	-	-	-	1
1163	1	-	-	-	2 (1 serrated flake, 1 end scraper, ?Neolithic)	3
1739	-	-	-	-	1 burnt ?knife fragment	1
1762	733	110	69	-	-	912
4110	-	-	-	1 single platform flake core	-	1
4355	4	-	-	-	-	4
4505	3	-	-	-	-	3
10094	2	-	-	-	-	2
10219	2	-	-	1 flake core fragment	-	3
11212	2	-	-	-	2 (end and side scrapers)	4
11239	1	-	-	-	-	1
16739	1	-	-	-	-	1
16529	10	-	-	-	-	10
16604	2	-	-	-	-	2
17561	16	-	-	3 (1 single platform flake core, 1 discoidal core, ?Neolithic, 1 flake core fragment)	1 ?battle axe fragment	20
17567	1	-	-	-	-	1

seems unlikely that this material was deliberately deposited (see below). This material is derived from a range of domestic activities.

Field systems and trackways

Around 400 pieces of worked flint were recovered from features relating to the field system on ICSG. Amongst this material there is a proportion of diagnostic redeposited Neolithic pieces (eg, leaf-shaped and chisel arrowheads, keeled and discoidal cores and some of the more finely retouched scrapers, serrated flakes and knives – discussed above). A finely retouched fragmentary and burnt plano-convex knife of Early Bronze Age date (Fig. 7.5, 55) was recovered from ditch G156 (section 17213), together with a little burnt unworked flint.

A much cruder element was recovered from the field system ditches, which is characterised by thick, often cortical flakes, roughly worked cores and chunks. A few crudely retouched forms such as scrapers and denticulates were also recovered. Many contexts contained relatively small quantities of flint perhaps indicating a general spread of activity across the area. The composition of this material indicates domestic activities such as hide preparation and food processing were occurring, but that flint was used expediently when and where it was needed.

At RMC Land a small quantity of flint came from the ditches and field boundaries including clearly redeposited material such as a flake from a polished implement, a scraper and piercer.

Pits, wells and other features

A number of Middle and Late Bronze Age features on ICGS contained worked flint although relatively few of these produced more than 10 pieces of flint (Table 7.7). Late Bronze Age pit 1762 stands out from these features as it contained a substantial assemblage of very crudely worked flakes, irregular waste and chips; no retouched pieces were recovered. There were no cores but some roughly flaked chunks are typical of Late Bronze Age technology. Many of the flakes are thick, cortical and had been struck using hard hammers. The size of the flakes and the surviving

Table 7.7 Continued

Feature	*Flakes, blades*	*Chips*	*Irreg. waste*	*Cores and fragments*	*Retouched pieces*	*Total*
Late Bronze Age con't						
17776	18	-	-	-	2 (1 serrated flake, 1 end and side scraper)	20
17780	2	-	-	1 single platform flake core	-	3
17917	4	-	-	1 multi-platform flake core	-	5
17925	1	-	1	-	-	2
G2142	1	-	-	-	-	1
40189	5	-	-	-	-	5
G2121	6	-	-	-	-	6
G2156	26	2	-	-	-	28
G1015	10	-	-	1 flake core fragment	-	11
RMC Land						
506	5	-	-	-	-	5
564	1	-	-	-	-	1
633	31 (inc. 2 from polished axe)	9	1	1 flake core	-	42
635	20	-	1	1 flake core	1 retouched flake	23
646	1	-	-	-	-	1
649	10	-	1	-	1 knife	12
670	12	-	2	1 flake core fragment	-	15
1109	4	-	-	1 blade core	-	5
2266	5	-	-	-	1 broken microlith	6
2326	6	-	-	2 (flake core fragments)	-	8
2357	1	-	-	-	-	1
2395	2	3	-	-	-	5
2401	12	-	-	-	-	12
3099	11 (inc 1 from polished axe)	-	2	-	1 piercer	14
4240	81 (inc 1 from polished axe)	-	8	3 (2 flake cores, 1 core fragment)	5 (4 retouched flakes, 1 end scraper)	97
4441	1	-	-	-	-	1
4727	4	-	-	-	-	4
5063	3	-	1 (from polished axe)	1 flake core	-	5
5065	1 from polished axe	-	-	-	-	1
5073	1	-	-	-	-	1
5211	2	-	-	-	-	2
5925	3	-	-	-	-	3
6469	1	-	-	-	1 end and side scraper	2
Total	1149	124	86	24	22	1405

cortex indicates that small, poor quality nodules were being used, many of which seem to have shattered during knapping or only produced a few useable flakes. It seems probable that this debitage results from a single knapping episode, with any useable material being removed for use elsewhere. The lack of retouched pieces or formal cores is not particularly surprising as flint-working during this period is characterised by expedient tools with limited retouch and roughly worked cores or chunks (Ford *et al.* 1984; Brown and Bradley 2006, 62; Young and Humphrey 1999).

A naturally holed piece of flint from a Late Bronze Age gully (17205) at ICSG has been heavily burnt and may have been used as a weight.

Redeposited diagnostic Neolithic material was identified in a number of Bronze Age features (eg, well 11093 – leaf-shaped arrowhead, core, scraper and serrated flake; feature 1320 – keeled core and broken blade; pit G468 – a discoidal core; and pit 17561 – a possible fragment from a battle axe or square-sectioned axe, see above). Much of the remaining flint from these features consists of crudely worked flakes, cores and a crude end scraper which are likely to be of later Bronze Age date. These redeposited Neolithic pieces are curious and merit a little further attention: the leaf-shaped arrowhead from the base of well 11093 has been particularly finely worked. It seems odd, therefore, that these pieces should end up within later Bronze Age features. It can be seen that a certain amount of redeposited flint would be expected given the level of Neolithic activity on the site. However, what seems unusual is the quality of some of those items (eg, the leaf-shaped arrowhead from the base of well 11093, Fig. 7.1, 6), perhaps indicating that they represent more than simple redeposition of Neolithic material. Many of them are in very fresh condition, so if they are redeposited they have not moved far from their original place of deposition.

At RMC Land, 24 Middle–Late Bronze and Late Bronze Age/Early Iron Age features (pits, wells, waterholes etc) contained assemblages of worked flint (Table 7.7) but of these only seven contained 10 or more pieces. Redeposited Mesolithic and Neolithic material was recovered from several of these features, including a microlith fragment, finely worked scrapers and knives from features 2266, 649 and 6469. In addition, fragments from polished axes were recovered from features 3099, 4240, 5063 and 5065, which are also probably redeposited. However, much of the debitage from these features is crudely worked and typical of Middle and Late Bronze Age flint-working. One of the larger assemblages from these features was recovered from well 4240. Apart from a few probable redeposited pieces this assemblage is technologically Late Bronze Age and characterised by crude, thick flakes, with a few crudely retouched tools. Cores and core fragments have been roughly worked, and in some case only a few flakes have been removed.

Cremation burials

Two flakes from Middle Bronze Age cremation grave 19231, cutting the outer ditch of the Neolithic double ring ditch G2007 on ICSG are probably incidental inclusions, as is a single broken flake from a Late Bronze Age cremation-related feature (1007) in ICSG Area A.

Discussion

Prior to the Early Neolithic there seems to have been relatively little activity across the area. Only two flakes of Palaeolithic date were recovered despite numerous finds of handaxes and other diagnostic material in the wider area (Cotton *et al.* 1986; Wymer 1999). A little more diagnostic Mesolithic material was found but it is still very sparsely distributed. It is possible to suggest that microlith manufacture was occurring and that sufficient knapping was being undertaken as to leave a few cores and blades across the sites. The two microliths that were found are very small and thus hand excavation may not have recovered all of the evidence. However, sufficient of the features were sampled for a reasonably representative selection of material to have been recovered. It seems possible therefore that the limited nature of the Mesolithic material is representative. This sparse occupation of the area seems to be matched across the region (eg, Cotton *et al.* 1986, 26, fig. 12) as small groups of largely redeposited flints have been identified, for example, at Staines (Healey and Robertson-Mackay 1987), Prospect Park (Harding 1999), Kingsmead, Horton (Bradley forthcoming), Manor Farm (Ford and Pine 2003), and Runnymede Bridge (Saville 1991). However substantial scatters of Mesolithic flint were recovered from Three Ways Wharf, Uxbridge (Lewis with Rackham 2011), and at Terminal 5, Heathrow a 7th millennium date was obtained on burnt flint from pits underneath the Stanwell bank barrow (Framework Archaeology 2006, 43) indicating more substantial occupation was occurring in certain locations.

Early Neolithic activity was slightly better represented but the diagnostic pieces are still quite limited and no large *in situ* groups of flint were identified. However, given the semi-nomadic nature of occupation at this time, these results might be expected. This relatively limited occupation can be seen within a landscape of extensive Early Neolithic monuments and sites including the causewayed enclosure at Staines (Robertson-Mackay 1987) and the Neolithic house and pits at Horton (Chaffey *et al.* forthcoming).

By the Middle Neolithic it can be seen that activity has substantially increased. Whether or not the pits represent ordinary domestic debris can be debated but it is certain from the lithics that everyday items were deposited, some of which had been used, broken or burnt. Alongside this seemingly ordinary deposition there are a few more unusual finds that may perhaps be of special significance, for example the Y-shaped tool and the polished mace-head and possible fragmentary mace-head. There is much folklore associated with holed stones and their use in warding off evil spirits. It is possible that these rather crude mace-heads were used in this way. However, the convenience of utilising the natural perforation in these objects may have been a purely practical decision.

The quantity of pieces from polished axes may be unusual but they seem to have been worked down, in at least one instance when the original implement broke, and the debris deposited in a series of pits. The limited use of flakes from polished implements for retouching may suggest that the fragments were knapped and useable flakes were removed for use elsewhere. Possible links between the RMC Land and ICSG have been identified with fragments of a very similar polished axe being found on each site. Although these fragments did not refit it seems highly likely that they were originally from the same object. Occasionally tree-throw holes were used for depositing flint debris and one or two examples from RMC Land in particular have quite rich assemblages similar to those in the pits. It has been argued at Terminal 5 that deposition in pits replaces the use of tree-throw holes during the Middle Neolithic (Cramp and Leivers 2010).

Contemporary activity at ICSG involved the construction and use of monuments, which produced limited flint assemblages and only one instance of a deliberately placed possible pyre good was identified.

The flint that was recovered from these monuments could have been used during their construction or may relate to activities carried out prior to construction. The distribution of Peterborough Ware in the London region has recently been examined (Cotton with Johnson 2004, 134–43) and it can be seen that the RMC Land and ICSG Middle Neolithic assemblages fit into a well occupied landscape.

Fragments of polished axes and transverse arrowheads have been recovered from large flint scatters between Harmondsworth and Harlington (Cotton *et al.* 1986, 35), and comparable flint assemblages came from Middle Neolithic pits in the vicinity of these scatters (MoLA in prep.). Also immediately comparable are the assemblages from Terminal 5 Heathrow (Cramp and Leivers 2010) and Caesar's Camp (Cotton 1993, 340–1). Cotton's assertion (1993, 341) that some pits contained large assemblages of pottery but little flint and that others were rich in flint but few or no sherds of pottery largely holds true at RMC Land and ICSG.

Very little Late Neolithic and Early Bronze Age flint was identified amongst the assemblages from RMC Land and ICSG. This may largely be due to the lack of diagnostic pieces and it is possible that there could be contemporary material that is less distinctive within the assemblage. However the paucity of flintwork also matches the ceramic evidence suggesting that this very limited use of the landscape is genuine at this time. This seems to mirror other sites in the west London region (eg, Heathrow – Cramp and Leivers 2010). Against this there are however some instances of clear Late Neolithic/ Early Bronze Age activity. For example the aurochs burial at Holloway Lane, Harlington (Cotton *et al.* 2006, 152, fig. 11.2) may have been a symbolic act intended to 'tame' the landscape. The presence of round barrows along the edge of the Heathrow terrace indicates that Early Bronze Age activity was occurring.

The Middle and Late Bronze Age assemblage conforms to the now well-established technological attributes (eg, Ford *et al.* 1984; Brown and Bradley 2006; Young and Humphrey 1999) and seems to represent a general scatter of flint across both sites. A couple of features contained large groups of distinctive later Bronze Age flintwork which seems to have been the product of single knapping episodes. This material consists largely of roughly worked debitage; many of the cores and chunks seem to have had a few flakes removed before they were rejected. This assemblage can be compared with Bronze Age flint from Runnymede Bridge (Bevan in prep.), Terminal 5, Heathrow (Cramp and Leivers 2010), Uxbridge (Bradley 1995, 17–18) and also from around Harmondsworth, Cranford and Sipson (MoLA in prep.).

Catalogue of illustrated flint

Figs 7.1–5, 1–63

1. Edge blunted microlith, Late Mesolithic. RMC Land context 2267 (Late Bronze Age/Early Iron Age pit 2266).
2. Edge blunted microlith, Late Mesolithic. RMC Land context 3757, ON 11843 (tree-throw hole 3872).
3. Geometric microlith Saville's quandrangular form (1981b), Late Mesolithic. RMC Land context 1977 (mixed date flint scatter 1100).
4. Mesolithic opposed platform blade core, 22 g. RMC Land context 3508, ON 11804 (Saxon enclosure ditch 3507).
5. Leaf-shaped arrowhead, finely retouched, modern break, Early Neolithic. ICSG context 16435, ON 18109 (Bronze Age ditch G1211, section 16439).
6. Leaf-shaped arrowhead, extremely finely retouched, broken at base, Early Neolithic. ICSG context 11092, ON 13085 (Middle Bronze Age well 11093).
7. Chisel or small axe, heavily burnt so precise form uncertain. Faint traces of polishing on both faces, Neolithic. ICSG context 19142, ON 18231 (Double ring ditch 2007, inner ditch G2001).
8. Chisel arrowhead, very finely worked, Middle Neolithic. ICSG context 19407, ON 18230 (double ring ditch G2007, outer ditch, G2000).
9. Unfinished flaked axe, Neolithic. ICSG context 17589, ON 18224 (Neolithic pit 17588).
10. Core made on polished axe fragment, 106 g, Middle Neolithic. ICSG context 1683 (Neolithic pit G345).
11. Multi-platform flake core on nodule with natural hole, 38 g, Middle Neolithic. ICSG context 1684 (Neolithic pit G345).
12. Knife, invasively retouched, extensive gloss on left-hand side. Middle Neolithic. ICSG context 1684 (Neolithic pit G345).
13. Core made on butt end of polished axe, very flat butt, 82 g. Middle Neolithic. ICSG context 11025, ON 13045 (Neolithic pit 11026).
14. Backed knife/sickle with extensive gloss. Middle Neolithic. ICSG context 4243, ON 3162 (Neolithic pit 4239).
15. Knife, possibly unfinished. Middle Neolithic. ICSG context 4243, ON 3168 (Neolithic pit 4239).
16. Serrated flake, made on a blade-like flake, gloss and worn edge. Middle Neolithic. ICSG context 4243, ON 3150 (Neolithic pit 4239).
17. Mace-head on naturally holed nodule, areas of polishing visible and some original surfaces,

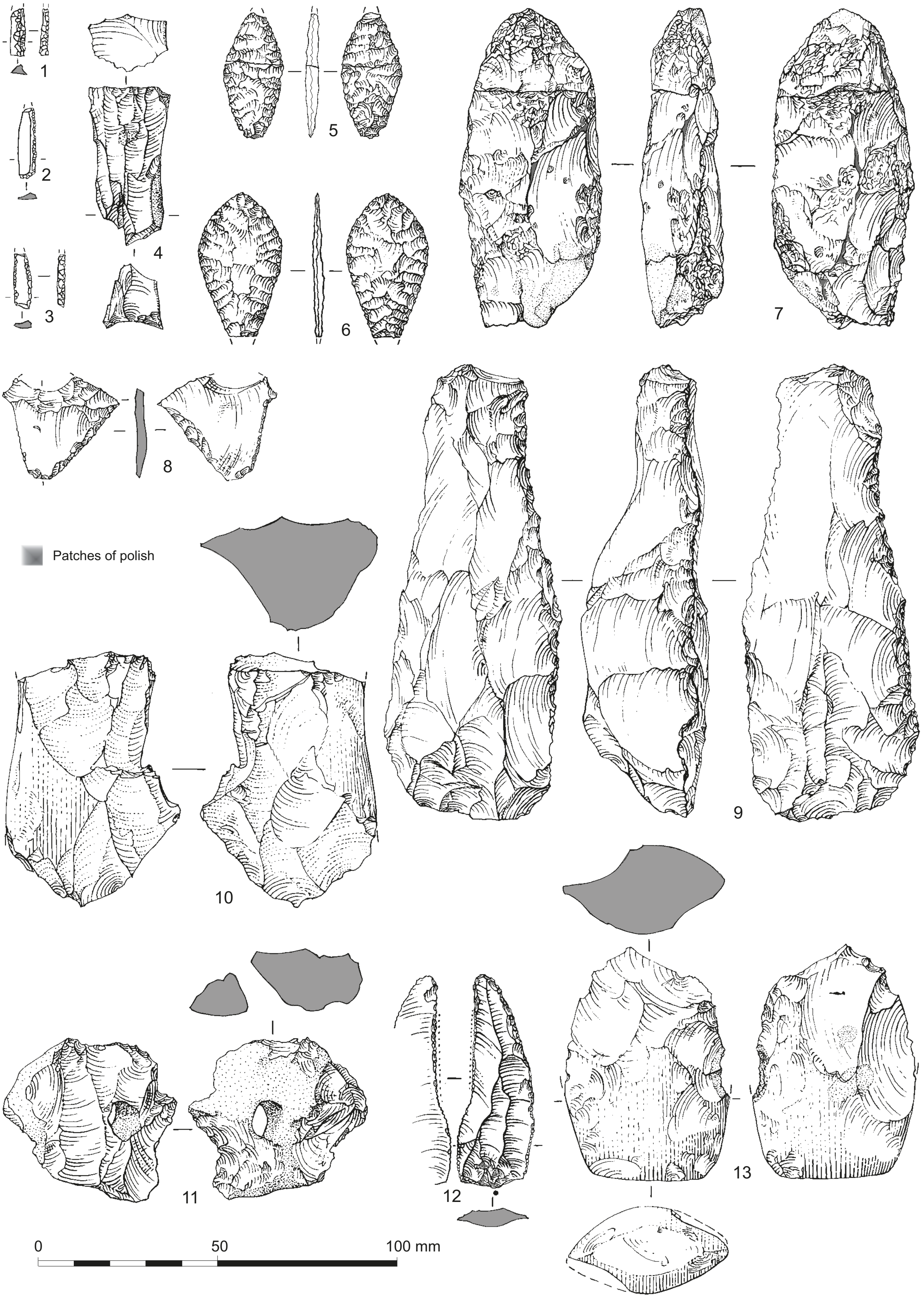

Figure 7.1 Worked flint: 1–13

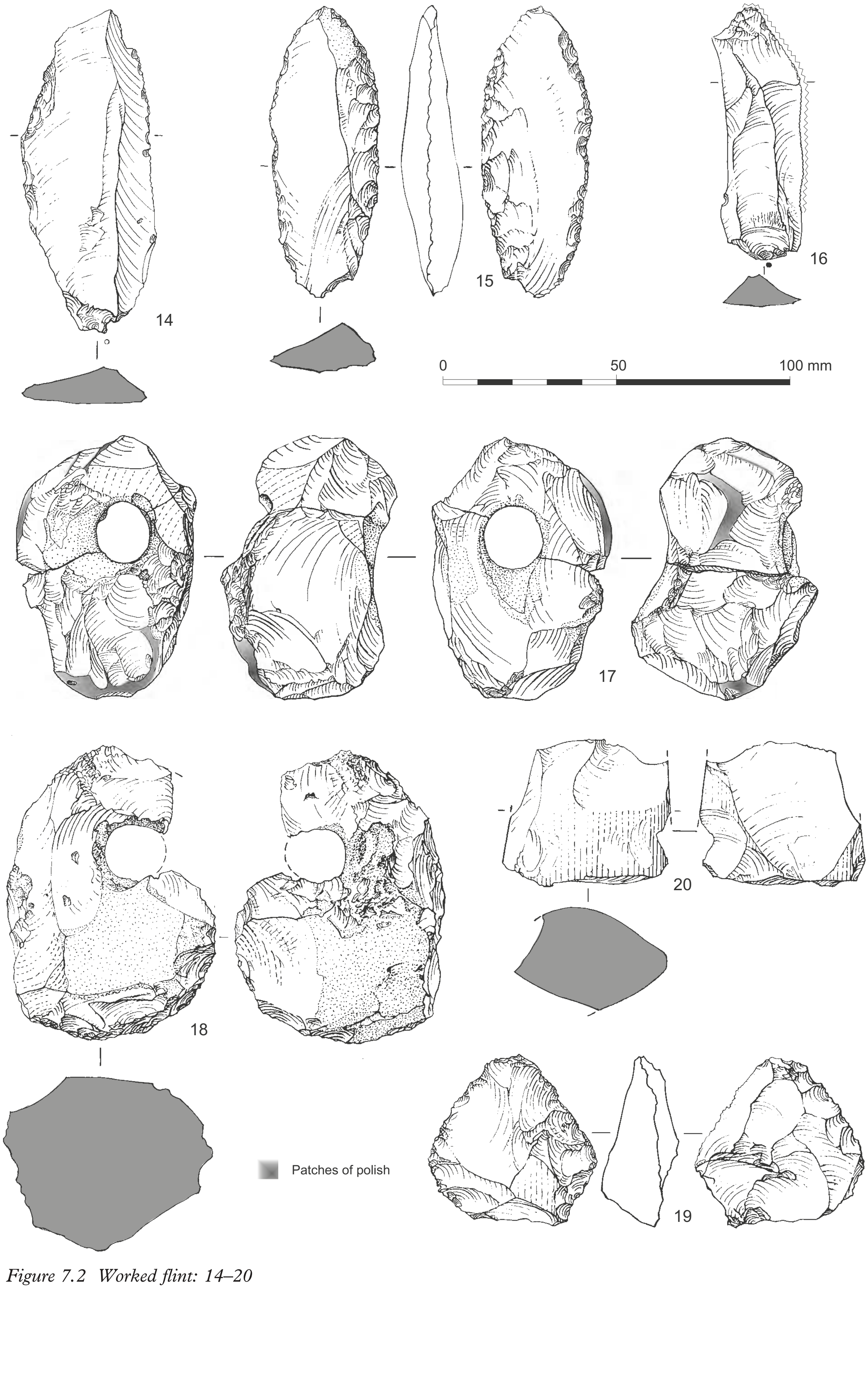

Figure 7.2 Worked flint: 14–20

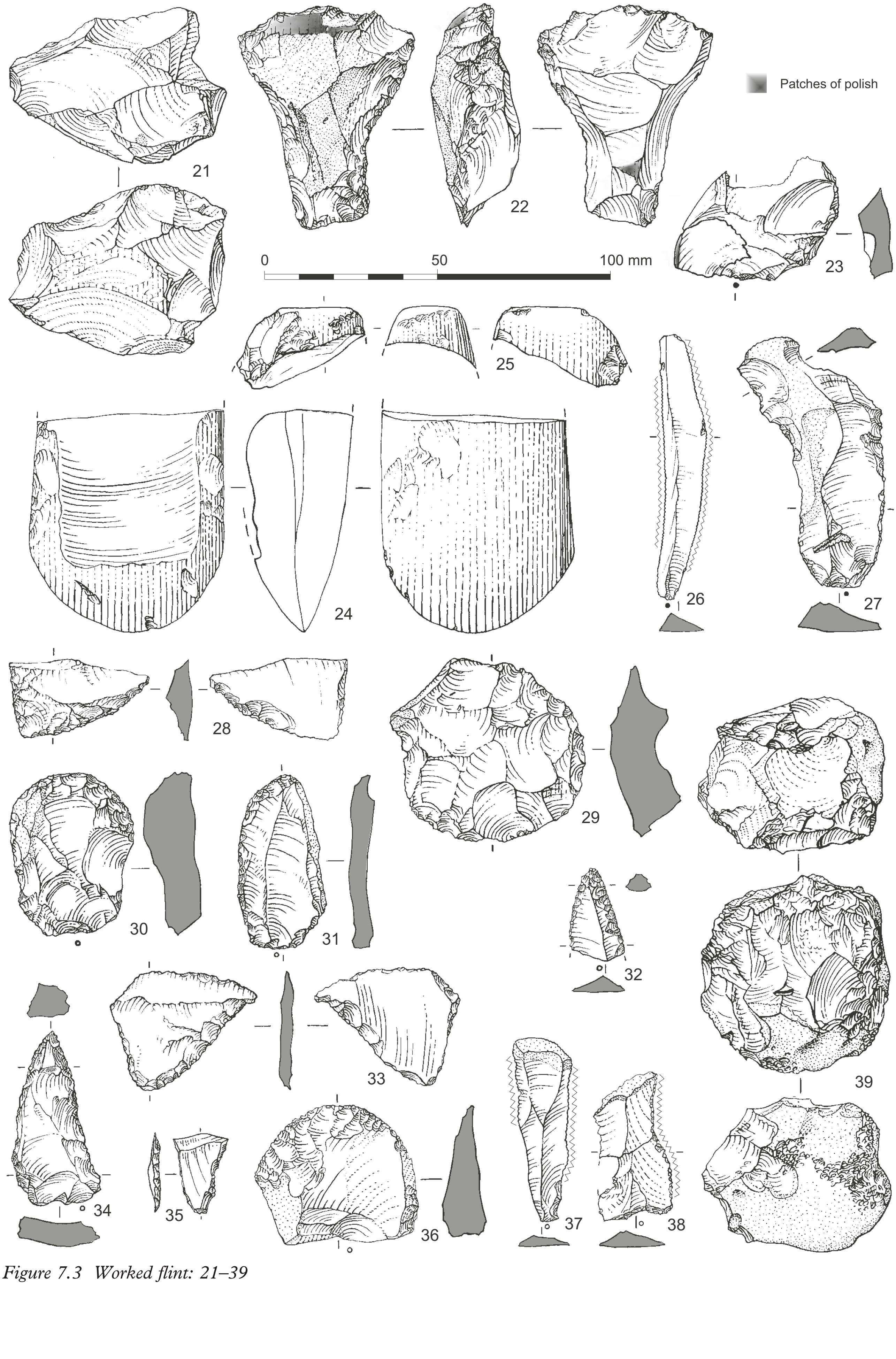

Figure 7.3 Worked flint: 21–39

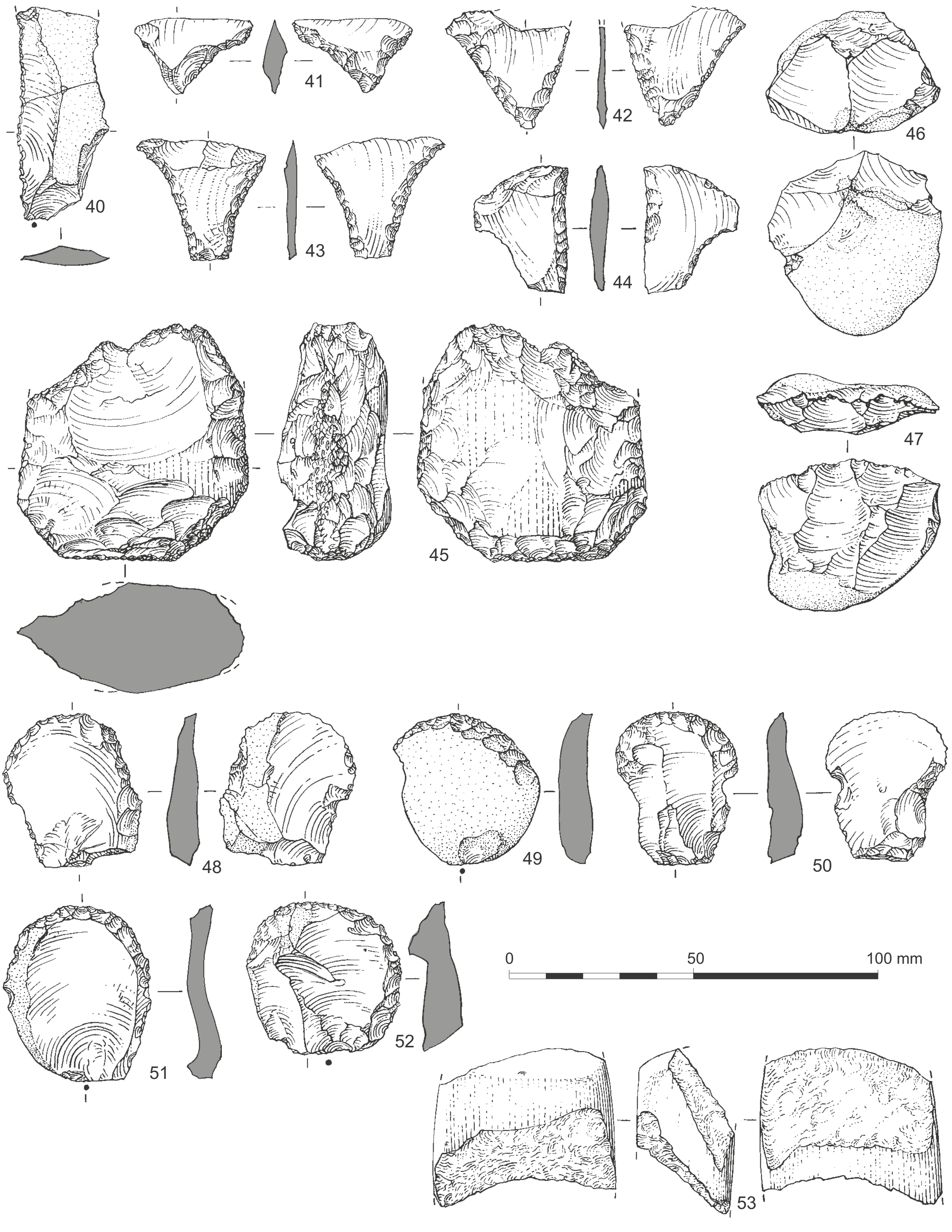

Figure 7.4 Worked flint: 40–53

broken perhaps during re-flaking. Some iron-staining and thermally altered original surface visible. Middle Neolithic. RMC Land context 2863, ONs 11732, 11735 (Neolithic pit 2817).

18. ?Mace-head, broken made on a naturally holed flint nodule. Middle Neolithic. RMC Land context 4639 (Neolithic pit 4638).
19. Discoidal core, 31 g. Middle Neolithic. RMC Land context 5572/5795 (Neolithic layer).
20. Core on polished axe fragment, 66 g. Middle Neolithic. RMC Land context 2753, ON 11634 (Neolithic pit 2752).
21. Core on polished axe fragment, 107 g. Middle Neolithic. RMC Land context 2754, ON 11670 (Neolithic pit 2752).
22. Y-shaped tool on polished axe fragment; roughly worked scraper-type edge with opposing worn chisel-like end. Middle Neolithic. RMC Land context 2754, ON 11690 (Neolithic pit 2752).
23. Two refitting flakes, one with a small area of polish, possibly from the same original implement as the Y-shaped tool. Middle Neolithic. RMC Land context 2754, ONs 11671 and 11700 (Neolithic pit 2752).
24. Blade end of a polished axe, probably broken during use, hinge fractured flake seems to have broken the axe across the middle. Middle Neolithic. RMC Land context 4535, ON 12005 (Neolithic pit 4534).
25. Polished axe fragment, ?butt end of axe, possible usewear. Similar raw material to a fragment from ditch G4003 section 40308 ICSG. Middle Neolithic. RMC Land context 4535, ON 12006 (Neolithic pit 4534).
26. Serrated flake, very finely serrated. Middle Neolithic. RMC Land context 4535, ON 12008 (Neolithic pit 4534).
27. Retouched flake, minimally retouched along both edges. Middle Neolithic. RMC Land context 4424, ON 12002 (Neolithic pit 4422).
28. Chisel arrowhead. Middle Neolithic. RMC Land context 2197 (Neolithic pit 2199).
29. Discoidal core, 59 g. RMC Land context 4594 (Neolithic pit 4593).
30. End and side scraper, worn edge. Middle Neolithic. RMC Land context 4639, ON 12017 (Neolithic pit 4638).
31. Backed knife, shallow retouch along right-hand edge, with cortical backing. Cutting edge rounded and worn. Middle Neolithic. RMC Land context 4629, ON 12016 (Neolithic pit 4628).
32. Piercer, invasively retouched, broken. Middle Neolithic. RMC Land context 4665, ON 12044 (Neolithic pit 4664).
33. Chisel arrowhead, finely retouched. Middle Neolithic. RMC Land context 3492, ON 11814 (tree-throw hole 3493).
34. Piercer, steeply retouched with a thick point Neolithic. RMC Land context 3494 (tree-throw hole 3493).
35. Chisel arrowhead, small neatly retouched example. Middle Neolithic. RMC Land context 5639, sample 363 (tree-throw hole 5638).
36. Sub-discoidal scraper, very fine invasive retouch, partly cortical. Late Neolithic. RMC Land context 5733, ON 12097 (Grooved Ware pit 5732).
37. Serrated flake, finely retouched along parts of both edges. Late Neolithic. RMC Land context 5733, ON 12101 (Grooved Ware pit 5732).
38. Serrated flake, quite coarsely serrated, faint gloss on bulbar surface Late Neolithic. RMC Land context 5733 (Grooved Ware pit 5732)
39. Multi-platform flake core, 181 g. Late Neolithic. RMC Land context 5733, ON 12098 (Grooved Ware pit 5732).
40. Saw on Bullhead flake, broken, coarsely serrated with some gloss. ?Neolithic. ICSG context 40309 (?Saxon ditch G4003, section 40308).
41. Chisel arrowhead, neatly retouched. Middle Neolithic. WGA07 context 9018.
42. Chisel arrowhead, slight break otherwise very fresh condition and neatly worked. Middle Neolithic. ICSG context 16317, ON 18028 (Romano-British quarry G1235).
43. Chisel arrowhead neatly worked and otherwise fresh condition. Middle Neolithic. ICSG context 40271 (Bronze Age ditch G4150, section 40270).
44. Chisel arrowhead, very fresh condition, neatly worked. Middle Neolithic. ICSG context 16134, ON 18036 (later pit 16131).
45. Discoidal core on polished axe fragment, 133 g, evidence for use as a hammerstone. RMC Land context 822 (medieval ditch 1201, section 815).
46. Single platform core, 91 g. ICSG context 1499 (Bronze Age ditch G477, section 1498).
47. Single platform flake core on flat pebble nodule, 36 g. ICSG context 40300 (Bronze Age ditch 40298).
48. Inversely retouched end scraper, neat retouch. Neolithic. ICSG context 4720 (Bronze Age ditch G511, section 4739).
49. End and side scraper, neatly retouched on a cortical Bullhead flake. Neolithic. RMC Land context 3345, ON 11793 (medieval ditch 3344).

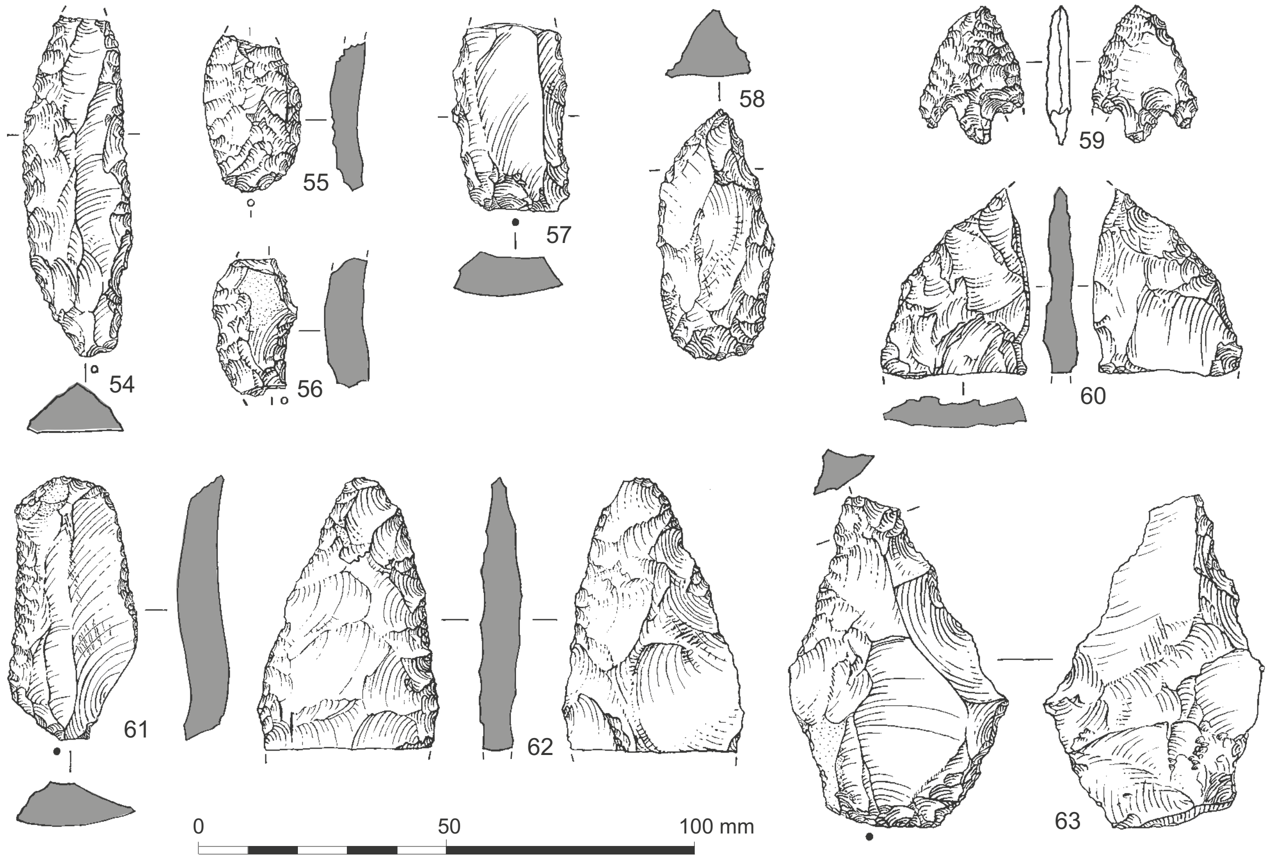

Figure 7.5 Worked flint: 54–63

50. End scraper, finely retouched, with a slight tang and side notches for hafting. Neolithic. RMC Land context 3399, ON 11775 (possible medieval ditch 4108, section 3797).
51. End and side scraper. Neolithic. RMC Land context 3013 (medieval ditch 3012).
52. End and side scraper. Neolithic. ICSG context 16183, ON 18811 (Middle–Late Bronze Age waterhole 16198).
53. Possible battle axe fragment, chert or quartzite, burnt. Polished and bevelled fragment, form uncertain but may be from the end of a battle axe or possibly a square-sectioned axe. Neolithic or Early Bronze Age. ICSG context 17562, ON 18217 (Late Bronze Age feature 17561).
54. Plano-convex knife, fine flaking over much of dorsal surface, orange fairly good quality flint. Bronze Age. ICSG context 1950 (pit 1953).
55. Plano-convex knife, burnt and broken, finely worked. Bronze Age. ICSG Bronze Age. context 17217 (ditch G156, section 17213).
56. Plano-convex knife, burnt and broken but with fine retouch over much of dorsal face. Bronze Age. ICSG context 1737 (Late Bronze Age/Early Iron Age pit 1739).
57. Rod or knife fragment, steeply retouched. ?Bronze Age. ICSG context 1704 (tree-throw hole 1705).
58. Piercer, steeply retouched, almost rod-like in form but with well-defined point. ?Bronze Age. RMC Land context 3003 (early Saxon pit 3002).
59. Barbed and tanged arrowhead, Green's Sutton B (Green 1980, 122, fig. 45), one barb broken but would have been asymmetrical in form, made on hinge fractured blank. Bronze Age. RMC Land context 4398, ON 12013 (subsoil).
60. Bifacially worked fragment, probably from a scraper or knife. ?Bronze Age. RMC Land context 40319.
61. Backed knife/scraper. ?Bronze Age. WGA07 context 4002.
62. Bifacially worked piece, probably a knife fragment, or possibly part of a dagger tang. Early Bronze Age. WGA07 Tr 4.
63. Piercer, large roughly worked piercer, with sturdy point. Middle–Late Bronze Age ICSG context 17885, ON 18223 (Neolithic penannular ring ditch G2002, section 17886).

Worked Stone

by Grace Perpetua Jones

A total of 757 fragments of stone (58,640 g) was recovered from the excavations at ICSG (28% count /26% weight) and RMC Land (72% count/74% weight). The assemblage was examined in the hand specimen and with a binocular microscope where necessary. During analysis, 73 pieces of retained stone (12,724 g) were classified as unworked and therefore discarded.

Querns

Prehistoric

A small saddle quern with angled surface was recovered from the Middle/Late Bronze Age field system (RMC Land, ditch 4053, ON 11562, Fig. 7.6, 3). It weighs 4537 g and is 64–73 mm thick; the outside had been roughly shaped. The quern had been very well used and has some surface polish, particularly towards the edge. A sarsen fragment with one flat surface that may have come from a quern was recovered from the field system (ICSG ditch G539, ON 3169). A piece of burnt sarsen from Late Bronze Age well 1163 (ICSG) with one smooth and slightly concave surface may have been part of a saddle quern. Small fragments of Hertfordshire Puddingstone were recorded from two Late Bronze Age/Early Iron Age features – pit 40189 (ICSG) and well 4240 (RMC Land, ON 11903). Although the fragments are far too small to ascertain the type of object they originated from, Hertfordshire Puddingstone is a quern material, and was used for rotary querns in the early Romano-British period. The use of this lithology for saddle querns is much rarer, although one example from a Bronze Age context has been published from Stansted Airport (Shaffrey 2008, 25.1). Well 4240 (RMC Land) also contained a fragment of Lodsworth Greensand with a slightly angled surface that may indicate it came from a saddle quern. Late Bronze Age/Early Iron Age use of Lodsworth Greensand is again relatively rare (Fiona Roe, pers. comm.); however, the Harlington fragment comes from the top fill of the feature and may therefore be later in date, although the angle of the surface would be in keeping with a saddle quern.

Two sarsen stones from undated pit 2719 (RMC Land, ON 12147, Fig. 7.6, 1) are quite flat with very smooth surfaces and may have been used as a small saddle quern and rubber, perhaps as a child's practice set (Fiona Roe pers. comm.).

Romano-British, medieval and undated

Mayen lava

The stone assemblage is dominated by fragments of querns made from grey basaltic lava (579 fragments, 12,620 g). They were recovered from a range of features across the sites, with 127 fragments (1465 g) coming from Romano-British features, 46 fragments (823 g) from early Saxon features and 188 fragments (7129 g) from late Saxon and medieval features. The remaining fragments came from undated features. This vesicular rock is commonly identified as coming from the Mayen-Niedermendig area of the Eifel region in West Germany but other sources are possible, including one near Volvic in the Auvergne region of France. Both are vesicular basalts, grey and lightweight, and cannot be differentiated without recourse to petrological analysis. It was the vesicular nature of the lava that made these querns so effective, as they worked by shearing and grinding using the sharpness of the vesicles, the grinding constantly creating new surfaces. The querns were also lightweight and easy to transport.

Most of the fragments from the Harlington sites are very small and degraded, without surfaces. The largest pieces come from late Saxon/early medieval waterhole 879 and pit 6046 (RMC Land), measuring 150 x 90 x 50 mm and 110 x 110 x 24 mm respectively, and unphased waterhole 5796 (RMC Land), measuring 145 x 110 x 60 mm. Only 12 fragments displayed two surfaces, these measuring between 20 mm and 75 mm in thickness. Those at the lower end of this range are particularly thin; analysis of fragments from Dorestad, The Netherlands, indicated that once ground to a height of 30 mm the querns would break (Kars 1980, 418). Given the small size of the fragments, identification of upper or lower stones was largely impossible. Part of the central perforation was evident on only one fragment from late Saxon/early medieval pit 3072 (RMC Land).

Lodsworth

Twenty pieces (8095 g) of Greensand were identified as coming from the Lodsworth quarries of West Sussex. Of these, 15 pieces (7137 g) are quern fragments, or possible quern fragments from Romano-British, Saxon and medieval features. The most diagnostic pieces of Lodsworth are two rotary quern fragments (1205 g) from medieval ditch G806 (ICSG). They are relatively thin (35 mm and 38 mm) and display part of the spindle hole. Other probable rotary quern fragments came from Romano-British posthole 10716 (ON 13157, ICSG), late Romano-British ditch G381 (ON 13145, ICSG), late Romano-British midden G407 (ON 3173, ICSG), medieval well 16413 (ON 18818, ICSG) and medieval ditch G816 (ON 13102, ICSG).

Featureless fragments of Lodsworth Greensand that may have come from querns were recovered from Romano-British gully G696 (ONs 13155 and 13158, ICSG), early Saxon waterhole 3022 (ON 11910, RMC Land), possible medieval waterhole 4512 (RMC Land), undated posthole 10626 (ON 13156, ICSG) and undated ditch 4756 (RMC Land). A large amorphous fragment from undated, but probably Saxon, pit 3810 (ON 11824, RMC Land) was burnt, but score marks suggest it had been used as a point-sharpener. The piece is 130 mm thick and it was not possible to ascertain if it originated from a quern or if it represents building stone (see below).

Other quern materials
Six fragments (3444 g) of Millstone Grit were recorded from Romano-British contexts at ICSG. All represent rotary querns, and came from well 11313 (Fig. 7.6, 5, ON 13147), midden G325 (ON 13149), ditch G314 (ON 13160) and ditch G725 (ON 13154). One, from ditch G416 (ON 3084, ICSG), had been re-used as a whetstone (see below).

Of particular interest is a rotary quern fragment from tree-throw hole 6243 (RMC Land, ON 12111), made from a very coarse-grained granite, possibly from south-west England. Two surfaces and one edge have survived. It is probably an upper stone, the grinding side having been worn to a polish at the outer edge. One fragment (280 g) of quartz conglomerate from the Forest of Dean was identified from hollow 4160 (ON 3172, ICSG), and may also represent a rotary quern.

Possible Romano-British pit 3790 (RMC Land) produced a fragment of local ironstone with one surface. This type of stone was used for saddle querns and rubbers (Fiona Roe pers. comm.). Two small fragments (44 g) of quartz conglomerate from the Forest of Dean were recorded from layer 1009 (ON 3170, ICSG) in the Middle Bronze Age cremation cemetery. Both have a flat surface and may have been part of a rotary quern and are therefore residual.

Smaller Grinding Stones

Prehistoric
Two stones from Middle Neolithic pits show evidence of use as some form of grinding or rub stone, perhaps used to process small quantities of foodstuffs. Half of a sarsen pebble from pit 2752 (RMC Land, ON 11630, Fig. 7.6, 2) appears to have been used in this way. Minor indents can be felt around the edge, and one edge is worn, indicating the stone was used for both rubbing and grinding. The second stone, from pit 4422 (RMC Land, ON 12149), was a slightly smaller example, half a rectangular stone, convex on one side and flat on the other. The centre of the flat side is dished from use, presumably from some form of grinding action, or perhaps being used as an anvil. It too fits comfortably into the left hand, with slightly concave areas around the edge where the thumb and two fingers can sit. A number of other stones were also recovered from the same pit, including one with traces of use as a hammerstone (ON 12150) and one which may have functioned as a slingshot (ON 12148).

Romano-British
A square-edged piece of Millstone Grit from later Romano-British well 11313 (ICSG, ON 13148) has two surfaces, one slightly concave and smooth. The function of this piece is uncertain as it is too square to be from a quern but may be some kind of smaller grinding stone.

Rubbers/Pounders/Grinders

A number of flint or sarsen stones displayed only minor evidence of use, but may have been used as some form of rubber/grinder or pounder. They include examples from Middle Neolithic pits 2752 (RMC Land, ON 11635), 4422 (RMC Land, ON 12151), and 10300 (ICSG, ON 13150) RMC Land; Late Bronze Age/Early Iron Age well 4240 (RMC Land); early Saxon ditch G4143 (ICSG) and undated pit G210 (ICSG, ON 18819).

Whetstones

Prehistoric
A small fragment of sarsen with one polished surface may come from a whetstone (Middle/Late Bronze Age field system ditch 6689, RMC Land).Two possible whetstones were recorded from Late Bronze Age/Early Iron Age contexts. A piece of sugary sarsen with one flat surface may have been used as a whetstone (well 4240, RMC Land, ON 11587), as may a piece of worked quartzitic sandstone with one smooth flat surface and one slightly rounded surface from adjacent pit 2401 (RMC Land, ON 11567).

Romano-British
Part of a millstone grit rotary quern had been re-shaped and used as a whetstone (Romano-British ditch G416, ICSG, ON 3084, Fig. 7.6, 4). Two edges are smooth and both surfaces are slightly concave and have been used for sharpening points. Part of the central spindle hole of the original quern is still visible.

Medieval and undated
Undated (probably late Saxon/early medieval) ditch 4065 (RMC Land, ON 11757) contained a small sugary sarsen fragment with one smooth surface which was probably used as a whetstone. A small, heavily worked dolorite (possibly from the West

Country, K. Haywood pers. comm.) whetstone was recovered from medieval ditch 16907 (ICSG, ON 18817). The stone has one curved edge and very smooth surfaces, with a groove, possibly a knife mark.

Hammerstones

Prehistoric

A number of stones from pits of Middle Neolithic date displayed percussion marks, indicating use as hammerstones. These include examples from pit 4422 (RMC Land, ON 12150) and pit 2817 (RMC Land, ON 12132, flint). A pebble from pit 5386 (RMC Land, ON 12152) had been used as a hammerstone but also had traces of wear from another use, possibly flint knapping. A hammerstone in a quartzitic sandstone was present in pit 10480 (ICSG, ON 13057), along with five small fragments of burnt quartzite (see below). Middle Bronze Age well 11093 (ICSG) contained an oval quartzite pebble with areas of battering at both ends, indicating use as a hammerstone.

Late Saxon–early medieval

A sarsen pebble from ditch 4077 (RMC Land, ON 11846) has some evidence of use as a hammerstone, with wear on one edge. There is also a slightly concave area above this which would make a good grip point; the stone fits nicely into the palm of the hand.

Slingstone

A fairly small stone (ON 12148, 94 g, 50 x 48 x 37 mm), from Middle Neolithic pit 4422 (RMC Land), may have been used as a slingstone.

Polishing Stones

Half of a burnt pebble from possible Romano-British pit 3192 (RMC Land) has traces of polish. Part of a pebble of very fine quartz sandstone from early Saxon waterhole 3022 (RMC Land, ON 11622) had been used as a polishing stone. Part of a pebble from undated pit 2983 (ON 11754) was very smooth with one flat edge and polish on the surfaces.

Building Stone

Pit 3810, undated but probably Saxon (RMC Land) contained a lump (1513 g) of fossiliferous limestone, as well as a piece of Greensand (ON 11824) with one scorched and scored surface. Both pieces may represent building stone, although the possibility that the Greensand may have come from a quernstone cannot be ruled out. Another piece of fossiliferous limestone (818 g) came from Late Bronze Age/ Early Iron Age pit 6469 (RMC Land), although it is not certain if this was ever worked. The fossiliferous limestone comes from the Jurassic deposits in Oxfordshire. Finally, a fragment of fine-grained sandstone with one very smoothed, curved surface from probable late Saxon/early medieval ditch 1210 (RMC Land) may also have been used as building stone.

Other Worked Stone

Prehistoric

by Philippa Bradley

The fill of penannular ditched monument G3002 produced a large oval quartzite flake (ICSG, ON 43001, Fig. 7.7, 1). The edges of the flake exhibit working and extensive wear. This flake seems to have been used for a repetitive purpose which has resulted in the areas of heavy wear; this may been in a scraping or rubbing motion, perhaps for cleaning skins. It is however difficult to date.

Five small fragments of burnt quartzite from Middle Neolithic pit 10480 (ICSG, ONs 13063, 13064, 13072, 13073 and 13080) may have been used as a tempering agent in the manufacture of pottery. A hammerstone was also recovered from this pit (ON 13057, see above). A small fragment of burnt shale was recorded from field system ditch G646 (ICSG). This may have originated in the gravels.

Early medieval

by Grace Perpetua Jones

A piece of fine-grained oolitic limestone, probably from Oxfordshire, was recovered from possible early medieval ditch 4086 (RMC Land, ON 11778, Fig. 7.6, 6). It has one very smoothed and dished surface. This may represent a fragment of building stone that has been re-used as a form of smoother.

A quartzitic sandstone pebble with two very smooth, flat surfaces from early medieval ditch 4144 (RMC Land) may have been used for smoothing or grinding. The corner of an object made from sarsen, possibly a floor tile or whetstone, came from possible late Saxon/early medieval ditch 4172 (RMC Land).

Post-medieval/modern

A small (50 x 25 x 20 mm), rectangular piece of basalt with plain faces and saw marks on all sides may be of post-medieval or modern date (topsoil layer 17320, ICSG). A small fragment of modern roofing slate was recorded from posthole 512 (RMC Land).

Pebbles and Unworked Stone Fragments

A total of 73 pieces of stone, weighing 12,724 g, displayed no obvious signs of working or utilisation and have been discarded. Most were pebbles, predominantly of flint or sarsen, from the gravels. Of these, 27 pieces (1760 g) were burnt and may have been used as pot-boilers. These came from Neolithic pit 10480 (ICSG), Middle Bronze Age well 11093 (ICSG), Late Bronze Age/Early Iron Age waterholes/wells 16198 (ICSG) and 4240 (RMC Land) and pit 2326 (RMC Land), early Romano-British ditch G579 and pit 11431 and Romano-British well 11313 (ICSG), as well as from undated ditch 5137 (RMC Land) and postholes 5319 (RMC Land), 10626 (ON 13156, ICSG) and 11233 (ICSG).

Discussion

The range of stone objects from the sites, and the sources exploited, are similar to those from Horton and other sites in the area (Kevin Hayward, archive report).

Neolithic

Stone recovered from Middle Neolithic contexts indicate local exploitation of materials, predominantly quartzitic sandstone, including sarsen; flint and quartzite. Two half pebbles had also been used for grinding during this period (pits 2752 and 4422, RMC Land). Both fit comfortably in the left hand, with indents around the edges of the stone creating finger-hold points. The centre of both stones is dished, a result of a repetitive rubbing, grinding or pounding action, from another stone held in the right hand. It is therefore reasonable to assume these were used by right-handed people. They may have been used to process small quantities of foods, or for a range of craft processes. Three stones with only small traces of use may have been used a rubber, grinder or pounder, possibly in conjunction with the smaller grinding stones, as two were recovered from the same pits (4422 and 2752, RMC Land). The third came from pit 10300 (ICSG).

Four stones with percussion marks had been used as hammerstones. They came from pit 10480 (ICSG) and pits 4422, 2817 and 5443 (RMC Land), the latter also displayed wear from an additional use, perhaps flint knapping. Also recovered from pit 10480 (ICSG) were five burnt pebbles that may have been used as pot-boilers, and five small pieces of burnt quartzite. The quartzite pieces may be waste fragments from the production of temper for pottery manufacture, such inclusions would be added to create an opener for the clay. A quartzite pebble with flaked edges was recovered from penannular ditched monument G3002 (ICSG) demonstrated evidence of extensive wear, possibly from cleaning skins (P. Bradley, see above). A possible slingshot was recovered from pit 4422 (RMC Land).

Bronze Age to Early Iron Age

Evidence of food processing is provided by a sarsen saddle quern from field system ditch 4053 (RMC Land, ON 11562 Fig. 7.6, 3). During the Late Bronze Age/Early Iron Age the range of stone types exploited increased. Well 4240 (RMC Land) contained three fragments of Hertfordshire Puddingstone (in the penultimate fill) and a piece of Lodsworth Greensand. The presence of both of these stone types in a feature of this date is unusually early, although the Lodsworth was recovered from the top fill and therefore it is uncertain if it is contemporary with the feature. Two fragments of Hertfordshire Puddingstone were also present in pit 40189 (ICSG), suggesting this type of stone was available during the Late Bronze Age/Early Iron Age at these sites. The presence of a piece of fossiliferous limestone from the Jurassic rocks of Oxfordshire in Late Bronze Age/Early Iron Age pit 6469 (RMC Land) is also quite surprising.

The local quartzitic sandstones and flint continued to be exploited during the Bronze Age and Iron Age. A sarsen hammerstone was recovered from Middle Bronze Age well 11093 (ICSG). Sarsen quern fragments were present in field system ditch G539 (ICSG) and Late Bronze Age well 1163 (ICSG). A stone that may have been used as a rubber, pounder or grinder was recovered from well 4240 (RMC Land). Whetstones in a quartzitic sandstone or sugary sarsen were recorded from field system ditch 6689 (RMC Land), well 4240 (RMC Land) and pit 2401 (RMC Land). Burnt stones, that may have been used as pot-boilers, were recovered from Middle Bronze Age waterhole 16198, Middle Bronze Age well 11903, Late Bronze Age/Early Iron Age well 4240 and pit 2326 (RMC Land).

Romano-British

During the Romano-British period rotary querns made from Lodsworth Greensand were in use (10 fragments, 2971 g), as well as two new rotary quern materials: Millstone Grit from Derbyshire (six fragments, 3444 g) and a lava stone from the Mayen-Niedermendig area of the Eifel region in West Germany (127 fragments, 1465 g). A square-edged piece of Millstone Grit from well 11313 (ICSG) may originate from some form of grinding stone rather than a quern. Part of a Millstone Grit rotary quern

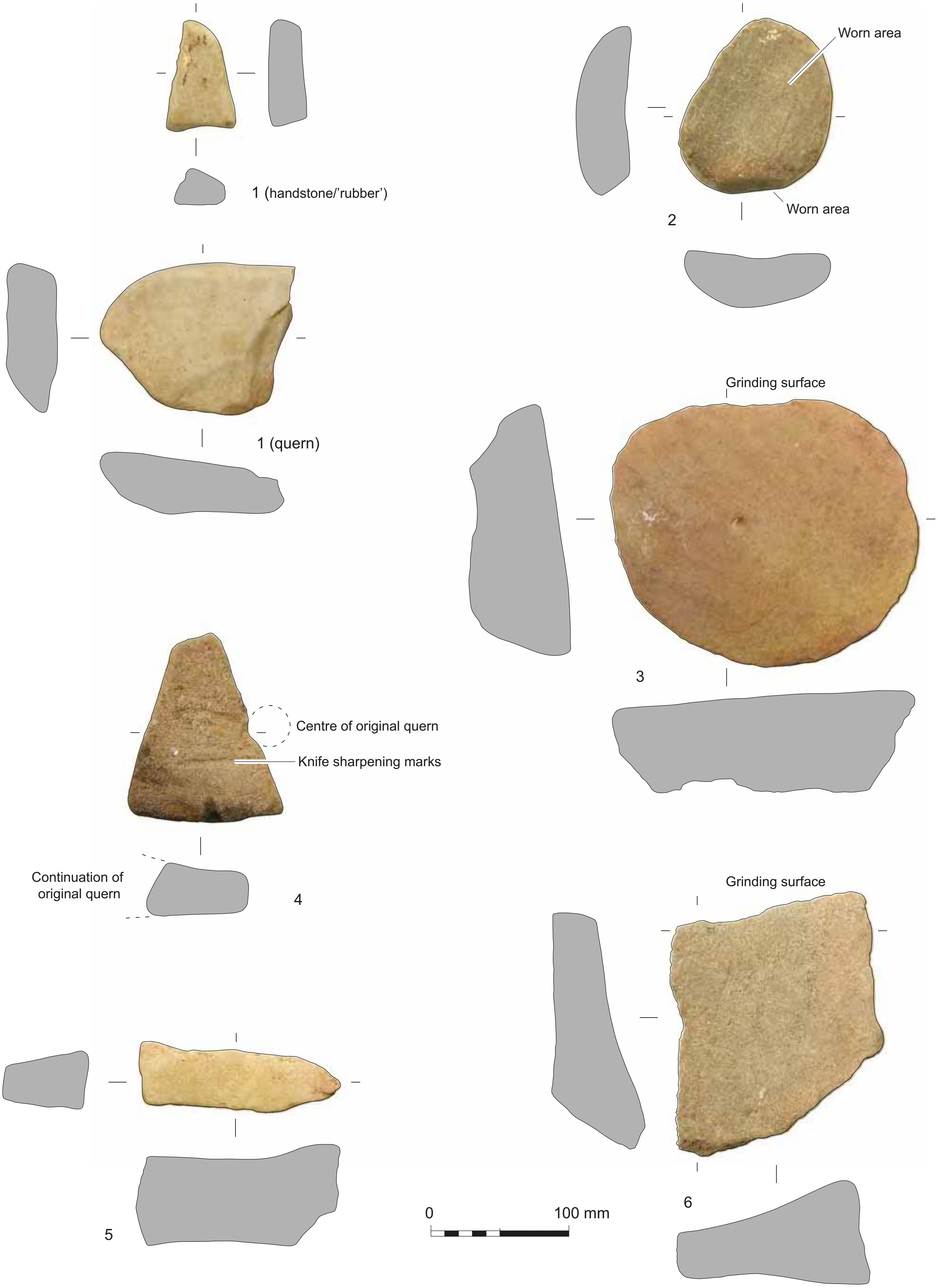

Figure 7.6 Worked stone 1–6

had also been re-shaped and used as a whetstone (ditch G416, ICSG, ON 3084 Fig. 7.6, 4).

Saxon and medieval

Forty-nine pieces of worked stone were recovered from early Saxon features. Most are small, degraded piece of Niedermendig lava from ditch 4069, waterhole 3022 and pits 3705, 3786 and 3817 (all RMC Land). During the late Saxon/early medieval and medieval periods, querns continued to be imported from the Mayen-Niedermendig region (188 fragments recorded, weighing 7129 g). Rotary querns made from Lodsworth Greensand also continued in use, with examples from early Saxon waterhole 3022 (RMC Land) and medieval ditches G806 and G816 (ICSG). Stones used to sharpen include a small sugary sarsen fragment with one surface, a possible whetstone, from probable late Saxon/early medieval ditch 4065 (RMC Land) and a small, heavily worked dolorite whetstone, possibly from the West Country (K. Hayward pers. comm.). A fine quartz sandstone pebble from early Saxon waterhole 3022 (RMC Land) had been used as a polishing stone, a quartzitic sandstone pebble with two very smooth, flat surfaces from early medieval ditch 4144 (RMC Land) had also been used for smoothing or grinding. A piece of oolitic limestone from early medieval ditch 4086 (RMC Land) with a smoothed and dished surface may represent a piece of building stone that has been re-used as some type of smoother or polisher. A fragment of fine-grained sandstone from ditch 1210 (RMC Land) with one curved surface may have been used as building stone.

Undated

Two sarsen stones from pit 2719 (RMC Land) appear to form a set and may have functioned as a small saddle quern, or were perhaps used by a child (Fiona Roe pers. comm.). A granite rotary quern fragment indicates trade with Devon or Cornwall, but it was recovered from undated tree-throw hole 6243 (RMC Land).

Catalogue of illustrated objects

Fig. 7.6 Undated

1 ON 12147, small possible saddle quern and rubber, sarsen. Pit 2719 (RMC Land), undated.

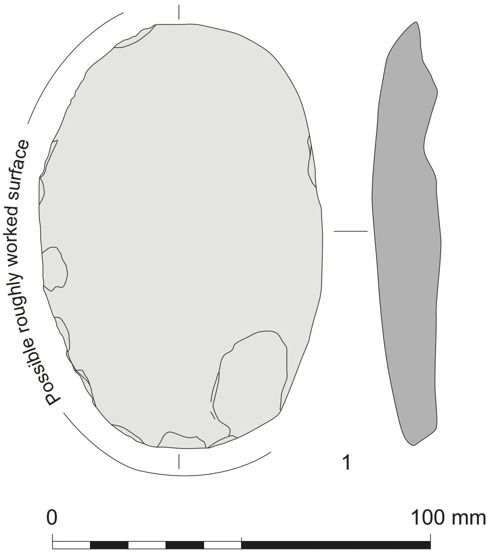

Figure 7.7 Worked stone 7

Prehistoric contexts

2 ON 11630, small sarsen grinding stone/rubstone. Context 2754, pit 2752 (RMC Land), Middle Neolithic.

3 ON 11562, sarsen saddle quern. Context 2208, Middle/Late Bronze Age ditch 4053 (RMC Land).

Romano-British contexts

4 ON 3084, Millstone Grit rotary quern fragment re-used as whetstone. Context 4521, ditch G416 (ICSG), Romano-British.

5 ON 13147, Millstone Grit rotary quern fragment. Context 11306, well 11313 (ICSG), late Romano-British.

Early medieval

6 ON 11778, possible building stone re-used as smoother, oolitic limestone. Context 3372, ditch 4086 (RMC Land), possibly early medieval.

Worked stone flake

Fig. 7.7 ?Neolithic

1 ON 43001, flaked quartzite pebble. Context 19539, penannular ditch G152, monument G3002 (ICSG), probable Neolithic.

Chapter 8
Other Finds

Coins and Tokens

by Nicholas Cooke

Six coins and three tokens were recorded, all but two of which came from unstratified contexts during the evaluation at ICSG; ON 13086 and ON 11838, however, were recovered from the excavations at ICSG and RMC Land, respectively (Table 8.1). The objects form a mixed group, with three Roman coins, one Saxon coin, three post-medieval tokens and two modern coins.

Roman

The three Roman coins all date to the 4th century AD, with two (ON 48 and ON 13086) identifiable as coins of the House of Valentinian, struck between AD 364 and 378. The only stratified example (ON 13086), from late Romano-British ditch G380 (Phase 5, see Chapter 4), is a small copper alloy *nummus* which, although both badly damaged and corroded, can be identified with confidence as a *Gloria Novi Saeculi* issue of the emperor Gratian. These were only minted in Arles, between AD 367 and 375. This coin may well have remained in circulation for some time before its loss, although the heavy corrosion prevents any assessment of the degree of wear. Such coins are common site finds in Britain, but as a group, they tell us little other than confirming the likelihood of 4th-century activity on the site.

Saxon

Four fragments of a silver coin (Pl. 5.1), slightly worn, were recovered from pit 3817 on RMC Land. This is a penny of Ælfred the Great (AD 871–899), and belongs to Ælfred's first coinage, issued between AD 871 and 875. The legend on the obverse is the less common 'ELFRED REX', whilst the reverse bears the name of a moneyer called Wine, who struck coins for several of the Saxon kings of the time, and is known to have minted coins in Canterbury. Coins of Ælfred the Great are rare as site finds, but need not be indicative of high status settlement.

Post-medieval and Modern

The three post-medieval tokens are all heavily worn, and crude in manufacture. Two are lead tokens, whilst the third was struck on a very thin copper alloy flan. None could be closely dated, although all are

Table 8.1 Coins and tokens

Object	Context	Metal	Denomination	Diameter (mm)	Weight (g)	Issue date	Description	Reference
ICSG								
13086	11606	Cu	*Nummus*	18	1.2	AD 367–375	Corroded. Gratian/Gloria Novi Saeculi. Minted in Arles	As LRBC II, 503
EV 48	u/s	Cu	*Nummus*	17	1.9	AD 364–378	Corroded. House of Valentinian/Gloria Romanorum reverse. Mint unknown	As LRBC II, 82
EV 45	u/s	Cu	*Nummus*	10	0.5	4th century AD	Corroded 4th-century copy. Completely illegible	-
EV 46	u/s	Pb	Token	21	6	Post-medieval	Worn. Stylised *fleur de lys* on obverse, spiders web/lattice on reverse.	-
EV 8	u/s	Pb	Token	23	6.6	Post-medieval	Extremely worn. Illegible on both faces. Flan is bent. *May be a weight rather than a token*	-
EV 9	u/s	Cu	Token	19	6	Post-medieval	Heavily corroded. Circles of pellets visible on both obverse and reverse. Otherwise illegible. Struck on a very thin flan with damaged edges	-
EV 40	u/s	Cu	Half penny	25	4.9	1886	Worn half penny of Queen Victoria	Seaby 1989, 3956
EV 31	u/s	Cu	Three pence	21	6.7	1952	Worn Three pence of George VI	Seaby 1989, 4113
RMC Land								
11838	3813	Ag	Penny			AD 871–875	Four fragments of penny of Ælfred the Great (AD 871–899). 'ELFRED REX' on obverse; name of a moneyer called Wine on reverse	-

LRBC II = Carson and Kent 1960; Seaby = Mitchell and Reeds (eds) 1989 likely to date to the post-medieval period. All were unstratified. Two modern coins, a half penny of Queen Victoria and a threepence of George VI, were also unstratified finds.

Metal Objects

by Lorraine Mepham and Rachael Seager Smith

Silver

by Lorraine Mepham

Fragments of a silver brooch (Fig. 5.19; Pl. 5.16) with garnet and gold leaf were recovered from Saxon grave 4662 at RMC Land (ON 12025). It was located at what is presumed to be the head end of the grave, immediately adjacent to what appears to have been a necklace of glass beads. The object is a keystone garnet brooch of Avent's class 2.1. Just under half of the brooch survives, with two keystone settings of type 1 and intervening ornament of type 7.3. Gold foil backing is visible on one of the garnets. The central setting is white, probably of a carbonate paste. The rim form is of type 4.1, comprising triangular punching, sometimes hit twice, resulting in the slightly 'stepped' appearance of the rim profile. According to Avent's typology, this brooch dates to the second half of the 6th century AD (Avent 1975).

Copper Alloy

by Rachael Seager Smith and Lorraine Mepham

ICSG

Apart from coins (see above), 31 copper alloy objects were recovered from ICSG, and of these 20 were probably of post-medieval or modern date. All but one of these, a flat, plain disc 26 mm in diameter, from unphased posthole 16642, were found during the MoLAS evaluation of the site. Most were from topsoil contexts and will therefore not be considered any further here.

Ten objects were all of Romano-British date. Five tiny waste droplets were found in early Romano-British enclosure ditch G427 (section 10030) and an unphased layer (4005) at the south of Area A, perhaps indicative of small-scale copper working in the vicinity. Part of a flattened tapering strip with plain, squared terminals, now bent to an open ring shape, was found in section 11475 of early Romano-British ditch G751 while pieces from two different surface-decorated strip armlets, typically of late 3rd or 4th century AD date, were found in well 11313 and topsoil layer 10803. The armlet from the topsoil was originally gilded, its surviving terminal decorated with incised grooves flanked by raised dots; that from well 11313 has short, diagonal notches incised along both edges. Part of a flattened strip decorated with three incised longitudinal grooves, again from topsoil 10803, may derive from a third armlet although if a notch in one end is original, it could be from a nail cleaner (eg, Crummy 1983, 58, type 4) also of late 3rd or 4th century AD date. From the same, eastern area of the site, a pair of tweezers with long, parallel-sided blades (Crummy 1983, 58–9, fig. 63, 1882) were found in ditch EV152 (evaluation trench 94), associated with pottery dating from the 1st century AD.

The final piece, a fragment of curved, cable-decorated binding with U-shaped cross section from section 10542 of medieval ditch G806, may well be contemporary although its origin remains uncertain.

RMC Land

Romano-British

A Romano-British plain trumpet-headed brooch (ON 12108) was found in possible waterhole 6030 (Fig. 8.1, 4). The brooch has a high arched bow with an elaborate lobed and notched moulding at the waist (flat at the back), a trumpet-shaped head with marked side flanges and a small foot moulding although the cast head-loop has broken away. The pin was sprung (three turns survive) on a hollow copper alloy bar passing through a perforated lug behind the head. The catch-plate is relatively large and harp-shaped and both the bow and catch-plate were coated in white metal. It falls within Bayley and Butcher's group B trumpet brooches (2004, 93, fig.73, 219 and 161, fig. 130 T158D), dated to the 2nd century AD.

Post-Roman objects from Saxon graves

Personal items from the Saxon graves may be represented by a very fragmentary rod-like object from grave 4662, found amongst the glass beads (ON 12039; not illustrated), and a ring with a lenticular section and an external diameter of 33 mm, from grave 4720 (ON 12049; Fig. 5.21). The latter object also came from the presumed head end of the grave, close to the glass bead clusters. It is of unknown function; similar rings from the Dover Buckland cemetery, for example, are considered to have been used largely for the suspension of other objects, such as keys (Evison 1987, 119, fig. 5/9), but no such function can be ascribed to the ring from grave 4720. Ephemeral copper alloy traces from grave 4707 (ON 12047, not illustrated), possibly originally adhering to organic material, are also of uncertain function; they may have been associated with the iron buckle (see above, ON 12046).

Post-Roman objects from non-mortuary contexts

Eleven other objects of copper alloy from RMC Land have been dated as post-Roman, on typological and/or stratigraphic grounds.

A dress or hair pin from context 6021 (ON 12107) is of a type which has a currency from the middle Saxon period, possibly into the early medieval period. This example has a biconical, irregularly faceted head above a ring collar (Fig. 8.1, 1). The top of the head is flattened and this bears possible traces of enamel. Biconical-headed pins were common in middle Saxon *Hamwic* (Southampton) (Hinton 1996a, 25–8, fig. 10), but have a widespread distribution elsewhere. A similar example from Winchester came from an 11th/12th-century context but may be residual there (Biddle 1990, no. 1447).

A small object from pit 3810 (ON 11825) may be a pin or fastening of some kind. It consists of a short length of wire, bent into regular loops, the two ends, both pointed, extending in the same direction (Fig. 8.1, 2). No parallels can be found for the object, which is assumed to be of Saxon date on stratigraphic grounds.

A copper alloy penannular finger-ring, probably of 11th–13th-century AD date, came from an early medieval context (ON 11520; ditch 1202). A strip fragment (possibly part of a finger-ring or armlet) came from an early medieval field system (ON 11849; ditch 4083); this has punched decoration (Fig. 8.1, 3). A small, irregular strip fragment (ON 11829) from another medieval ditch (4022, section 3598) is of unknown function. A flat piece with incised grooves from topsoil may be a vessel fragment of post-medieval date; a button from a remnant early prehistoric field system (gully 4057, section 2251) is similarly dated, and presumably intrusive here, as is a possible washer from the subsoil. A small, square-sectioned rod fragment (ON 11808) from waterhole 3022 (with a ceramic date of early Saxon) is of uncertain date and function, as is a possible pin shank (ON 11551) from possible Romano-British waterhole 2054.

Iron

by Rachael Seager Smith and Lorraine Mepham, with a comment by Thomas Kind and Jörn Schuster

The iron objects (totalling 326) survived in very poor, corroded condition. Just under 19% (61 pieces) remained unidentified after X-radiography, having decayed into little more than bundles of corrosion products, and with the exception of nails, there were relatively few diagnostic pieces.

Romano-British

The range and frequency of the iron objects is summarised by feature and phase in Table 8.2. All the items from the prehistoric features are likely to be intrusive, incorporated into the uppermost fills. The knife blade from the Early/Middle Iron Age enclosure ditch G383 at ICSG, for example, is almost certainly of Romano-British date, the back of the wide blade, with a convex cutting edge, continuing the line of the tang (Manning 1985, 112, type 12).

Although most of the iron was from features and deposits of Romano-British date, only two contained significant quantities. Around 169 small (up to 25 mm long) nails, with round, flat heads and square-sectioned, tapering shanks, were found in cremation grave 16427 at ICSG, associated with pottery dating from the mid-2nd century AD onwards. Five larger (over 60 mm long) nails of similar type and six unidentified fragments were also included and most items appear to have been burnt (some have charcoal adhering), indicating that they had been included on the funeral pyre. These nails may therefore represent some form of wooden bier burnt with deceased, their small size suggesting that a bier is more likely than a coffin, for although the size of coffin nails is known to vary (eg, Mills 1993, 115) the majority were between 60–100 mm long, equivalent to, but generally occurring in larger numbers than the five bigger nails from this deposit. Evidence for such wooden biers has been encountered in the cremation burials and pyre debris deposits in the east London cemeteries (Barber and Bowsher 2000, 68). Similar small nails were also found in the adjacent cremation grave 16440 and in a nearby feature (16450) although in far smaller quantities.

A large quantity of ironwork was also found in the upper fills of well 11313 at ICSG, associated with late Romano-British pottery, including pieces dating from the second half of the 4th century AD. Most were nails and other structural fittings but a spiral ferrule or 'ox goad' (Manning 1985, 142) was also identified, representing the only recognisable agricultural item in the collection (Fig. 8.1, 5). The structural fittings included part of a substantial corner bracket and two, possibly three, large bindings, all from fill 11302. The surviving arm of the corner bracket (170 mm long, 60 mm wide, 5 mm thick) had a slightly expanded, rounded terminal pierced by a centrally-placed nail hole, probably used to secure it. The most complete binding indicates that they were formed from strips of iron (260 x 36 x 5 mm), bent to 90° at either end (both terminals appear to be broken and the bar may well have bent through 90° again to form a 'C' shape at each end) perforated at intervals by nail holes; one with dome-headed nails surviving *in situ* 105 mm and 130 mm from the ends. The bindings probably served to fix several planks side by side. The assemblage also included 26 round-headed nails (Manning 1985, 134, type 1b) as well as 31 small (10–15 mm long), dome-headed nails or tacks (*ibid.*, 135, type 8), commonly used as upholstery studs. Sadly, it is unclear from the site records whether these objects were directly associated with each other, forming a substantial box, chest or other item of furniture, perhaps decorated

Table 8.2 Summary of the ironwork from each feature

Feature	*No.*	*Wt.*	*Type*
Late Bronze Age/Early Iron Age			
Pit G2109	10	161	Unident. fragments
Sub-total	*10*	*161*	
Early/Middle Iron Age			
Ditch G0383	2	104	1 knife; 1 unident. fragment
Gravel pit G0607	1	3	Unident. fragment
Sub-total	*3*	*107*	
Middle Iron Age			
Pit 1229	1	33	Unident. fragment
Sub-total:	1	33	
Early Romano-British			
Pit G0110	3	53	Unident. fragments
Ditch G0382	1	32	Nail shank
Sub-total	*4*	*85*	
Later Romano-British			
Ditch G0306	3	51	1 nail; 2 unident. fragments
Ditch G0355	1	16	Nail
Ditch G0381	1	1	Unident. fragment
Ditch G0413	1	35	Nail
Well G0527	1	3	Mount
Well 11313	79	2964	1 ox goad; 62 structural fittings (incl. nails); 16 unident. lumps
Cremation grave G1262	180	221	169 small round-headed nails/nail fragments; 5 larger round-headed nails/nail fragments; 6 unident. fragments
Cremation grave G1264	3	5	Small nails
Sub-total	*269*	*3296*	
Romano-British			
Cremation grave 16450	2	5	Small nails
Gully G0311	1	25	Broken rod
Gully G0314	1	1	Unident. fragment
Gully G0325	6	31	Unident. fragments
Pit G0369	1	30	Nail
Sub-total	*11*	*92*	
Late Saxon/early medieval			
Waterhole 16200	1	14	Unident. fragment
Sub-total	*1*	*14*	
Medieval			
Well G1286	4	149	1 Spur; 2 hooks; 1 nail
Ditch G0853	1	65	Horseshoe
Ditch G2039	3	52	Unident. fragment
G3039	1	28	Horseshoe
Sub-total	*9*	*294*	
Post-medieval			
Pit G0122	1	14	Nail
Sub-total	*1*	*14*	
Modern			
Ditch G0204	15	28	Unident. scraps
Sub-total	*15*	*28*	
Unphased			
Pig burial G0376	2	46	Nose ring
Pit G0559	1	153	Unident. frag
Sub-total	*3*	*199*	
Overall total	327	4323	

with the upholstery nails, a structural element such as part of the well-head fittings or merely waste timber thrown into the well as part of backfilling.

The only other identifiable piece of Romano-British date was a flat, rectangular-sectioned plate, broken at one end but with an oval loop formed at the other. This item can be paralleled at Caerleon (Scott 2000, 405, fig.102, 98) and may be a latch-lifter loop (Lucas 1993, 84, fig.19, 70 and 71) or the terminal of a plate-tang knife handle (*cf* Manning 1985, 111–12, pl. 53, Q17, pl. 54, Q18–22) although no evidence for rivets survives. It was found in well 1087 at RMC Land, also associated with pottery dating to the second half of the 4th century AD.

Post-Roman

Objects from Saxon graves at RMC Land

An iron buckle from grave 4707 (ON 12046; Fig. 5.20) is of flattened oval form, with a folded, rectangular buckle plate secured by three copper alloy rivets. The latter have degraded and their original form is unknown. A comparable buckle comes from the Dover Buckland cemetery, and its original function was probably to secure a sword belt (Evison 1987, fig. 20, 33/5).

Two iron knives came from graves 4707 and 4720 respectively. The example from grave 4707 (ON 12045; Fig. 5.20) is complete, although now in several conjoining fragments. This knife is of Evison's type 1, or Böhner type A, which was in use *c.* AD 450–700 (Evison 1987, 113–5, text fig. 22). The other knife (ON 12055/6; Fig. 5.21) is less easy to assign to type, but is possibly of Böhner type C, with back and cutting edge parallel; this type was only found in the 7th century AD (*ibid.*, 115). This date would fit with the glass beads (see above), which are dated to the second half of the 6th or first half of the 7th century.

An iron object from grave 5601 (ON 12093; not illustrated) is of unknown function. It comprises a single square-sectioned bar bent into a U-shape, with a loop at the base of the U. The two ends are both pointed and bent over to form small hooks.

A small iron object (length 20 mm) from grave 4662 (ON 12043; not illustrated) remains unidentified; no detail is visible on the X-radiograph.

Objects from non-mortuary contexts

In addition to iron objects from the Saxon graves, a total of 68 other iron objects was recovered from RMC Land, and all these are assumed, on the grounds of stratigraphic association, or other dating evidence (eg, pottery) to be of post-Roman date. To these can be added a further six objects from ICSG, assigned on the same basis.

Identifiable objects are few, and the functional range restricted. Apart from nails (11 examples), knives were the most commonly occurring object type. There are at least seven of these (possibly nine), all whittle tang forms in varying sizes, from pits 4010 (from evaluation trench 4) and 6520, waterholes 879 and 6454, and ditches 4020, 4043 (east–west field system ditch), 4093 (Enclosure 2) and 7872. One of the two examples from RMC Land ditch 7872 (ON 13012, Fig. 8.2) is of interest in preserving polychrome inlaid decoration on each side of the blade (the decoration on one side has largely been removed). This is a strip, formed of three 'plaits', side by side, each composed of four interlaced strands of wire. The two on the outside are both composed of two white (probably silver) and two red wires (probably copper alloy), while the central one features two red and two yellow wires (probably brass). The whole has been hammered into place, producing an elaborate herringbone effect. There are fragments of what appears to be a second, similar strip below this. Although the knife blade is broken, it does appear to conform to the characteristic late Saxon form with a straight cutting edge and an angular 'shoulder' part way down the blade; the knife measures about 130 mm in total length, with a blade of about 115 mm in length. Both knives and seaxes with similar inlaid decoration are known from England, mainly from the east and south-east, with a prevalence in London (Evison 1964, 34; Pritchard 1991, 127); this example conforms to the general pattern of using bichrome combinations of wire, red and white or red and yellow, but never white and yellow together (Evison 1964, 33; Pritchard 1991, 125). The inlaid wires were generally laid on to a prepared groove, and there is a faint sign of that in this example, particularly on the X-radiograph, but the blade is heavily abraded. A date range of late 9th to early 11th century has been proposed for these high quality decorated knives; this example may be residual in ditch 7872, which produced pottery of cp5 (mid- to late 11th century).

A pair of shears came from ditch 7879, which also produced pottery of cp3/4 (late 9th to mid-11th century). The shears in themselves are not closely datable; the form remained remarkably constant from their original introduction during the Iron Age. This pair is relatively small, with a blade length of 60 mm, and a total length of at least 110 mm (the looped handle is incomplete), and would have been suitable for domestic uses, such as thread-trimming and hair-cutting, rather than, for example, cloth-cutting or sheep-shearing (Cowgill *et al.* 1987, 58).

The only other identifiable implement is a small awl (length 95 mm), probably used in leatherworking, from RMC Land pit 6520. Two other points from the same site, from ditches 4047 and 4093, could also represent awls (Margeson 1993, fig. 141, nos. 1478, 1482).

One, possibly two objects represent locks, both from RMC Land. A padlock slide key came from the upper fill of waterhole 6350 (ON 12116); this object has an expanded handle with a looped end, and a circular, angled bit (Fig. 8.1, 6). Similar keys from London come from late 12th to early 13th-century contexts (eg, Egan 1998, no. 264), but this is a common type, of pre-Conquest origin and with a currency through to the post-medieval period; at Winchester, for example, keys of this type occurred in contexts from the 10th to the 15th century (Goodall 1990, 1006). The second object (ON 11506), from waterhole 879, has one expanded, flattened end, bent over at the end, on a circular or square-sectioned shaft (Fig. 8.1, 7). This may have formed part of rotary lock, perhaps the spring (see Egan 1998, fig. 78–9).

Two horseshoes were recovered from ICSG. The first, from ditch G0853, is of lobate form (Clark 1995, type 2b), while the second, from ditch G3039, is more fragmentary and cannot be assigned with certainty to type.

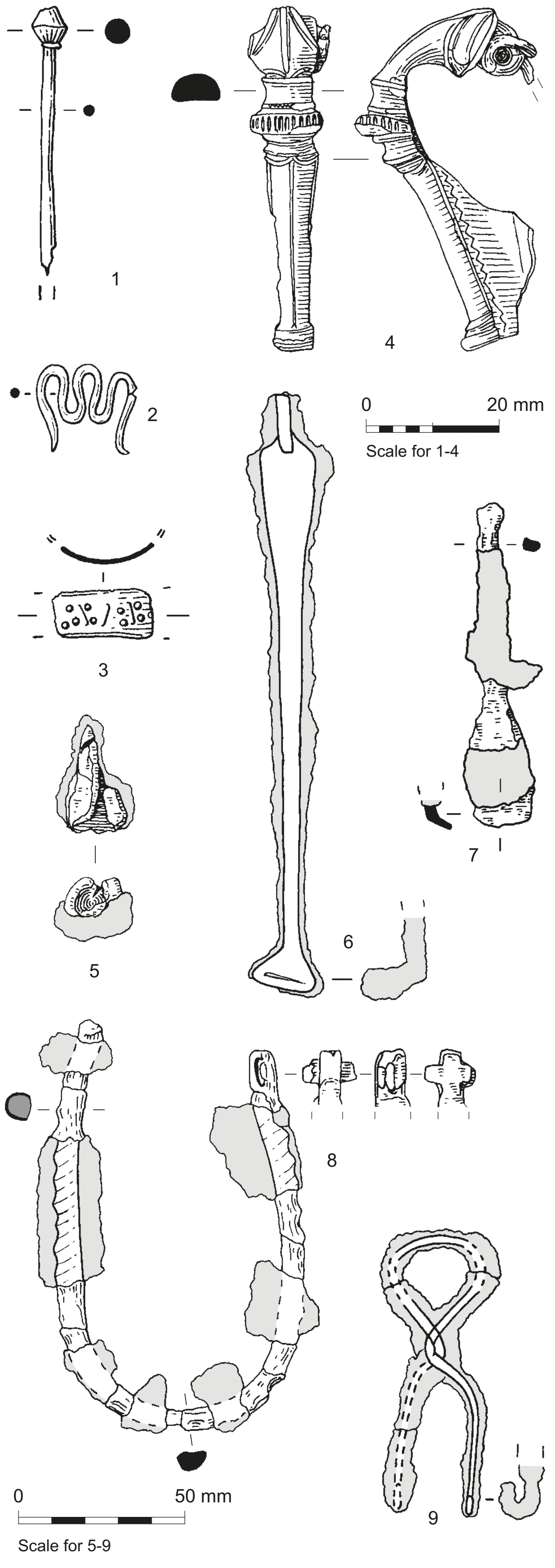

Figure 8.1 Metalwork: 1–9

A ring with at least nine chain links attached is of uncertain function; it could have been used, for example, as a suspension chain (eg, Egan 1998, fig. 146). This came from RMC Land ditch 742 (group 1211).

An object from RMC Land pit 564 appears superficially similar to another from one of the Saxon graves (see above, ON 12093). This object (ON 11505) has a looped head joining two thin shafts, each bent over at the end to form a short hook (Fig. 8.1, 9). Its function is uncertain, but the hooks are surely too small for the suspension of objects, and may have acted instead as hook fasteners, perhaps on textiles.

A large iron object from RMC Land waterhole 4512 (ON 12004) is of unknown function, but may have been an implement of some kind. The object was at least 0.55 m in length and up to 30 mm wide; it tapers at one end (and possibly also at the other), and its cross-section is variable, from flat through lenticular to sub-circular.

Other objects comprise various rod, bar, strip and sheet fragments, and unidentified objects, all of unknown date and function. A large piece of bent and folded sheet iron, probably from a modern vehicle, was found.

Prick spur

by Thomas Kind and Jörn Schuster

A complete prick spur in several fragments (ON 18031; Fig. 8.1, 8) was recovered from well 16413 (ICSG). The prick (now missing) was riveted. The spur is sub-square in cross-section, with 'rippled' decoration on the outer edge; the terminals (of which one survives) are flattened and folded to form a flat loop with cruciform strap fittings. The object appears to be plated; no compositional analysis has been undertaken on this plating but it is certainly non-ferrous. It may be noted that a number of allegedly silvered spurs of this period turned out on further examination to be tinned (Jope 1956).

While the affinities of the spur are clearly continental, its dating is problematic. The context and associated finds suggest a date of 11th or 12th century. There are no good parallels for the cruciform treatment of the looped ends of the spur branches. A spur from Gojače-Boršt, Slovenia has similarly rippled branches, but this is clearly a spur with rivet plates belonging to the Tassilokelchstil-Horizon of the late 8th or early 9th century. As the coating on the Harlington spur appears to be covering almost the entire outside of the branches, instead of covering only some ribs or other ornaments, it is not chronologically distinctive. It might indicate an elevated social echelon which, however, does not necessarily have to be aristocratic. The chronologically sensitive element would be the prick (here missing), which, for the 11th or 12th centuries,

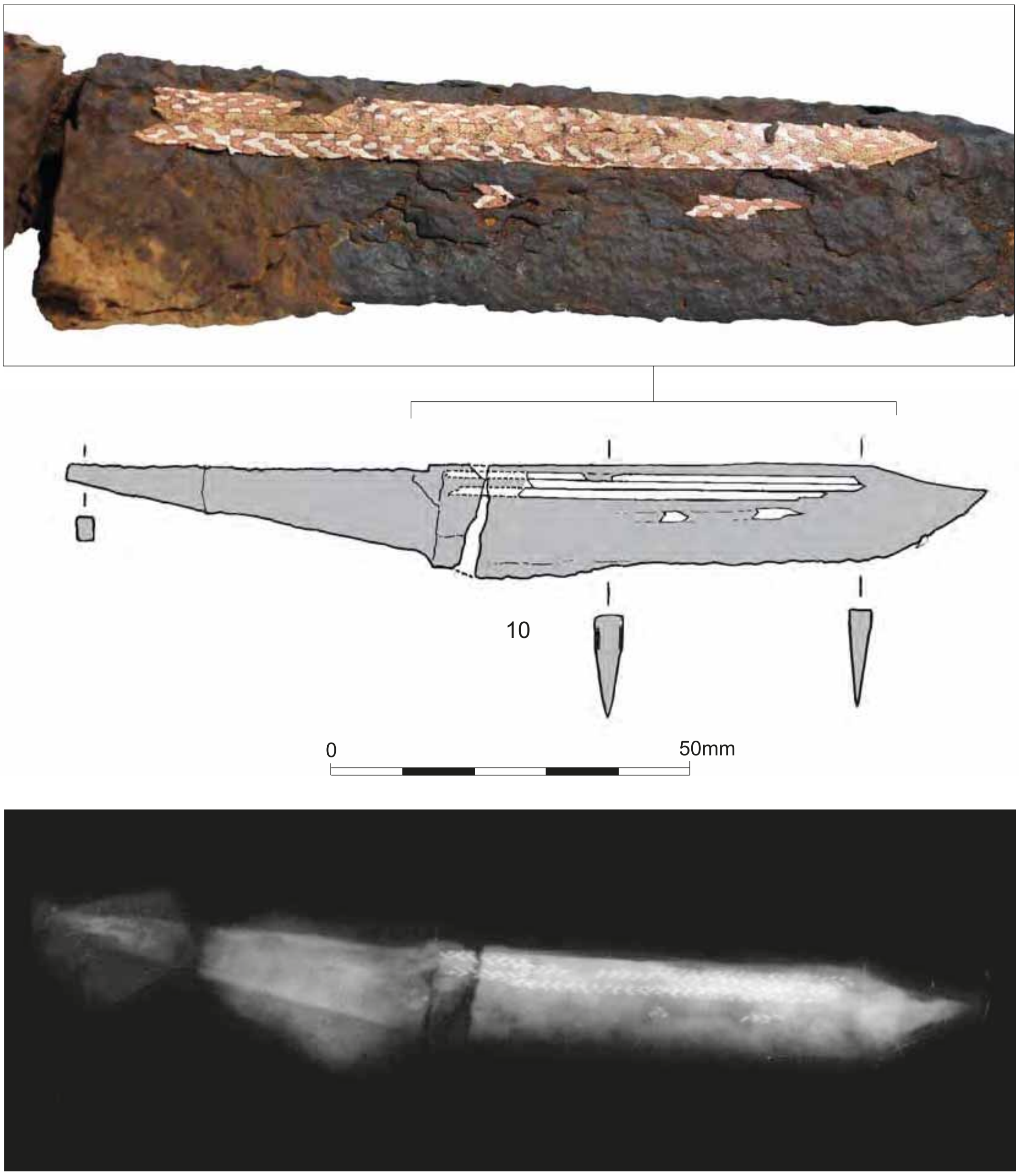

Figure 8.2 Iron knife

should be long and with a tip that is set off from and thicker than the stem. It should be a spur of form 'Colletière', which is the only form with straight branches continuing to this date (Colardelle and Verdel 1993). If the spur is as early as the early 11th century, the spur could also have had a non-thickened, long prick. The only problem with a dating of 11th/12th century could be the looped ends of the spur branches (employed from the 7th century onwards); both the Colletière-type spurs as well as other more elaborate spur types would commonly have had rivet plates for attachment at the branch ends both on the Continent and, because of the strong French influence after the Norman conquest, in England. One explanation for a looped end could be that it was an indigenous imitation of a continental form.

Illustrated objects

Fig. 8.1

1. Copper alloy dress/hair pin. RMC Land, ON 12107, context 6021.
2. Copper alloy ?pin. RMC Land, ON 11825, context 3805, pit 3810.
3. Copper alloy finger-ring fragment. RMC Land, ON 11849, context 3920, ditch 4083, section 3919.
4. Copper alloy trumpet-headed brooch. RMC Land, ON 12108, context 6031, possible waterhole 6030.
5. Iron ferrule or ox goad. ICSG, ON 13124, context 11308, well 11313.
6. Iron padlock slide key. RMC Land, ON 12116, context 6351, waterhole 6350.

7. Iron ?lock fragment. RMC Land, ON 11506, context 874, waterhole 879.
8. Iron prick spur. ICSG, ON 18031, context 16414, well 16413.
9. Iron object, unknown function. RMC Land, ON 11505, context 565, pit 564.

Fig. 8.2

10. Iron knife with inlaid decoration. RMC Land, ON 13012, context 7502, ditch 7872.

Metalworking Debris

by Phil Andrews

Approximately 2.88 kg of material initially classified as slag was recovered from RMC Land. Of this small assemblage, 2.36 kg is likely to derive from iron smithing, while a further 204 g is smithing slag or fuel-ash slag, 75 g is fuel-ash slag, 81 g hearth lining, and 160 g comprises natural concretions.

The probable smithing slag is generally undiagnostic, consisting of small, amorphous, vesicular lumps or fragments, although there is one much denser piece. There are two possible smithing hearth bottoms (SHBs), hemispherical accumulations which formed in the base of smithing hearths. One example weighs 333 g and the other, less certain example only 114 g; both come from late Saxon–early medieval features (from contexts 6429 and 2899 respectively).

In addition to the two SHBs, the majority of the remaining metallurgical material from dated contexts also comes from late Saxon and medieval features, with only 84 g assigned to the Romano-British and 187 g to the early Saxon periods. There is 13 g of hearth lining from a Late Bronze Age/Early Iron Age deposit, but there is no certainty that this material derives from metalworking.

Approximately 7 kg of possible metalworking debris came from the ICSG excavations. However, just over 6 kg of this material comprises very light, pale grey, semi-vitrified clay with entrapped gas bubbles, material sometimes classified as fuel-ash slag, which probably has no connection with metalworking.

The majority of the remaining 926 g of material probably represents iron smithing slag, most of it undiagnostic and including a small quantity of hearth lining, but there is a single probable SHB, weighing 199 g.

The SHB and virtually all of the probable smithing slag are from undated contexts, with a tiny amount from one late Romano-British context. Much of the vesicular fuel-ash slag is also from undated contexts, but more than 2.5 kg comes from late Romano-British features and a small quantity from Middle–Late Iron Age deposits. Such material has been identified on various late prehistoric and Romano-British sites, particularly in central and eastern England, again with no apparent association with metalworking.

Overall, considering the two sites together, virtually all of the small quantity of material which can be fairly certainly associated with iron smithing appears to be from Romano-British or later features, with most from late Saxon–medieval deposits. A similarly low-level of ironworking evidence has also been recorded at other sites in the area, for example at Terminal 5 where some Middle Iron Age, Romano-British and late Saxon–medieval material has been recorded (Framework Archaeology 2006, 193–4, 211; 2010), at Prospect Park, Hillingdon, where the few pieces of slag are all probably early Saxon (Andrews 1999, 28), and at Horton where the only smithing slag is medieval (Wessex Archaeology 2009b). In all periods represented this possibly reflects the presence of itinerant smiths, and perhaps seasonal smithing activity, largely associated with the maintenance of agricultural and domestic equipment.

Glass and Amber Beads

by Lorraine Mepham

Beads from Saxon Graves

Beads of glass (43) and amber (two) were recovered from two Saxon graves at RMC Land – 22 glass beads from grave 4662 and 21 glass (plus some fragments) and two amber beads from grave 4720 (Figs 5.19 and 21; Pls 5.15, 5.18 – see Chapter 5 for catalogue).

The glass beads have been catalogued according to Hirst's classification which sets out colour, form size and decorative motif (Hirst 2000). Reference has also been made to Brugmann's classificatory system (Brugmann 2004, also citing polychrome glass types defined by Koch (1977)), and details of manufacturing technique and proportion were also recorded. The amber beads have been catalogued using the forms set out by Evison for the Dover Buckland Saxon cemetery (Evison 1987).

The two amber beads from grave 4720 are very similar in both size and shape; both are flat drum-shaped cylinders of approximately 11 mm diameter (Evison 1987, text figure 11, form A03).

There are 29 monochrome glass beads, 17 from grave 4662 and 12 from grave 4720. The bead types found in each grave are listed in Table 8.3; 17 from grave 4662 and 12 from grave 4720. Both graves contained a similar range of colours and forms: disc, annular, globular and cylinder, in translucent (blue,

Table 8.3 Monochrome glass bead types

Context	*No.*	*Colour*	*Form*	*Comment*	*Dating*
Grave 4662	3	Opaque yellow	Disc	Brugmann SegGlob	*c.* AD 580–650
	1	Semi-opaque green blue	Double thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650
	1	Opaque red	Annular	Brugmann SegGlob	*c.* AD 580–650
	1	Opaque blue white	Thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650
	1	Blue	Disc	Brugmann Blue	-
	3	Opaque yellow	Thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650
	1	Opaque yellow	Globular	Brugmann SegGlob	*c.* AD 580–650
	2	Opaque pale blue	Thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650
	1	Opaque yellow	Coiled globular	Brugmann SegGlob	*c.* AD 580–650
	3	Opaque red	Thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650
Grave 4720	3	Blue	Annular	Brugmann Blue	-
	1	Opaque pale blue	Drawn globular	Brugmann SegGlob	*c.* AD 580–650
	2	Opaque red	Annular	Brugmann SegGlob	*c.* AD 580–650
	4	Opaque pale blue	Annular	Brugmann SegGlob	*c.* AD 580–650
	2	Opaque pale blue	Thick-walled cylinder	Brugmann CylRound	*c.* AD 555–650

green-blue) and opaque colours (yellow, red, pale blue, blue white). Within Brugmann's classification, these fall into the Blue, Round Cylinder and Segmented Globular types. The Round Cylinder and Segmented Globular types have a date range between the mid-6th and mid-7th century (Brugmann 2004, 52, 70, appendix 8.2).

There are 14 polychrome glass beads, five from grave 4662 and nine from grave 4720. Details of types and dating are set out in Table 8.4. Only two types are represented: applied crossing trails (Koch 20) and applied crossing trails with dots (Koch 34); these occurred in disc, globular and barrel-shaped forms. each of the two graves contained examples of both types. The Koch 20 designs all use opaque yellow trails on opaque red beads (Brugmann's Koch 20 Yellow type), while all but one of the Koch 34 designs are in either opaque yellow or opaque white, in both cases on opaque red grounds. One example of a Koch 34 design from grave 4720 carries crossing trails and dots in both opaque white and opaque pale blue, on an opaque red ground.

Overall, the two graves produced very similar ranges of bead types, with a slight difference in the proportion of polychrome to monochrome beads between the two. The date ranges for the types represented are quite consistent, suggesting that both graves belong to the second half of the 6th or first half of the 7th century. All the types represented have their main distribution on the Continent, and in England show a clear bias towards the eastern part of the country, Kent in particular, with none in the London area (Brugmann 2004, figs 2, 41, 60, 61; but her sample included only one site from the Lower Thames Valley as a whole).

In both graves, although no human remains survived, the beads were found at what is assumed to be the head end, and clustering of the beads suggests that they were strung as necklaces (Figs 5.19 and 21). Beads from grave 4662 were not arranged regularly in terms of colour, but the smaller beads (both monochrome and polychrome) seem to have been strung together, with the larger beads (again, both monochrome and polychrome) strung in groups on

Table 8.4 Polychrome glass bead types

Context	*No.*	*Colours*	*Type and pattern*	*Comments*	*Dating*
Grave 4662	1	Opaque red body with opaque yellow trail	Barrel; double crossing wave	Buckland D30; Koch 34	*c.* AD 580–675
	2	Opaque red body with opaque yellow trail	Biconical; double crossing wave and spots	Koch 20 Yellow	*c.* AD 555–650
	1	Opaque red body with opaque white trail	Globular; double crossing wave	Koch 34	*c.* AD 580–675
	1	Opaque red body with opaque white trail	Disc; double crossing wave	Buckland D19; Koch 34	*c.* AD 580–675
Grave 4720	2	Opaque red body with opaque yellow trail	Biconical; double crossing wave and spots	Koch 20 Yellow	*c.* AD 555–650
	6	Opaque red body with opaque white trail	Disc; double crossing wave	Buckland D19; Koch 34	*c.* AD 580–675
	1	Opaque red body with opaque white and opaque pale blue trails	Disc; double crossing waves and spots	Koch 34?	
Pit EV1014	1	Opaque black body with opaque red and opaque white trails	Barrel; single zigzag trail between two horizontal trails	?Legoux 29/30	*c.* AD 530–80
Ditch 4043	1	Opaque red brown body with opaque yellow spots	-	Brugmann DotReg	*c.* AD 555–650

either side. In grave 4720 the beads formed two clusters, the larger containing about 16 beads and the smaller six beads; there were also a few outliers. All of the beads from this grave were of similar size; the arrangement appears to mix monochrome and polychrome beads, possibly alternating, although the precise arrangement is not clear.

Beads from Non-mortuary Contexts

Fragments of two further beads were recovered from RMC Land, both polychrome examples (Table 8.4). The first, from pit EV1014, is a large, barrel-shaped bead with a single opaque red zigzag trail between two opaque white horizontal trails, on a body which now appears opaque black but which may originally have been green. The type is similar to Legoux's types 29/30, dated by Brugmann to *c.* AD 530–80 (Brugmann 2004, fig. 142), although in differing colours.

The second, from ditch 4043, is a large biconical bead of Brugmann's Regular Dot type, with opaque yellow dots on a red ground, dated *c.* AD 555–650 (Brugmann 2004).

Catalogue of beads non-mortuary contexts
Not illustrated

ON 1: polychrome glass bead, large barrel-shaped; opaque red single wave between two opaque white horizontal trails on opaque ?black (fragment only), context EV1012, pit EV1014.

ON 11774: polychrome glass bead, large biconical; opaque yellow dots on opaque red (fragment only), context 3151, ditch 4043, section 3148.

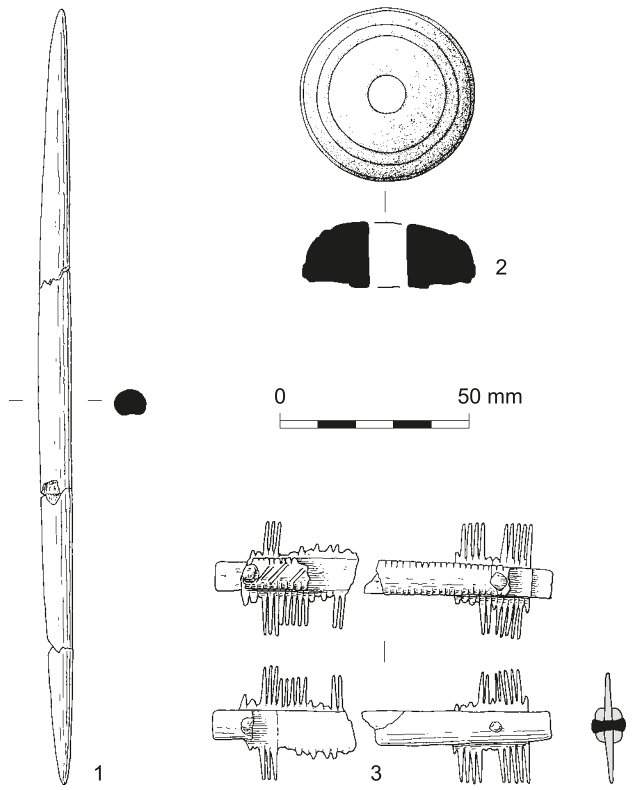

Figure 8.3 Worked bone: 1–3

Worked Bone
by Lorraine Mepham

Three worked bone objects were recovered, all from RMC Land: a complete, double-ended pin beater (Fig. 8.3, 1), a spindle whorl showing signs of burning (Fig. 8.3, 2), and fragments of a double-sided composite comb (Fig. 8.3, 3). All objects are typologically of early Saxon date.

Pin beaters (sometimes known as thread pickers) were used to separate threads on a warp-weighted weaving loom, and are usually made of bone or antler. They are relatively common finds on early and middle Saxon settlement sites, often occurring in pairs of different sizes (Riddler 1993, 117–9). The example from RMC Land is made from a large mammal bone and is double-ended, with a circular cross-section slightly flattened on one side, and has extensive surface polish, presumably through use. It was found in pit 5541, along with parts of two ceramic loomweights (see above).

A number of examples are known from the London area, but the example from RMC Land appears anomalous within this geographical group and, indeed, elsewhere, by virtue of its length (205 mm). The size range generally is between 80 mm and 140 mm, and the longest example cited by Blackmore from the London area is 144 mm (Blackmore 2008b, 210).

The spindle whorl, which came from pit 5597, is bun-shaped. It is lathe-turned and is well made and finished, with concentric grooved decoration. The object retains some surface polish on the upper (flat) surface, but this has worn off over part of the lower (domed) surface, resulting in a whitish-grey discolouration; the object may have been partly burnt. Bone (or antler) is the material type most commonly used for spindle whorls in middle Saxon *Lundenwic* (Blackmore 2008b, 148).

The size and weight would reflect the quality of the yarn to be spun – the lighter the whorl, the finer the yarn. Shape may also have played a functional role, whorls of certain shapes, such as conical, rotating faster than others, such as disc-shaped whorls (Øye 1988, 54–5). The example from RMC Land has an external diameter of 45 mm and a central perforation of 9 mm diameter, and weighs 24 g.

The size is consistent with other early and middle Saxon whorls (of various material types) from the London area, while the weight would place it somewhere in the middle range, suitable for spinning wool (*ibid.*, 54).

The comb, from pit 6229, is a double-sided, composite type, made of antler. The two side plates are rectangular, tapering very slightly at both ends, and were secured with an iron rivet at each end. The object was in very fragmentary condition when found, but reconstruction allows the overall length to be estimated at around 90 mm, and the width at around 30 mm. One side plate is plain, and the other decoration with small notches along each long edge; there are also traces of diagonal hatching at one end. The side notches do not consistently align with the spacing of the teeth, and in any case are too evenly formed to be the result of sawing the teeth after the comb had been assembled, the standard technique (MacGregor *et al.* 1999, 1917), but they may have been intended to give a guide to the spacing of the teeth. The tooth plate appears to have been made up of several sections; the end plates do not survive.

Illustrated objects

Fig. 8.3

1. Bone pin beater. ON. 12082, context 5543, pit 5541.
2. Bone spindle whorl. ON. 12094, context 5598, pit 5597.
3. Bone comb, composite, double-sided. ON. 12113, context 6231, pit 6229.

Objects of Worked Wood

by Lorraine Mepham

Objects of waterlogged wood were recovered only from ICSG. The majority of these comprise structural timbers, but three other objects were also found.

Structural Timbers

Worked timbers were recovered from several waterlogged contexts within a late Romano-British well (1087), where they formed a box-framed lining. The timbers extracted from the well comprise eight planks, three stakes and four small roundwood pegs; another small fragment may derive from a further plank. The most complete planks were around 1.20 m in length, between 0.13 and 0.15 m in width, and approximately 0.06 m thick, and had sub-rectangular notches at each end to enable the planks to be fitted together. The planks appeared to be tangentially split, at least one plank being an outer split. The stakes were roundwood, two of them with surviving faceted points; their function within the well is uncertain, but they may have acted as vertical strengthening to the plank lining, as may the pegs.

Eight small fragments of worked timber were recovered from three waterlogged contexts within a medieval waterhole (10318). None were found *in situ*, but had been redeposited within the lowest excavated fill of the waterhole (10369). Six of the fragments appeared to represent part of a timber revetment, which comprised a construction of tangentially split planks (width 50 mm and thickness 20–30 mm), laid edge up (to a depth of at least two planks) and held in place with narrow roundwood pegs (diameter 15–17 mm), which fitted vertically into grooves cut into the ends of the planks. One surviving fragment comprises parts of two planks and two pegs; the pegs are spaced 40 mm apart. Two further planks of larger size were also recovered from the well and presumably also formed part of the revetment.

A Late Bronze Age well G2156 produced the tip of a tangentially split stake, worked to a faceted point. From the same pit came a possible vessel fragment (see below).

Bucket

The bucket (ON 18756) was found almost intact at the base of medieval waterhole 16200. It is stave-built with a cylindrical profile (Fig. 8.4); there are eight staves; six are approximately 100 mm wide, and the two opposed staves which form part of the handle attachment are 120 mm wide. The two latter staves have slightly narrower vertical extensions (80 mm and 92 mm respectively) in a stepped outline, rising by about 50 mm above the rim of the bucket, and these extended 'lugs' have chamfered corners and single circular perforations. Through one of these perforations a wooden peg remains *in situ*, which would have held the handle in position. The base of the bucket comprises a single piece of timber (diameter 280 mm) that was inset into the base of the staves by means of an excised, squared horizontal groove cut into each with a croze (C. Earwood pers. comm.), a metal cooper's tool used to cut a continuous groove across the staves. Unusually, fragments of the bentwood handle were also recovered. One fragment remained adjacent to the wooden peg, indicating that the handle fitted inside the lugs rather than outside. Two other fragments were found separately inside the bucket. The larger of the two represents one end of the handle and consists of a short curved fragment, 148 mm by 32 mm, and with a sub-rectangular section; there is a circular perforation at the end. The second fragment is much smaller and presumably derives from the other end of

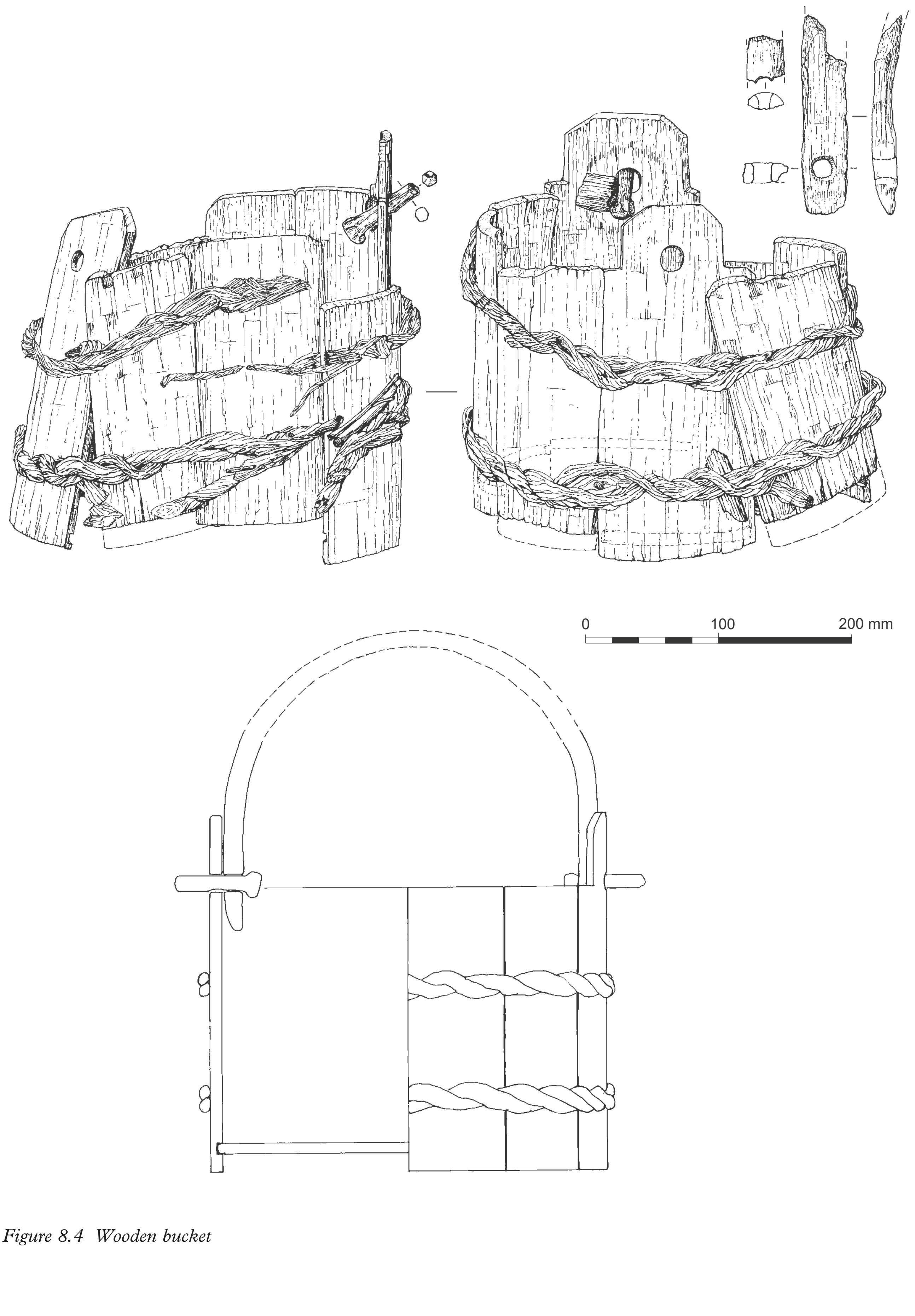

Figure 8.4 Wooden bucket

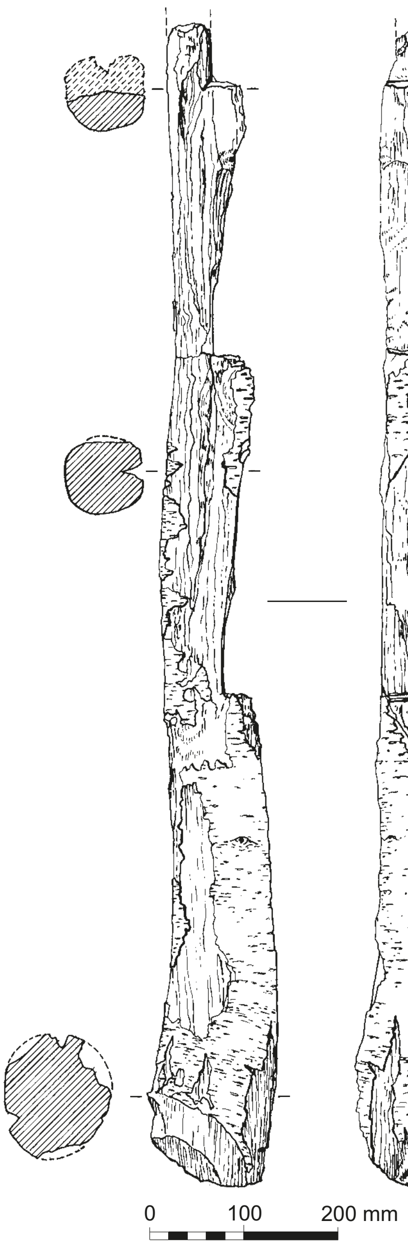

Figure 8.5 Worked wood: log ladder

the handle; it includes the remains of another circular perforation. Staves, base and handle are of oak (*Quercus*); the peg holding the handle is possibly willow/poplar (*Salix/Populus*). Binding the bucket together were lengths of twisted rope (withies), made of willow/poplar. The capacity of the bucket, with an internal diameter of 280 mm and height of 190 mm, would have been approximately 2.6 gallons (11.8 litres).

Two samples from the bucket were submitted for radiocarbon dating. One from the base produced a date of AD 760–1020 (at 95% confidence) (OxA-8529), while a second sample, from the handle, yielded a date of AD 1180–1290 (at 95% confidence) (OxA-8469), confirming the bucket as early medieval.

Stave-built buckets have a lengthy currency in Britain, from the prehistoric period onwards, the form remaining remarkably unchanged. In the Saxon and medieval periods, buckets were probably the most widely used domestic stave-built vessel (Morris 2000, 2225). The large Anglo-Scandinavian and medieval collection from York, for example, amply demonstrates the basic form and technology (eg, *ibid.*, figs 1066–7), although none of the York examples have withy bindings, being bound instead with wooden or metal hoops. A medieval bucket from Billingsgate Buildings, London, also has wooden hoops (Jones 1980, fig. 84). A mid-Saxon stave-built cask from Southampton has a twisted hazel-wood binding, as does a small tub or bucket from the same site, although not stave-built (Holdsworth 1976, fig. 20). Only one handle, of iron, was found at York, but a bucket from the 9th-century Gokstad ship burial in Norway appears to have utilised a similar bentwood handle construction secured by wooden pegs (Nicolaysen 1882, pl. 8, 2).

Log Ladder

The log ladder came from Middle Bronze Age waterhole 16198 (context 16197, Fig. 8.5). It was found in two conjoining pieces of roundwood (some bark survives), constituting a tapering length of 1.65 m from the basal end, with three notched steps cut along one side. The basal end has been cut at an angle. The lowest notch is 0.26 m above the base, the second notch is 0.18 m above lowest notch, and the uppermost notch 0.14 m above the second notch. The notches provide a ‘tread’ of approximately 20 mm wide, constituting between one third and one half of the width of the log. The ladder was used butt end down, the natural taper being widest at the base.

The log ladder produced a radiocarbon date falling around the transition of the Middle and Late Bronze Age, of 1210–910 cal BC (at 95% confidence) (OxA-8470, 2870±45 BP). Such log ladders are not common finds, but in recent years fragments of at least four others have been found in Middle/Late Bronze Age contexts in the Heathrow area, including one from Stanwell (Parker Pearson and Sydes 1997, 233) and three from Heathrow (Framework Archaeology 2006, fig. 3.30; Framework Archaeology 2010). Another example came from Eton, Buckinghamshire (Oxford Archaeology in prep.), with others from Radley, Oxfordshire, Lofts Farm, Essex, and Fengate, Cambridgeshire (Taylor 1995, 40; Brown 1988, fig. 27; Pryor 1991, 55). Where provenance is known, all these ladders seem to have been used to afford access to wells or waterholes.

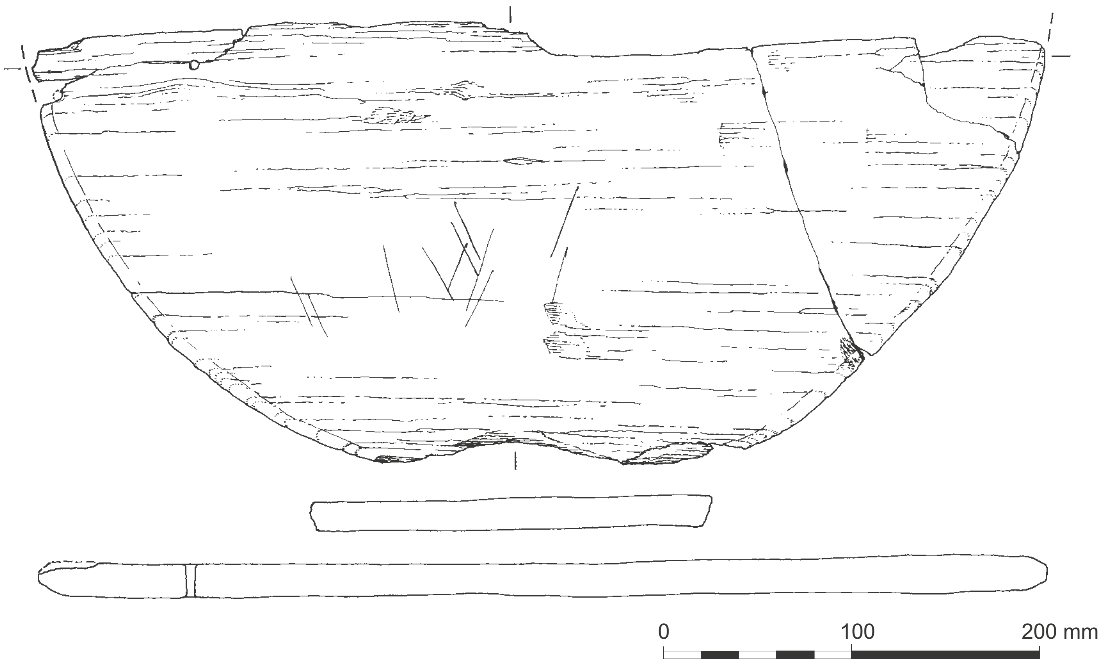

Figure 8.6 Wooden lid or vessel base

?Lid or Vessel Base

A flat, semi-circular object (ON 18222) from Late Bronze Age well G2156 (NZA-32370, 2829±35 BP, 1110–900 cal BC, at 95% confidence) could have been used as a vessel base (bucket or barrel) or lid (Fig. 8.6; Pl. 3.3). The piece had an original radius of approximately 280 mm, and is 16 mm thick. Made from a tangentially split oak timber and carefully worked to an even thickness throughout, the object has a chamfered outer edge. These dimensions are twice the size of the base of the medieval bucket from waterhole 16200 (see above), and double that of the Bronze Age vessel bases recovered from the Wilsford Shaft, Wiltshire, most of which were also of oak, but radially split (Ashbee *et al.* 1989, 54–5, 61, fig. 51, 3). The latter examples had a plano-convex profile not seen here, but were also tapered at the edges to fit within grooved stave-ends.

Chapter 9
Human Bone and Animal Bone

Human Bone

by Jacqueline I. McKinley

Introduction

Cremated human bone was recovered from 49 contexts; 44 from ICSG and five from RMC Land. The deposits spanned a broad temporal range from the Middle Neolithic to the middle Romano-British period (Table 9.1). Two small clusters of deposits were situated in the central-southern and north-eastern areas of ICSG; the former associated with a pair of Neolithic monuments and the latter forming a small, largely Middle Bronze Age mortuary group (Fig. 2.3). Other deposits comprised mostly singletons scattered across the multi-phase landscape dominated by Bronze Age and later field systems and enclosures, where evidence for Middle Bronze Age settlement was limited to the eastern end of ICSG, with a possible structure in the central southern area (see above).

Samples of cremated bone from the seven features associated with double ring ditch G2007 and adjacent penannular ring ditch G2008 (8.5 m to the north) were subject to a programme of radiocarbon dating (see Chapter 11). Six of them, comprising the remains of unurned burials, are of Middle Neolithic date and one, which appears to represent redeposited material, is of Middle Bronze Age date. In addition, a small quantity of redeposited bone, recovered from the terminal (17946) of a later ditch clipping the southern edge of the double ring ditch, may derive from burials at the monument (Fig. 2.9). A small deposit, possibly of redeposited pyre debris, within pit 40413, situated in a relatively isolated position towards the west of ICSG (55 m from the nearest cremation-related deposit) also returned a radiocarbon result consistent with a Middle Neolithic date (Fig. 2.3 and Chapter 2).

Two deposits at ICSG, the remains of an urned burial (in grave 16669) and probably a disturbed and redeposited burial (in grave 40017), situated 470 m apart both returned radiocarbon results consistent with an Early Bronze Age date. A further possible burial deposit (in grave 40018), 2 m north-east of grave 40017, has been attributed an Early Bronze Age date by association. Many of the graves from these phases, and later deposits, included varying quantities of pyre debris that had been placed in them secondary to the burials (Table 9.1).

The greatest proportion of contexts from any one phase is Middle Bronze Age (17, 34.7%). Most features formed part of the small mortuary group within a 17 m diameter area in ICSG Area A (Figs 3.11–12); one other deposit was recovered from a Middle Bronze Age pit (G468) cutting the ditch of Neolithic long enclosure (G3001) situated 60 m to the east (Fig. 2.5). The deposits included the remains of four, probably five, urned burials and one, possibly two, unurned burials dated by association. The remains of the unurned burial (in grave 1206) on the southern margins of the group was radiocarbon dated to the Middle Bronze Age. The nature of the remaining contexts, also dated by association, is uncertain, but includes some redeposited pyre debris. A deposit of uncertain form (1009) central to the group contained Middle Bronze Age pottery.

A radiocarbon date falling within the early phase of the Late Bronze Age, was recovered from a deposit of uncertain form, possibly redeposited pyre debris, in feature 1850, in Area 1 of RMC Land. Redeposited material, probably from a Late Bronze Age/Early Iron Age urned burial (in grave 1102), was recovered on the western margin of the same area. At ICSG, three other deposits believed to be of Late Bronze Age/Early Iron Age date (in two cases on the basis of residual pottery) were distributed across the eastern half of the site. The remains of a possible unurned burial (in grave 1007) lay on the eastern side of the Middle Bronze Age mortuary group. The remains of an unurned burial (in grave 10001) lay in an isolated position 220 m to the south. At the west of the site, in Area E, feature 40073 contained a deposit of what may have been pyre debris.

The remains of a middle Romano-British urned burial with redeposited pyre debris (in grave 16427) was recovered from the southern part of ICSG Area C (Fig. 4.6), and a possible unurned burial with redeposited pyre debris (in feature 16440), 4 m to the north was attributed a similar date by association. Redeposited material was recovered from late Romano-British ditch G615 in Area A.

A further nine deposits, six from ICSG and three from RMC Land, are undated (Table 9.1). The deposit types include two possible unurned burials (in graves 16452 and EV19) both in the broad vicinity (40–60 m) of the Romano-British graves. Other deposits probably include pyre debris and incidentally redeposited material.

Table 9.1 Summary of results from analysis of cremated human bone

Cut	*Context*	*Date*	*Deposit type*	*Weight (g)*	*Age/sex*	*Pathology*	*Pyre goods*
ICSG evaluation							
EV19	18	u/d	rpd/?un.burial + rpd	93.6	adult >18 yr.	-	0.2 g animal
EV164	163	?MBA	crd/?un.burial + rpd	18.6	infant/juvenile *c.* 2–6 yr.	-	-
EV166	165	?MBA	crd/?rpd	17.3	subadult/adult >13 yr.	-	-
EV170	169	?MBA	crd	1.2	infant/juvenile *c.* 2–9 yr.	-	-
EV171	172	MBA	u.burial + rpd	11.8	subadult/adult >13 yr.	-	-
ICSG excavation							
1007	1008	LBA–EIA	?rpd/?un.burial + rpd	0.2	infant/juvenile *c.* 2–8 yr.	-	-
	1009	?MBA	r.	8.4	subadult/adult >13 yr.	-	Cu alloy globule
1100	1101/1103	MBA#	u.burial + rpd	643.3	adult >18 yr.	-	Animal bone
1104	1105–6	MBA#	u.burial + rpd	227.7	adult >30 yr.	enthsopathy – L, femur	
1107	1108–9	MBA	u.burial + rpd	352.4	adult >30 yr. ??female	osteophytes – ilium	?Animal bone; Cu alloy globule
1206	1205	MBA#	un. burial + rpd	521.8	subadult 13–18 yr.	-	-
1208	1207	?MBA	?un.burial + rpd	347.4	subadult *c.* 14–17 yr.	-	?Animal
1301	1300	?LBA–EIA	?r./?rpd	1.2	subadult/adult >13 yr.	-	-
1303	1302	?MBA	?u.burial ?+ rpd	127.6	adult >18 yr.	-	Glass and slag (intrusive)
1400	1401	?MBA	rpd	20.1	adult >18 yr.	-	-
G615 (1619)	1618	?LRB	r.	0.3	>6 yr.	-	-
G468 (1972)	1976	?MBA	r./?rpd	0.2	>3 yr.	-	-
4102	4100	u/d	r.	0.1	subadult/adult >13 yr.	-	-
10001	10002	?LBA–EIA	un.burial + rpd	216.1	subadult/adult *c.* 15–45 yr.	-	-
16427	16426/8	MRB#	u.burial + rpd	86.8	subadult/adult >14 yr.	-	-
16440	16432	?MRB	?rpd/?un.burial + rpd	20.9	adult >21 yr.	-	?Animal
16452	16453	u/d	?rpd/?un.burial + rpd	7.6	subadult/adult >14 yr.	-	-
16669	16670	EBA#	un.burial + rpd**	1155.3	adult *c.* 30–50 yr. ?male	amtl; osteophytes – atlas, axis, IP (hand); periosteal new bone – fibula	-
16768	16769	u/d	rpd	3.6	subadult/adult >13 yr.	-	-
17556	17557	u/d	crd	7.9	subadult/adult	-	-
17890	17889	MNeo #	un.burial**	255.7	juvenile/subadult *c.* 8–14 yr.	hyperporosity – vault	-
17946	17945	?LBA–EIA	r.	2.5	adult >18 yr.	-	-
19006	19008	MNeo #	un.burial**	1096.5	1) infant/juvenile *c.* 3–6 yr. 2) adult *c.* 25–35 yr. ?female	osteoarthritis – T; hypervascularity – vault; mv – wormian	-
19010	19011–2	MNeo #	un. burial**	236.1	juvenile *c.* 5–8 yr.	-	
19013	19014–5	MNeo #	un.burial*	1266.1	adult *c.* 30–45 yr.	pitting – C, T; destructive lesion – prox. IP (foot); osteophytes – prox. IP (foot)	-
19123	19122	MNeo #	un.burial	456.6	subadult/adult *c.* 15–20 yr. ??male		-
19203	19206	MNeo #	un.burial **	712.5	subadult *c.* 13–16 yr.	periosteal new bone – rib, femur & fibula shaft; mv – wormian bones	-
19230	19231	MBA#	rpd	11.2	subadult/adult >13 yr.	-	
40017	40064	EBA#	?r. burial + rpd	12.0	subadult/adult >13 yr.	-	-
40018	40062	?EBA	rpd/?un.burial + rpd	15.2	juvenile/subadult *c.* 9–15 yr.	-	-
40073	40119	?LBA–EIA	?rpd	0.2	subadult/adult >13 yr.	-	-
40219	40220	u/d	rpd	3.1	subadult/adult >13 yr.	-	-
40413	40458	M. Neo.	?crd/?rpd	5.9	adult >25 yr.	-	-
RMC Land							
572	573	u/d	?rpd	20.1	subadult/adult >13 yr.	-	-
1102	656	LBA–EIA#	r. u.burial + rpd	5.4	subadult/adult >13 yr.	-	-
1610	1609	u/d	?r.	1.6	subadult/adult >13 yr.	-	-
1850	1851	M/LBA#	crd/?rpd	53.3	adult >18 yr.	-	-
-	4398	u/d	r.	1.9	subadult/adult >13 yr.	-	-

– direct dating (^{14}C or artefact); **/* – intact/only slightly disturbed; u. – urned; u/d – undated; un. – unurned; r. – redeposited; rpd – redeposited pyre debris; crd – cremation-related deposit; amtl – *ante mortem* tooth loss; mv – morphological variation; C – cervical; T – thoracic; IP – interphalangeal

Unburnt human bone was recovered from a single context; the remains of an inhumation burial in the upper fill of a Middle Iron Age pit (4902) in the eastern part of ICSG (Figs 4.3–4).

Methods

The fills of most cremation-related features were excavated as single entities but in five cases (four Middle Neolithic graves and one Middle Bronze Age) they were collected as between two and four contexts or samples (halves, or in one case, spits, in another both). These divisions were maintained throughout analysis to allow the detail of the deposit formation process to be studied. The weights of bone from these contexts are shown together in Table 9.1 but have been maintained separately in the archive.

Osteological analysis of the cremated bone followed the writer's standard procedure (McKinley 1994a, 5–21; 2004b). Age (cremated and unburnt individuals) was assessed from the stage of tooth and skeletal development (Beek 1983; Scheuer and Black 2000), and the patterns and degree of age-related changes to the bone (Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Gejvall 1981; Bass 1987; Buikstra and Ubelaker 1994). None of the unburnt bone survived sufficient intact for the recovery of metric data. A summary of the results from analysis of the cremated bone is presented in Table 9.1. Full details are in the archive.

Results and Discussion

Disturbance and condition

There was no intercutting between any of the discrete features from which cremated bone was recovered, nor had any suffered disturbance due to the insertion of later features.

The surviving depths of the cuts demonstrate a fairly broad range (0.04–0.34 m), with the majority (52%) being in excess of 0.1 m and a small proportion (14%) over 0.2 m. Although the range for the Middle Neolithic features in the two mortuary groups (monuments G2007–8) is similar to that of the Middle Bronze Age (0.05–0.34 m and 0.04–0.3 m respectively), the average depth is slightly greater: 0.19 m compared with 0.12 m. At 0.15 m, the mean surviving depth of the graves containing the remains of unurned burials, is slightly greater than for other categories of feature/deposit (graves with urned burials 0.11 m; all other categories 0.12 m), and the range of depths (0.05–0.34 m) is substantially broader than for the graves containing the remains of urned burials (0.09–0.16 m).

Although many features had clearly suffered some level of truncation, both in antiquity and, in some cases, during machine stripping of the site (urned burial 1109, grave 1108), it is probable that in most cases there was limited, if any, loss of bone as a result of this disturbance. The two largest quantities of bone recovered (>1000 g) came from graves 0.11 m and 0.10 m in depth, the bone itself being concentrated in the lower 0.05–0.06 m of the cuts, the burials having been made unurned. Even in the deepest grave (Middle Neolithic grave 19203 – 0.34 m deep) the unurned bone was concentrated in the lowest 0.05 m (Figs 2.10 and 2.12; sections of 19010, 19203 and 17890). The remains of five of the six Middle Neolithic burials had survived undisturbed and, given the evidence from these graves, it is likely that the remaining burial, made in one of the shallowest graves (19123 – 0.05 m deep) will also have suffered little or no bone loss. On other sites the remains of intact unurned burials from other periods have also shown shallow depths of only 0.07–0.1 m (eg, Egging Dinwiddy and Schuster 2009, figs 36–38), thus demonstrating that such deposits can survive fully intact even in what may be considered very shallow features. In contrast, some of the deepest features at this site (EV19, 1400, 40219) contained relatively little bone (3.1–93.6 g) despite there being minimal chance of bone loss in these cases. The correlation between the depth of the feature, the level of disturbance and the quantity of bone recovered is one of the key factors in assisting with the interpretation of deposit type. The vessel fragments from the remains of the Middle Bronze Age urned (inverted) burial in grave EV171 (Fig. 3.12) survived to a depth of 0.13 m but only two-thirds of the rim circumference remained; clearly substantially damaged in antiquity, a large amount of bone could have been lost from this deposit.

Much of the bone is slightly worn and chalky in appearance, but some trabecular bone (generally subject to preferential destruction in free-draining, acidic soil conditions such as the gravels and brickearths seen here; McKinley 1997a, 245; Nielsen-Marsh *et al.* 2000) was recovered from most of the graves. The most representative quantities of trabecular bone came from unurned burials of Middle Neolithic and Early and Middle Bronze Age date. The depths of these features varied from 0.1–0.25 m, and some contained redeposited pyre debris whilst others did not. In the absence of any obvious factors affecting preservation such as location, date, feature depth and known inclusions, it can only be assumed that the original presence of materials subject to subsequent loss was sufficient to cause the minor variations in the burial micro-environment necessary to enhance preservation of the trabecular bone. Conversely, most of the bone from the non-grave contexts is both visibly eroded and trabecular bone is not represented. Much of this material had been redeposited, some possibly subject to repeated manipulation, and the implied changing burial environment could have resulted in poorer preservation of the bone. A further factor could have been the more dispersed distribution of the bone within the burial environment.

The incomplete (45%) remains of an inhumation burial were recovered from the upper fill of Iron Age pit 4902 (Fig. 4.4). The remains are very heavily fragmented (old and fresh breaks), the only complete skeletal element present being one carpal bone, and the axial skeleton is very poorly represented. The surviving bone is in relatively good condition but appears very dry and prone to cortical flaking.

Demography and deposit types

Assessment of the minimum number of individuals (MNI) represented within the cremated bone assemblage is hampered by the lack of clarity regarding many of the deposit types. A variety of cremation-related deposits may contain fills inclusive of the same type of archaeological components and with a similar visual appearance (eg, McKinley 1997b; 1998). Interpretation of the deposit type has to take into consideration a number of potentially inter-related factors, including – the surviving depth of the feature and potential level of disturbance (see above); the type, quantity and condition of the archaeological components within the deposit and their relative distribution; and details related to the cremated bone itself (eg, age, sex, skeletal elements represented). Where a charcoal-rich, apparently homogenous fill is present within a feature the distribution of the archaeological components (generally cremated bone and charcoal) cannot necessarily be ascertained visually and commonly requires excavation in quadrants and, if the feature is sufficiently deep, spits (eg, McKinley forthcoming).

Unfortunately, with only a few exceptions (all from the Middle Neolithic monuments), the fills of the features containing cremation-related deposits were collected as single entities. Consequently, there is no mechanism by which the distribution of the bone within the individual features can be ascertained (comments on such distribution were rarely, if ever, recorded on site). A variety of deposit types other than the remains of burials (some graves were inclusive of secondary deposits of pyre debris; Table 9.1) are represented within the assemblage, including discrete formal or incidental deposits of pyre debris and disturbed redeposited material. In the absence of clear duplication of skeletal elements or variations in indicated age/sex, the remains from a cremation may have been deposited in several places and it cannot be assumed that the contents of discrete features all derived from different pyres.

A minimum of 23 individuals are represented within the cremated bone assemblage. The greatest numbers are from the Middle Neolithic monuments (seven individuals, 30%) and the Middle Bronze Age cemetery (eight individuals, 35%).

Middle Neolithic

With the exception of the western outlier (in cut 40413; Fig. 3.11), the Neolithic assemblage derived from the remains of unurned burials. A high proportion of immature individuals are represented within the latter (57%) including two individuals of between 3–8 years of age and two of between 8–16 years. One subadult/young adult (probably male) was identified, and two adults, both under 45 years of age. One of the latter, buried and probably cremated with the youngest individual in the group, was probably female. Although only a very small quantity of bone was recovered from pit 40413, amongst what is likely to represent redeposited pyre debris, the adult from this feature has been included within the minimum number count. The feature lay 450 m to the north-west of the contemporaneous funerary monuments and this is an improbable distance over which to maintain a link between the deposits. It should, however, be noted that in contrast with other phases of mortuary activity on the site, no redeposited pyre debris was found in association with the Middle Neolithic burial remains; this may indicate that the cremations were undertaken at some distance from the place of burial (cremated bone is readily transportable).

The proportion of immature to adult individuals from this site contrasts noticeably with the available evidence from Dorchester-on-Thames, Oxfordshire which, with an estimated 165 individuals, represents the largest comparable assemblage of Middle to Late Neolithic date from any site in England (Atkinson *et al.* 1951; Whittle *et al.* 1992). A number of provisos do need to be considered in any comparison: however, a large proportion of the cremated bone from Dorchester-on-Thames has not been fully analysed (42% Weiner 1951); some of the earliest recorded data has been slightly adapted by the writer following reassessment of the published information (Zeuner 1951; one 'adolescent' (Site I: 2) was obviously a young adult and one 'young adult' (Site II: 13) a subadult), and for all seven sites from which cremated human bone was examined (I–II, IV–VI, and 2–3; Harman 1992; Weiner 1951; Zeuner 1951) there appears to have been no consideration of the deposit types, which from the available evidence do not all appear to have comprised the remains of burials. On the basis of the published data, however, 12% of the assemblage (ie, 21% of those subject to full analysis) comprised immature individuals compared with 40% adults (69%); the remaining 10% were classed as subadult/adult ie, >13 years. It should be noted, however, that there were differences between the individual sites at Dorchester-on-Thames; eg, Site II 9.1% immature (Zeuner 1951), Site IV 44% (Weiner 1951) and Site 2 24% (Harman 1992). Whilst these may represent a genuine reflection of variations between the individual assemblages, it may also in part reflect the level of experience of those undertaking the analyses. A slightly closer balance to that seen at ICSG was recorded from Llandegai Site A, Gwynedd, where of the eight individuals of this date identified, 62% were adult and 37% immature (Bayley and Cook, 2004; McKinley 2004c).

The probable sex of the individual was attributed to only 10 adults from Dorchester-on-Thames; six males and four females (Harman 1992; Weiner 1951; Zeuner 1951). One other probable male was identified during a recent rapid scan of the material from Sites I and II by the writer (the attribution of further identifications were hampered by the obvious mis-numbering of collections). What is clear from even this small amount of data is that funerary monuments of this form were not exclusive to one or other sex, and included individuals across a wide age range.

Early Bronze Age

The two individuals identified, were both from urned burial remains (though one was disturbed and redeposited), comprised a mature/older adult male from grave 16669 and a subadult/adult (>13 years) from grave 40017 (Fig. 3.11). The only other deposit possibly of this date (cut 40018) appears more likely to represent redeposited pyre debris than the remains of an unurned burial with pyre debris, but the immature individual has been included in the minimum number count since, given the age, date and location, it is unlikely that bone from the same pyre is represented elsewhere within the assemblage. Little other evidence of this date was recovered from the site. No burials of this date were recovered in the recent investigations at Perry Oaks (Framework Archaeology 2006) and Heathrow Terminal 5 (McKinley 2010) to the south-west, or from Cranford Lane (MoLA in prep) to the east.

Middle Bronze Age

A minimum of eight individuals were identified from the Middle Bronze Age cemetery (Figs 3.11–12), one from each of the eight graves. Although there is doubt over the deposit type represented within the latter, no remains within this age range were recovered from any of the contemporaneous burials. The very small amount of immature bone present within feature EV170 could have derived from the same cremation; whether this would have formed an incidental deposit within a pre-existing feature or a ritual deposit made deliberately in addition to the burial remains a matter of conjecture. Similarly, the small amounts of bone recovered from the four other features within this group could have derived from the same cremation as one or more of the individuals represented within the identified burials.

Both immature individuals (three = 38%) and adults (four = 50%) are represented in the cemetery; it was not possible to give an age closer than >13 years to the remaining individual. The adult age groups are very broad, with only two being subject to greater definition within the mature/older adult range, and it was possible to suggest the sex of only one – a probable female. This small cemetery was situated 150 m to the north-west of what appears to have formed the focus of Middle Bronze Age activity on the site, potentially indicative of a small settlement just beyond the area of investigation (see Chapter 3). Whilst unlikely to be representative of the population of such a settlement as a whole, even over a short phase of its occupation (a greater proportion of immature individuals at least would be anticipated), it was clearly a recognised and maintained mortuary area for a domestic occupation group. Similar, though generally smaller burial groups and singletons of Middle to Late Bronze Age date have been recovered from various investigations within the vicinity, eg, Prospect Park (Andrews 1996), Perry Oaks (Framework Archaeology 2006) and Heathrow Terminal 5 (McKinley 2010), giving the impression of a sparse dispersed rural population.

Cremated bone from among the pyre debris was recovered from feature 19230, which cut the outer ditch of Neolithic double ring ditch G2007 (Fig. 2.9), is noticeably more worn and chalky than most, suggesting it has been subject to repeated manipulation.

Middle/Late Bronze Age

Although the single deposit dated to the transition between the Middle and Late Bronze Age (NZA-30921 2904±30 BP 1210–1000 cal BC at 95% confidence) appears unlikely to represent the remains of a burial (feature 1850 at RMC Land; Table 9.1, Fig. 3.11), the nearest potentially contemporary burial remains (in grave 1102 – Late Bronze Age/Early Iron Age) lay 115 m to the south-west (see below).

Late Bronze Age/Early Iron Age

The Late Bronze Age/Early Iron Age deposits were particularly problematic in terms of interpretation of deposit type. A minimum of two individuals have been allocated to this period, both subadult/adult. One was from the remains of isolated unurned burial (grave 10001) on the southern edge of the ICSG Area B (Fig. 3.11). In the second case, from the western edge of RMC Land (Area 1), a very small quantity of bone was recovered from the charcoal-rich fill of feature 1102 (0.14 m deep; Fig. 3.17) together with the base and a 0.03 m depth of a Late Bronze Age vessel; the deposit appears to represent the disturbed and redeposited remains of urned burial. The minuscule quantity of bone recovered from feature 1007 (0.11 m deep) on the eastern side of the Middle Bronze Age cemetery (Fig. 3.13). The small quantities of bone from the three remaining features attributed to this phase of activity (1301, 17946 and 40073) were obviously redeposited and in two cases have been phased by the presence of small quantities of residual pottery. In both cases the bone could have originated from one of the same cremations as already represented in the minimum number counts given.

The one deposit of unburnt bone from the site (feature 4902) represents the remains of a Middle Iron Age inhumation burial of an adult (25–35 years), probably male. There is very little evidence for prehistoric inhumation burials from the broader vicinity (Fig. 4.4); though poor bone preservation could in part be a factor in this apparent absence. No such remains were found at Prospect Park, Perry Oaks or Cranford Lane (Andrews 1996; Framework Archaeology 2006; MoLA in prep) and only a single Middle Bronze Age burial was recovered from Heathrow Terminal 5 (Geber 2010). The heavily fragmented and eroded remains of 10 prehistoric inhumation burials were recently recovered from Horton (Wessex Archaeology 2009b), 8 km to the south-west. Most of these could not be radiocarbon dated as insufficient collagen survived; however, of the three that could be dated one is Late Neolithic, another is Middle Bronze Age and a third is late Saxon (Chaffey *et al.* forthcoming). As with the cremation burials at ICSG the Horton examples clearly demonstrate the dangers of assuming date from spatial association alone.

Romano-British

A minimum of one middle Romano-British individual was identified from the urned burial in grave 16427 (Fig. 4.6). The neighbouring deposit (in feature 16440) could be redeposited pyre debris from the same cremation. Romano-British singletons of late and unspecified Romano-British date have been recovered from two other sites in the immediate vicinity, Heathrow Terminal 5 (McKinley 2006; Framework Archaeology 2010) and Prospect Park (Andrews 1996, 21). The presence of dispersed burials of this date, demonstrating similar characteristics in number and location to their prehistoric counterparts, suggests a continuity in landuse and population in this area over a long period.

Undated

Two of the undated deposits, in features EV19 and 16452 at ICSG, are of uncertain form (Fig. 3.11); they could possibly be the remains of unurned burials with redeposited pyre debris, but on balance appear far more likely to represent redeposited pyre debris potentially related to other deposits on site. All other undated contexts contained very small quantities of bone (20.1–0.1 g, mean 4.5 g, often from relatively deep features of 0.05–0.22 m), mostly redeposited and, although scattered across the area of investigation, they could again be related to material recovered from other features. Consequently, none of these remains have been included in the minimum number count.

Pathology

Pathological lesions were recorded in the remains of seven individuals from the cremated bone assemblage; four Neolithic, one Early Bronze Age and two Middle Bronze Age (Table 9.1). Low bone weights and poor bone survival (particularly the under-representation of trabecular bone) are major influences on the potential for recording pathological lesions in cremated remains. It is probably significant that although lesions were observed in the remains of only 30% of the MNI within the assemblage, they were recorded in 50% of those deposits containing over 200 g of bone (see below). Lesions were also observed in the remains of the one inhumed individual.

Evidence for dental disease is largely confined to the unburnt human remains; in cremated remains such evidence is generally limited to conditions affecting the supportive structure. This is because during the cremation process the enamel of erupted teeth (mineral as compared with the combined mineral and organic of bone) commonly shatters in the intense heat, and even in the rare cases where fragments are recovered there is usually insufficient to preserve evidence of dental caries, calculus or hypoplasia. *Ante mortem* loss of a mandibular molar (1/15 sockets) was observed in the remains of the Early Bronze Age adult male. Most of the dentition survived in the remains from the Middle Iron Age inhumation grave (25 socket positions, 30 teeth). Moderate dental calculus (calcified plaque/tartar; Brothwell 1972 fig. 58) was observed on most teeth, especially the labial side. Slight periodontal disease (gingivitis) had affected most of the surviving alveolar margin. Dental caries, resulting from destruction of the tooth by acids produced by oral bacteria present in dental plaque, were recorded in

10% of teeth (3/30); all are slight–moderate interproximal lesions.

Very slight, patchy fine-grained periosteal new bone was observed in a few bone fragments from several skeletal areas in the remains of the Middle Neolithic subadult 19206. Lesions were seen in a minimum of one fragment (of 80) of rib shaft, three fragments (of 40) of femur shaft and four fragments (of 13) of fibula shaft. Incomplete skeletal recovery and fragmentation of the bone hampers diagnosis but there are no indications of trauma, or a wider or deeper bone infection in the recovered bone. The lesions suggest the infection may have been relatively mild and/or in its early stages. Involvement of the ribs may indicate a focus in the lungs spreading through the blood stream into the lower limb bones and possibly elsewhere. Whatever the cause, the effect on the individual would have debilitating and painful (Roberts and Manchester 1995, 126–31). Coarse lamellar new bone on a fragment of fibula shaft (one of nine) from Early Bronze Age grave 16669 provides evidence for a healed infection in the lower limb bone. No potentially associated lesions were observed in other bones of this large assemblage, and the infection may have been localised affecting the overlying soft tissue.

Three of the 100 vault fragments recovered from Middle Neolithic grave 17890 (juvenile/subadult) show marked hyperporosity over a minimum 15 mm diameter area (exocranial). Slight hypervascularity was also observed to some fragments of adult occipital vault from grave 19006. Increased blood supply, creating such lesions in the skull, can result from repeated scratching such as may occur with a chronic infestation of head lice. Lice tend to congregate in the occipital area due to the blood supply in that region (L. Capasso Palaeopathology Association Conference, Durham 2004) and it is most likely that the lesions in the adult skull reflect such an infestation. The lesions in the immature skull were more marked and the area affected was not clear. There was, however, no noticeable thickening of the diploe as would be expected in porotic hyperostosis (indicative of iron-deficiency anaemia; Stuart-Macadam 1991, 101) and it is likely that some skin irritant causing the individual to scratch persistently was the probable cause of the lesions in this case as well, though metabolic conditions such as scurvy or anaemia cannot be fully dismissed.

Most of the other observed lesions are generally degenerative in nature, indicative of osteoarthritis and physical stress reflective of age-related wear-and-tear. Only four spinal and four extra-spinal articular surfaces survived in the unburnt skeletal assemblage, where very slight osteophytes (marginal new bone) were recorded in the atlas anterior facet.

Pyre technology and cremation ritual

Oxidation

Most of the cremated bone is white in colour, indicative of full oxidation of the organic components (Holden *et al.* 1995a and b). A few bone fragments from eight deposits (three Middle Neolithic, four Middle Bronze Age and one Romano-British) exhibit colour variations indicative of incomplete oxidation. The variations are very minor, involving slight blue or grey colouration of one or more fragments from any one skeletal element; there are no cases where the complete element was affected. Elements of the upper limb were most frequently affected (six cases; Neolithic and Middle Bronze Age) with involvement of the hand bone in most instances. Lower limb elements, particularly the femur, were affected in four cases (all periods); the axial skeleton in three cases (Neolithic and Middle Bronze Age); and the skull in only one case (Neolithic).

The minor variations recorded are relatively common and do not signify any specific fault in the cremation process (McKinley 1994a, 72–81; 2000a), but there a few interesting observations which may be reflective a variations in practice. Poor oxidation of the hand bones is not uncommon and may be indicative of their position in laying-out. If the hands were laid across the body they may be shielded from the heat of the pyre and not attain the necessary temperature for long enough to ensure full oxidation of the bone. Similarly, if laid to the side of the body on an overly-narrow pyre, their peripheral position would again result in insufficient heat being available for full oxidation. The interesting observation in this instance is that the hand bone were affected in all three cases of poor oxidation in the Middle Bronze Age (all adults) compared with only one from the Neolithic (a subadult). The single case involving the skull is also noteworthy in that only the left side was affected (mandible, facial and vault fragments) together with the left scapula. This suggests that the oxygen necessary for cremation and/or the heat source was cut off from the left upper body/skull, probably relatively early in the cremation process. This could have been effected by some form of muffling/insulation to the left side of the head/shoulder as may be provided by the head being laid on or covered by some thick fur/leather/textile.

Similar levels of variability in oxidation were observed in the prehistoric and Romano-British cremated remains from Heathrow Terminal 5 and Prospect Park (McKinley 1996; 2006) but there is no evidence supportive of any general temporal patterns. Middle Neolithic material from sites elsewhere has been recorded as fully oxidised, for example at Dorchester-on-Thames (pers. obs. bone from Sites I and II; limited comment in published reports but it is not incompletely oxidised as suggested by Zeuner

(1951)), Sarn-y-bryn-caled, Powys (Stead 1994), and Llandegai Henge A (McKinley 2004c).

Bone weight

Some discussion pertaining to the weights of bone within the overall range of cremation-related deposits and the potential effects of disturbance and redeposition has been included in previous sections, and the following discussion will be limited to the *in situ* burial remains. Inevitably, the quantities of bone most representative of those originally included in a burial will be obtained from undisturbed deposits. Where graves have been subject to extensive truncation bone may have been lost either by physical removal or due to increased pressure/resultant micro-variations in the burial environment leading to greater fragmentation of the bone and its chemical degradation; though there seems to be limited evidence for the former at this site (see above).

The range of weights recovered from the Neolithic burials is broad (236.1–1266.1 g, with a mean of 671 g), but these figures include individuals of all ages and both the disturbed burial and the dual burial. The undisturbed burials have the same range but a slightly higher average of 787 g, despite still including the immature individuals. The range of weights for the latter group is 236–712 g with a mean of 401 g. The undisturbed adult burial contained a substantial proportion of the bone which would have remained following cremation (79.1% by weight of the average expected from an adult cremation; McKinley 1993). As is often observed, the number of individuals within the burial need not necessarily greatly affect the weight of bone recovered, particularly where one of the individuals (as is often the case) is immature, as here; the dual burial contained the third greatest weight of bone within the assemblage.

Comparative data also suggests very broad weight ranges for Middle Neolithic burials, often with a high proportion of deposits of >1000 g but with variable average weights from individual assemblages. Direct comparison is frequently hampered by a lack of data relating to levels of disturbance, the age/sex of individuals and little or no consideration seems to have been given to possible variations in types of deposit. The original examination of material from Dorchester-on-Thames Sites I and II included no bone weights only subjective comments on quantity (Zeuner 1951). An attempt was later made to rectify this omission (Weiner 1951, table VIII) but the weights for Site I are clearly incorrect since they do not tally with the earlier descriptions; 'very large quantities' are smaller in weight than those described as 'a small amount'. This discrepancy does not seem to have occurred for Site II and these weights may be correct, however, neither data set corresponds with the assemblage in its current state (pers. obs. 2009). Each of the Dorchester-on-Thames sites show a different average – 907 g Site II, 494 g, 504 g and 755 g from Sites IV–VI (Weiner 1951; excluding weights of <75 g which were clearly either very disturbed or not burials as such) – and very broad weight ranges – 220–1815 g, 75–1680 g, 243–985 g and 78–3933 g respectively (*ibid.*). Some of the higher weights are due to the burials containing the remains of more than one individual, though, as previously observed, the relationship is not consistent. The one 'multiple' burial from Site V weighed only 426 g; the 'single' burials from Site VI had a mean weight of 715 g and the 'multiples' 1770 g (though several of former had higher weights than the latter; *ibid.*); all six of the 25 deposits from Site 2 (Harman 1992, table 1) comprising >1000 g of bone were multiple burials, though, yet again, some multiple deposits included smaller quantities of bone than some of those of single individuals.

The weight of bone recovered from the undisturbed Early Bronze Age burial in grave 16669 (1155.3 g), the second highest recorded from the site, represents 72.2% by weight of the average expected from an adult cremation (McKinley 1993). It lies in the upper range of weights recovered from Bronze Age burials and at the lower end of the consistently high range of weights recovered from primary barrow burials (902–2747 g, average 1525 g; McKinley 1997b).

None of the remaining burials were undisturbed and the comparatively low weights of bone recovered may, at least in part, reflect variable levels of bone loss as a result either of direct removal or, more likely in this case, of accelerated disintegration of trabecular bone in particular (see *Disturbance and condition*, above). The average weight of bone from the Middle Bronze Age urned burials is 272.6 g, but this was doubtless significantly reduced by one very low weight in the group (range 11.2–643.3 g). The weight from the Late Bronze Age unurned burial in grave 10006 (216.1 g) is also low, and that from the urned Romano-British burial in grave 16427 (86.8 g) is particularly so. The results for all these periods are below the respective averages, those for the Bronze Age generally falling in the 300–500 g range with a large minority of much greater weights (>900 g; McKinley 1997b), and those for the Romano-British in the 400–600 g range (McKinley 2004d, table 6.6). Similar below average weights have, however, been recorded from several sites in the region including Heathrow Terminal 5, with a range of 54.2–252.8 g and an average of only 120.8 g from the prehistoric subadult/adult burials, and a slightly higher weight of 300.5 g from the Romano-British burial (McKinley 2010), and the Romano-British burials at Prospect Park (average 128 g; McKinley 1996 table 14). As at ICSG/RMC Land, it was postulated that the

Table 9.2 Maximum recorded fragment size and distribution (weight) by sieve fraction (burials only)

Phase	*Deposit type*	*Maximum fragment*	*Majority sieve fraction*
Middle Neolithic	unurned burials */**	24–73 mm; average 45 mm 35–73 mm; average 57 mm (adults only)	most 5 mm (46–61%) one juvenile 2 mm (50.4%) one adult 10 mm (50%)
Early Bronze Age	unurned burial	57 mm	5 mm (48%)
Early/Middle Bronze Age	unurned burial	34 mm	5 mm (55%)
Middle Bronze Age	urned burials	19–30 mm; average 28 mm	most 5 mm (44–69%) one adult 2 mm (50%)
	unurned burial	29 mm (subadult)	5 mm (64%) subadult
Late Bronze Age	unurned burial	40 mm	5 mm (50%)
Middle Romano-British	urned burial	37 mm	5 mm (53%)

apparent shortfall may be reflective of taphonomic factors. If this were the case, however, it suggests that there was sufficient variation in the burial environment of the earlier prehistoric burials to ensure their better preservation; this, in turn, implies either a temporal change in landuse sufficient to effect the burial micro-environment, or variations in the cremation burial practice which are currently not detectable.

Fragmentation

A variety of factors can affect the size of cremated bone fragments, many of which are exclusive of any deliberate human action other than that of cremation itself (McKinley 1994b). In this instance, the presence of an urn does not appear to have afforded the bone the additional protection from the burial environment commonly observed (Table 9.2). The lack of disturbance to the deposit does, however, demonstrate the anticipated positive effect as demonstrated by the higher average maximum fragment sizes in Middle Neolithic deposits, despite the high number of immature individuals (where one would expect to see lower maximum fragments sizes anyway). Those deposits inclusive of large quantities of bone (>1000 g) consistently included the largest fragments (57–73 mm), despite the majority of the bone (47%) in all except one case being recovered from the 5 mm sieve fraction.

According to Zeuner (1951) the bone from Sites I and II at Dorchester-on-Thames 'scarcely [included] a maximum dimension exceeding two inches [51 mm] and the great majority were less than half an inch long' [13 mm]. These figures suggest the remains to be of a commensurate size to those from ICSG; the writer, having undertaken a rapid scan of the remains, would say that the maximum fragments are likely to be slightly greater than stated by Zeuner, and that it is probable that the majority of the bone would be collected in the 10 mm sieve fraction (it was also noted that a large proportion of trabecular bone survived suggesting taphonomic bone loss and degradation was not a major problem). Weiner (1951) also indicates a maximum fragment size of 50–60 mm for the remains from Sites IV–VI. Most of the bone from Site 2 was between 25–>50 mm in size, whilst most of that from Site 3, where the bone weights were substantially lower (max. 275 g), was between 0–50 mm (Harman 1992, tables 1 and 2). At Site 2 only five deposits were undisturbed by later ploughing and at Site 3 the implication is that all the deposits had probably been disturbed (Whittle *et al.* 1992, 155 and 174). The bone from burial A111 at Llandegai Henge A was also observed to be relatively highly fragmented and there, as at Dorchester-on-Thames (Weiner 1951; Zeuner 1951), it was suggested that some deliberate fragmentation of the bone may have occurred in addition to that that which would result in the normal sequence of events (cremation; during collection of the bone for burial; as a consequence of disturbance; and during excavation) (McKinley 2004d). Such may also have been the case at ICSG, but if so it certainly did not comprise any systematic pounding-up of the remains, and may reflect a variation in pyre tending and additional handling in collection for burial which could result in increased fragmentation of this naturally very brittle material (see below).

The Neolithic remains from the site tend to have been preserved as larger fragments than their later counterparts. Similarly high levels of fragmentation to the latter were also observed in the bone from Heathrow Terminal 5 (McKinley 2010), that from Perry Oaks and Prospect Park being close but slightly less fragmented (McKinley 2006; 1996). In all these cases taphonomic factors were believed to be the major factor, after cremation, influencing the observed high levels of fragmentation.

Skeletal elements

Bone weight and fragmentation both affect the proportion of the burial remains it is possible to identify to skeletal element (a named bone within one of the four skeletal areas). The highest proportions were within the Middle Neolithic (29–54% by weight, mean 40%) and the Early Bronze Age burials (44%). Amongst the more fragmentary Middle and Late Bronze Age burial remains much lower proportions of the bone could be identified to element (10–36%; average 20%).

As is usually the case, other than where only a very small quantity of bone was recovered due to disturbance (Middle Bronze Age grave EV171), each burial contained bone fragments from all four skeletal areas. As is commonly observed, elements of axial skeleton were under-represented in many cases due to taphonomic factors (see *Disturbance and condition*, above). Conversely, skull elements were frequency over-represented due to their ease of identification even as small fragments, particularly amongst the remains of immature individuals; for example, 71%, 82% and 78% of the identifiable skeletal elements from graves 19010, 1206 and 1208 respectively, comprised skull. An unusually high proportion of skull elements was identified within two of the Middle Bronze Age adult burial remains, 60% from grave 1100 at the expense of axial elements and 66% from grave 1104 at the expense of upper limb. In both cases, however, only very small proportions of the bone was identified to skeletal element (14% and 10% respectively) and this, rather than deliberate selection, is likely to be the major factor influencing the imbalance. There is no obvious link in terms of date, and age and/or sex of the individual for the other observed slight variations, and there is no clear indication of the recovery of specific skeletal elements for burial.

Small bones of the hand and foot and fragments of tooth root/enamel were recovered from most burials of all periods with the exception of those of Romano-British date. Between four and 33 such elements (average 21) were included in the Middle Neolithic graves; the highest frequency was from those graves with the greatest weight of bone, which were also the graves of adults. The greatest number (45) were from the Early Bronze Age grave (16669) of an adult male. An average of 16 were recovered from the Middle Bronze Age graves, with both the highest and lowest numbers (26 and five) from the remains of adult burials. The fewest (eight) came from amongst the Late Bronze Age subadult/adult remains.

The frequency of these small bones suggests that different methods of recovery of bone from the pyre site were employed between, and possibly to some extent within, phases. Hand collection of individual bones from the pyre site would tend to give a bias towards the recovery of the larger bones, the very small bones being more difficult to distinguish and more likely to be masked by wood ash. Raking or scraping-off of the upper levels – where the bone would be concentrated – of the *in situ* pyre debris, with some subsequent form of winnowing (using a basket or water), would be more likely to ensure the random recovery of all bone including the smaller elements (McKinley 1997a, 68). The lack of these small elements within the Romano-British burial suggests hand-recovery of bone, whilst the large numbers in most of the prehistoric burial remains suggests en masse recovery and winnowing in most cases. This latter mode of recovery is also suggested for the Middle Neolithic burials from Dorchester-on-Thames (Sites I and II at least; Zeuner 1951), burial 1 from Sarn-y-bryn-caled (Stead 1994) and Llandegai (McKinley 2004c), where relatively large numbers of these small elements were also reported.

Multiple burials

Only one burial (19008) contained the remains of more than one individual, a young adult female and an infant, made within the Middle Neolithic grave 19006, central to the double ring ditch (G2007) (Fig. 2.9). This form of multiple burial, and by implication cremation, comprising an adult (commonly but not exclusively female) together with an immature individual, represents the most frequently encountered combination within any period in which the mortuary rite was practiced (Petersen 1981; McKinley 1997b; 2000b). Although difficult, if not impossible to prove, there is an understandable presumption for a direct familial relationship between the individuals in such cases; there is certainly documentary evidence from the Romano-British period for the dual cremation of mother and child together, where both have died as a result of the same infection (Hope 2007, 20).

The writer has previously noted that on average 5% of Bronze Age cremation burials have been found to contain the remains of two, or more rarely three, individuals (1997b). Not all sites with cremation burials will include multiples, especially when individual period assemblages are relatively small as here, but figures from elsewhere suggest that the frequency within Middle to Late Neolithic deposits is generally greater than encountered in other periods. At Dorchester-on-Thames multiple burials were recorded from three of the sites: a single multiple (adult and child) from Site II (Zeuner 1951); 12.5% of the burials from Site VI, most comprising the remains of two individuals with one burial containing three (no ages given; Weiner 1951); whilst at Site 2, 10 of the 25 deposits (40%; though three were probably not burials) were recorded as comprising multiples, mostly of two or more adults (maximum five; Harman 1992). At Llandegai, burial A111 contained the remains of two adults and a neonate (McKinley 2004c). These apparently high frequencies, not only of multiple burials but the number of individuals represented within each deposit, suggests a variation in practice from that seen at other periods, perhaps indicative of a more communal rite. What is not always clear, particularly in some of the cases where three or more individuals are recorded, is how much of each individual is represented within these multiple deposits. Do they represent a 'representative proportion' of each individual suggestive of combined cremation and co-mingling of remains, or are the duplicate bone fragments singletons more suggestive either of incidental contamination on a re-used, or inefficiently cleared pyre site, or 'token' inclusions of curated fragments (*memento mori*) from earlier cremations?

Pyre goods

Small quantities of animal bone (see Grimm, below) were recovered from three of the Middle Bronze Age burials (graves 1100, 1107 and 1208), together with a small globule of copper alloy (the re-solidified remnants of a melted copper alloy artefact) also from grave 1107. A copper alloy globule was also recovered from the spread of soil (1009) in the main concentration of burials. Animal bone was also recovered from EV19 (undated) and 16440 (MRB). The inclusion of animal offerings on the pyre is a common characteristic of the rite; for example, an average of 15% of Bronze Age burials from a sample of 31 cemeteries contained cremated animal bone (McKinley 2000b).

Pyre debris

Varying quantities of redeposited pyre debris were recovered from the fills of all the graves with the exception of those of Middle Neolithic date. Most, if not all of the deposits appear to have been made subsequent to the burial, be that urned or an unurned one where the concentration of bone at the base of the grave suggests the original presence of some form of organic container. As outlined above (*Demography and deposit types*), where small quantities of bone (<100 g) were recovered from charcoal-rich fills within relatively deep cuts it could not always be stated with confidence that the bone had either been concentrated or dispersed within the general fill; hence the questionable interpretation of deposit type in these cases. A dispersed distribution suggests bone retained with the rest of the pyre debris for deposition rather than bone collected for formal burial; for example, the homogenous spread of a mere 20 g of adult bone (1% of the expected weight of bone from an adult cremation; McKinley 1993) from the 0.3 m deep cut 1400 is representative of a deposit of pyre debris rather than a burial. Such a variety of deposit types is frequently represented within the mortuary rite as a whole across the temporal range (eg, McKinley 1997b; 2000c), and the presence of pyre debris is believed to indicate the proximity of the pyre sites to the place of burial even where no direct evidence for the former survives.

In view of the latter observation, the absence of pyre debris from any of the Middle Neolithic deposits is of interest. Redeposited pyre debris was also notably absence from the majority of the burials at Dorchester-on-Thames, being recorded in only three graves from Site VI with a passing reference (slightly contradictory in view of its reported absence in the earlier investigations) to small amounts at Site 3 (Zeuner 1951; Weiner 1951; Atkinson *et al.* 1951, 12, 40, 47, 49; Whittle *et al.* 1992, 174). Although the excavators interpreted the fuel ash from pit D at Site II as pyre debris (*ibid.*, 32), the only bone recovered with it appears to have been animal; although the deposit may have been associated with the overall mortuary rite, the absence of any cremated human bone renders its interpretation as pyre debris questionable. Pyre debris was recorded at both Llandegai A and Sarn-y-bryn-caled Site 2 (Lynch and Musson 2004; Gibson 1994), illustrating that its absence from ICSG and Dorchester-on-Thames cannot be a general temporal variation. A geographic temporal variation may be indicated, however, at least in burial practice if not in the location of the graves in relation to the pyres. The possibility of the latter has been suggested at ICSG by the Middle Neolithic outlier 40413 (see above).

Formation processes

As outlined above, very little pertaining to the burial formation process can be ascertained due to the excavation methodology. In the four cases where grave fills were half-sectioned some further detail could be extracted, but there are limitations regarding interpretations due to the inconsistency of recording. There was a significant difference in the distribution of the bone within the fill in only one case, grave 19006, where 72% lay in the northern half of the grave. In grave 17890, 64% of the bone was in the eastern half; in 19010, 57% lay in the southern half; whilst there was an even distribution in grave 19013.

Animal Bone

by J. M. Grimm

Introduction

Of the 13,755 fragments (or approximately 81 kg) of bone recovered from the site, 9001 were selected for full analysis and of these 2079 (or 23%, Table 9.3) could be identified to species. The assemblage includes material of Neolithic to medieval date. Most of the identified bone fragments are from late Saxon/early medieval (54%), Late Iron Age/Romano-British (19%) and early Saxon (17%) contexts (Tables 9.3–4). Bones were recovered from a variety of contexts including ditches, gullies, pits, waterholes,

Table 9.3 Characteristics of the sub-assemblages within the RMC Land/ICSG assemblages

Period	*Number of fragments*	*Preservation index*	*NISP*	*Average weight (g)*	*Loose teeth %*	*Eroded %*	*Laminated %*
Prehistoric	1332	2.1	119	4.3	31	45	10
LIA/RB	3953	2.6	398	2.4	29	7	23
Early Saxon	1136	2.9	357	7.2	1	-	7
Late Saxon/early medieval	2417	2.9	1130	12.6	10	-	6
Medieval–modern	163	2.7	75	12.7	55	5	18
Total	9001	2.6	2079	6.3	25	10	14

Preservation Index is 'preservation stage x number of bones' / 'total number of bones in the assemblage'
Loose teeth % based on NISP total

cremation graves and a midden deposit. Most fragments were collected by hand during the normal course of excavation; an additional small amount of bone was recovered from the residues of sieved bulk soil samples from selected contexts. A small number of features (for example 22 out of 291 features, or 7.5%, from ICSG) were undated or could not be phased due to the lack of associated artefacts; the animal bone recovered from these contexts is of limited value and will not be further discussed.

For each animal bone fragment, the following characteristics were recorded where applicable: species, bone element and side, fusion, mandible wear stages (following Grant 1982), sex and age measurements (von den Driesch 1976). Sheep and goat were differentiated using the data published by Prummel and Frisch (1986). The atlas published by Prummel (1987) was used to identify foetal bones from domestic species. Butchery marks were recorded using the coded system developed by Lauwerier (1988) and burnt areas were described following Wahl (1981). Gnawing, preservation condition (very poor, poor, fair, good and excellent) and completeness (zonation after Serjeantson 1996) were also recorded. Conjoining fragments were counted as one bone in order to minimise distortion. Fragments that could not be identified to species or family were recorded as small, medium or large mammal, and bird or fish. The following quantification methods were used were appropriate: number of identified specimens present (or NISP), bone weight (or BW) and minimum number of individuals (or MNI). A database detailing the results of the analysis can be found in the site archive together with digital photographs of the bones with signs of pathology mentioned in the text.

Bone preservation across the site is relatively poor due to adverse soil conditions (ie, acidity); as a result only 23% of fragments could be identified to species (Tables 9.3–4). The size of the dataset obtained for individual phases of occupation at the site is therefore quite variable and this limits the scope of detailed analysis and comparison at the intra-site level. For example, Hambleton (1999, 39–40) has demonstrated that the optimum sample size for a reliable assessment of the relative importance of livestock species, and therefore the economy of a site, is an NISP count for livestock species over 300. Only the Late Iron Age/Romano-British (NISP 374) and late Saxon/early medieval (NISP 677) phases of occupation meet this minimum criterion. The early Saxon assemblage falls just outside this, with a combined cattle, sheep/goat and pig NISP of only 255. These main phases are therefore the focus of the report; the small samples from the other phases are only briefly described in the following sections.

Taphonomy

Both sites are situated on the expansive brickearth deposits of the Lynch Hill Terrace between the rivers Colne and Crane. The silty clay soil type is very acidic, and therefore not conducive to the good preservation of bone.

The prehistoric bone is generally poorly preserved and eroded (Table 9.3), and the average weight of bone fragments is low. Analysis of the types of skeletal elements present indicates that the proportion of loose teeth is relatively high at 31% NISP. This bias reflects the durability of the different calcified tissues that make up the mammalian skeleton. Teeth, which are made up of three different calcified tissues (ie, enamel, dentine and cementum), contain less organic material (ie, collagen) than bone, which effectively means that they are more stable (ie, durable) in unfavourable burial environments.

The material from the Late Iron Age/Romano-British period is slightly better preserved however much of the bone is laminated (ie, has a flaky cortical surface), which suggests that the assemblage has been subjected to repeated episodes of wetting and drying due to a fluctuating water table. The assemblage shows a similar preservation bias to the previous phase, namely a bias toward more durable elements such as teeth, which make up about 29% NISP for this phase. Fragment weight is also very low as in the proceeding phase; however, in this instance it reflects the fact that 50% of the assemblage comes from soil samples rather than hand-collection.

The material from the early Saxon and late Saxon/early medieval periods is moderately well preserved in comparison to the assemblages from earlier phases and this is reflected in the low proportion of loose teeth relative to post-cranial bones and the higher average weight of fragments. Bones are less affected by fluctuations in the water table than before, as reflected by the lack of laminated bone. The medieval to modern assemblage is also moderately well preserved, however the high proportion of loose teeth indicates reworking.

Gnaw marks were seen on only 1% of all the bones but this is probably a reflection of poor bone preservation and does not necessarily indicate that gnawing was not a significant taphonomic factor. Indeed the percentage of gnawed bones was higher for the better preserved assemblages from later phases. Most of the gnawing was observed on the articular end of long bones; these areas are hard to de-flesh completely during butchery or food preparation and are therefore favoured by scavengers.

A significant number of burnt bone fragments were recovered from the site (23% NISP). Burning removes the organic component of bone, effectively making it more stable than unburnt bone, and on sites with generally poor preservation it is important not to over-emphasis the significance of this type of evidence. It is, however, worth noting that the proportion of burnt bones is particularly high (45%) for the Late Iron Age/Romano-British period, compared to just 1–7% for the other periods. Most of the identified burnt material was attributed to sheep/goat, but some fragments of cattle and pig bone were also burnt. Most bones were burnt bluish-grey in colour, which indicates temperatures of 550°C (Wahl 1981, 159). Bone does not discolour when meat is cooked or roasted, which means that the discoloured fragments are the result of deliberate waste disposal practices, for example the burnt sheep/goat bones from three Late Iron Age/Romano-British pits G0346, G0347 and G0348 at ICSG. However, some of the burnt bone could result from more ritualised acts, such as, for example, food offerings made during cremation rites (see McKinley Table 9.1).

Prehistoric

Little can be established about prehistoric animal husbandry practices or the economy of the site before the Late Iron Age/Romano-British period due to the small size of the sample (119 identified bones). However, some confirmation of the species kept and possible ritual behaviour could be identified.

Neolithic

The Early Neolithic assemblage comprises just one cattle rib fragment, this was recovered from feature G2004 at ICSG. All three livestock species are present in the small Middle Neolithic assemblage. At RMC Land, pit 2817 contained a pig first phalanx and maxillary tooth from a subadult animal, and tree-throw hole 5638 (close to pit 5616) contained a cattle carpal/tarsal, the fragmented remains of several cattle teeth, and a fragment of sheep/goat metapodial. The cattle and sheep/goat remains are all from adult animals. Several small unidentifiable fragments of calcined animal bone were recovered from the backfill (context 5784) of pit 5783.

Early Bronze Age

The hollow and shaft (ICSG, G288), which could be Early or Middle Bronze Age (see Chapter 2 above), contained a heavily fragmented red deer antler, a fragmented large bovine horncore from the upper fills and a fragment of cattle skull (petrosum). Samples of the horncore and antler were sent for radiocarbon dating, but unfortunately both contained insufficient collagen – see Chapter 11) It is possible that special significance was attached to the deposition of the antler and horncore (for example see Brück 1999; Proctor 2002), particularly since the antlers might have been used as a pick to dig the shaft (see for example Serjeantson 1995). The fragmented state of the horncore makes it impossible to confirm if it derives from an aurochs or cattle. The latest dated aurochs specimens in Britain are both from Somerset (ie, Charterhouse Warren Farm and Porlock Weir), both have been radiocarbon dated to the Early Bronze Age (Yalden 1999, 109; J. Weinstock and V. Straker pers. comm.). The partial remains of an Early Bronze Age aurochs have also been recovered from Holloway Lane in the borough of Hillingdon (MoLAS 1993, 21–2; Cotton *et al.* 2006). A fragment of cattle metatarsal was present in possible Early Bronze Age pit 1215.

Middle Bronze Age to Late Bronze Age/ Early Iron Age

There was little material from the ditches of the Bronze Age field system at either site, although the left piece of a cattle humerus shaft was found in ditch G2012 from ICSG.

Animal bone fragments were recovered from a few other Middle Bronze Age features, including wells 11093 and G545 at ICSG, and pit 2824 and well 3918 at RMC Land. The remains include four cattle bones, a mandible fragment, loose upper molar, and two astragali, and two sheep/goat bones, a lower molar and the left horncore from a male sheep (ie, a ram). A small quantity of cremated animal bone was recovered from Middle Bronze Age human cremation burials 1100, 1107 and 1208 (Table 9.1).

A small amount of Late Bronze Age/Early Iron Age material was also recovered from both sites. A fragment of cattle horncore and a sheep/goat atlas vertebra were recovered from well G2156 at ICSG, while pits 506, 1451, 5726 and 6469, and well 4240 at RMC Land produced a small number of cattle and pig bones, and single sheep/goat, horse and fish bones. The pig remains are all cranial fragments, they include a mandible from a sow and part of the skull from a young pig aged between 12–16 months.

The limited information from the Middle Bronze Age to Late Bronze Age/Early Iron Age assemblage suggests that sheep/goat numbers had increased since the Neolithic period. The adult cattle remains suggest that secondary products such as milk, traction and manure were important, while the information for sheep/goat indicates that meat production was not completely given up in favour of these secondary products. Similar mortality patterns have been noted at contemporary local sites (see for example Bates 2008, 32.3–4; Serjeantson 1996, 216–18). There is also limited evidence for the use of cattle horn during the Late Bronze Age.

This period also sees the arrival of the horse to complement the existing livestock of cattle, sheep/goat and pig. Current evidence indicates that the earliest horse keeping occurred during the Late Neolithic/Early Bronze Age in Britain (see Bendrey *et al.* 2009, 140; Bendrey 2010, 10–11). Horses were initially a rare animal but gradually became more widely used by the Late Bronze Age. All of the horse bones are from adult animals; this means that horse breeding is not attested. The articulating left lower hind leg of a horse was found in a Bronze Age field system ditch (6116) at RMC Land. None of the bones show any signs of butchery; however the remains probably represent part of a horse carcass that for some reason was not extensively utilised.

All parts of the beef carcass are represented in the Bronze Age assemblage; the remains are those of adult and subadult animals that were processed locally (ie, slaughtered on site). The few sheep/goat remains derive mainly from juvenile and subadult animals, and this suggests that sheep/goat were principally exploited for meat, while the presence of a sow and a subadult pig assemblage might indicate local pig breeding.

Middle Iron Age

Material dating to the Middle Iron Age was only found at ICSG from ditches 383 and 693, gully G386 and pits 11501 and 4902. Of the 681 fragments recovered from Middle Iron Age contexts, only 46 were identifiable to species. Most of the identified remains belong to horse (n=23) and consist of fragments of skull, mandible, radius, femur, metapodial and loose teeth. Age estimates based on tooth crown heights indicate the presence of horses aged 7.5–12.25 years, 9.5–13.5 years, 6.0–9.25 years and 7.5–10.0 years (Levine 1982). The 19 cattle bones consist of fragments of skull, mandible, rib, scapula, humerus, pelvis, femur, metatarsal and loose teeth. Most of the teeth are from subadult and adult cattle. One of the third molars lacked the third pillar. This non-metric trait results from a reduction in the overall size of the mandible and is generally attributed to genetic change. Evidence of trauma in the form of a healed rib fracture was also noted. Less common species include sheep/goat and dog, both of which are represented by mandible fragments, and also in the case of sheep/goat, by a few loose teeth.

The largest group of Middle Iron Age animal bones is from feature 4902, which produced a total of 338 fragments. The upper fill of this feature also contained a crouched inhumation burial (see Chapter 4 and Fig. 4.4). The identified bones include fragments of cattle skull, mandible, vertebra (both cervical and thoracic), rib, humerus, pelvis and tibia. The post-cranial bones are from adult and subadult animals and one of the mandible fragments from a 29–34 month old. A small number of sheep/goat, pig and horse bones were also recovered. The body part information suggests that the bone fragments recovered from this feature are a mixture of good and poor (ie, offal) quality meat cuts. Most of the fragments recovered are rather small and might have been incorporated unintentionally when the feature was backfilled. However, the level of settlement activity was low during this period, it is therefore more likely that the animal bone was deliberately included as part of the burial rites. The intrusive remains of a field vole (*Microtus agrestis*) were also identified from this feature.

The dominance of cattle (and horse) remains in the assemblage from prehistoric phases is potentially misleading given the pronounced effects of preservation bias, notably that larger mammals may have survived to a greater extent due to their higher bone density values (Lyman 1994, 146–7). However, the environmental setting of the site is better suited to cattle rather than sheep husbandry due largely to the susceptibility of the latter to liver fluke infestation in wet lowland areas (Behrens 1962, 137–42). This aside, however, it is likely, given the presence of loomweights from the Middle/Late Bronze Age and the Late Bronze Age settlements, that sheep wool was an important secondary product and was probably being processed on site.

Table 9.4 Fauna list per period according to NISP, BW and MNI

Species	*Late Iron Age/Romano-British* NISP	BW	MNI	*Early Saxon* NISP	BW	MNI	*Late Saxon/early medieval* NISP	BW	MNI
Mammals									
Horse	23*	1659	2	6	247	1	53	4858	3
Cattle	193	5403	5	149	5273	5	761***	21560	10
Sheep	5	70	3			2	5	83	9
Sheep/goat	163	259	-	65	224	-	169	770	-
Pig	13	33	1	41	252	4	100	1058	7
Dog	1	4	1	86**	914	3	33****	244	3
Red deer	-	-	-	-	-	-	2	12	1
Roe deer	-	-	-	-	-	-	4	43	1
Fox	-	-	-	-	-	-	1	4	1
Hare	-	-	-	-	-	-	1	2	1
Birds			-						
Domestic fowl	-	-	-	8	6	2	1	1	1
Goose	-	-	-	1	4	1	-	-	-
Fish									
Flatfish	-	-	-	1	-	1	-	-	-
Bird	2	-	-	2	3	-	4	4	-
Large mammal	1470	1739	-	507	1080	-	928	2148	-
Medium mammal	2106	490	-	276	246	-	408	353	-
Total	3976	9657	12	1142	8249	19	2470	31140	37

*7 articulating bones, **skeleton numbering 77 bones, ***spine of 15 bones, skeleton numbering 345 bones and
**** 21 bones of partial skeleton

Late Iron Age/Romano-British

All three quantification methods, NISP, BW and MNI, indicate that cattle are the most common species in the Late Iron Age/Romano-British assemblage (Table 9.4), but only marginally so relative to sheep/goat. Horse bones are more common than pig bones. This pattern of relative importance fits well with the species proportions recorded from other rural settlements (King 1999, 180) and with the evidence from other settlements in the Thames Valley (Hambleton 1999, 46; Booth *et al.* 2007, 283; Bates 2008, 5, 10; Knight and Grimm 2010, 5; Evans 2004, 210). In general less Romanised sites tend have a low frequency of pig bones (King 1991, 16). However, in assessing the status of a site, it is important to bear in mind the suitability of the local environment to support this type of husbandry, in particular the local availability of pannage (for example see Booth *et al.* 2007, 29).

According to BW, beef and possibly horsemeat made a large contribution to the diet. However, it is clear from the MNI counts that sheep/goat were in fact more numerous than horses. The only other identified species from this phase is dog. The absence of wild mammals and birds suggests that the local rural economy was largely concerned with the production of agricultural surplus.

Age information obtained from tooth eruption/wear and epiphyseal fusion suggests a peak of slaughter amongst adult cattle. This suggests that secondary products such as milk, manure and traction were more important than the production of prime beef. It is possible that the general expansion and intensification of arable cultivation during the Romano-British period (Thomas and Stallibrass 2008, 10), and more specifically in the Middle Thames Valley, would have required higher numbers of draught cattle (Booth *et al.* 2007, 26). The mortality profiles recorded for cattle from contemporary sites in the Thames Valley area, for example Stansted (Bates 2008, 8), Ewell (Evans 2004, 210) and Staines (McKinley 2004a, 28) generally show a peak of slaughter amongst older animals, and therefore an emphasis on secondary products. However, Ewell and Staines are both urban sites and their mortality profiles might therefore reflect the age of animals sent to market rather than the type of husbandry regime practised in the rural hinterland.

The husbandry strategy for sheep/goat also appears to have been geared towards the production of secondary products given the dominance of adult animals. However, at sites in the Upper Thames Valley juvenile and young adult sheep/goat dominate indicating that prime meat production was more important than wool (Hambleton 1999, 73; Bates 2008, 8).

The pig bones are all from subadult animals. Pigs reach full body weight relatively quickly, have large litters and provide no secondary products. This means that they are generally killed at a younger age than other livestock. The horse bones from RMC Land and ICSG all derived from adult animals and thus horse breeding cannot be attested.

The Late Iron Age/Romano-British livestock includes rather small cattle (1.14 m) of the short horned variety. Measurement taken on a single complete horse bone provided a withers height estimate of 1.42 m (or 14 hands – ie, a large pony). A height at the withers of 0.56 m (Teichert 1975) for sheep is typical of the small animals generally noted from other sites of this period.

Most parts of the beef and mutton carcass are present in the assemblage, which suggest that cattle and sheep were butchered and processed nearby. Butchery marks were rare due to the generally poor preservation state of most bones. However, it is worth noting that marks seen on one cattle scapula are similar to the filleting marks observed on cured shoulder joints of beef. This particular type of specialist butchery practice is typically Roman and has been recorded at range of different sites in Britain. Several examples of this type of butchery were recorded from Staines (McKinley 2004a, 29).

The Late Iron Age/Romano-British assemblage includes a mixture of butchery waste and domestic food refuse. The assemblages recovered from three pits G0346, G0347 and G0348 at ICSG are noteworthy since they contain varying amounts of burnt sheep/goat bones. Due to the fragmented nature of the evidence it is uncertain whether these remains represent the burning of waste products or the incineration of diseased animals, or indeed ritual acts.

Cattle bones are common in every type of feature. Contrary to what would be expected on taphonomic grounds (see below), sheep/goat and pig bones were best represented in the ditches and gullies and less so in pits and waterholes. The special nature of the pits containing burnt bone has already been discussed. Analysing the skeletal parts of cattle, sheep/goat and pig per feature type shows that leg bones dominate (by BW) in the ditches and gullies. The moderate number of bones from the head and the feet indicate that butchery waste was mixed with domestic refuse and dumped into these features. The material from the waterholes has a high proportion of cattle cranium fragments and might thus have been used for the dumping of cattle skulls. The emphasis on cattle skulls suggests a degree of selection that could be interpreted as having special significance. The skulls were clearly deposited after the waterhole fell into disuse, they might therefore represent 'offerings' to close or decommission the feature.

It is difficult to address questions relating to the development of this rural settlement and its possible trade connections with London and other small towns, such as Staines. While it is possible that the absence of young cattle and sheep/goat might be because these animals were driven to market elsewhere, this cannot be established with confidence given the apparent preservation biases noted above. What can be concluded, however, is that if meat was being traded to other settlements, then this was probably achieved by transporting live animals on the hoof. The animal bone evidence from Staines certainly suggests cattle and sheep were supplied on the hoof from farmsteads in the surrounding countryside (McKinley 2004a, 28).

Early Saxon

Cattle and pig increased in importance during the early Saxon period, relative to a decrease in the importance of sheep/goat. This pattern is similar to that noted at Lake End Road near Maidenhead (Powell 2002, 46). The bones of goose and domestic fowl provide evidence for the keeping of poultry. With the possible exception of goose, no wild mammals or birds were identified.

The assemblage also includes a single fish bone. The caudal vertebra could not be identified to species but its general characteristics are similar to flatfish, most probably plaice. Bones from flatfish have previously been identified from Saxon deposits at Lake End Road near Maidenhead (Powell 2002, CD) and Wraysbury (Coy 1989, 119), as well as medieval deposits at Staines (McKinley 2004a, 59). Today flatfish such as flounder can be caught regularly between Fulham and Tilbury (http://www.thames-explorer.org.uk/about_the_river/fish.html).

Most of the cattle bones in the Saxon assemblage are from mature animals, with limited evidence for subadult animals. The sheep/goat assemblage includes mostly adult and juvenile animals, while most of the pigs are subadult animals killed at the optimum age for meat production. Foetal pig bones were noted from pit 5541 at RMC Land, which suggests on-site breeding and rearing. All of the recovered horse bones are from adult animals. The dog skeleton found in waterhole 3022 at RMC Land is an adult male dog and has various pathologies (see below). The skeleton belonged to an animal with a height at the withers of 0.59 m (Harcourt 1974); this is well within the ABMAP range for dog in the (early) medieval period (range in height from 0.33 m to 0.70 m (n=31, median 0.51 m and mean 0.52 m), (http://ads.ahds.ac.uk/abmap, accessed 9 February 2009).

In an attempt to assess the health of the animal population, anomalies and pathologies were recorded since these can be disruptive and have huge economic consequences (Vann and Thomas 2006). Although only a few bones show signs of pathology, this does not mean that livestock and other domestic species were healthy, merely that we only have a record of the most severe cases that have affected bony changes.

The mature male dog skeleton found in waterhole 3022 displayed several severe pathological lesions. The right humerus showed a large rough callus on the volar-dorsal aspect, the result of an oblique fracture that shortened the limb by 14 mm. The bone and surrounding tissue were probably still mildly inflamed when the animal died. The left tibia was also fractured, however this injury had healed well before death with minimal distortion to the alignment of the bone because the fibula acted as a natural splint. Minor changes were noted on the distal articulation of the right femur and probably result from increase stress on this limb as a result of the other injuries.

As in the proceeding phase, most parts of the cattle, sheep/goat and pig skeleton were recovered and any absence are likely to be due to small sample size. Again butchery evidence is rare due to poor preservation although cut marks were noted on the distal articulation of a cattle femur that results from disarticulation at the knee joint. Another cattle femur has knife cuts near the *caput femori*, which is indicative of lifting the caput from the socket joint of the pelvis.

Most of the early Saxon assemblage is from pits; this hinders spatial analysis to look for any differences in disposal patterns such as the distribution of butchery waste and domestic refuse. However, some features clearly have more distinct assemblages than others, such as the disused waterhole at RMC Land that was used to dispose of a dog carcass and a cattle skull and mandible. It is also possible that the dog bones in pit 3786 (RMC Land) belong to a single animal carcass. These features appear to represent convenient dumping places for the remains of dead (non-food) animals and butchery waste, although it is equally possible that they have some ritual significance.

Late Saxon/Early Medieval

After correcting for the (partial) skeletons, species proportions according to NISP are the same as for the early Saxon period. The MNI, however, suggests a more even distribution across the three main domesticates (Table 9.3). A dominance of cattle over sheep is also seen at other Thames Valley sites of the same period (Hamilton-Dyer 1996, 43; Astill and Lobb 1989, 85; Sykes 2007, 134). A single bone of domestic fowl indicates the consumption of poultry. Wild species are represented by red deer, roe deer, fox and hare, all of which could have been hunted or caught within the immediate surroundings of the settlement. The hare bone, a left humerus, is from the backfill 5573 of a grave (RMC Land) and might be intrusive.

The late Saxon/early medieval cattle were mostly mature when they were slaughtered. The presence of a calf indicates that veal was occasionally consumed. This pattern suggests that dairying and traction were important. At other contemporary local sites, such as Wraysbury near Staines (Coy 1989, 114) a mixed husbandry strategy was recorded, while at the Dorney sites near Maidenhead (Powell 2002, 44–9), most cattle were culled at prime meat age, which suggests a consumer rather than a producer economy with animals arriving on the hoof, but perhaps with some pork joints traded in.

The sheep/goat dental age data indicates that the main peak of slaughter was amongst animals aged 8–13 months and 4–9 years. If we assume that young animals were born in March and April, then the first age group represents autumn/winter culling. There is a discrepancy between the age data obtained using teeth and that obtained using epiphyseal fusion. The most likely explanation for this is that due to the abrasive nature of the substrate upon which the animals graze, teeth wear faster than normal, therefore they appear to be older than they actually are. Indeed bones with fused epiphyses are rare, which suggests that most sheep/goat were in fact young adults that were slaughtered at the optimum age for prime meat and may even have provided a few wool clippings. A similar sheep/goat mortality pattern was noted at Wraysbury near Staines (Coy 1989, 114). In general most late Saxon/early medieval sheep mortality profiles suggest that wool production was important (Sykes 2007, 36).

The dental and epiphyseal fusion data for pig indicates that most were slaughtered in autumn either as yearlings or as two-year-olds. A small proportion lived beyond the age of two years and could have been used for breeding. All of the horse bones are from adults, therefore on-site breeding cannot be attested. Waterhole 879 (RMC Land) contained three fragments of foetal bone of which one could be identified as a dog scapula. All of the other dog bones derived from adult animals.

Withers height estimates were calculated for a number of complete long bones (following Matolcsi 1970; von den Driesch and Boessneck 1974). Eleven cattle bones produced a mean height of 1.15 m. A search on ABMAP (http://ads.ahds.ac.uk/abmap, accessed 9 February 2009) revealed that late Saxon and early medieval cattle generally ranged in height from 0.76 m to 1.35 m, although their mean height at the withers is 1.14 m (n=343). Three horse bones produced a height at the withers of between 1.36–1.38 m. The ABMAP data for this period shows that late Saxon/early medieval horses generally ranged in height between 1.03 m and 1.42 m (n=48, mean

1.32 m). Both complete dog bones provided a height at the withers of 0.59 m.

The only bone with signs of pathology found in this assemblage is a right cattle mandible that was found in grave 5573 (RMC Land, ABG 12091). Lumps of bone, porosity and necrosis were noted on the *ramus* and below the teeth; these changes result from a severe inflammation.

Most horse, cattle, sheep/goat and pig skeletal elements are present in the late Saxon/early medieval assemblage, which suggests local slaughter, butchery and consumption. Butchery marks were observed on a total of 19 bones, most of this evidence was noted on cattle bones. Knife cuts at the bases of two horncores indicate that the horn sheath was removed for working. Filleting marks were noted on two pig scapulae; these particular pork joints are usually cured for long-term storage.

The late Saxon/early medieval assemblage contains three animal bone groups, all from RMC Land. These include a complete cattle skeleton from enclosure ditch 4042, part of a cattle spine from enclosure ditch 4099 (ABG 11810) and the partial skeleton of a young dog (wear stage Aa, after Horard-Herbin 2000) from waterhole 879. Dog burials are not uncommon from contemporary sites, for example a male dog skeleton was recovered from a pit at Lake End Road, Dorney (Clark 2002, 64 and CD), and are generally considered to represent nothing more than the disposal of a dead animal.

Spatial analysis indicates that cattle bones are common in all feature types, but sheep/goat and pig bones are more numerous in pits and waterholes than in ditches. This could be due to differences in microenvironment between feature types, alternatively ditches might have been used for dumping larger bones from primary butchery, while pits were primarily used to dump domestic refuse. In terms of skeletal element distribution, leg bones dominate (by BW) in pits, since these bones carry more meat; the results of the body part analysis appear to confirm that pits contain more domestic refuse than ditches. Disused waterholes, on the other hand, were primarily used to dump primary butchery waste, while ditches were used for the disposal of both types of waste.

The backfill of grave 5574 (RMC Land) included a fragment of horse metacarpal and a sheep/goat mandible, while the backfill of grave 5575 included a horse tooth, several cattle bones, the mandible from a young pig and part of the left humerus of a hare. It is possible that (some of) these bones represent grave goods.

Chapter 10
Environmental Remains

Charred and Waterlogged Plant Remains
by Chris J. Stevens

During the course of excavation at ICSG and RMC Land a large number of samples were taken for the recovery of charred and occasionally waterlogged plant remains.

A broad strategy was adopted in which a wide range of Neolithic to medieval features were sampled. A total of 518 and 279 samples were taken from the excavations at ICSG and RMC Land respectively. All the samples were assessed and on this basis 49 samples from ICSG and 55 from RMC Land were chosen for full analysis of charred plant remains (Table 10.1). Waterlogged material was relatively frequent in the samples from ICSG and a further 10 sub-samples were selected for analysis of waterlogged plant remains on the basis of the assessment from this site. While samples from some features at RMC Land were also processed and assessed for waterlogged material only a single medieval sample was seen to contain waterlogged material and was analysed in full.

Table 10.1 Samples by period analysed for charred plant remains from each site

Period	*ICSG*	*RMC Land*
Middle to Late Neolithic	14	10
Early Bronze Age	1	-
Middle/Late Bronze Age	4	1
Late Bronze Age/Early Iron Age	7	5
Romano-British	17	-
Early–middle Saxon	-	10
Saxo-Norman/early medieval	-	28
Medieval	6	1
Totals	49	55

Methods

Charred plant samples

The bulk samples were processed by standard flotation methods with the flot retained on a 0.5 mm mesh; the residues were fractionated and sorted for charred plant remains. The flots were sorted under a x10–x40 stereo-binocular microscope with charred remains extracted, identified where possible and quantified (Tables 10.2–10). Nomenclature follows

Table 10.2 Charred plant remains from Neolithic pits at RMC Land

	Phase	Middle Neolithic									Late Neol.
	Feature	2187	2752	2817	4400	4481	5088	5616	5783	5961	5732
	Context	2191	2753	2815	4401	4483	5089 SW q.	5617	5784	5962	5733
	Sample	159	198	204	300	303	318	359	370	373	366
	Vol (l)	10	40	40	10	10	16	10	37	10	47
	Flot Size (ml)	200	375	300	40	50	60	40	150	30	675
	Roots %	2	10	10	15	7	10	60	2	10	5
Cereals	Common name										
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	-	-	-	-	-	1	8	-	-
Hordeum vulgare L. *sl* (grain)	barley	-	-	-	-	-	-	-	2	-	1
Triticum sp. L. (grains)	wheat	-	1	-	-	-	-	-	-	-	-
Triticum cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	-	2	7	-	-	2	cf. 5	6	-	14
Triticum aestivum/turgidum (rachis fragment)	bread wheat	-	-	-	-	-	-	-	1	-	-
Secale cereale (grain)	rye	-	-	-	-	-	-	-	-	-	3
Cereal frag. indet. (est. whole grains from fragments)	cereal	-	2	-	-	1	-	2	-	-	-
Other species	Common name										
Corylus avellana L. (fragments)	hazelnut shell	1000+ (118ml)	365 (12ml)	260 (10ml)	255 (8ml)	195 (5ml)	120 (5ml)	9	544	127	300
Rumex sp. L.	docks	-	-	1	-	-	-	-	-	-	-
Prunus spinosa L.	sloe	-	-	-	-	-	-	cf.1	-	1	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	-	3	1	-	-	1	-	-	-	1
Plantago lanceolata L.	ribwort plantain	-	-	-	-	-	-	1			
Anthemis cotula L.	stinking mayweed	-	-	-	-	-	-	1			
Anthemis/Tripleurospermum L./Sch. Bip.	stinking/scentless mayweed	-	-	-	-	-	-	-	-	-	1
Avena sp. L. (grain)	oat grain	-	-	-	-	-	-	-	-	-	1
Bromus sp. L.	brome grass	-	-	-	-	-	-	-	-	-	1
Parenchyma indet.	soft plant tissue	++f ?kernal	-	-	-	-	-	-	-	-	-
Catkins fragments indet.	-	-	-	-	1	-	-	-	-	-	-

Table 10.3 Charred plant remains from Neolithic features at ICSG

	Feature type	Encl. G3001		Pits											
		Ditch G496	Ditch G503												
	Cut	4124	4217	G345	G344		10821	11018	11024	11026	10298	11340	16033	16109	
	Context	4126	4219	1684	4411	4421	10822	11020	11023	11025	10297	11339	16032	16108–11	16110
	Sample	2194	2250	2235	2236	2309	12008	12012	12016	12017	12044	12128	17002	17003	17005
	Vol (L)	20	30	20	30	20	10	5	10	30	15	15	20	30	20
	Flot Size ml	30	10	220	160	120	120	100	120	50	30	75	100	60	100
	Roots %	7.5	2.5	44	56	10	6	7	12	15	12	19	10	12	15
Cereals	Common name														
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Hordeum vulgare L. *sl* (grain)	barley	-	-	-	1	-	-	-	1	1	-	-	-	-	1
Triticum sp. L. (grains)	wheat	-	-	-	1	-	-	-	1	-	-	-	-	-	-
T. cf. *dicoccum/monococcum* (Schübl)	emmer/einkorn	-	-	-	-	-	-	-	-	1	-	-	-	-	-
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	-	-	-	-	-	-	-	cf.1	-	-	-	-	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	-	1	-	-	-	-	-	-	-	-	-	-	-
T. cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	-	-	-	-	-	-	1	-	-	-	-	1	cf.3	-
Secale cereale L. (grain)	rye	-	-	-	-	-	-	-	-	-	-	-	-	cf.1	-
Cereal indet. (grains)	cereal	cf.1	3	-	1	-	1	1	3	9	-	-	-	4	1
Cereal frag. (est. whole grains)	cereal	cf.5	1	-	-	-	1	-	-	4	-	1	-	1	-
Cereal indet. (rachis fragment)	cereal	-	-	-	-	-	-	-	-	-	-	cf.1	-	-	-
Other species	Common name														
Corylus avellana L. (fragments)	hazelnut	-	-	42	73	24	400	395	550	380	-	172	73	35	29
Polygonaceae indet.	knotweeds	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp. L.	docks	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Rubus sp. L.	brambles	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	-	1?	-	-	-	-	1	1	3	-	-	-	1	1
Medicago lupulina L.	black medick	-	-	1	-	-	-	-	-	1	-	-	-	-	-
Galium aparine L.	cleavers	-	-	-	2	-	-	-	-	-	-	-	1	-	-
Avena sp. L. (grain)	oat grain	-	-	-	-	-	-	-	1	2	-	-	cf.1	-	-
Anisantha sterilis (L.) Nevski	barren brome	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Seed indet.	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
Dropping?	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-

Table 10.4 Charred plant remains from Bronze Age features at RMC Land

	Phase	MBA	LBA–EIA				
	Feature Type	well	pit	pit	well		pit
	Feature	3918	633	2326	4240		3099
	Context	3913	508	2346	2398		3100
	Sample	245	107	168	173	191	219
	Vol (L)	40	30	13	40	18	40
	Flot Size ml	450	400	150	150	100	50
	Roots %	1	5	2	3	1	5
Cereals	Common name						
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	1	-	2	-	-
Hordeum vulgare L. *sl* (grain)	barley	-	4	-	13	31	6
Triticum cf. *dicoccum* (Schübl) (grain)	emmer wheat	-	3	-	-	-	-
Triticum dicoccum (Schübl) (glume base)	emmer wheat	16	4	1+cf.1	e.23	28	-
Triticum dicoccum (Schübl) (spikelet fork)	emmer wheat	1	1	cf.2	e.17	5	-
Triticum spelta L. (glume bases)	spelt wheat	-	1	3	e.50	3	-
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	14	7	163	39	3
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	2	-	6	e.21	20	4
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	15	e.48	69	e.246	114	4
Triticum cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	-	1	-	-	-	2
Cereal indet. (grains)	cereal	4	3	9	62	19	13
Cereal frag. indet. (est. whole grains from frags.)	cereal	1	11	5	50	12	5
Other species	Common name						
Urtica dioica L.	common nettle	-	-	-	-	-	-
Corylus avellana L. (fragments)	hazelnut	-	1+1	1	18	13	-
Chenopodiaceae	goosefoot/campion	-	1	-	-	-	-
Chenopodium ficifolium Sm.	fig-leaved goosefoot	-	-	-	-	2	-
Chenopodium album	fat-hen	-	-	-	-	61	-
Atriplex sp. L.	oraches	-	-	-	-	4	-
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank	-	-	-	-	1	-
Fallopia convolvulus (L.) À. Löve	black bindweed	-	-	-	-	5	-
Polygonum aviculare L.	knotgrass	-	-	-	-	1	-
Rumex sp. L.	docks	2	-	-	-	13	-
Rumex acetosella group Raf.	sheep's sorrel	-	-	-	1	1	-
Raphanus raphanistrum L. (capsules)	runch	-	-	-	-	1+1f	-
Fragaria/Potentilla	cinquefoil/strawberry	-	-	-	-	1	-
Prunus spinosa L.	sloe	-	-	-	-	4f	-
Crataegus/Prunus thorns	hawthorn/sloe thorns	-	-	3	-	-	-
Crataegus monogyna Jacq. (fruit stone)	hawthorn	-	-	-	1	-	-
Vicia faba var. *minor* L.	celtic bean	-	-	-	-	-	-
Vicia L./*Lathyrus* sp. L.	vetch/ wild pea	-	2	2	7	5	2
Medicago/Trifolium sp. L.	medick/clover	-	-	-	-	-	-
Trifolium sp. L.	clover	-	-	-	-	1	-
Torilis sp. Adans.	hedge-parsley	-	-	-	-	1	-
Galium aparine L.	cleavers	-	-	-	1	3	3
Lapsana communis L.	nipplewort	-	-	-	2	-	-
Poaceae (small indet.)	small grass seed	1	-	-	-	4	-
Poaceae (culm internode)	grass stem	-	-	-	-	+	-
Poa/Phleum sp. L.	meadow grass/cat's-tails	-	-	7	e.50	3	-
Avena sp. L. (grain)	oat grain	-	8	-	14	6	2
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	-	-	-	-
Avena sp. L. (floret base wild)	wild oat floret base	-	-	-	-	-	-
Avena L./*Bromus* L. sp.	oat/brome	-	2	12	15	4	-
Bromus sp. L.	brome grass	-	-	-	-	-	-
Bud	-	1	1	-	-	-	-
Seed indet.	-	2	-	-	-	-	-
Parenchyma	-	-	-	-	++	-	-

Table 10.5 Charred plant remains from Bronze Age-Early Iron Age features at ICSG

		EBA	MBA				M/LBA		LBA/EIA				
	Phase	EBA		MBA			M/LBA				LBA/EIA		
	Feature type	Crem. grave	Ditch	Ditch G532	Ditch G1211	?Quarry	Waterhole		Pit	Ditch G477	Pit	Well G2156	Hearth
	Cut	16669	1378	1845	16439	30814	16198		17925	4339	17561	17580	10056
	Context	16670	1377	1843	16437	30843	16186	16188	17923	4340	17563	17581	10057
	Sample	17013	2076	2079	17061	32021	17068	17069	18005	2318	18012	18022	12049
	Vol (L)	15	30	10	20	30	24	25	20	20	17	29	14
	Flot Size ml	40	50	10	250	175	750	350	30	90	120	1400	1000
	Roots %	16	40	1	12.5	17.5	n/a	n/a	6	30	6	N/A	n/a
Cereals	Common name												
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	1	-	-	-	-	2	1+3h	1	1	-	-	-
Hordeum vulgare L. *sl* (grain)	barley	-	-	31	-	1	1	-	2	-	2	-	-
H. vulgare L. sl (6-row rachis fragment)	barley	-	-	-	-	-	-	e.10	1	11	-	-	-
Hordeum vulgare L. sl (rachis fragment)	barley	-	-	-	-	-	-	e.30	1	-	-	1	-
Triticum sp. *L. (grains)*	wheat	1	1	-	-	-	-	1	2	-	-	-	1
Triticum cf. *dicoccum* (Schübl) (grain)	emmer wheat	-	-	27	-	-	-	1	-	?1	2	-	-
Triticum. dicoccum (Schübl) (glume base)	emmer wheat	-	-	9	-	5	4	e.20	9	-	4	-	-
Triticum dicoccum (Schübl) (spikelet fork)	emmer wheat	-	-	5	-	-	2	-	-	-	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	-	1	cf.2	-	1	1	-	25	255	10	5	1
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	-	cf.1	50	-	-	3	1	-	-	9	3	5
Triticum dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	-	cf.1	-	-	-	-	-	-	-	-	-
Triticum dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	-	11	-	-	-	-	3	-	-	1	1
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	1	4	7	-	-	-	e.20	66	73	42	-	21
Triticum cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	-	-	-	-	-	-	-	-	3	-	-	-
Secale cereale L.(rachis fragment)	rye	-	-	-	-	-	-	-	-	4	-	-	-
Cereal indet. (grains)	cereal	2	2	230	1	1	2	2	2	2	6	-	6
Cereal frag. (est. whole grains)	cereal	-	4	-	-	-	1	-	3	8	5	-	5
Cereal indet. (basal rachis fragment)	cereal	-	-	-	-	-	4	e.10	-	-	-	-	-
Cereal (germinated coleoptile)	cereal	-	-	-	-	-	-	-	-	3	-	-	-
Cereal indet. (basal rachis fragment)	cereal	-	-	-	-	-	-	-	-	4	-	-	-
Other species	Common name												
Ranunculus ficaria.L.	lesser celandine	cf.7	-	-	-	-	-	-	-	-	-	-	-
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	-	-	-	-	-		-	-	1+1wl	-	-	-
Corylus avellana L. (fragments)	hazelnut	1	-	-	-	-	-	-	-	2wl	-	-	-
Chenopodiaceae	goosefoot family	-	-	-	-	-	-	-	-	2	-	-	1
Chenopodium album L.	fat-hen	-	-	-	-	-	-	est.20	5	2	-	-	1
Montia fontana subsp. chondrosperma (Fenzl) Walters	blinks	-	-	-	-	-	-	-	-	-	-	-	1
Stellaria media (L.) Vill.	stitchwort	-	-	-	-	-	-	-	-	1	-	-	-
Polygonaceae indet.	knotweeds	-	-	-	-	-	-	-	-	2	-	-	-
Persicaria lapathifolia/maculosa (L.) Gray/Gray	redshank/pale persicaria	2	-	-	-	-	-	-	-	-	3	-	-
P. hydropiper/mitis Spach/(Shrank) Opiz ex Assenov	water-pepper/tasteless water-pepper	cf.13	-	-	-	-	-	-	-	-	-	-	-

Persicaria minor (Huds.) Opiz	small water-pepper	cf.2	-	-	-	-	-	-	-	-	-	-	-
Fallopia convolvulus (L.) À. Löve	black bindweed	-	-	6	-	-	1	-	-	-	-	-	-
Polygonum aviculare L.	knotgrass	-	-	2	-	-	-	-	-	-	-	-	-
Rumex sp. L.	docks	2	-	-	-	-	-	-	-	4	1	2	2
Rumex sp. L. (bract)	dock bract	-	-	-	-	-	-	-	-	1	-	-	-
Rosaceae (Rubus/Rosa type thorns indet.)	bramble, rose etc. thorns	30	-	-	-	-	-	-	-	-	-	-	-
Rubus sp. L.	brambles	-	-	1	-	-	-	-	-	-	-	-	-
Fragaria/*Potentilla* sp. L.	cinquefoil/strawberry	-	-	-	-	-	-	-	-	-	-	-	cf.1
Agrimonia eupatoria L.	agrimony	cf.1	-	-	-	-	-	-	-	-	-	-	-
Rosa sp. L.	rose	cf.1	-	-	-	-	-	-	-	-	-	-	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	-	1	28	-	-	4	-	2	-	2	-	2
Medicago lupulina L.	black medick	-	-	-	-	-	-	-	-	2	-	-	-
Trifolium sp. L.	clover	-	-	-	-	-	-	-	-	4	-	-	-
Conopodium majus (Gouan) Loret	pig-nut	-	cf.1	-	-	-	-	-	-	-	-	-	-
Galium palustre L.	marsh bedstraw	cf.6?	-	-	-	-	-	-	1	-	-	-	-
Galium aparine L.	cleavers	-	-	-	-	-	-	-	-	-	-	1	1
Asteraceae seed head.	daisy family	-	-	2+2 frgs	-	-	-	-	-	-	-	-	-
Anthemis cotula L.	stinking mayweed	-	-	-	-	-	-	-	-	1	-	-	-
Tripleurospermum inodorum (L.) Sch. Bip.	scentless mayweed	-	-	2	-	-	-	e.20	1	2	-	-	-
Monocot Root stems	grass/sedge stems	125 (+ ?dicots)	-	-	-	-	-	-	-	1 tuber	-	-	-
Isolepis setacea (L.) R. Br.	bristle club-rush	-	-	-	-	-	-	-	-	1	-	-	-
Carex sp. L. trigonous	sedge trigonous seed	-	-	-	-	-	-	-	-	1	-	-	1
Poaceae (small indet.)	small grass seed	-	-	-	-	-	-	-	4	-	-	-	-
Poaceae (mid-large indet.)	med.-large grass seed	-	-	-	-	-	-	-	4	-	-	-	-
Poaceae (culm node)	grass culm node	-	1	-	-	-	-	-	-	-	-	-	-
Lolium perenne L.	perennial rye-grass	3	-	-	-	-	-	-	-	1	-	-	-
Poa/*Phleum* sp. L.	meadow grass/cat's-tails	-	-	-	-	-	-	-	1	-	-	-	-
Arrhenatherum elatius var. *bulbosum* (Willd.) St-Amans	onion couch grass	2	-	-	-	-	-	-	-	-	cf.1	-	-
Avena sp. L. (grain)	oat grain	-	-	1	-	1	-	-	2	5	8	-	2
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-	-	-	1	-	-	-
Avena L./*Bromus* L. sp.	oat/brome grass	-	2	-	-	-	-	-	2	-	-	-	-
Bromus sp. L.	brome grass	-	-	-	-	-	-	-	-	-	-	1	1
Seed indet.		4	-	-	-	-	-	-	-	2	-	-	-
Bud		-	-	-	-	-	-	e.10	-	1	-	-	-
Charred roots		-	-	-	-	-	-	-	2	-	-	-	-

Table 10.6 Charred plant remains from Romano-British features at ICSG

	Phase	ERB		MRB		LRB									RB			
	Feature			G325		G306	G332	G385	G407						G271	G524	G585	
	Feature type	Midden		Midden		Ditch	Ditch	Ditch	Midden	Well	Well	Pit	Pit/well	Well	Ditch	Ditch	Hearth	Pit
	Cut	10662	10923	10923	11531	1282	10347	1944		1087	1087	10738	11313	16402	16663	1392	1922	16660
	Context	10662	11528	11529	11530	1280	10346	1942	4414	4807	4817	10737	11302	16408	16664	1390	1919	16661
	Sample	12043	12102	12103	12110	2229	12087	2085	2237	2311	2331	12101	12091	17032	17012	2084	2059	17060
	Vol (L)	30	30	30	25	30	30	30	20	10	5	15	5	30	15	30	30	10
	Flot Size ml	40	25	80	10	10	60	50	50	40	175	100	30	150	35	20	175	60
	Roots %	30	6	20	1.5	0.5	36	40	35	2	52.5	5	1.5	135	9	12	158	3
Cereals	Common name																	
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	-	-	-	-	-	-	-	6	1	2	-	-	-	-	-	150
Hordeum vulgare L. *sl* (grain)	barley	1	-	-	-	3	cf.1	9	1	-	2	29	5	-	55	5	-	210
H. vulgare L. *sl* (6-row rachis frag.)	barley	-	-	-	-	-	-	-	-	8	e.33	-	-	-	2	-	-	-
Hordeum vulgare L. *sl* (rachis frag.)	barley	-	-	-	-	-	-	-	1	7	e.20	-	1	-	7	1	-	1
H. vulgare L. *sl* (basal rachis frag.)	barley	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Triticum sp. L. (grains)	wheat	2	-	-	-	-	-	-	5	-	-	16	1	-	-	-	-	-
T. cf. *dicoccum/monococcum* (Schübl)	emmer/einkorn	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Triticum cf. *dicoccum* (Schübl) (grain)	emmer wheat	-	-	6	-	1	-	-	-	-	-	1	-	-	-	-	-	-
T. dicoccum (Schübl) (glume base)	emmer wheat	1	cf.2	7	1	-	1	cf.1	-	-	-	1	-	cf.2	-	-	-	-
T. dicoccum (Schübl) (spikelet fork)	emmer wheat	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	11	55	30	7	28	18	29	26	230	-	9	45	-	42	35	52	162
Triticum spelta L. (spikelet fork)	spelt wheat	-	-	-	-	-	-	-	-	4	6	-	-	-	3	-	-	2
Triticum dicoccum/spelta (grain)	emmer/spelt wheat	4	7	25	2	8	4	6	3	7	11	8	3	1	82	5	17	130
T. dicoccum/spelta (germinated grain)	emmer/spelt wheat	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	4	-
T. dicoccum/spelta (rachis frag.)	emmer/spelt wheat	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-	-
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	3	3	16	1	4	-	1	1	1	e.36	2	4	-	2	-	2	2
T. dicoccum/spelta (glume bases)	emmer/spelt wheat	63	398	e.600	41	64	86	60	93	507	e.1034	328	151	-	754	30	1030	280
T. cf. *spleta* (short grained)/*aestivum sl*	spelt/bread wheat	-	-	-	-	-	-	-	-	-	-	-	-	cf.1	-	-	-	-
T. cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	-	-	-	-	-	-	-	-	cf.1	-	-	-	-	-	-	-	-
Secale cereale L. (grain)	rye	-	-	-	-	-	-	-	cf.1	-	-	-	-	-	-	-	-	-
Secale cereale L.(rachis frag.)	rye	-	-	-	-	1	cf.2	1	cf.1	4	e.63	-	-	-	9	1	-	-
Cereal indet. (grains)	cereal	12	8	25	2	4	10	14	7	6	6	25	5	-	141	6	11	330
Cereal frag. (est. whole grains)	cereal	9	7	-	3	3	5	6	5	4	4	15	10	-	-	5	5	250
Cereal (germinated coleoptile)	cereal	-	-	-	-	-	-	-	-	10	e.18	-	-	-	-	-	1	2
Cereal indet. (rachis frag.)	cereal	-	-	-	-	-	-	1	1	1	e.16	-	-	-	-	-	-	-
Cereal indet. (basal rachis frag.)	cereal	-	-	-	-	-	-	1	-	4	e.36	-	-	-	5	-	-	-
Cereal indet. (culm node)	cereal	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Other species	Common name																	
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-
Urtica urens L.	small nettle	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Corylus avellana L. (frag.s)	hazelnut	-	2	-	3	2	-	-	8	-	-	3	-	-	-	-	-	1
Chenopodiaceae	goosefoot family	-	1	-	-	3	-	-	-	5	-	-	4	-	-	-	-	1
Chenopodium album L.	fat-hen	-	-	e.32	-	1	-	-	-	8	1	56	-	-	-	-	-	3
Chenopodium rubrum/urbicum L.	red leaved/ivy-leaved goosefoot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Atriplex sp. L.	oraches	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-
Montia fontana subsp. *chondrosperma* (Fenzl) Walters	blinks	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Stellaria media (L.) Vill.	stitchwort	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-
Agrostemma githago L.	corn cockle	-	-	-	-	cf.1	-	-	-	-	-	-	-	-	-	-	-	-
Polygonaceae indet.	knotweeds	-	-	e.42	-	3	-	-	-	1	-	-	1	-	-	-	-	-
Persicaria lapathifolia/maculosa(L.) Gray/Gray	redshank/pale persicaria	-	-	-	-	-	-	-	2	1	3	42	-	-	2	-	-	8
Fallopia convolvulus (L.) À. Löve	black bindweed	-	-	-	-	-	-	-	-	-	-	85	-	-	1	-	-	15
Polygonum aviculare L.	knot grass	-	3	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp. L.	docks	-	3	1	-	18	1	1	3	6	5	52	5	-	9	-	-	32
Rumex sp. L. (bract)	dock bract	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Rumex acetosella group Raf.	sheep's sorrel	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-
Rumex cf. *crispus* L.	curled dock	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Malva sp. L.	mallow	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-
Aphanes arvensis L.	parsley piert	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crataegus monogyna Jacq. (fruit stone)	hawthorn	-	-	-	-	-	-	1	-	-	-	cf.1	-	-	-	-	-	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	16	3	35	1	2	-	6	2	3	2	19	3	-	33	1	-	25
Pisum/*Vicia* L.	pea/bean/large vetch	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Medicago lupulina L.	black medick	-	-	-	-	3	-	-	1	9	-	-	5	-	-	-	-	-
Medicago/*Trifolium sp.* L.	medick/clover	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Trifolium sp. L.	clover	-	2	-	-	11	-	4	7	2	3	6	6	-	-	1	-	-
Prunella vulgaris L.	self-heal	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata L.	ribwort plantain	-	-	-	-	1	cf.1	-	-	-	e.11	3	-	-	-	-	-	-
Odontites vernus (Bellardi) Dumort	red bartsia	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Galium palustre L.	marsh bedstraw	-	1	-	-	cf.1	-	-	-	-	-	-	-	-	-	-	-	cf.1
Galium aparine L.	cleavers	-	-	-	1	-	-	-	-	-	-	7	42	-	-	-	-	-
Asteraceae indet. (small)	daisy family	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-
Centaurea sp. L.	knapweed	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Anthemis cotula L.	stinking mayweed	-	-	-	-	-	1	2	2	-	e.20	-	1	-	12	-	-	10
Anthemis/*Tripleurospermum* L./Sch. Bip.	stinking/scentless mayweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Tripleurospermum inodorum (L.) Sch. Bip.	scentless mayweed	1	10	-	-	2	-	-	2	2	e.50	-	2	-	5	1	-	6
Juncus sp. (capsule)	rush	-	cf.1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Eleocharis cf. *palustris* (L.) Roem. & Schult.	common spike-rush	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
Carex sp. L. lenticular	sedge flat seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Poaceae (small indet.)	small grass seed	-	-	2	-	3	-	-	1	3	e.20	-	-	-	-	-	-	-
Poaceae (mid-large indet.)	medium to large grass seed	-	-	-	-	4	-	-	2	-	4	-	2	-	2	-	-	-
Poaceae (culm node)	grass culm node	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Poa/*Phleum* sp. L.	meadow grass/ cat's-tails	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	1	-
Melica/*Danthonia* L./(L.) DC. type	melick/heath-grass	-	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-
Avena sp. L. (grain)	oat grain	3	16	20	4	2	1	11	1	5	e.40	16	-	-	25	2	-	52
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	7
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Avena sp. L. (floret base wild)	wild oat floret base	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Avena sp. L. (floret base cultivated)	cultivated oat floret base	-	-	-	-	-	-	-	-	-	cf.1	-	-	-	-	-	-	-
Avena L./*Bromus* L. sp.	oat/brome grass	2	2	24	4	-	2	2	-	25	e.9	1	8	-	-	-	8	-
Bromus sp. L.	brome grass	-	1	12	-	1	2	-	-	4	5	-	-	-	-	-	7	-
Bud	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Charred roots	-	-	-	-	-	-	-	-	-	-	e.4	-	-	-	-	-	-	-
Dung/Tuber	-	-	-	2 frgs	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 10.7 Charred plant remains from Saxon and medieval pits at RMC Land

	Feature	1756	2126	2213	3722	3786	3810	3998	5541	6046	6229	6229	6369	7405	7064	7462	7505	7362	7703
	Context	1758	2122	2214	3726	3921	3807	3999	5542	6056	6231	6232	6370	7407	7067	7466	7506	7363	7704
	Sample	140	153	163	263	255	242	264	357	379	381	382	385	417	400	421	425	414	432
	Vol (l)	30	20	20	40	30	35	40	17	18	6	9	19	20	10	20	20	20	10
	Flot size (m)l	150	250	120	100	60	500	250	175	175	75	60	100	90	40	60	80	500	125
	Roots %	20	1	5	7	5	5	5	5	2	2	2	30	55	8	65	40	3	10
Cereals	Common name																		
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	-	24	-	-	-	1	1	-	7	-	-	-	-	-	-	15	-
Hordeum vulgare L. *sl* (grain)	barley	-	6	33	6	-	65	4	-	1	28	50	-	15	12	13	18	75	3
Hordeum vulgare L. *sl* (rachis frag.)	barley	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	1sr-rf	-
Triticum sp. L. (grains)	wheat	-	-	-	-	5	-	2	-	-	6+2g	-	-	-	cf.5	-	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	-	-	-	2	-	-	2	-	-	-	-	1	-	2	-	1	-	-
T. dicoccum/spelta (spikelet fork)	emmer/spelt wheat	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
T. dicoccum/spelta (glume bases)	emmer/spelt wheat	-	-	1	1	-	-	-	-	-	-	-	-	2	-	1	-	-	-
T. cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	350	36	41	38	9	525	132	300	35	190	114	9	12	8	73	43	2034	1220
T. aestivum/turgidum (rachis frag.)	bread wheat	38	3	3	25	3	392	122	825	131	e.193	e.111	8	11	4	42	28	e.1091	e.501
Triticum. cf. *turgidum* type (rachis frag.)	tetraploid rachis frag.	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-	-	-	-
T. cf. *aestivum* (hexaploid rachis frag.)	hexaploid rachis frag.	-	-	-	-	-	-	-	cf.6	-	-	-	-	1	-	-	-	-	e.5
Secale cereale (grain)	rye	56	65	34	cf.4	-	2	1	17	14	9	7	8	15	2	6	10	e.83	e.83
Secale cereale (rachis frag.)	rye	2	57	-	4	-	12	1	62	5	1	5	-	14	8	3	15	-	e.52
Cereal indet. (grains)	cereal	120	57	45	38	5	139	30	37	4	200	155	12	8	10	50	25	e.40	e.240
Cereal frag. indet. (est. whole grains from frags.)	cereal	-	12	25	20	-	63	60	-	3	50	40	4	12	6	15	23	e.60	e.190
Cereal indet. (rachis frag.)	cereal	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Cereal indet. (basal rachis frag.)	cereal	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
Cereal indet. (culm node)	cereal	-	-	-	-	1	-	1	-	1	1	-	-	-	-	-	-	-	-
Other species	Common name																		
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	-	8m	-	-	1	4	1	-	-	-	-	-	1	-	-	-	4	e.2
Papaver sp. L.	poppy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e.5
Urtica dioica L.	common nettle	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
Urtica urens L.	small nettle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Corylus avellana L. (frags)	hazelnut	40	10	6	10	14	28	9	2	-	1	4	7	-	-	6	1	280 +2 imm.	2
Chenopodiaceae	goosefoot/campion	-	2m	-	-	-	16	-	-	-	-	-	2	3	-	4	-	-	-
Chenopodium ficifolium Sm.	fig-leaved goosefoot	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-
Chenopodium album	fat-hen	-	-	-	-	-	-	-	4	2	-	-	-	1	1	-	2	-	e.36
Atriplex sp. L.	oraches	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Beta vulgaris L.	beet	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Caryophyllaceae indet.	pink family	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	3	-	-
Stellaria palustris Retz/*graminea* L.	marsh /lesser stitchwort	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stellaria media		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	e.5
Agrostemma githago L.	corn cockle	1	-	-	-	-	-	1	3	-	1	-	-	-	-	-	-	-	9
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank	-	-	1	-	-	-	-	-	-	2	-	-	2	-	-	1	e.18	e.4
Persicaria. hydropiper/mitis Spach/(Shrank) Opiz ex Assenov	water-pepper/tasteless water-pepper	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	cf.1
Fallopia convolvulus (L.) À. Löve	black bindweed	-	1	3	-	-	-	-	-	-	4	1	-	-	-	-	-	-	-
Polygonum aviculare L.	knotgrass	-	-	5	-	-	-	-	-	1	1	-	1	-	-	-	1	-	-
Rumex sp. L.	docks	3	-	56	4	1	4	2	2	8	11	e.16	-	11	1		4	e.23	e.13
Rumex sp. L. (bract)	docks	-	2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 whole fruit	-
Rumex acetosella group Raf.	sheep's sorrel	-	1+4m	16	-	-	-	-	-	2	-	4	-	-	--	1	3		e.35
Rumex cf. *crispus* L.	curled dock	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	-
Malva sp. L.	mallow	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Brassica nigra/oleracea (L.) W.D.J. Koch/L.	black mustard/wild cabbage	-	30m	-	-	-	1+1m	-	-	-	11	-	-	-	3+ 100m	-	-	7	e.14
Brassica/Vicia/Lathyrus POD		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Raphanus raphanistrum L.(capsules)	runch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Reseda sp.	weld/mignonette	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Rubus sp. L.	brambles	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fragaria/Potentilla	cinquefoil/strawberry	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-

Fragaria/*Potentilla*	cinquefoil/strawberry	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
Rosa sp. L.	rose	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prunus spinosa L.	sloe	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1frg	-	4f	-
Prunus sp. L.	plum, cherry, sloe	cf.3+35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crataegus /*Prunus* thorns	hawthorn/sloe thorns	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Crataegus monogyna Jacq. (fruit stone)	hawthorn	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Prunus domestica L.	domestic plum	8f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vicia faba var. *minor* L.	celtic bean	-	1	-	-	-	32	-	-	-	6	3	21	1	-	-	-	5	4
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	14	12	47	22	-	115	18	14	54	30	e.61	6	16	2	25	17	e.85	e.117
(3.5–4mm) cf. *Lathyrus aphaca*	yellow vetchling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45
Pisum sativum L.	pea	-	2	-	-	1	-	-	-	-	cf.2	-	-	-	-	-	-	-	-
Vicia sativa/*Pisum* type/size?	common vetch/pea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4f	-
Pisum/*Vicia* L.	pea/bean/large vetch	cf.2	11	5	-	-	30f	-	-	-	5f	-	-	-	-	-	-	-	-
Medicago lupulina L.	black medick	-	-	-	-	-	-	-	-	-	-	e.2	-	-	-	-	-	2	-
Trifolium sp. L.	clover	-	1	4	-	2	8	-	-	3	-	-	-	7	-	-	4	e.42	e.5
Linum usitatissimum L.	flax	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Oenanthe silaifolia M. Bieb	narrow-leaved water droplet	-	-	-	-	-	-	-	-	-	cf.1	-	-	-	-	-	-	-	-
Conium maculatum (Gouan) Loret	hemlock	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apiaceae	fennel type	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Apium sp. L.	fool's watercress	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	cf.1	-
Torilis sp. Adans.	hedge-parsley	-	cf.1m	-	-	-	4	-	-	-	-	e.2	-	-	-	1	-	1	-
Daucus carota L.	carrot	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Galeopsis sp. L.	hemp-nettle	-	1+1m	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Mentha sp.	mint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e.10	-
Prunella vulgaris	self-heal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e.10	-
Plantago lanceolata L.	ribwort plantain	-	-	2	1	-	-	-	-	-	e.7	e.2	-	-	-	-	-	e.15	-
Odontites vernus (Bellardi) Dumort	red bartsia	-	-	4	-	9	-	1	-	-	-	-	-	-	-	-	-	-	e.5
Galium aparine L.	cleavers	-	-	1	-	7	-	1	-	2	-	-	1	-	-	-	-	-	-
Centaurea sp. L.	knapweed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Senecio/*Solidago* sp.	ragwort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e.5
Lapsana communis L.	nipplewort	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	1	-	e.5
Anthemis cotula L.	stinking mayweed	14	-	128	2	7	64	22	72	2	e.30	e.4	52	2	2	37	18	e.200	e.569
Anthemis cotula L .(seed head)	stinking mayweed	-	1(4f)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2f
Tripleurospermum inodorum (L.) Sch. Bip.	scentless mayweed	-	1	24	-	-	-	-	8	2	e.12	e.2	-	2	4	4	-	e.90	e.70
Cyperaceae indet.	sedges	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Juncus sp. capsule	rush capsule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Eleocharis cf. *palustris* (L.) Roem. & Schult.	common spike-rush	3	-	-	-	5	-	-	4	-	1	-	-	2	-	-	-	-	-
Schoenoplectrus lacustris type (L.) Palla	common club rush	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Carex sp. L. lenticular	sedge flat seed	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-
Carex sp. L. trigonous	sedge trigonous seed	-	-	4	-	1	-	-	-	-	-	-	-	-	1	-	-	3	-
Poaceae (small indet.)	small grass seed	-	-	-	-	-	-	-	4	-	e.4	e.8	-	v	-	-	1	e.10	-
Poaceae (mid-large indet.)	med. to large grass seed	-	-	24	-	-	-	-	-	-	8	e.4	-	-	1	-	-	-	-
Poaceae (culm node)	grass culm node	2	-	-	-	-	9	-	-	2	2	e.6	-	-	-	1	-	e.100 +3bcn	2
Poaceae (culm internode)	grass stem	-	-	-	-	-	-	-	-	-	3	1	-	-	1basal	-	1basal	210+	-
Lolium perenne L.	perennial rye-grass	-	-	-	-	1	-	-	1	-	-	e.10	-	-	-	5	2	6	-
Poa/*Phleum* sp. L.	meadow grass/cat's-tails	3	1	111	-	-	8	-	-	-	e.16	e.14	1	7	3	9	-	-	e.139
Arrhenatherum elatius var. *bulbosum*	onion couch grass	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Avena sp. L. (grain)	oat grain	40	11	45	12	1	130	46	7	12	e.240	105	20	14	10	41	23	e.365	e.260
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-	-	-	-	++	-	-	1	-	-	-	-	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-
Avena sp. L. (floret base wild)	wild oat floret base	-	-	-	-	-	-	-	-	-	1	e.4	-	-	-	-	-	-	-
Avena sp. L. spikelet cultivated	oak spikelet cultivated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Avena sp. L. (floret base cultivated)	cultivated oat floret base	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-
Avena L./*Bromus* L. sp.	oat/brome grass	-	-	3	-	-	8	2	-	-	15	45	4	-	-	-	-	11	-
Bromus sp. L.	brome grass	-	1	9	1	-	4	-	2	-	-	1	11	-	-	-	-	29	-
Sparganium erectum L.	branched bur-reed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Mineralised	-	-	+++	-	-	-	-	-	-	3	7	-	-	-	-	-	-	-	-
Bud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
Seed indet.	-	-	e.40+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3?	-
Seed indet. small (<2.5 mm)	-	-	e.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 10.8 Charred plant remains from Saxon and medieval ditches at RMC Land

	Feature			Enclosure 2			Droveway	Ditch	Ditch	Ditch	Ditch	Ditch
	Ditch	2897	2912	2900	3527	3919	3954	7765	7765	7873	7742	7742
	Context	2899	2914	2901	3529	3920	3955	7766	7766	7631	7745	7746
	Sample	235	59	234	236	244	253	441	441*	445	438	439
	Vol (L)	40	10	28	38	40	39	10	10	10	9	10
	Flot Size ml	35	30	15	90	275	100	40	60	50	250	60
	Roots %	15	20	10	20	10	8	25	20	70	5	40
Cereals	Common name											
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	2	1	-	-	-	-	-	2	-	1
Hordeum vulgare L. *sl* (grain)	barley	12	-	19	1	41	23	10	5	9	8	7
H. vulgare L. *sl* (rachis fragment)	barley	-	-	3	-	-	-	e.5	-	-	-	-
Triticum sp. L. (grains)	wheat	-	-	3	-	-	-	-	-	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	-	1	-	-	-	1	-	-	-	-	-
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat	5	4	2	1	-	-	-	-	1	-	-
Triticum cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	20	38	22	18	1215	845	230	212	43	6000	815
Triticum aestivum/turgidum(rachis fragment)	bread wheat	7	45	-	-	812	260	e.135	e.154	46	e.2000	e.415
Triticum cf. *aestivum* (hexaploid rachis fragment)	hexaploid rachis fragment	-	2	-	-	-	8	-	-	-	-	2
Secale cereale (grain)	rye	-	11	-	5	50	2+cf.2	13	4	-	14	9
Secale cereale (rachis fragment)	rye	-	2	-	1	91	-	e.12	e.14	5	-	-
Cereal indet. (grains)	cereal	25	41	34	5	900	135	-	58	15	e.440	-
Cereal frag. indet. (est. whole grains from frags.)	cereal	9	12	10	8	-	e.500	-	30	14	-	-
Cereal indet. (rachis fragment)	cereal	-	2	-	-	-	-	-	-	1	-	-
Cereal indet. (culm node)	cereal	-	1	-	-	-	-	-	2	-	-	-
Other species	Common name											
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	-	2	-	-	-	-	3	-	-	1	1
Urtica dioica L.	common nettle	-	-	-	-	-	-	e.5	e.5	-	-	-
Urtica urens L.	small nettle	-	-	-	-	-	1	e.10	-	-	-	-
Corylus avellana L. (fragments)	hazelnut	-	5	5	9	17	8	8	3	2	2	3
Chenopodiaceae	goosefoot/campion	2	2	-	1	-	4	-	-	3	-	-
Chenopodium album	fat-hen	-	-	-	-	-	12	-	3	-	-	-
Chenopodium polyspermum L.	many-seeded goosefoot	-	-	-	-	-	-	-	-	1	-	1
Atriplex sp. L.	oraches	-	2	-	-	21	4	1	1	3	1	2
Stellaria media		-	-	-	-	-	-	-	-	-	-	e.5
Agrostemma githago L.	corn cockle	-	-	-	-	-	-	2	5	-	1	4
Spergula arvensis L.	corn spurrey	cf.1	-	-	-	-	-	-	-	-	-	-
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank	-	-	-	1	-	-	-	-	-	-	-
P. hydropiper/mitis Spach/(Shrank) Opiz ex Assenov	water-pepper/tasteless water-pepper	-	-	-	-	-	-	-	-	1	-	-
Fallopia convolvulus (L.) À. Löve	black bindweed	-	-	-	-	-	-	-	-	-	1	1
Polygonum aviculare L.	knotgrass	-	-	-	-	-	-	-	2	-	e.12	1
Rumex sp. L.	docks	3	2	3	3	1	1	3	8	1	-	3
Rumex acetosella group Raf.	sheep's sorrel	-	-	-	-	-	-	e.25	e.20	3	e.50	e.20
Rumex cf. *crispus* L.	curled dock	-	-	-	-	-	-	-	-	4	17	-
Malva sp. L.	mallow	-	-	-	-	-	-	1	-	-	-	-
Brassica nigra/oleracea (L.) W.D.J. Koch/L.	black mustard/wild cabbage	-	-	-	-	1	-	-	1	1	18	-
Raphanus raphanistrum L. (capsules)	runch	-	-	-	-	2	5	-	-	-	2	-
Erica L./*Calluna vulgaris* (L.) Hull (heather flowers)	heather	-	-	-	-	-	20	-	-	-	-	-
Prunus spinosa L.	sloe	-	1	-	-	2frg.	-	-	-	1	-	-

Crataegus/Prunus thorns	hawthorn/sloe thorns	-	-	-	-	-	-	1	1	-	-	-
Vicia faba var. *minor* L.	celtic bean	-	-	2 small	1	1	-	cf.1	1	1	1	2
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	20	4	10	7	1099	75	60	36	7	80	46
(3.5–4 mm) cf. *Lathyrus aphaca*	yellow vetchling	-	-	-	-	-	-	-	5	-	26	-
Lathyrus sylvestris type	narrow-leaved everlasting pea	-	-	-	-	-	-	-	-	-	1	-
Vicia sativa/Pisum type/size?	common vetch/pea	-	-	-	-	-	-	-	-	-	cf.4	-
Pisum sativum L.	pea	-	-	-	-	cf.7	-	-	-	-	-	-
Pisum/Vicia L.	pea/bean/large vetch	-	-	5	-	6	-	-	-	-	-	-
Trifolium sp. L.	clover	-	-	-	3	-	-	-	1	3	-	-
Linum usitatissimum L.	flax	-	1	-	-	-	-	-	-	1	-	-
Apiaceae	fennel type	-	-	-	-	-	-	-	-	-	-	e.5
Conium maculatum (Gouan) Loret	hemlock	-	-	-	-	-	-	-	-	-	1?	-
Apium sp. L.	fool's watercress	-	-	-	-	-	-	1	-	-	-	-
Solanum nigrum L.	black nightshade	-	-	-	-	-	-	-	-	-	-	1
Lamium sp.	dead nettle	-	-	-	-	-	-	e.5	-	-	-	-
Prunella vulgaris	self-heal	-	-	-	-	-	-	-	e.5	-	-	-
Plantago lanceolata L.	ribwort plantain	-	-	-	-	-	-	-	-	1	-	1
Odontites vernus (Bellardi) Dumort	red bartsia	-	-	-	-	-	-	-	-	-	-	e.5
Galium palustre L.	marsh bedstraw	-	-	-	-	-	1	-	-	-	-	e.5
Galium aparine L.	cleavers	-	-	-	-	2	1	7	3	-	1	-
Sambucus nigra L.	elder	-	-	-	-	-	-	-	1	-	-	-
Cirsium/Carduus sp.	thistle	-	-	-	-	-	-	-	-	-	2	-
Senecio/Solidago sp.	ragwort	-	-	-	-	-	-	e.10	-	-	-	-
Anthemis cotula L.	stinking mayweed	21	50	27	5	-	-	e.311	1	49	e.1030	e.528
Anthemis cotula L .(seed head)	stinking mayweed	-	-	-	1f	310	-	-	e.175	-	est.2	9frgs
Anthemis/Tripleurospermum L./Sch. Bip.	stinking/scentless mayweed	1	-	-	-	-	-	e.5	e.5	5	e.50	e.55
Tripleurospermum inodorum (L.) Sch. Bip.	scentless mayweed	2	2	-	-	-	-	-	-	-	-	-
Juncus sp. capsule	rush capsule	-	-	-	-	-	-	-	-	-	-	1
Eleocharis cf. *palustris* (L.) Roem. & Schult.	common spike-rush	-	2	-	-	-	-	1	-	1	-	-
Schoenoplectus lacustris type (L.) Palla	common club rush	-	-	-	-	-	-	-	-	1	-	-
Carex sp. L. lenticular	sedge flat seed	-	-	-	-	-	-	-	-	1	-	-
Carex sp. L. trigonous	sedge trigonous seed	-	1	-	-	-	-	-	-	-	-	e.5
Poaceae (mid-large indet.)	medium to large grass seed	-	2	-	2	-	-	3	-	-	e.40	-
Poaceae (culm node)	grass culm node	-	1	-	-	20	2	2	1	2	e.23	1
Poaceae (culm internode)	grass stem	-	-	-	-	-	-	-	-	-	-	2
Lolium perenne L.	perennial rye grass	-	-	-	-	-	-	12	-	1	-	e.6
Poa/Phleum sp. L.	meadow grass/cat's-tails	8	-	-	1	-	-	e.5	-	6	e.10	e.24
Arrhenatherum elatius var. *bulbosum*	onion couch grass	-	-	-	-	-	-	-	-	-	-	1
Avena sp. L. (grain)	oat grain	12	30	13	5	271	32	80	105	19	e.1062	140
Avena sp. L. (awn)	oat awn	-	-	-	-	-	-	-	-	-	44	-
Avena sp. L. (floret base indet.)	oat floret base indet.	-	-	-	-	-	-	-	-	-	-	1
Avena sp. L. (floret base cultivated)	cultivated oat floret base	-	-	-	-	-	-	-	-	-	e.22	-
Avena L./*Bromus* L.sp.	oat/brome grass	23	-	5	3	-	-	4	2	-	7	2
Bromus sp. L.	brome grass	1	-	cf.7	-	-	-	-	-	-	-	8
Melica/Danthonia L./ (L.) DC. type	melick/heath-grass	-	-	1	-	-	-	-	-	-	-	-
Bud	-	-	-	-	-	-	-	-	-	-	1 catkin	-
Seed indet.	-	-	-	-	-	-	-	e.10	-	-	-	-
Capsule? Indet.	-	-	-	-	-	-	1	-	-	-	-	-
Charred possible gall	-	-	-	-	-	-	-	-	1	-	-	-
Parenchyma	-	++	-	-	-	-	-	-	-	-	1	-

Table 10.9 Charred plant remains from other Saxon and medieval features at RMC Land

		Feature type			Waterholes				Scoop	Pit
		Feature	879	2460	3628	3734	5531	6454	6632	6329	1564
		Context	876	2486	3837	3729	5534	6460	WL	6336	1565
		Sample	128	179	248	251	355	388	392	383	138
		Vol (L)	30	40	40	40	9	19	20	16	2
		Flot Size ml	100	500	200	15	20	250	700	3100	200
		Roots %	5	2	2	8	25	5		2	10
Cereal	Common name									
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)		16	-	-	-	2	7	-	2	6
Hordeum vulgare L. *sl* (grain)	barley		24	2	28	-	8	36	-	-	-
Hordeum vulgare L. *sl* (rachis fragment)	barley		-	-	-	-	1	-	-	-	-
Triticum dicoccum/spelta (glume bases)	emmer/spelt wheat		-	-	-	-	-	-	-	-	1
Triticum cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat		334	255	55	22	26	550	12	5205	72
Triticum aestivum/turgidum (rachis fragment)	bread wheat		120	13	-	14	28	160	-	-	29
Triticum cf. *turgidum* type (rachis fragment)	tetraploid rachis fragment		-	-	8	-	-	-	-	-	-
Secale cereale (grain)	rye		12	16	6	cf.2	-	2	1	90	1
Secale cereale (rachis fragment)	rye		67	-	2	-	-	8	-	220	4
Cereal indet. (grains)	cereal		120	-	70	15	20	-	20	-	8
Cereal frag. indet. (est. whole grains from frags.)	cereal		33	-	10	8	2	-	-	500	-
Cereal indet. (rachis fragment)	cereal		-	-	-	-	1	-	-	-	-
Cereal indet. (culm node)	cereal		1	90	-	-	-	-	2	10	1
Other species	Common name									
Ranunculus sp. subg *Ranunculus* arb L.	buttercup		-	-	-	-	-	1	-	40	2
Ranunculus ficaria L.	lesser celandine		-	1 tuber	-	-	-	-	-	-	-
Corylus avellana L. (fragments)	hazelnut		30	6	-	4	1	2	-	-	6
Chenopodiaceae	goosefoot/campion		9	6	-	-	2	-	-	-	2
Chenopodium album	fat-hen		3	-	-	-	-	-	-	-	1
Atriplex sp. L.	oraches		1	59	-	-	-	-	-	-	-
Stellaria palustris Retz/*graminea* L.	marsh stitchwort/lesser stitchwort		-	1	-	-	-	-	-	-	2
Agrostemma githago L.	corn cockle		7	31	-	-	-	-	-	50	-
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank		1	-	-	-	-	-	-	-	-
P. hydropiper/mitis Spach/(Shrank) Opiz ex Assenov	water-pepper/tasteless water-pepper		2	-	-	-	-	-	-	-	-
Fallopia convolvulus (L.) À. Löve	black bindweed		2	-	-	-	-	1	-	-	-
Polygonum aviculare L.	knotgrass		-	-	-	-	-	-	-	-	2
Rumex sp. L.	docks		215	39	-	4	5	1	-	-	10
Rumex acetosella group Raf.	sheep's sorrel		-	-	-	1	2	8	-	-	2
Rumex cf. *crispus* L.	curled dock		-	-	-	-	-	12	-	-	-
Viola sp. L.	violet		-	-	-	-	1	-	-	-	-
Brassica nigra/oleracea (L.) W.D.J. Koch/L.	black mustard/wild cabbage		-	-	-	-	2	-	-	-	-
Raphanus raphanistrum L.(capsules)	runch		-	1f	-	-	-	-	-	-	-
Fragaria/Potentilla	cinquefoil/strawberry		-	-	-	-	-	1	-	-	-

Prunus spinosa L.	sloe	1	-	-	-	-	-	-	-	-
Prunus sp. L.	plum, cherry, sloe	-	-	-	-	-	-	-	-	9+30f.
Crataegus/Prunus thorns	hawthorn/sloe thorns	-	-	1	-	-	-	10	-	6
Prunus domestica L.	domestic plum	-	4f	-	-	-	-	-	-	-
Vicia faba var. *minor* L.	celtic bean	3	-	2	1	-	5	-	9930	1
Vicia faba var. *minor* L.	celtic bean est. from frags	-	-	-	-	-	-	-	6200	-
Vicia faba var. *minor* L.	celtic bean (infested)	-	-	-	-	-	-	-	75	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	21	100	17	13	9	101	20	40	14
Pisum sativum L.	pea	-	8	-	-	-	-	-	-	-
Pisum/*Vicia* L.	pea/bean/large vetch	4	-	-	2	-	1	-	-	4p/b
Medicago lupulina L.	black medick	1	-	-	-	-	1	-	-	-
Trifolium sp. L.	clover	16	36	-	-	-	-	-	-	33
Aethusa cynapium L./*Sium latifolium* L.	fool's parsley/greater water parsnip	1	-	-	-	-	-	-	-	-
Apium sp. L.	fool's watercress	cf.5	-	-	-	-	-	-	-	-
Daucus carota L.	carrot	-	cf.4+e.6	-	-	-	-	-	-	-
Stachys sp. L.	woundwort	-	cf.1	-	-	-	-	-	-	-
Plantago lanceolata L.	ribwort plantain	3	-	-	-	-	-	-	-	1
Galium aparine L.	cleavers	5	4	-	-	-	-	1	-	6
Sambucus nigra L.	elder	1	-	-	-	-	-	-	-	37
Centaurea sp. L.	knapweed	-	1	-	-	-	-	-	-	1
Lapsana communis L.	nipplewort	-	-	-	-	23	-	-	-	-
Tragopogon pratensis L.	goat's beard	1type	-	-	-	-	-	-	-	-
Anthemis cotula L.	stinking mayweed	252	440	5	9	22	72	-	2140	12
Eleocharis cf. *palustris* (L.) Roem. & Schult.	common spike-rush	4	1	-	-	-	-	-	-	-
Carex sp. L. trigonous	sedge trigonous seed	-	-	-	-	-	-	-	-	7
Poaceae (small indet.)	small grass seed	-	-	1	-	-	-	-	-	4
Poaceae (mid-large indet.)	medium to large grass seed	18	-	-	-	-	-	-	-	-
Poaceae (culm node)	grass culm node	3	4	-	-	-	1	10	20	36
Poaceae (culm internode)	grass stem	-	14	-	-	-	1	-	-	8
Lolium perenne L.	perennial rye-grass	-	-	-	1	-	1	-	-	1
Poa/*Phleum* sp. L.	meadow grass/cat's-tails	400	15	-	-	4	12	-	-	15
Arrhenatherum elatius var. *bulbosum*	onion couch grass	-	-	-	-	-	-	-	1	1
Avena sp. L. (grain)	oat grain	100	8215	11	8	23	375	7	300	9
Avena sp. L. spikelet cultivated	oak spikelet cultivated	-	43	-	-	-	-	-	-	-
Avena sp. L. (floret base cultivated)	cultivated oat floret base	-	56	-	-	-	-	-	-	-
Avena L./*Bromus* L.sp.	oat/brome grass	8	-	-	-	-	12	-	60	1
Bromus sp. L.	brome grass	2	-	-	-	-	1	-	40	1
Sparganium erectum L.	branched bur-reed	1	-	-	-	-	-	-	-	-
Bud	-	-	15	-	-	-	-	-	-	-
Seed indet.	-	18	-	-	-	-	-	-	-	-
Siliceous material (slag?)	-	-	-	-	-	-	-	-	-	+++
charred insect larva	-	-	-	-	-	-	-	-	-	1
Parenchyma	-	-	1x tuber+10f	-	-	-	-	-	-	-

Table 10.10 Charred plant remains from medieval features at ICSG

	Feature type	Gully G864	Pit	Ditch G816	Pit	Well	Waterhole
	Cut	10819	10445	11047	16445	16413	16200
	Context	10818	10446	11048	16447	16415	16220
	Sample	12009	12022	12027	17015	17043	17059
	Vol (L)	15	15	25	5	20	10
	Flot Size ml	50	150	175	250	400	250
	Roots %	20	30	8.75	2.5	8	n/a
Cereals	Common name						
Hordeum vulgare L. *sl* (hulled grain)	barley (many are tail grains)	-	-	1	-	-	-
Hordeum vulgare L. *sl* (grain)	barley	2	-	9	-	-	-
Triticum spelta L. (glume bases)	spelt wheat	-	1	-	-	-	-
Triticum. cf. *aestivum/turgidum* L. *sl* (grain)	bread wheat	21	-	141	98	3	-
Triticum cf. *aestivum sl* (rachis fragment)	bread wheat	-	19	5	2	1	-
Secale cereale L.(grain)	rye	6	-	17	-	1	cf.1
Secale cereale L. (rachis fragment)	rye	1	-	-	-	-	cf.1
Cereal indet. (grains)	cereal	18	-	101	51	3	-
Cereal frag. (est. whole grains)	cereal	5	-	10	10	3	-
Cereal indet. (culm node)	cereal	1	-	-	-	-	-
Other species	Common name						
Corylus avellana L. (fragments)	hazelnut	16	-	3	-	1	-
Stellaria media (L.) Vill.	stitchwort	-	-	-	-	1	-
Spergula arvensis L.	corn spurrey	1	-	-	-	-	-
Polygonaceae indet.	knotweeds	-	-	-	2	-	-
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank	-	-	-	1	-	-
Polygonum/Persicaria sp. L./Mill..	knotweed family	-	-	-	-	2	-
Rumex sp. L.	docks	-	-	-	9	-	-
Rumex acetosella group Raf.	sheep's sorrel	-	1	-	-	est.30	-
Erica L./*Calluna vulgaris* (L.) Hull (flowers)	heather	-	-	-	cf.30+	-	-
Vicia faba var. *minor* L.	celtic bean	-	-	7	-	-	-
Vicia L./*Lathyrus* sp. L.	vetch/wild pea	20	75	26	8	39	-
Pisum sativum L.	pea	-	-	14	-	-	-
Pisum/Vicia L.	pea/bean/large vetch	-	1	22f	1	-	-
Medicago lupulina L.	black medick	-	1	-	-	-	-
Trifolium sp. L.	clover	-	2	-	-	-	-
Sherardia arvensis L.	field madder	-	1	-	-	-	-
Galium aparine L.	cleavers	-	-	-	3	-	-
Centaurea sp. L.	knapweed	-	1	-	-	-	-
Anthemis cotula L.	stinking mayweed	-	6	-	15	1	-
Chrysanthemum segetum L.	corn marigold	-	1	-	-	-	-
Poaceae (basal culm nodes)	grass root stems	-	-	-	1	-	-
Avena sp. L. (grain)	oat grain	26	5	19	306	60	1
Avena L./*Bromus* L. sp.	oat/brome grass	-	-	2	252	-	-
Bromus sp. L.	brome grass	-	1	-	-	-	-
Dropping?	-	-	-	1	-	-	-
Dung/tuber	-	-	1	-	-	-	-

that of Stace (1997) for wild species and Miller (1987) for cereals.

In several cases samples were too rich to be completely sorted. In these cases the samples were fractionated and estimated counts produced from sub-samples by multiplying up. The percentage of each fraction sorted is marked at the top of the table, and where counts are based on estimates these are prefixed by "e.".

Waterlogged plant samples

Sub-samples of 1 litre were taken from bulk samples from these features and processed for the recovery of waterlogged remains (Tables 10.11–12). Laboratory flotation was undertaken with flots retained on a 0.25 mm mesh and residues on a 0.5 mm mesh. Residues and flots were stored in sealed containers with Industrial Methylated Spirits (IMS). The larger fraction (>5.6 mm) was sorted, weighed and discarded. The flots were sorted under a x10 to x40 stereo-binocular microscope and material extracted and identified where possible following the nomenclature of Stace (1997). As with the charred material the finer fractions of the waterlogged samples were often too rich to be extracted and quantified in full and, following the same procedure as the charred material, samples were fractionated and a 5% to 50% sub-sample examined.

Charred Plant Remains

Neolithic

Samples of Middle to Late Neolithic date were examined from both sites. In most cases by far the most predominant remains were those of hazelnut shell (*Corylus avellana*). Such remains were most abundant in pits 10821, 11018, and 11024, from ICSG and pit 2187 from RMC Land, where the number of hazelnut shell fragments were greater than 50 per litre of processed sediment.

Cereal remains were present in most of the samples, but generally rarely numbered more than a few grains. Where identifiable the grains could be seen to be of barley (*Hordeum vulgare* L.), free-threshing wheat (*Triticum aestivum/turgidum* sl.) and in the case of pit 5732 (and possibly 16109) of rye *(Secale cereale*). In many of these cases such remains were very poorly preserved.

Samples from excavations at Heathrow Terminal 5, which lies in close proximity to RMC Land and ICSG (Fig. 1.1), had also produced grains of free-threshing wheat from Neolithic features (Caruthers 2010; 2008), and dating of one of these grains has subsequently demonstrated this material to be intrusive (Healy *et al.* 2010).

Within Neolithic Britain the most prolific cereals recorded are emmer wheat (*Triticum dicoccum*), along with hulled and naked barley (*Hordeum vulgare* sl). As the material from these sites was often from shallow deposits with quite high numbers of roots, the cereal remains may very probably be intrusive. There is good reason to doubt that free-threshing wheat was present in Neolithic Britain (Stevens and Fuller 2012) and given the presence of rye and the Saxon and medieval activity on these sites, when free-threshing wheat and rye were dominant (see below), it seems most likely that at least these grains are related to activity of this date.

However, the remains of other cereals are less certainly intrusive. For this reason two Neolithic pit contexts with grains of barley were submitted for radiocarbon dating (RMC Land pit 5783 and ICSG pit 11024), and further unidentified cereal grains were submitted from the Neolithic enclosure G3001. The results clearly demonstrate that the grains were intrusive (NZA-32687, 262±45 BP; NZA-32684, 890±45 BP; and NZA-36738, 953±30 BP; see Chapter 11, Table 11.1). Two barley grains from a probable Early Bronze Age shaft 16049, associated with a deer antler and dated on charcoal to the Early Bronze Age (NZA-32685, 3602±45 BP), were dated to the late Romano-British/early Saxon period (NZA-32686, 1583±45 BP) and so are also quite likely to be intrusive (see Chapter 11, Table 11.2).

Similar problems have been encountered with the application of radiocarbon dates to cereal remains from securer deposits from other sites around the British Isles and demonstrate the problems that are evident when dealing with extremely low quantities of cereal grains from Neolithic and earlier Bronze Age sites.

Given that this material was found to be intrusive it is probable that the remainder of the material from both sites is of similar origin. As such there is no conclusive evidence for cereal agriculture in this region during the Neolithic.

Other remains in these Neolithic samples included occasional seeds of wild species that are commonly found growing as weeds in arable fields. These included those of dock (*Rumex* sp.), cleavers (*Galium aparine*), vetch (*Vicia/Lathyrus* sp.), medick (*Medicago* sp.), small seeded grasses (*Poa/Phleum* sp.), brome grass (*Bromus* sp.) and oats (*Avena* sp.), and most are recorded from later periods. As such, and given the probable intrusive cereals, such remains may also be intrusive.

The only other charred remains were a single seed of bramble (*Rubus* sp.) from pit G344 at ICSG and a stone of sloe (*Prunus spinosa*) from pit 5961. While both of these could also be intrusive, they are consistent with the collection of wild foods and have been recovered from other sites in England (see Moffett *et al.* 1989). Similarly, thorns of sloe or hawthorn (*Prunus/Crataegus* sp.) may have come in with branch and twig material, collected for fire wood.

Finally, although only examined for charcoal (see Challinor, below), a single tuber of onion couch grass (*Arrhenatherum elatius* var. *bulbosum*) was recovered from a charcoal-rich deposit (probable pyre debris) within ditch G2001 (19380) associated with a Middle Neolithic cremation cemetery. A radiocarbon date of 3340–2910 cal BC (NZA-31074, 4427±40 BP, 95% confidence) on this tuber indicates that the deposit is of the same date as the Neolithic cremated remains (see Chapter 11, Table 11.1). Other deposits were noted from the ditch fills but not analysed or radiocarbon dated.

Discussion

Finds of charred hazelnut shell are a common feature of Neolithic sites in England and have been interpreted as indicative of a diverse subsistence base with a strong reliance on wild foods alongside cereals (Moffett *et al.* 1989; Robinson 2000; Stevens 2007). The extent of the reliance on wild foods as opposed to cultivated cereals has been subject to much debate, with some advocating cereals playing little importance in the Neolithic diet (Thomas 1991; 1996), while others maintain that cereals still may have formed the major component of the diet (Rowley-Conwy 2000; 2004; Jones 2000; Jones and Rowley-Conwy 2007; Rowley-Conwy see also Robinson 2000 and Stevens 2007). The evidence from this site is consistent with a newly emerging picture of the Neolithic in which evidence for cereal agriculture becomes increasingly poor in the Middle to Late Neolithic, a picture which continues into the Early Bronze Age (see Stevens and Fuller 2012).

While similar assemblages were recovered from the Heathrow site, cereal agriculture has been suggested for that site on the basis of the presence of cereal pollen (Wiltshire 2008). However, it has been noted that the use of pollen data as evidence for cereal agriculture is highly problematic and far from reliable

(Tweddle *et al.* 2005; Brown 2007). As such there is no clear evidence from this region for cereal agriculture at this date, and it is certainly probable that all the small number of grains examined on this site are, as at Heathrow Terminal 5, intrusive.

The single tuber of onion couch grass, associated with wood charcoal (Challinor, see below) and the cremations and double ring ditch G2007, was dated to the Middle Neolithic. As discussed below, such remains are common in Early to Middle Bronze Age cremations (Robinson 1988), where they are associated with the construction of firebreaks around the pyre in long-grassland (Stevens 2008; see below). The finding of such a tuber from a Middle Neolithic context associated with cremation burials might then imply that both charcoal and tuber can be associated with pyre debris perhaps indicating that the bodies were cremated close to the monument. Further it would imply the construction of the double ring ditch within a landscape that at least in the immediate vicinity of the enclosure comprised long, infrequently grazed grassland.

Early Bronze Age

Only a single sample of Early Bronze Age date was examined for charred plant remains from cremation grave 16669 from ICSG. The sample contained only a few cereal remains and as with the Neolithic samples it is questionable given the type of context whether these might not also be intrusive.

The sample did however contain a number of seeds of wild species and stems of probable grasses and dicotyledonous plant, as well as tubers of lesser celandine (*Ranunculus ficaria*), onion couch grass (*Arrhenatherum elatius* var. *bulbosum*) and possible pig-nut (*Conopodium majus*). Seeds of wild species included wetland species, such as water-pepper (*Persicaria hydropiper/mitis* and *P. minor*) and probable marsh bedstraw (*Galium palustre*). Other species of grassland and shrub included dock (*Rumex* sp.), redshank/persicaria (*Persicaria* sp.) possible agrimony (*Agrimonia eupatoria*) and rose (*Rosa* sp.). Thorns of bramble/rose-type (*Rubus/Rosa* sp. were also relatively common.

Discussion

Tubers of onion couch grass are a relatively common find in Bronze Age cremations across Southern England (*cf*, Robinson 1988), while pignut is also occasionally found in such deposits (Moffett 1991; 1999).

It has been suggested that onion couch grass was hand-pulled as tinder (Robinson 1988), while with pignut, whose tubers are situated too deep to be removed by such a process, are thought to have been deliberately collected and burnt as a food offering (Moffett 1989). Tubers of lesser celandine, as found in cremation grave 16669, are also edible. However, given the absence of other edible species commonly found within Early Bronze Age assemblages, sometimes in great quantities, such as hazelnut, crab apple and sloe, it is questionable whether such remains can indeed be associated with pyre food offerings.

A more probable explanation is that such remains result from the creation of a firebreak for the pyre (see Stevens 2008). Within long grassland, as characterised by onion couch grass, such an operation would be an absolute necessity with the lighting of a pyre and certainly would have required the breaking of the turf. The gathering and burning of vegetation loosened by the breaking of the turf would account for tubers, seeds and stems. The thorns of bramble/rose may have been collected with wood and shrub species for the pyre (see Challinor, below). However, such plants would make poor tinder and as such the thorns perhaps also derive from plants cleared during the construction of a firebreak.

The assemblage then provides quite detailed information as to the nature of the landscape and vegetation within which the pyre was constructed. While onion couch grass is a common plant within long grassland, several of the species are more closely associated with overgrown shrub and relict woodland. Lesser celandine is found in damp/wet meadows, but also within woods. Water-pepper and agrimony are also associated with similar damp/wet long grassland and shaded/woodland type habitats. The assemblage then suggests that the pyre was constructed in over-grown, long, seldom grazed grassland, which was perhaps reverting to scrub with potentially some woody-scrub or woodland element nearby.

Middle to Late Bronze Age

A number of samples were attributed to a Middle/Late Bronze date. The majority of these were from the ICSG site, although a single sample from Middle Bronze Age well 3918 was analysed from RMC Land.

Cereal remains from the Middle Bronze Age feature comprised mainly of chaff (glumes and spikelet forks) of emmer wheat (*Triticum dicoccum*) and significantly no remains of spelt wheat (*Triticum spelta*) were seen. Weed seeds were also fairly scarce in this sample, consisting of a few seeds of dock (*Rumex* sp.) and small grasses.

The samples from ICSG were all of Middle/Late Bronze Age to Late Bronze Age date. As with the earlier sample from RMC Land emmer was the main wheat identified from the Middle/Late Bronze Age samples, while spelt was commoner in the Late Bronze Age samples with fewer remains of emmer. Grains and chaff of barley (*Hordeum vulgare*) were relatively infrequent although a number of grains were recovered from ditch G532 (1845) and some rachis fragments from waterhole 16198. Unlike the Neolithic samples, no remains of free-threshing wheat were recovered from any of these contexts, although this is more likely to reflect the greater depth of the features than any genuine change in the agricultural economy. No other crops were seen and no other remains of wild edible species were recovered, bar a single seed of bramble (*Rubus* sp.).

Seeds of other wild species were relatively infrequent in the samples, and include fat-hen (*Chenopodium album*), redshank/persicaria (*Persicaria lapathifolia/maculosa*), black bindweed (*Fallopia convolvulus*), docks (*Rumex* sp.), vetch/wild pea (*Vicia/Lathyrus* sp.), cleavers/goosefoot (*Galium* sp.), scentless mayweed (*Tripleurospermum inodorum*), grass seeds including oat/brome grass (*Avena/Bromus* sp), bristle club-rush (*Isolepis setacea*) and sedge (*Carex* sp.).

Generally chaff predominated in all these samples, with the exception of the assemblage from ditch 1845 in which grains of hulled wheat and barley were dominant. Most of the samples contained only a few weed seeds, mainly of larger seeded species such as vetch and oats.

Discussion

The low number of weeds, dominance of large weed seeds and generally higher presence of chaff is indicative of waste from the processing of hulled wheat brought to the site in a relatively clean state. The range of species is fairly limited in terms of providing information on the type of soils and nature of agricultural husbandry at this time. The presence of sedge and bristle club-rush can be taken as indicating some cultivation of wetter fields, but few of the remaining species are ecologically distinct.

Charred cereal remains and associated weed seeds have been relatively rare finds on Middle to Late Bronze Age sites in the Upper to Lower Thames. While Aldermarston produced some remains, mainly of emmer and barley (Arthur and Paradine 1980), Reading Business Park and Prospect Park produced little to no cereal remains (Campbell 1992; Hinton 1996b). However, waterlogged and charred remains of emmer and spelt wheat, were fairly well represented at the two sites discussed here with waterlogged glumes of emmer present in one waterhole (16198) from ICSG (see below), as well as being recorded from the nearby sites of Perry Oaks (Carruthers 2008) and Heathrow Terminal 5 (Carruthers 2010).

The prominence of emmer wheat during the Middle Bronze Age period is demonstrated by radiocarbon dates on emmer wheat from features at both sites. From ICSG a date of 1500–1300 cal BC (NZA-31069, 3133±35 BP, at 95% confidence) was obtained on emmer wheat grains from ditch G532 (1845), while a slightly later date, 1410–1190 cal BC (NZA-31084, 3037±35 BP, at 95% confidence) was obtained on emmer chaff from an upper fill of well 3918 (3913).

While the earlier feature at ICSG did have two possible glumes of spelt wheat, it might be noted that no definitive identifications of spelt were made for this Middle to Middle/Late Bronze Age period. However, while the prominence of spelt wheat increased from the Late Bronze Age into the Early Iron Age for many sites in southern England, spelt wheat is now known from a number of sites to have been introduced as early as the Middle Bronze Age (see Pelling 2003; Clapham 1999; Campbell and Straker 2003; Martin and Murphy 1988; Murphy 1998; Monckton 2000). Waterlogged remains of spelt have also been recorded from a waterhole at Perry Oaks and were radiocarbon dated to the Middle–Late Bronze Age (Carruthers 2008).

Late Bronze Age to Early Iron Age

Five pits and waterholes of Late Bronze Age to Early Iron Age date were examined from RMC Land. All were relatively rich in cereal remains, mainly of hulled wheat chaff with both spelt (*Triticum spelta*) and emmer (*Triticum dicoccum*) wheat represented. Generally emmer is at least as well, if not occasionally better, represented as spelt in these samples. Barley (*Hordeum vulgare*) appears to be slightly more prominent in the samples in comparison to the Middle/Late Bronze Age samples discussed above, although the crop is still a minor component in comparison to remains of hulled wheat. In terms of wild food remains, fragments of hazelnut (*Corylus avellana*) shell were well represented, along with occasional fragments of sloe (*Prunus spinosa*), within well 4240.

The range of weed seeds was similar to those seen in the Middle to Late Bronze Age samples, although well 4240 notably contained many more seeds of wild species that seen in the earlier samples. In particular there were numerous seeds of goosefoot (*Chenopodium* sp.) and dock (*Rumex* sp.), along with those of clover (*Trifolium* sp.), hedge-parsley (*Torilis* sp.), sheep's sorrel (*Rumex acetosella*), nipplewort (*Lapsana communis*) and small grass seeds, including meadow grass/cat's-tails (*Poa/Phleum* sp.).

A single Late Bronze Age to Early Iron Age sample was also examined from the ICSG site, from hearth 10056. The sample was relatively sparse and no cereals were identified to species beyond a single glume of spelt wheat. Along with some of the species listed above were also seeds of a few wetland species, such as blinks (*Montia fontana* subsp. *chondrosperma*) and sedge (*Carex* sp.).

Discussion

The samples seem to indicate a similar agricultural scenario to that described above with probably the storage of relatively clean spikelets on the settlement, perhaps after the cereals had been threshed, winnowed and sieved in the field following harvest in summer. The sample assemblage from well 4240, dated to the Late Bronze Age/Early Iron Age, 800–520 cal BC (NZA-31086, 2513±35 BP, 95% confidence), was high in smaller weed seeds and as such may indicate that the crop from which this deposit was derived had been stored in a slightly less clean state than appeared to be normal practice at the site.

The prominence of emmer can be seen to continue into the Early Iron Age period with spelt wheat becoming an increasingly important crop. Spelt wheat is often seen as more suited to autumn sowing, and emmer to spring (see Jones 1981), but whether the crops were grown separately is difficult to establish and it may even be that they were grown together as a maslin.

Romano-British

A large number of samples from Romano-British features were examined from ICSG, with no samples examined of this date recovered from RMC Land.

The main cereal represented in these samples was spelt wheat (*Triticum spelta*), with chaff being present and generally dominant within all of them. Unlike in the Late Bronze Age to Early Iron Age period, the Romano-British samples only have a few remains of emmer wheat (*Triticum dicoccum*).

Other cereal remains include those of barley, which where identifiable could be seen to be of hulled 6-row barley (*Hordeum vulgare* subsp. *vulgare*). Barley generally appears better represented than it was in the earlier periods, with quite high numbers of grains in several of the samples.

Of some interest was the presence of rye (*Secale cereale*) rachises and occasional grains. While generally only small numbers of rye were recovered from the samples, in the case of that from well 1087 such remains were recovered in high enough numbers to suggest that they are not intrusive and represent the cultivation of the crop at this time. Rachises of rye from this well, context 4817, were submitted for radiocarbon dating and yielded a date of cal AD 240–510 (NZA-32694, 1680±45 BP, at 95% confidence) demonstrating them to be late Romano-British in date.

The possibility that some of the oats (*Avena* sp.) represent the cultivated crop cannot be dismissed, although of the three oat floret bases, identified by virtue of their basal disarticulation scars, two (from ditch 16663) could be seen to be of the wild type (*Avena fatua*-type), while only one (from well 1087) was tentatively identified as from cultivated oat (*Avena sativa*-type).

A few germinated coleoptiles (sprouts) and grains of probable hulled wheat were seen in occasional samples from ICSG. Free-threshing wheat (*Triticum aestivum*) was scarcely present in any of the samples and those from gully 4339 may well be intrusive, as often argued for such remains from Romano-British contexts (van der Veen and O'Connor 1998). No certain remains of leguminous crops were found, although two large seeds may be of celtic bean/pea (*Vicia faba*/*Pisum sativum*). Fragments of hazelnut (*Corylus avellana*) shell occurred sporadically through the Romano-British samples, but never in great quantity.

The range of wild species represented in the samples was somewhat greater than seen in the earlier periods. Many of the species seen were similar to those previously represented, such as fat-hen (*Chenopodium album*), black bindweed (*Fallopia convolvulus*), knotgrass (*Polygonum aviculare*), persicaria (*Persicaria maculosa*/*lapathifolium*), vetches/wild peas (*Vicia*/*Lathyrus* sp.) and oats (*Avena* sp.). Species not previous recovered from earlier features included the occasional seeds of species that are known from other sites in England to be common Iron Age and Romano-British weeds, such as stitchwort (*Stellaria media*), parsley-piert (*Aphanes arvensis*), self-heal (*Prunella vulgaris*), ribwort plantain (*Plantago lanceolata*), red bartsia (*Odontites vernus*) and knapweed (*Centaurea* sp.), while rush (*Juncus* sp.) and spike-rush (*Eleocharis palustris*) are also likely to be growing as weeds at this date.

Discussion

As with much of Roman Britain, spelt can be seen on these sites to be the main and dominant crop for this period (van der Veen and O'Connor 1998). The remains of emmer are so few as to raise the question as to whether emmer was grown as a crop in its own right during this period. Barley, while poorly represented in most of the samples, may have been grown mainly as a fodder crop explaining its infrequent occurrence. Charred cereal remains most often occur as waste from routine processing of stored crops is discarded in the hearth. In the case of the storage of hulled wheats, as stated below, this is most probably as semi-clean spikelets, and while hulled barley may have been stored as semi-clean grain it is unlikely to have been dehusked or further sieved if destined for use as fodder.

As with the Bronze Age and Iron Age samples, the high presence of glume chaff can be associated with the storing of hulled wheats as spikelets on the site. As with previous periods, that glumes outnumber grains can then be taken to indicate the burning of waste during the routine processing of hulled wheat spikelets taken from storage. The number of weed seeds is higher than in previous periods, although this may reflect the larger amounts of cereal waste from these features in general. That the weed assemblage is still slightly dominated by larger seeded species, in particular those of vetches, knotweeds, and oats/brome grass, would seem to indicate that crops were still brought to and stored on the settlement as relatively clean spikelets, having undergone threshing, winnowing, coarse and fine-sieving, probably in the field, following harvest in summer (*cf* Stevens 2003).

Of some interest is the appearance of mallow (*Malva* sp.) and potentially also corncockle (*Agrostemma githago*), as both are probable Roman introductions (Godwin 1984), becoming increasingly common in later periods. Of similar significance, and quite probably provenance, is stinking mayweed (*Anthemis cotula*). This species has been strongly associated with the cultivation of heavy clays soils, and its seeds were present in a number of the samples.

The slightly wider range of species present in the Romano-British samples allows for a more detailed insight into the arable husbandry techniques practised during this period. As noted above the presence of stinking mayweed can be taken to indicate the cultivation of heavier clay soils (Jones 1981). However, several of the species indicate a much wider range of soils under cultivation. For example, sheep's sorrel is commonest on acidic to circum-neutral, sandier drier soils; while spike-rush, blinks and rush are commonest on wetter soils. Other species, such as black medick and ribwort plantain often tend to be commoner on drier, more calcareous soils.

The presence of seeds of non-twining species, including several low growing species seeds such as clover (*Trifolium* sp.) would imply that crops were harvested low to the ground most probably by sickle (see Hillman 1981).

Early to middle Saxon

Samples from features of Saxon date were only available from RMC Land. The earliest samples came from five early Saxon features, a further two came from middle Saxon pit 6229, from which free-threshing wheat grains were radiocarbon dated to *cal AD 680–880 (NZA-31080, 1253±30 BP, at 95% probability)*. Three early–middle Saxon features were also examined from RMC Land Area 3, and radiocarbon dating of barley grains from one of these features, 7405 (7407) provided a date of *cal AD 660–880 (SUERC-27147, 1275±30 BP, at 95% probability)*, showing it to be of similar date to pit 6229.

All of these samples, bar the sample from waterhole 3786, were relatively rich in cereal remains of free-threshing wheats (*Triticum turgidum/aestivum*-type), barley (*Hordeum vulgare*) and rye (*Secale cereale*). It is also possible that seeds of oats (*Avena* sp.) may be of the cultivated variety; however, only a few floret bases were recovered from the samples. Comparatively it might be noted that barley and rye are more common in the early and early/middle Saxon period than in the late Saxon to early medieval period, while evidence for cultivated oats (*Avena sativa*) seem to be restricted to later periods.

In most of these samples cereal grains predominated over chaff, with the exception of a particularly rich sample from pit 5541, in which rachis fragments of both free-threshing wheat, most probably of the hexaploid-type (*Triticum aestivum* sl), and rye far outnumbered cereal grains. Rye rachis fragments were also frequent within the sample from pit 2126, although here grains of rye and to a lesser extent free-threshing wheat still dominated. Other crops present in the samples included pea (*Pisum sativum*) and celtic bean (*Vicia faba*), the latter being mainly present mainly in middle Saxon pit 6229.

Four seeds of carrot (*Daucus carota*) were also recovered although, unlike with the waterlogged material, it is not possible to establish if they came from the domestic or wild variety. The wild species (*Daucus carota* subsp. *carota*) tends to be found more commonly on chalky soils and near the sea. However, the possibility that such seeds come from relic or feral populations of domesticated carrot also remains a possibility. Likewise a single seed of beet (*Beta vulgaris*) may be of the cultivated or wild variety, although the wild plant tends to be present only in arable fields closer to the coast (Hanf 1983).

A number of mineralised seeds of possible mustard (*Brassica/Sinapis* sp.) were recovered from pits 2213 and 7064. Given the presence of other mineralised seeds of wild species, mainly docks, hedge-parsley, goosefoots, and probable buttercup (*Ranunculus* arb), such remains may be of wild species, such as black mustard (*Brassica nigra*) growing locally. However, the presence of mineralised material can be indicative of cess which potentially could contain seeds of cultivated black or white mustard (*B. nigra/Sinapis alba*). The only other probable food resources included several fragments of hazelnut (*Corylus avellana*) shell, recovered from all but one of the early Saxon samples, and one of the early–middle Saxon samples in Area 3.

As with the samples from the pre-Romano-British phases of the sites, the early Saxon samples contain a relatively narrow range of seeds of wild species. Those present are mainly of the same large seeded species seen in previous periods, such as vetches/wild peas (*Vicia/Lathyrus* sp.), knotweeds (*Polygonum* sp.), black bindweed (*Fallopia convolvulus*), cleavers (*Galium aparine*), corncockle (*Agrostemma githago*), and oats (*Avena* sp.). Smaller seeds included those of stinking mayweed (*Anthemis cotula*), scentless mayweed (*Tripleurospermum inodorum*), dock (*Rumex* sp.), and sheep's sorrel (*Rumex acetosella*). A few seeds of wetland species were also present including sedge (*Carex* sp.), branched bur-reed (*Sparganium erectum*), spike-rush (*Eleocharis palustris*), common club rush (*Schoenoplectrus lacustris*), and potentially marsh stitchwort (*Stellaria palustris*). It was notable that the sample from pit 2213 contained quite a high number of seeds of small grasses including meadow grass/cat's -tails (*Poa/Phleum* sp.) and a few of red bartsia (*Odontites vernus*) and clover (*Trifolium* sp.).

Saxo-Norman and early medieval

Twenty-eight samples from features of Saxo-Norman date and/or late Saxon/early medieval date were examined from RMC Land. The most common cereal remain present in these samples were grains of free-threshing wheat (*Triticum turgidum/aestivum*-type), although compared with the preceding early and middle Saxon samples, rachises were even better represented, outnumbering grains in three of the samples, most notably pit 6046. Rye (*Secale cereale*) was also reasonably well represented in several of the samples, and in pit 1104 rachis fragments of rye far outnumbered identified grains. Barley (*Hordeum vulgare*) was present in several of the samples, although generally not as well represented as in the early and middle Saxon samples. As with the previous period, while grains of oat (*Avena* sp.) were quite numerous in several of the samples, few floret bases were recovered from these samples that might help determine whether cultivated oat was present. However, a sample from RMC Land Area 3 did produce quite high numbers of grains and a number of probable floret bases from cultivated oats (*Avena sativa*) while a single possible cultivated floret base was also recovered from pit 7362, although this feature also had a floret base of wild oats (*Avena fatua*).

Regarding other crops, remains of celtic bean (*Vicia faba*) were particularly prevalent within tree-throw hole 6329 with over 1000 beans present for each litre of sediment processed. A radiocarbon date on one of the beans showed the deposit to be late Saxon in date, *cal AD 890–1000 (NZA-31085, 1075±35BP, at 95% probability)*. A second deposit, pit 3810, located very close to this feature also yielded some remains of bean and was thought to be of potentially similar date. Seeds of celtic bean were present in several of the other samples, but no remains of pea (*Pisum sativum*) were positively identified. In addition to this evidence for pulse crops, a single seed of flax (*Linum usitatissimum*) was recovered from ditch 2912.

Hazelnut (*Corylus avellana*) shell fragments were well represented in the samples, including a large number from pit 7362 (7363) that also contained two immature whole hazelnuts. A few of the samples contained stones of sloe (*Prunus spinosa*), along with fragments of larger *Prunus* stones, most probably domesticated plum (*Prunus domestica*). This species was positively identified from pit 1756, while it is probable that fragments from pit 1564 also represent domestic plum rather than sloe. Seeds of bramble (*Rubus* sp.) were also present in pit 1756, while those of elder (*Sambucus nigra*) were recovered from 1564. However, it might be noted that pit 1756 also had a seed of rose (*Rosa* sp.), and stone of hawthorn (*Crataegus monogyna*), while pit 1564 had several thorns of sloe/hawthorn and so these species rather than representing wild food resources may come from the burning of shrub or hedge material.

As with the previous period the assemblages were dominated by seeds of vetches/wild peas (*Vicia/Lathyrus* sp.), docks (*Rumex* sp.), knotweeds (*Polygonum* sp.) and quite high quantities of stinking mayweed (*Anthemis cotula*). Seeds of this last species along with smaller grass seeds of meadow grass/cat's-tails type (*Poa/Phleum* sp.) were especially abundant in waterhole 879. The range of species was otherwise similar to that seen in the early and middle Saxon period, although a few capsules of runch (*Raphanus raphanistrum*) were recovered from ditch 4192 (3954), ditch 7742 (7745) and pit 7703 (7704), which was generally absent from the previous periods.

A few features from RMC Land Area 3 (pit 7703, ditch 7742 and 7765) provided samples that had seeds of vetch/wild pea that were much larger (3–4 mm in charred specimens) than many of the native British species. The seeds were often sub-oval with slightly squared off edges. The hilum was relatively short and positioned off centred on the 'corner' of the seed. Such specimens compare well with modern seeds of yellow vetchling (*Lathyrus alpaca*), a probably introduced species that is common on rough ground and grassland on drier sandy, gravel and chalk soils. The plant has been recorded from Anglo-Saxon samples at West Cotton, Northamptonshire (Campbell 1994) where it is proposed it probably came in as either a weed of cereals, bean or other leguminous crops. While celtic beans were recorded in these samples it seems more probable that it came in as a weed of free-threshing wheat.

Discussion

The Saxon assemblages indicate the cultivation of barley, free-threshing wheat and rye, along with pea and bean, a suite of crops that were to continue in cultivation through the medieval period to the present day.

The majority of rachises of free-threshing cereals are removed in the earliest processing stages, during threshing, raking, winnowing, and coarse sieving (Hillman 1981). The presence of high numbers of rachises of rye and free-threshing wheat in pit 5541 may then indicate the presence of earlier stages of crop processing in this assemblage. Likewise the high number of rye rachises in pit 2126 may also indicate earlier stages of rye processing being present in this feature. However, small weeds seeds, which are often more frequent in the earlier stages, were generally poorly represented. The exception to this were seeds of stinking mayweed (*Anthemis cotula*), which were fairly well represented in this sample. Seeds of this species, as also with scentless mayweed (*Tripleurospermum inodorum*), have a tendency to remain in the seed head and are consequently often removed during coarse-sieving with the rachis fragments (see Jones, G. 1984; 1987). These assemblages might then represent coarse-sieving waste, or waste from the processing of ears.

Such assemblages are not unusual within the medieval period, but are often interspersed with assemblages more typical of the storage and processing of crops stored as cleaned grain. A distinct possibility is that following harvest, depending on labour demands and the weather, that sometimes some crops were stored as sheaves and only processed later in the year in a manner similar to that recommended by Thomas Tusser (1557).

The range of crops in this period represents a fundamental shift occurring between the Romano-British and Saxon periods in which many traditional agricultural practices were abandoned. Included within this change is the relatively sudden replacement of spelt wheat with free-threshing wheat. Leguminous crops also seem to become more frequent, a change that may be related to the implementation of three field rotational systems, certainly in place by the medieval period, in which cereal crops are rotated with leguminous crops in order to restore some of the nitrogen to the soil.

In addition, while there is some indication of the cultivation of clay soils within the Romano-British period, species such as stinking mayweed become increasingly common within the Saxon and medieval periods. They are perhaps to be associated with the introduction of different tillage types, including the replacement of the ard with the plough and eventually the introduction of the mouldboard ploughs, in order to facilitate the working of such clay soils. Despite such potential changes in ploughing regimes, it is interesting to note that spike-rush, an indicator of wet, flooded fields and low disturbance, seems to persist into this period.

Medieval 11th–13th century

An assemblage from a single feature (2460) of a 11th- to 12th-century date was examined from RMC Land, along with six of a slightly later 12th–13th-century date from ICSG. As with the previous period, the main crop represented was free-threshing wheat (*Triticum aestivum/turgidum* sl.). Rye (*Secale cereale*) and barley (*Hordeum vulgare*) were both still present, but by comparison with wheat were quite poorly represented. Rachis fragments were also by comparison to the previous period poorly represented. A single sample from RMC Land, well 2460, was extremely rich in grains of oats and also contained a large number of clearly identifiable florets and whole spikelets of cultivated oat (*Avena sativa*). In terms of other crops a sample from ditch 11047 at ICSG contained both seeds of pea (*Pisum sativum*) and celtic bean (*Vicia faba*), while the sample from RMC Land has a few fragments of probable domesticated plum (*Prunus domestica*). Fragments of hazelnut (*Corylus avellana*) shell were also present in several of the medieval samples, but other than a single tuber of lesser celandine (*Ranunculus ficaria*) from RMC Land no other potential wild food resources of this date were recovered.

The weed flora from the medieval assemblages at ICSG was generally small, comprising mainly seeds of vetches/wild peas (*Vicia/Lathyrus* sp.), oats/brome grass (*Avena/Bromus* sp.) and potentially oats (*Avena* sp.), although these may of course be of the domesticated variety. Two species not previously positively identified present in the samples from ICSG were corn marigold (*Chrysanthemum segetum*) and corn spurrey (*Spergula arvensis*), both species associated with drier, sandier, acidic soils, while a single seed of field madder (*Sherardia arvensis*), a species associated with drier, calcareous soils, was also recovered. No seeds of wetland species were present in these samples, although a single seed of stitchwort (*Stellaria* sp.) from well 2460 at RMC Land may be of marsh stitchwort (*Stellaria palustris*) rather than lesser stitchwort (*Stellaria graminea*).

The samples from ICSG also contained seeds of stinking mayweed (*Anthemis cotula*), although these were fairly poorly represented compared to the Saxon and Saxo-Norman periods. The oat-rich single medieval sample from RMC Land did have high numbers of seeds of stinking mayweed, along with seeds of corncockle (*Agrostemma githago*), orache (*Atriplex* sp.), clover (*Trifolium* sp.), and several seeds of carrot (*Daucus* sp.). As discussed above, it was not possible to determine if the carrot seeds came from cultivated, wild or indeed feral plants.

Discussion

The continuation of a suite of crops first seen in the early Saxon samples can be seen to continue into the medieval period. While domestic oat (*Avena sativa*) was not seen in the Saxon period its archaeological presence as a crop in the medieval period is confirmed by the find of a large quantity of grain recovered from well 2460 at RMC Land.

In contrast to the early Saxon and late Saxon/early medieval periods, the lower proportion of rachises might be associated with the more regular storage of crops in a clean state.

Waterlogged Plant Remains

Ten samples were examined for waterlogged plant remains (Tables 10.11–13). Nine were selected, mainly from well fills of Bronze Age to medieval date, from ICSG, while a single medieval sample was also available from RMC Land.

Unlike charred material which consists predominately of crop remains, comprising cereal grains, chaff and their associated weed flora, waterlogged samples are largely composed of material from the local vegetation that grew around the feature in question. As such, economic plants are often much less well represented in waterlogged assemblages compared to those of the local vegetation. However, in contrast to charred material, examination of such assemblages can provide important information on the nature of the vegetated environment of the settlement itself.

For ICSG all the main periods of occupation, bar the Neolithic, provided features that contained waterlogged material. For RMC Land only a single feature of Saxo-Norman date (waterhole 6632) provided such material.

Middle Bronze to Late Bronze Age/ Early Iron Age

A total of four samples were examined from ICSG. These included two samples from waterhole 16198 (G4168), for which a radiocarbon date of 1210–910 cal BC on a log ladder (OxA-8470, 2870±45 BP, at 95% confidence) was available, and one from well G2156 which contained an oak lid or vessel fragment. Dates on a waterlogged hazelnut (*Corylus avellana*) shell fragment from this feature yielded a Late Bronze Age/Early Iron Age date of 780–410 cal BC (NZA-31073, 2473±35 BP, at 95% confidence), while the lid itself provided a date of 1110–900 cal BC (NZA-32370, 2829±35 BP, at 95% confidence). The remaining sample came from a Middle Bronze Age well G545.

The sample from well G545 had little to no waterlogged material other than a few seeds of bramble (*Rubus* sp.). Such seeds may have been suspected to have been intrusive but for their depth, however, radiocarbon dating demonstrated them and the feature to be Middle Bronze Age in date, 1420–1210 cal BC (NZA-31068, 3048±35 BP, at 95% confidence).

The samples from 16198 and G2156 were much richer in waterlogged remains and showed some broad similarities to each other. Both had large numbers of wood fragments, twigs, buds, seeds, thorns, stones and nuts from tree and shrub species. These included large numbers of stones/fruits of hawthorn (*Crataegus monogyna*) and sloe (*Prunus spinosa*), as well as thorns of both species.

In several cases these stones could be seen to have been gnawed by small rodents. Whole hazelnuts, immature nuts and fragments of hazelnut shell were also frequent both in context 16186 from waterhole 16198, and the later well G2156. Seeds of elder (*Sambucus nigra*) were also frequent in both samples, along with seeds and probable thorns of bramble (*Rubus* sp.).

Differences noted between the two features in terms of tree and tree/shrub species were that the Late Bronze Age/Early Iron Age well G2156 contained many stones of dogwood (*Cornus sanguinea*), which was absent from 16198, while the Middle to Late Bronze Age waterhole 16198 contained numerous acorn cups and occasionally whole acorns from oak (*Quercus* sp.), especially from 16198. Other species of woody scrub represented included dog rose (*Rosa canina*) of which seeds and possible thorns were recovered.

Of some interest are seeds of three-nerved sandwort (*Moehringia trinervia*) in well G2156. This species is commonest in mull-soils forming under deciduous woodland or as a relict of woodland. While bittersweet (*Solanum dulcamara*), whose seeds were only recovered from waterhole 16198, is also a general plant of open woodland, hedges and on the edge of woody scrub. Occasional seeds of violet (*Viola* sp.) recovered from both features were of the larger seeded types (eg, *V. hirsuta/odorata*) often more commonly associated with wet woodlands (see Godwin 1984).

Seeds of common nettle (*Urtica dioica*), can be found in nitrogen-rich soils within wasteland, poor grassland and on the edge of overgrown scrub and were very frequent in all these samples. Bracken (*Pteridium aquilinum*), while found on heaths, can be commonly found in open woodlands and on the edge of such vegetation, as well as taking over poorly managed grazing land.

Seeds of buttercup (*Ranunculus repens, R. bulbosus, R. acris*), are present in all three samples. Most are probably seeds of creeping buttercup (*Ranunculus repens*), a species found in damp long grassland, pasture and also woods. Nipplewort (*Lapsana communis*) was well represented, particularly in waterhole 16198, and is commonly found in open woods, hedgerows and waste ground.

Seeds of docks (*Rumex* sp.) were present in both features and particularly common in the Late Bronze Age/Early Iron Age well G2156. By virtue of a great number of seeds still within their fruiting bodies it was possible to identify them as clustered dock (*Rumex conglomeratus*), a species mainly of damp grasslands

Table 10.11 Waterlogged plant remains from Middle Bronze Age and Late Bronze Age/Early Iron Age features at ICSG

	Phase		MBA		LBA–EIA
	Feature type	Well G545	Waterhole		Well G2156
	Cut	1127	16198		17580
	Context	1917	16186	16188	17581
	Sample	2045	17068	17069	18022
	% sorted (e=estimate) 2 mm %	100	50	10	25
	1 mm %	100	10	5	10
	0.5 mm %	100	10	5	5
Cereals	Common name				
Triticum dicoccum (Schübl) (glume base)	emmer wheat	-	-	est.80	-
Triticum dicoccum (Schübl) (spikelet fork)	emmer wheat	-	-	est.20	-
Other species	Common name				
Pteridium aquilinum (L.) Kuhn	bracken	-	-	-	e.180
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	-	e.90	e.80	e.100
Ranunculus sardous Crantz.	hairy buttercup	-	e.60	e.220	-
Ranunculus sceleratus L.	celery-leaved buttercup	-	-	-	est.40
Ranunculus flammula L.	lesser spearwort	-	e.40	e.40	-
Papaver sp. L.	poppy	-	-	-	1
Fumaria sp.	fumitory	-	1	-	-
Urtica dioica L.	common nettle	-	e.1050	e.960	e.2760
Quercus sp. L. (acorns and cups)	acorn	-	24+e.122	e.650	-
Corylus avellana L. (fragments)	hazelnut	-	13f+ 2 immature	e.5	e.204
Corylus avellana L. (whole immature nuts)	hazelnut	-	-	-	3
Chenopodium polyspermum L.	many-seeded goosefoot	-	-	-	-
Chenopodium ficifolium Sm.	fig-leaved goosefoot	-	-	-	e.60
Chenopodium album L.	fat-hen	-	e.1220	e.1940	e.80
Atriplex sp. L.	oraches	-	e.130	e.340	e.20
Montia fontana subsp. *chondrosperma*	blinks	-	e.320	e.280	e.40
Moehringia trinervia (L.) Clairv.	three-nerved sandwort	-	-	-	e.690
Stellaria holostea L.	greater stitchwort	-	-	-	e.30
Stellaria media (L.) Vill./*nemorum* L.	common/wood stitchwort	-	e.360	e.1520	e.960
Stellaria palustris Retz/*graminea* L.	marsh/lesser stitchwort	-	e.20	e.80	e.40
Cerastium cf. *fontanum* Baumg.	common mouse-ear	-	-	-	e.680
Silene sp. L./*Lychnis flos-cuculi*	campion/ragged robin	-	-	-	cf.1
Persicaria lapathifolia/maculosa (L.) Gray/Gray	pale persicaria/redshank	-	e.20	e.20	-
Polygonum/Persicaria sp. L./Mill..	knotweed family	-	e.10	-	e.10
Polygonum aviculare L.	knotgrass	-	e.240	e.900	e.310
Rumex sp.L.	docks	-	e.20	-	e.1030
Rumex acetosella group Raf.	sheep's sorrel	-	e.80	e.80	-
Rumex conglomeratus Murray(whole fruit)	clustered dock	-	-	-	e.580
Viola sp. L.	violets	-	e.30	e.90	e.40
Brassicaceae (*Lepidium, Barbarea* etc.)	small indets. 1–2mm	-	-	-	e.60
Rorippa palustris (L.) Besser	marsh yellow cress	-	-	-	e.300
Thlaspi arvense L.	field penny-cress	-	-	-	cf.1
Rosaceae (thorns indet.)	bramble, rose etc. thorns	-	e.700	e.1490	e.90
Rubus sp. L.	brambles	5	e.3000	e.5040	e.2760
Fragaria vesca L.	strawberry	-	cf.1	-	-
Potentilla sp. L.	cinquefoil	-	-	e.80	-
Potentilla erecta (L.) Raeusch	tormentil	-	e.60	-	-
Agrimonia eupatoria L.	agrimony	-	-	-	1
Aphanes arvensis L.	parsley-piert	-	e.680	e.480	-
Rosa sp. type thorns	rose	-	-	-	e.28
Rosa cf. *canina* L.	dog rose	-	e.30	e.30	e.20
Prunus spinosa L.	sloe	-	16+est.8	e.34	e.58
Prunus spinosa L. (gnawed fruit stone)	gnawed sloe	-	6	11	1
Crataegus/Prunus thorns	hawthorn/sloe type thorns	-	e.25	e.80	e.292
Crataegus monogyna Jacq. (fruit stone)	hawthorn	-	10+est.170	e.101	e.228
Crataegus monogyna (gnawed stone)	hawthorn	-	1	-	2
Cornus sanguinea L.	dogwood	-	-	-	148
Oenanthe cf. *fluviatilis* (Bab.) Coleman/aquatica (L.) Poir	river/water dropwort	-	40	120	-
Pastiaca sativa L.	wild parsley	-	cf.2	-	-
Torilis arvensis/japonica. Adans.	spreading/upright hedge-parsley	-	2	-	e.40
Daucus carota cf. subsp. *sativa* (Hoffm.) Arcang	wild carrot	-	-	-	cf.1
Hyoscyamus niger L.	henbane	-	-	-	e.20
Solanum dulcamara L.	bittersweet	-	e.20	e.100	-
Stachys sp. L.	woundwort	-	-	-	e.60
Ballota nigra L.	black horehound	-	cf.e.200	e.40	1
Lamium sp. L.	dead-nettle	-	e.60	e.40	-
Galeopsis sp. L.	hemp-nettle	-	-	e.20	e.28
Prunella vulgaris	self-heal	-	-	-	e.60
Clinopodium cf. *vulgare* L.	wild basil	-	-	-	cf.1
Galium aparine L.	cleavers	-	1	-	-
Sambucus nigra L.	elder	-	e.162	e.180	e.92
Carduus L./*Cirsium* sp. Mill.	thistle	-	e.80	e.200	e.70
Lapsana communis L.	nipplewort	-	e.260	e.680	e.20
Sonchus arvensis L.	perennial sow-thistle	-	-	e.140	-
Sonchus asper (L.) Hill	prickly sow-thistle	-	e.30	e.260	-
Alisma plantago-aquatica L.	water-plantain	-	cf.1f	-	-
Lemna sp. L.	duck weed	-	e.581	e.80	-
Carex sp. L. lenticular	sedge flat seed	-	e.140	e.80	-
Poaceae (large culm node)	-	-	-	e.20	-
Bud	-	-	e.560	e.1042	e.18
Twigs	-	-	+++	+++	+++
Daphnia sp. (ephippium)	water-flea (egg case)	-	e.60	-	e.120
Partially burnt twigs	-	-	++	-	-
Worm cocoons	-	-	++	++	-
Leaf fragments	-	-	+	++	-

Table 10.12 Waterlogged plant remains from Romano-British wells at ICSG

	Cut	1087	16402
	Context	4817	16408
	Sample	2331	17032
Species	Common name		
Pteridium aquilinum (L.) Kuhn	bracken	e.14	-
Ranunculus sp. subg *Ranunculus* arb L.	buttercup	e.79	182
Ranunculus flammula L.	lesser spearwort	cf.1	-
Ranunculus sp. subg *Batrachium* (DC.) A. Gray	water-crowfoot	e.46	-
Thalictrum flavum L.	common meadow rue	1	-
Fumaria sp.	fumitory	4	-
Urtica dioica L.	common nettle	e.192	e.170
Urtica urens L.	small nettle	e.15	-
Corylus avellana L. (fragments)	hazel	e.12	-
Chenopodium polyspermum L.	many-seeded goosefoot	-	9
Chenopodium album L.	fat-hen	e.625	e.55
Atriplex sp. L.	oraches	e.27	16
Montia fontana subsp. *chondrosperma*	blinks	e.10	-
Stellaria media (L.) Vill./*nemorum* L.	common/wood stitchwort	e.14	-
Stellaria palustris Retz/*graminea* L.	marsh stitchwort/lesser stitchwort	-	e.2
Stellaria/Cerastium sp.L.	stitchwort/mouse-ears	-	e.10
Persicaria lapathifolia/maculosa (L.) Gray/Gray	persicaria	e.60	-
Fallopia convolvulus (L.) À. Löve	black bindweed	e.4	-
Polygonum/Persicaria sp. L./Mill..	knotweed family	-	2
Polygonum aviculare L.	knot grass	e.11	-
Rumex cf. *obtusifolius* L. (whole fruit)	broad-leaved dock	e.8	-
Rumex sp. L.	docks	e.116	e.84
Viola sp. L.	violet	e.20	-
Rorippa palustris (L.) Besser	marsh yellow cress	-	1
Coronopus squamatus (Forssk.) Asch	swine-cress	e.4	-
Raphanus raphanistrum L. (capsules)	runch	e.4	-
Rosaceae (thorns indet.)	brambles, rose etc. thorns	e.10	-
Rubus sp. L.	brambles	-	118
Potentilla sp. L.	cinquefoil	e.134	-
Rosa sp. type thorns	rose thorns	-	1
Vicia hirsuta (L.) Gray type pod (3mm)	hairy vetch	1	-
Conium maculatum L.	hemlock	-	12
Apium sp. L./Daucus L.	fool's watercress	28	-
Torilis arvensis/japonica. Adans.	spreading/upright hedge-parsley	e.4	cf.1
Daucus carota cf. subsp. *sativa* (Hoffm.) Arcang	wild carrot	-	e.80
Hyoscyamus niger L.	henbane	3	-
Lamiaceae indet.	dead-nettles	-	1
Stachys sp. L.	woundwort	-	1
Lamium sp. L.	dead-nettle	1	-
Prunella vulgaris	self-heal	-	cf.1
cf. *Scrophularia nodosa/aquatica/umbrosa*	common/water figwort	-	1
Plantago major	greater plantain	-	e.12
Odontites vernus (Bellardi) Dumort	red bartsia	-	1
Sambucus nigra L.	elder	-	30
Carduus L./*Cirsium* sp. Mill.	thistle	-	15
Sonchus arvensis L.	perennial sow-thistle	e.4	e.2
Sonchus asper (L.) Hill	prickly sow-thistle	-	e.6
Anthemis cotula L.	stinking mayweed	e.67	-
Lemna sp. L.	duck weed	-	e.45
Juncus sp. L. (seed)	rush	e.4	-
Isolepis setacea (L.) R. Br.	bristle club-rush	e.30	-
Carex sp. L. lenticular	sedge flat seed	e.14	-
Carex sp. L. trigonous	sedge trigonous seed	e.42	-
Poaceae (small indet.)	small grass seed	e.20	-
Twigs		++	-
Seed indet.		4	-
Daphnia sp. (ephippium)	water-flea (egg case)	e.10	-

Table 10.13 Waterlogged plant remains from late Saxon and medieval features at RMC Land and ICSG

	Phase	Late Saxon	Medieval
	Feature type	Well	Waterhole
	Cut	6632	16200
	Context	6633	16220
	Sample	392	17059
	% sorted (e=estimate) 2 mm %	100	100
	1 mm %	10	10
	0.5 mm %	5	10
Species	Common name		
Musci	moss	-	+++
Pteridium aquilinum (L.) Kuhn	bracken	e.10	-
Ceratophyllum submersum/demersum L.	soft/rigid hornwort family	-	cf.1
Papaver sp. L.	poppy	-	1
Cannabis sativa	cannabis	47	-
Urtica dioica L.	common nettle	e.40,000+	e.5158
Urtica urens L.	small nettle	40	10
Corylus avellana L. (fragments)	hazelnut	28	3
Atriplex sp. L.	oraches	e.60	e.82
Chenopodium polyspermum	many-seeded goosefoot	e.180	-
Chenopodium ficifolium Sm.	fig-leaved goosefoot	e.40	e.180
Chenopodium urbicum/rubrum L.	upright/red goosefoot	e.20	-
Chenopodium album L.	fat-hen	e.180	e.31
Stellaria media (L.) Vill./*nemorum* L.	common/wood stitchwort	e.190	e.10
Stellaria palustris Retz/*graminea* L.	marsh/lesser stitchwort	e.20	-
Cerastium cf. *fontanum* Baumg.	common mouse-ear	e.10	-
Agrostemma githago L.	corn cockle	-	e.21
Persicaria cf. *minor* (huds.) Opiz	small water pepper	e.120	-
Polygonum aviculare L.	knotgrass	e.20	e.31
Fallopia convolvulus (L.) À. Löve	black bindweed	e.10	-
Rumex sp. L.	docks	e.100	e.300
Rumex sp. L. (bract)	dock bract	-	3
Rumex acetosella group Raf.	sheep's sorrel	e.40	e.70
Hypericum sp. L.	St John's wort	e.20	-
Bryonia dioica Jacq.	white bryony	e.19	-
Brassica sp. L./*Raphanus raphanistrum* L.	black mustard/wild runch	e.70	e.70
Raphanus raphanistrum L. (capsules)	runch	-	2 caps
Rosaceae (thorns indet.)	bramble, rose, etc. thorns	-	e.10
Rubus sp. L.	brambles	e.20	e.290
Potentilla sp. L.	cinquefoil	e.10	-
Rosa sp. type thorns	rose	-	2
Prunus spinosa L. (gnawed fruit stone)	gnawed sloe	-	cf.2
Prunus domestica L.	domestic plum	4x ?*cerasifera*	cf.2
Prunus sp. L.	plum/sloe/wild cherry	3+1 cf. *P. avium*	-
Crataegus/Prunus thorns	hawthorn/sloe thorns	++	7
Apiaceae small indet.	-	-	1
Oenanthe cf. *fluviatilis* (Bab.) Coleman/aquatica (L.) Poir	river/water dropwort	cf.1	1
Aethusa cynapium L.	fool's parsley	30	-
Conium maculatum L.	hemlock	190	663
Apium sp. L./Daucus L.	fool's watercress	e.10	1
Torilis japonica (Houtt.) DC.	upright hedge-parsley	e.90	e.183
Hyoscyamus niger L.	henbane	220	-
Solanum nigrum L.	black nightshade	180	-
Myosotis sp. L.	forget-me-knot	-	cf.1
Lamium sp. L.	dead-nettle	e.850	e.23
Galeopsis sp. L.	hemp-nettle	-	1
Plantago major L.	greater plantain	20	-
Sambucus nigra L.	elder	e.320	e.279
Dipsacus fullonum L.	wild teasel	-	1
Asteraceae seed head.	daisy family	-	1
Carduus L./*Cirsium* sp. Mill.	thistle	e.153	e.62
Centaurea sp. L.	knapweed	-	20
Sonchus asper (L.) Hill	prickly sow-thistle	-	e.40
Anthemis cotula L.	stinking mayweed	e.420	e.111
Chrysanthemum segetum L.	corn marigold	-	e.61
Alisma plantago-aquatica L.	water-plantain	-	e.10
Glyceria sp. R. Br.	sweet grasses	-	1
Carex sp. L. lenticular	sedge lenticular seed	e.10	-
Carex sp. L. trigonous	sedge trigonous seed	-	e.10
Bud	-	-	e.25
Capsule indet	-	?3 indet.	5
Twigs	-	++	+++
Daphnia sp. (ephippium)	water-flea (egg case)	+++	-

that is occasionally found in woods. While only represented by a single seed in well G2156, agrimony (*Agrimonia eupatoria*) is also commonly associated with grasslands and hedge banks, while black horehound (*Ballota nigra*) present in waterhole 16198 is also present within hedgerows and rough ground.

While there are many indicators of open woody, scrub in these samples, seeds of fat-hen (*Chenopodium album*), orache (*Atriplex* sp.), along with fig-leaved goosefoot (*C. ficifolium*), are commoner in nitrogen-enriched open disturbed trampled soils or wasteland. Similarly, knotgrass (*Polygonum aviculare*) is common in wastelands. These species were generally present in both features. Hairy-buttery cup (*Ranunculus sardous*) and sow-thistle (*Sonchus* sp.) are also commoner on disturbed wasteland soils and arable fields and were present in waterhole 16198, while a large number of seeds of common mouse-ear (*Cerastium fontanum*), a species of wasteland were found in well G2156.

Wetland species, as might be expected, were fairly frequent in the samples, although it was noticeable that many of the seeds of wetland species were not present in both samples. They included from well G2156 seeds of marsh yellow cress (*Rorippa palustris*), with water-droplet (*Oenanthe* cf. *fluviatilis* or *O. aquatica*), celery-leaved crowfoot (*Ranunculus sceleratus*), sedge (*Carex* sp.) and duck weed (*Lemna* sp.) from waterhole 16198. Present in both were seeds of blinks (*Montia fontana* subsp. *chondrosperma*), as well as ephippia of water-flea (*Daphnia* sp.).

Most significant though are the finds of emmer wheat (*Triticum dicoccum*) chaff from the Middle to Late Bronze Age waterhole 16198, which in contrast to the evidence for dense scrub and possible open woodland would tend to imply settlement waste and domestic activities.

Discussion

The interpretation of these features is slightly problematic but two distinct possibilities arise. The range of the assemblage and the presence of smaller seeds of woodland and shrub species would tend to indicate that these assemblages do indeed arise from local vegetation rather than representing single dumps of material. The range of species indicate both a strong presence of woody scrub, with possibly some woodland element, but also some trampling around the features possibly by animals resulting in nitrogen enriching. The first possibility is that such features are located within open scrub woodland, or perhaps rather relatively open secondary woodland regeneration after clearance. The second is that the features were located very close to either a well-established hedge boundary, or woodland edge or copse.

Such features with a heavy wooded scrub or possible hedge element are very common on Middle to Late Bronze Age sites, often in close association with field systems, with ditches running adjacent or through them and have been noted by the author in East Anglia (eg, Barleycroft, Stevens 1997) and to the south-east of this site at Beddington (Wessex Archaeology 2004c).

In terms of the site plan, the features are of slightly different date and as such have a slightly different relationship to the Middle–Late Bronze Age field system. The waterhole, 16198, from which acorns were recovered, is Middle Bronze Age and cut by one of the field system ditches. As such it is likely that this feature infilled prior to the layout of the field system. However, it may be that it was contemporary with the field system, perhaps serving as a sump or a well fed by the ditch, but infilled while the ditches continued to be maintained, although no indication of recutting was seen. It would seem more probable that the establishment of hedging would be carried out with the digging of the ditch and as such that it may be that the assemblage relates to relict patches of woodland and over grown scrub in the vicinity of the waterhole.

Well G2156 is of Late Bronze Age/Early Iron Age date and contemporary with the field system. In common with 16198 it also is situated on the edge of the field system, and while it too may relate to hedging the presence of several woodland indicators might again indicate relict stands of scrub or woodland.

Many of these species were also seen in the pollen from the nearby site at Perry Oaks (Wiltshire 2006). It is further notable that several features from the Heathrow sites, in general of similar Middle to Late Bronze Age date, also yielded evidence for wooded scrub (Wiltshire 2006; Carruthers 2006). This was not universal, however, and several contemporary waterholes did appear to have been dug and infilled in much more open conditions.

Comparison of insect faunas and waterlogged plant remains from the same features at Perry Oaks does indicate that while the waterlogged remains had sometimes quite high elements of shrub this was not always reflected in the insect fauna (see Robinson 2008; Carruthers 2008) that generally represents a larger catchment area than the waterlogged plant remains. As such the interpretation of such remains as representative of hedges (see Wilshire 2008; Carruthers 2008) rather than woodland edge or open woodland seems more likely.

The only other possibility is whether such assemblages represent trees that were left standing and woodland/scrub re-growth in the corner of existing fields. In the case of waterhole 16198 this appears to comprise of scrub re-growth (mainly brambles, sloe and hawthorn, with some hazel) around a probably pre-existing oak tree left standing after clearance close to the waterhole. The presence of emmer chaff in this feature would probably indicate that domestic settlement probably also existed very close to the waterhole.

Romano-British wells

Samples were examined from two Romano-British features: wells 1087 and 16402. Unlike the Bronze Age assemblages both were dominated by species of open ground, with species of poor, wet rough grassland and disturbed nitrogen-enriched settlement type soils well represented. The samples were generally similar, although some distinctions can be made.

The most common seeds in these samples were those of buttercup (probably *Ranunculus repens*) and dock (*Rumex* sp.), both present in rough grasslands, common nettle (*Urtica dioica*) found in poorly managed grasslands and neglected areas of settlements and fat-hen (*Chenopodium album*) more common within settlements, especially in phosphate-enriched areas, such as manure heaps.

Well 16402 contained seeds of several species that might be equally associated with rough grassland, arable fields and wastelands, including those of greater plantain (*Plantago major*), thistle (*Cirsium/Carduus* sp.), and prickly and perennial sow-thistle (*Sonchus asper, S. arvensis*).

Associated also with wet meadows from well 1087 were seeds of common meadow rue (*Thalictrum flavum*), while blinks (*Montia fontana* subsp. *chondrosperma*) is associated with flushes and wet areas in pasture and arable fields. The seeds of cinquefoil/tormentil present in some number also from well 1087 are most likely to be of creeping cinquefoil (*Potentilla reptans*), silverweed (*P. anserina*) or tormentil (*P. erecta*). Generally all three can be associated with damp to wet pastures and waste ground. A single probably two-seeded pod of vetch/wild pea was tentatively identified as most probably from hairy vetch (*Vicia hirsuta*), a species of grasslands.

Seeds indicative of arable and wasteland, mainly recovered from well 1087, were from fumitory (*Fumaria* sp.), small nettle (*Urtica urens*), orache (*Atriplex* sp.), henbane (*Hyoscyamus niger*), knotgrass (*Polygonum aviculare*), black bindweed (*Fallopia convolvulus*), stitchwort (*Stellaria media*) and runch (*Raphanus raphanistrum*). Fruits of broadleaved dock (*Rumex obtusifolius*) were identified only from well 1087, again a species common at field edges and waste ground.

Well 1087 also contained numerous seeds of stinking mayweed (*Anthemis cotula*). This species (as discussed above in the charred section) is a common arable weed of heavy clay soils and while possibly a Roman introduction (Godwin 1984), it is more certain that it only began to spread during this period, by virtue of the cultivation of heavier clay soils (*cf*, Jones 1981). The seeds could have been brought into the settlement with arable crops from the field and were recorded within some of the charred assemblages. However, no chaff of spelt wheat was recovered within this sample, and it is more likely it was growing locally, possibly even spreading from nearby arable fields.

Particularly characteristic of animal trampling, growing around gateways and animal troughs is swine-cress (*Coronopus squamatus*) represented in well 1087, while persicaria (*Persicaria persicaria/lapathifolium*) is common in wet places and areas around ponds.

Wetland plants were particularly common in well 1087, with seeds of sedges (*Carex* sp.), rush (*Juncus* sp.) and bristle club-rush (*Isolepis setacea*), perhaps indicating plants vegetation growing around the edge of the feature. Seeds of water crowfoot (*Ranunculus* sp. subg. *Batrachium*) were also frequent in this feature. While many species of water crowfoot are found in slow-flowing rivers, there are a number that are found in shallow pools, muddy ditches and ponds. Finally ephippia or eggs of water-flea (*Daphnia* sp.) were also recovered from this feature, and are indicative of standing water.

Within well 16402 seeds of these wetland species were less frequent or absent, however, those of duckweed (*Lemna* sp.) were recovered. This floating aquatic can become quite abundant in ponds and probably came to dominate the surface of this waterhole.

Of some interest were numerous seeds of carrot (*Daucus carota*) from well 16402. While wild carrot (*D. carota* subsp. *carota*) is found in rough grassland, most commonly on chalk soils, there were several aspects of the seeds that more resembled those of domesticate carrot (*D. carota* subsp. *sativus*). In wild carrot the spines on the seeds are long and straight and present on the dorsal ridges. On domesticated carrot the spines are often absent, although intermediate varieties exist with shorter hook-like spines. While it is usually not possible to identify such characteristics on charred material, several of the waterlogged seeds from well 16402 appeared to lack spines or have the reduced hook-like spines, more characteristic of the domestic variety. However, rather than domestic carrot grown on the settlement it is possible such plants may come from ruderal or 'escaped' populations (*cf*, Stace 1997, 518). Further it might be noted that seeds of wild carrot were also recovered from a waterhole at Heathrow Terminal 5 that was securely dated to the Middle Bronze Age (Carruthers 2008), indicating it had been present within the general area for some time at a time when it would seem unlikely that cultivated varieties existed in England.

Seeds of hemlock (*Conium maculatum*) were also relatively common in this feature. This damp waste ground species is likely to be a Roman introduction (Godwin 1984), and can be associated with the edge of overgrown scrub land. Similarly bramble seeds (*Rubus* sp.) and elder (*Sambucus nigra*) were quite common in this feature, indicating patches of overgrown woody scrub land or possibly even a hedgerow.

Several pinnules of bracken (*Pteridium aquilinum*) were recovered from well 1087; this species while common in open woodland is also characteristic of heaths and can invade pasture. The only species present that is less representative of such habitats were fragments of hazelnut shells (*Corylus avellana*) from well 1087, which may have derived from general settlement waste.

Discussion

The Romano-British samples generally indicate an open environment with areas of poor weedy pasture, interspersed with trampled nitrogen-rich settlement soils, with some indication of patches of overgrown scrub or possibly hedges in particular from well 16402. The samples compare very well with those from a Romano-British waterlogged feature examined from Heathrow Terminal 5 (Carruthers 2006), where a similar array of species was recorded. The main difference being that whereas the samples from Terminal 5 contained fairly good evidence for cereals such evidence was lacking from the features examined here.

Saxon and early medieval features

Two features of Saxon to medieval date with waterlogged material were examined. That from RMC Land came from well 6632 and was dated to the late Saxon period cal AD 890–1000 (NZA-31081, 1268±35 BP, at 95% probability) on a grain of free-threshing wheat (*Triticum turgidum/aestivum*-type). The sample from ICSG came from waterhole 16200 associated with a wooden bucket dated to the late 12th–13th century cal AD 1180–1290 (OxA-8469, 780±40 BP, at 95% confidence).

The late Saxon sample from 6632 (6633) on RMC Land was mainly dominated by seeds of common nettle (*Urtica dioica*), along to a lesser degree with seeds of dead nettle (*Lamium* sp.). Other species generally indicative of farmyards and nitrogen-rich, disturbed soils whose seeds were common in the sample, included many-seeded goosefoot (*Chenopodium polyspermum*), fig-leaved goosefoot (*C. ficifolium*), upright/red goosefoot (*C. urbicum/rubrum*), fat-hen (*C. album*), stitchwort (*Stellaria* sp.), henbane (*Hyoscyamus niger*) and black nightshade (*Solanum nigrum*).

In addition to this element was a relatively strong indication of hedge and/or overgrown scrub. This element was represented by seeds of elder (*Sambucus nigra*) and white bryony (*Bryonia dioica*), a climbing species found mainly in hedgerows, as well as several thorns of hawthorn/sloe (*Crataegus monogyna/Prunus spinosa*). Seeds of hemlock (*Conium maculatum*) were also relatively frequent and this species is found on damp ground on waysides and next to hedgerows, as is upright spreading hedge-parsley (*Torilis japonica/arvensis*). Other plants, typical of field edges, fringing ponds and ditches on wet ground, whose seeds were recovered from the samples were small water pepper (*Persicaria minor*), probable marsh stitchwort (*Stellaria palustris*) and sedge (*Carex* sp.).

Other species were more indicative of wet grasslands and poor rough pasture in general, such as thistle (*Cirsium/Carduus* sp.), dock (*Rumex* sp.) and greater plantain (*Plantago major*).

Finally in terms of the local environment, there were also seeds of species more indicative of arable soils, in particular those of stinking mayweed (*Anthemis cotula*), while others, such as black bindweed (*Fallopia convolvulus*), small nettle (*Urtica urens*), mustard/runch (*Brassica/Raphanus* sp.) and fool's parsley (*Aethusa cynapium*) formed a minor component

The sample also had several stones of probable domestic plum (*Prunus domestica*), but also possible sloe (*Prunus spinosa*) and cherry (*Prunus avium*), along with fragments of hazelnut shell (*Corylus avellana*). All of these may be associated with settlement waste in general, although there were very few charred remains in the sample, and the possible sloe may relate to scrub given the presence of thorn of sloe or hawthorn.

Of some interest in this sample were seeds of hemp (*Cannabis sativa*). Generally such seeds are only recovered from Saxon and later periods, where they can be associated with the growing of hemp as a crop for ropes, cloth etc.

The assemblage from ICSG waterhole 16200 along with nettle seeds also had quite high numbers of seeds indicative of hedgerows, hedgerow/scrub edge and waysides. In particular, there were seeds of elder, upright hedge-parsley (*Torilis japonica*), bramble (*Rubus* sp.), fullers teasel (*Dipsacus fullonum*), hemp-nettle (*Galeopsis* sp.) and hemlock. The sample also contained reasonable numbers of twigs, as well as thorns of probable bramble, rose (*Rosa* sp.) and sloe/hawthorn.

Seeds of thistle, knapweed (*Centaurea* sp.), knotgrass (*Polygonum aviculare*) and dead-nettle were also identified; these species are found in various habitats ranging from waysides and hedgerow edges, in rough grasslands and arable fields.

There were also a fairly high number of seeds of species more directly associated with arable fields and disturbed nitrogen-enriched soils from waterhole

16200. Associated with both, but commonly found in nitrogen-rich soils within farmyards in general were species such as orache (*Atriplex* sp.), fat-hen, and small nettle.

Slightly more associated with arable fields, but which could have been spread by the movement of crops around the settlement to become established within the area around the well were poppy (*Papaver* sp.), corncockle (*Agrostemma githago*), prickly sow-thistle (*Sonchus asper*), runch (*Raphanus raphanistrum*) and possibly seeds of runch or wild mustard. Within this category, and of some interest, were seeds of both stinking mayweed and corn marigold (*Chrysanthemum segetum*). Given that the former is associated with heavier clay soils and the latter with drier sandier acidic soils, their appearance in the same sample is perhaps unusual.

In terms of species of wetland, water-plantain (*Alisma plantago-aquatica*), whose seeds were present, would have grown in the wet mud beside the well.

Discussion

The general impression from the wells is that, as with the Bronze Age samples, it is probable that both were located close to woody scrub or hedgerows. The generally greater number of seeds of taxa associated with disturbed soils and arable fields, along with the presence of elder and bryony might rather point to hedgerows, with dense patches of nettles growing between them and around the well.

The hemp from well 6632 is some interest, as it might indicate that the feature was used for hemp retting. As with flax, in order to obtain the fibres from the hemp plant it needs to be soaked in water. Similarly better quality (thinner) fibres are obtained by harvesting plants prior to flowering, while fibres for rope are taken from plants that are harvested some four to six weeks after flowering. Hemp production has strong ties with the shipping industry with hemp used both for the rope in the rigging as well as sail cloth.

Wood Charcoal

by Dana Challinor

Introduction

In common with other large excavations in southern Britain, charcoal was ubiquitous at ICSG and RMC Land, and offered a generally well preserved and abundant dataset for analysis. A selection of 54 samples was made which reflected the range of feature types and phases represented. The aims of the charcoal analysis were to characterise the wood utilised for fuel for each period and, where enough comparable features existed, to examine any context-related variation, with particular reference to ritual and domestic types, and finally, to examine any changes in the exploitation of woodland resources.

Methods

A dual approach to the analysis was undertaken, with full analysis on 20 samples, and detailed assessment on the remainder. For the full analysis, standard procedures outlined below were followed. Large assemblages were divided so that approximately 100 fragments were identified from each sample (the percentage of the flot identified is given in the tables). The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at x7 to x45 magnification.

Representative fragments from each group were then selected for further examination in longitudinal sections using a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. The maturity of the wood was noted where possible and the presence of roundwood, sapwood and heartwood is noted in the tables. Full quantities are included in the archive, but the quantification of maturity tends to be under-represented due to poor condition or small size, precluding its determination.

The samples which were selected for detailed assessment were scanned under a binocular microscope at up to x45 and a selection of 20 charcoal fragments were examined in transverse section, with occasional fragments checked at high magnification. An estimate of the abundance of each taxa was made on the basis of the whole sample. This method provides a reasonable characterisation of the taxonomic composition of the sample, but does not give a complete species list. Classification and nomenclature follow Stace (1997). The figures are based upon fragment count as a method of quantification, but it is acknowledged that there are limitations to this method.

Notes on Identifications

A total of 3150 fragments were fully identified. The results by fragment count are given in Tables 10.14–21 which are presented by phase with the discussion below. The preservation of the charcoal was generally good, although some fragments were infused with sediment, which can obscure key anatomical features. There were also several samples with large quantities of small diameter roundwood fragments, which can be difficult to identify to species level. The maturity of the wood was not always evident, particularly with

Table 10.14 Charcoal from Neolithic features

	Site		ICSG							RMC Land	
	Phase	E. Neol	Middle Neolithic							M. Neol	L. Neol
	Feature type	Tree-throw hole	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit
	Feature	G151	G345	10821	11018	11340	16033	16109	17588	683	5732
	Context	19533	1684	10822	11020	11339	16032	16108/ 10/11	17589	684/5	5733
	Sample	18106	2235	12008	12012	12128	17002	17003	18029	113	366
	% identified	-	25	-	-	-	25	-	25	-	3.13
Species	Common name										
Quercus sp.	oak	20h	52hs	18h	12hs	4	38hr	12r	38hr	20hsr	5
Corylus avellana L.	hazel	-	17	2	8r	1	38r	6	2	-	7
Populus/Salix	poplar/willow	-	-	-	-	-	4	-	-	-	-
Prunus spinosa L.	blackthorn	-	3	-	-	-	-	-	6	-	-
Prunus sp.	cherry-type	-	-	-	-	-	13	1	-	-	-
Maloideae	hawthorn group	-	42r	-	-	14r	1	1	69	-	111r
Acer campestre L.	field maple	-	-	-	-	1	-	-	-	-	-
Indeterminate		-	3	-	-	-	8	-	2	-	1
Total		20	117	20	20	20	102	20	117	20	124

r = roundwood; h = heartwood; s = sapwood

Table 10.15 Charcoal from the Neolithic double ring ditch G2007, ICSG

	Feature type	Outer ring ditch				Inner ring ditch				
	Feature	19319	19324	19220	19380	19411	19339	19020	19020	19024
	Context	19321	19326	19222	19378	19412	19341	19021	19022	19025
	Sample	18041	18056	18063	18083	18068	18076	18084	18085	18086
Species	Common name									
Quercus sp.	oak	-	8	-	2	-	-	2	4	-
Alnus/Corylus	alder/hazel	2	-	-	-	-	-	-	-	-
Populus/Salix	poplar/willow	-	-	-	-	-	-	1	-	-
Maloideae	hawthorn group	18	12	5	109	5	5	17	7	20
Total		20	20	5	111	5	5	20	11	20

some of the large oak-dominated assemblages, where the fragments were highly comminuted and less than one growth ring. In most samples there were fragments characterised as indeterminate; these were usually not identifiable due to poor preservation or unusual cellular structure.

The list of taxa identified is given below, with details and explanations on the level of identification:

Pinaceae
Pinus sp., pine, tree. *P. sylvestris* L. (Scots pine) is the sole native species, but the single fragment from context 11529 was of Romano-British date and could have come from an imported species.

Fagaceae
Fagus sylvatica L., beech, large tree, sole native species.

Quercus spp., oak, large tree, two native species, not distinguishable anatomically.

Betulaceae
Betula spp. (birch), trees or shrubs, two native species, not distinguishable anatomically.

Alnus glutinosa, Gaertn., alder, tree, sole native species. *Corylus* has a very similar anatomical structure to *Alnus* and can be difficult to separate, hence the category *Alnus/Corylus*.

Corylus avellana L., hazel, shrub or small tree, only native species.

Salicaceae
The genera *Salix* spp. (willow) and *Populus* spp. (poplar) are rarely possible to separate. Both are trees although there is variation within the genera.

Rosaceae
Prunus spp., trees or shrubs, including *P. spinosa* L. (blackthorn), *P. avium* L. (wild cherry) and *P. padus* L. (bird cherry), all native, which can sometimes be separated on the basis of ray width. Only *P. spinosa*

was positively identified, but the key distinguishing characteristics were often ambiguous.

Maloideae, subfamily of various shrubs/small trees including several genera, *Pyrus* (pear), *Malus* (apple), *Sorbus* (rowan/service/whitebeam) and *Crataegus* (hawthorn), which are rarely distinguishable by anatomical characteristics.

Fabaceae
Cytisus/*Ulex*, broom/gorse, shrubs, several native species, not distinguishable anatomically.

Aquifoliaceae
Ilex aquifolium L., (holly), evergreen tree or shrub, native.

Rhamnaceae
Rhamnus cathartica L., purging buckthorn, shrub, sole native species.

Aceraceae
Acer campestre L. field maple, tree, sole native species. The presence of *A. campestre* was also confirmed by ray width.

Oleaceae
Fraxinus excelsior L., ash, tree, sole native species.

Neolithic

Early Neolithic tree-throw hole

A single sample from a possible tree-throw hole (19533) produced a rich charcoal assemblage, apparently composed exclusively of *Quercus* sp. (oak). The charcoal had characteristically split along its rays, leaving comminuted slivers from which maturity was difficult to determine. A few fragments exhibited tyloses indicating some heartwood was present. Comprising a single taxon, the assemblage could represent the burnt remains of a single tree. The assemblage was also similar to some of those from the Middle and Late Neolithic pits, indicating consistency in the supply of oak and use for domestic fuel.

Middle Neolithic pits

The charcoal from nine Middle Neolithic pits was examined, mostly from ICSG, with a couple from RMC Land (Table 10.14). All of the samples produced *Quercus* (oak) charcoal, which dominated the assemblages of five pits, and included both mature and young branch wood. *Corylus avellana* (hazel) and Maloideae (hawthorn group) were well represented in the samples, with lesser occurrences of *Prunus* sp. (blackthorn/cherry), *Populus*/*Salix* (poplar/willow) and *Acer campestre* (field maple). The charcoal is likely to have derived from domestic fuelwood, and such assemblages reveal two potential sources of information; the availability of local resources and the deliberate selection of firewood. The taxa identified are consistent with the types of wood utilised for domestic fuel at other sites of comparable date in the Thames Valley generally (eg, Thompson 1999; Gale 2004) and, more specifically, at the nearby site of Heathrow Terminal 5 (Challinor 2010), where the charcoal supports the general picture of the Neolithic landscape from the pollen at Terminal 5, which indicates mixed, deciduous woodland, dominated by oak and hazel (Wiltshire 2006). The exploitation of riverine resources appears to be marginal from the dataset, evidenced by a few fragments of *Salix*/*Populus* (willow/poplar), and there is greater evidence for clearance at Terminal 5 through the quantity of *Fraxinus excelsior* (ash) which is a coloniser of open areas.

Double ring ditch G2007, ICSG

The charcoal from this feature was generally sparse and small sized, but is likely to have originated from pyre material; their Middle Neolithic date merited detailed investigation (Table 10.15). Four taxa were noted in the assemblages; *Quercus* sp. (oak), *Alnus*/*Corylus* (alder/hazel), *Populus*/*Salix* (poplar/willow) and Maloideae (hawthorn group). All of the samples produced fragments of hawthorn group charcoal, suggesting that this may have been the primary fuelwood used, but interpretation is limited by the fact that several pyres may be represented, and the scarcity of the charcoal itself means the dataset is not really representative. Context 19378, from the outer ditch, which produced a more abundant assemblage,was almost entirely dominated by hawthorn and suggests that hawthorn group (and to a lesser extent, oak) were preferred for cremations. Oak is commonly recovered from Late Neolithic/Early Bronze Age cremation assemblages, often as a single, dominant taxon (eg, Thompson 1999). Given the prevalence of oak in the Neolithic pits, it seems likely that the hawthorn group wood was deliberately selected instead of, or in addition to, oak. All of the members of the hawthorn group have reasonable burning properties if used in enough quantity, and have been utilised as the dominant species for cremation in Early and later Bronze Age pyres elsewhere, including one at Heathrow Terminal 5 (Challinor 2010). It has also been postulated that apple or pear wood may have been preferred since they burn with a pleasant aroma, and may have alleviated some of the stench of burning bodies (Challinor 2007).

Undated cremation deposits

Two further cremation-related deposits were examined from pits 16768 and 40219 at ICSG (Table 10.16). Both contained only small quantities of bone

Table 10.16 Charcoal from undated cremation graves, ICSG

	Feature	16768	40219
	Context	16769	40220
	Sample	17066	42053
Species	Common name		
Quercus sp.	oak	18	15hr
Prunus sp.	cherry-type	2	-
Maloideae	hawthorn group	-	5
Total		20	20

r = roundwood; h = heartwood; s = sapwood

and are thought to represent dumped pyre debris and to be broadly contemporary with the Middle Neolithic ring ditches and dated cremation burials. Full analysis was not undertaken, but the broad characterisation determined that oak was dominant in both assemblages. This contrasts with the pyre debris from the double ring ditch G2007, but is comparable to the Middle Bronze Age cremation deposits (see below).

Bronze Age

Several phases spanning the Bronze Age were represented in the samples analysed, but there were only a few, in some instances only one, per phase, and no confirmed Iron Age samples. For this reason, the phases (up to and including the Late Bronze Age/Early Iron Age) have been grouped together in the tables and the discussion.

Early Bronze Age shaft/well G288

Two small charcoal samples from the upper fills of a shaft/well were assessed for radiocarbon dating. The charcoal was very small and degraded. Only *Quercus* sp. (oak) fragments were observed and a single, incomplete, piece of roundwood was selected for the dating, which produced a date in the Early Bronze Age (2130–1820 cal BC NZA-32685 at 95% confidence). Given the paucity of the dataset, no interpretation is possible.

Cremation graves

The charcoal from five cremation graves was analysed from several phases: Early Bronze Age grave 16669, Middle Bronze Age graves 1100, 10001, and 19230, and Late Bronze Age/Early Iron Age grave 1102 (Table 10.17; Fig. 10.1); the latter is the only example from RMC Land. The charcoal largely derives from redeposited pyre debris, found in association with a single burial. Most of these contexts were dominated by *Quercus* sp. (oak), including two exclusively so (1100 and 19230). The majority of fragments in these samples were either too highly comminuted or vitrified to establish maturity, although a little heartwood and roundwood was noted in (19231). The dominance of a single taxon in cremation assemblages is well attested at other sites, and represents an important part of the fuelwood selection and pyre ritual (Thompson 1999).

The Early Bronze Age cremation grave 16669 (associated with a Collared Urn and NZA-30925 1940–1740 cal BC at 95% confidence) was the only cremation which did not use oak as the primary fuel, but was instead composed of *Corylus avellana* (hazel) and Maloideae (hawthorn group) in a ratio of roughly 70:30. The *Rhamnus cathartica* (buckthorn) in the Middle Bronze Age cremation 10001 is also noteworthy. Buckthorn is a spiny shrub, whose berries were used traditionally for medicines and dyes (Gale and Cutler 2000), but there are other examples of buckthorn wood appearing in cremation assemblages, including a Middle–Late Bronze Age cremation grave at Heathrow Terminal 5 (Challinor 2010). The significance of the specific selection of

Table 10.17 Charcoal from Bronze Age cremation graves

	Site	ICSG				RMC
	Phase	EBA		MBA		LBA–EIA
	Feature	16669	1100	10001	19230	1102
	Context	16670	3000	10002	19231	656
	Sample	17013	2365	12001	18082	103
	% flot identified	25	50	25	12.5	25
Species	Common name					
Quercus sp.	oak	-	128	75r	101rh	72rs
Corylus avellana L.	hazel	78r	-	1	-	26r
Prunus sp.	cherry-type	-	-	6r	-	-
Maloideae	hawthorn group	34	-	-	-	8r
Rhamnus cathartica L.	buckthorn	-	-	22r	-	-
Indeterminate bark	-	-	-	1	-	2
Indeterminate	-	2	-	4	3	5
Total		114	128	109	104	113

r = roundwood; h = heartwood; s = sapwood

Table 10.18 Charcoal from Bronze Age pits and waterholes/wells

	Site	RMC	ICSG	RMC				
	Phase	Mid-Late Bronze Age		Late Bronze Age/Early Iron Age				
	Feature type	Well	Waterhole	Pit	Pit	Pit	Pit	Pit
	Feature	3918	16198	633	670	897	4555	2326
	Context	3913	16188	508	671	898	4556	2346
	Sample	245	17069	107, 107A	109, 109A	130	307	168
	% flot identified	3.13	12.5	-	-	25	-	6.25
Species	Common name							
Quercus sp.	oak	44r	33rh	15rs	20s	10r	12r	7
Alnus glutinosa Gaertn.	alder	-	43r	-	-	-	-	-
Corylus avellana L.	hazel	2	-	-	-	-	2	3r
Alnus/Corylus	alder/hazel	3	-	-	-	-	-	-
Populus/Salix	poplar/willow	-	9	-	-	-	-	-
Prunus spinosa L.	blackthorn	-	-	3r	-	-	-	50r
Prunus sp.	cherry-type	1	2	-	-	-	-	5r
Maloideae	hawthorn group	28r	8r	1	-	-	2	31r
Rhamnus cathartica L.	buckthorn	1	-	-	-	-	-	-
Acer campestre L.	field maple	12r	-	1	-	6r	4	2r
Fraxinus excelsior L.	ash	-	3	-	-	86rs	-	-
Indeterminate bark	-	1	-	-	-	-	-	1
Indeterminate	-	4	3	-	-	2	-	4r
Total		96	101	20	20	104	20	103

r = roundwood; h = heartwood; s = sapwood

scrub or woodland species has been discussed in relation to the age/gender of the deceased (Campbell 2007). All of the bodies represented in the ICSG dataset were adults or subadults and the only relevant deposit to be sexed was the Early Bronze Age unurned burial 16669, which was a male adult (see McKinley, Chapter 9). Since none of the charcoal assemblages are particularly diverse, this is consistent with Campbell's hypothesis that adult cremations tend to be dominated by a single taxon (Campbell 2007). The gender link is less certain, since it is rarely possible to sex cremated remains and there are not enough comparanda to be conclusive.

Pits and waterholes/wells

To provide some comparable data for an examination of context-related variation, several pits and waterholes/wells were examined (Table 10.18; Fig. 10.1). Unfortunately, there were no useful Early or Middle Bronze Age assemblages, so the dataset is restricted to the Middle–Late Bronze Age and Late Bronze Age/Early Iron Age. It is assumed that the deposits of charcoal in these features represent the spent remains of domestic fuelwood. Three of the individual samples from the Late Bronze Age/Early Iron Age pits at RMC Land were dominated by *Quercus* sp. (oak), and one by *Fraxinus excelsior* (ash), but *Corylus avellana* (hazel), *Prunus spinosa* (blackthorn) and Maloideae (hawthorn group) are also well represented. The Middle–Late Bronze Age well 3918 and waterhole 16198 produced particularly diverse assemblages with all of the above species and additionally two taxa indicative of damp/wet ground, *Alnus glutinosa* (alder) and *Populus/Salix* (poplar/willow).

As illustrated by Figure 10.1, it is immediately striking that there is a greater diversity of taxa utilised in the domestic-type assemblages than in the cremation-related deposits. It is likely that this

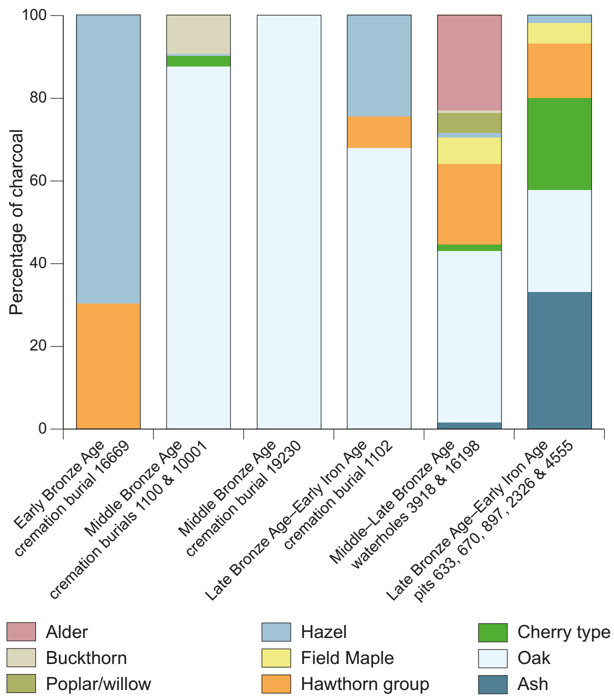

Figure 10.1 Taxonomic composition of charcoal assemblages from Bronze Age cremation and domestic features (based upon 12 samples; 997 fragments)

Table 10.19 Charcoal from Romano-British features, ISCG

	Feature type	Midden	Crem. grave
	Feature	10923	16427
	Context	11529	16426
	Sample	12103	17055
	% flot identified	100	25
Species	Common name		
Pinus sp.	pine	1	-
Quercus sp.	oak	16r	76rs
Corylus avellana L.	hazel	-	8
Alnus/Corylus	alder/hazel	1	6
Prunus sp.	cherry-type	1r	-
cf. Maloideae	cf. hawthorn group	25r	-
Cytisus/Ulex	broom/gorse	-	6r
Fraxinus excelsior L.	ash	-	6sr
Indeterminate bark	-	-	1
Total		44	103

r = roundwood; h = heartwood; s = sapwood

represents a crucial distinction between the careful/ritual selection of fuelwood for pyres, and a more haphazard approach to the gathering of fallen branches or easily available woods for domestic purposes. These two approaches to fuelwood gathering have been convincingly distinguished in charcoal assemblages at other sites, including Heathrow Terminal 5 (Challinor 2010). The use of oak in several of the domestic assemblages indicates that this wood was still readily available and probably preferred for fuel use to some of the other taxa such as alder, which was only found in two samples and has inferior burning properties.

Romano-British

Only two samples from this phase merited analysis, both from ICSG (Table 10.19). Cremation grave 16427 was dominated by *Quercus* sp. (oak), with some *Fraxinus excelsior* (ash) and *Corylus avellana* (hazel), including many roundwood fragments. McKinley (Chapter 9) notes that the bone in this cremation deposit exhibited signs of incomplete oxidisation, perhaps this was due to the immaturity of the wood used. Oak and ash are commonly found in Romano-British cremation deposits, as they provide an excellent fuel and decent supports for the pyre structure (Gale 1997). More unusual is the presence of *Cytisus/Ulex* (broom/gorse). Both gorse and broom make good, fast, fuel-woods and are known to have been used traditionally, particularly in bread ovens or when other woodland species are scarce (Gale and Cutler 2000; Mabey 1997). The fuelwood for cremations, however, tends to be carefully and deliberately selected, and the use of broom or gorse does not appear to have been a widespread practice, although a Late Iron Age burial from Beechbrook Wood, Kent, produced an assemblage dominated by hazel with a large quantity of gorse/broom (Aldritt 2006). The exploitation of heathland for fuelwood is not a common characteristic of the ICSG dataset, nor indeed that of Heathrow Terminal 5 where it does not appear until the medieval period (Challinor 2010), so it is unlikely to have been used due to scarcity of other resources.

The second Romano-British sample to be analysed came from a midden, 10923. The assemblage was small and composed almost entirely of small twigs of up to two years in age. The narrow width of the twigs meant it was not possible to fracture the stems to confirm with certainty the identification of Maloideae (hawthorn group), which formed a large component of the assemblage, along with *Quercus* sp. (oak), and single fragments of *Alnus/Corylus* (alder/hazel), *Prunus* sp. (cherry-type) and *Pinus* sp. (pine). The native species of pine, *Pinus sylvestris* (Scots pine), is thought to have died out from England by the Romano-British period (Rackham 2006), so it is possible that an imported species is represented. Certainly, the Romans did introduce *Pinus pinea* (stone pine) into England as they used the pine cones in temple rituals.

Saxon

The charcoal from nine features dating to the Saxon period were analysed (Table 10.20; Fig. 10.2). *Quercus* sp. (oak) and *Fagus sylvatica* (beech) formed the main fuelwood, with lesser use of other taxa, including *Alnus glutinosa* (alder), *Betula* sp. (birch), *Corylus avellana* (hazel), Maloideae (hawthorn group) and *Populus/Salix* (poplar/willow). The use of alder and poplar/willow indicates riverine or damp ground resources were utilised. Many of the fragments came from small diameter roundwood, consistent with the gathering of side or fallen branches common for domestic activities. A mid-Saxon posthole, 3706, produced mainly roundwood fragments of alder or hazel, which could have related to the structure (eg, hazel wattles), although there was not enough oak to suggest that a large timber post is represented.

In common with the charcoal from Heathrow Terminal 5, the Saxon dataset from ICSG does not indicate pressure on woodland resources, or the particular exploitation of heathland that is suggested by the deliberate use of heather as fuel at other sites in the vicinity (see discussion in Smith 2002, 33). The use of beech is of interest as this taxon is not recorded in the charcoal dataset at either Terminal 5 or ICSG earlier than the Saxon period. At Perry Oaks, a few fragments were identified from samples of Middle Iron Age and Romano-British date (Challinor 2006) so the species must have been growing locally and

Table 10.20 Charcoal from Saxon features, RMC Land

	Phase		Early Saxon			Early–mid Saxon		Mid Saxon	Late Saxon	
	Feature type	Pit	Pit	Pit	Pit	Pit	Pit	Post-hole	Pit	Pit
	Feature	1302	2126	5541	2213	7064	7505	3706	6329	7362
	Context	1301	2122	5542	2214	7067	7506	3707	6336	7363
	Sample	124	153	357	163	400	425	232	383	414
	% flot identified				12.5	50	50		100	12.5
Species	Common name									
Fagus sylvatica L.	beech	1	73r	4r	49r	26r	27r	-	-	32r
Quercus sp.	oak	15hrs	20r	13hr	46r	18hr	61rh	2	8r	66rhs
Betula sp.	birch	-	-	-	-	7	-	-	-	-
Alnus glutinosa Gaertn.	alder	-	-	3	-	-	3r	-	-	7r
Corylus avellana L.	hazel	-	7r	-	2r	2r	4r	-	26r	2r
Alnus/Corylus	alder/hazel	4	1	-	-	-	3	18r	-	3
Betulaceae	birch family	-	-	-	-	12	-	-	-	-
Populus/Salix	poplar/willow	-	-	-	-	26	2	-	5r	1
Maloideae	hawthorn group	-	-	-	1	-	-	-	-	-
Ilex aquifolium L.	holly	-	-	-	-	-	-	-	-	2r
Acer campestre L.	field maple	-	-	-	1	-	-	-	-	-
Fraxinus excelsior L.	ash	-	-	-	-	3	-	-	-	-
Indeterminate bark		-	-	-	2	4	-	-	-	-
Indeterminate		-	3	-	2	3	2	-	-	1r
Total		20	104	20	103	101	102	20	39	114

r = roundwood; h = heartwood; s = sapwood

available as a resource. It is striking that (even given the limitations of charcoal as an absence indicator) beech does not seem to have been deliberately or consistently utilised for fuel until the later periods, a trend noted recently by the author at other urban and rural sites. Pollen data, whilst sparse, suggests that beech was widespread but rare in early prehistory, increasing in the south-eastern third of England during the Bronze Age (Rackham 2003). This rise in beech has been linked to its colonisation of felled woodland or abandoned farmland, so its later use for fuel may perhaps be attributed to its spread in areas with a long history of clearance and farming.

Saxo-Norman

Six features of Saxo-Norman date, comprising pits, ditches and a well, produced large quantities of charcoal (Table 10.21; Fig.10.2). Two were dominated by *Quercus* sp. (oak) and one by *Alnus glutinosa* (alder) whilst the others produced more mixed assemblages with several taxa present. The assemblages from well 6460 and ditch 7742 were particularly diverse, with *Fagus sylvatica* (beech), *Quercus* (oak), *Alnus* (alder), *Corylus avellana* (hazel), *Prunus* sp. (cherry-type) and Maloideae (hawthorn group). Whether this resulted from the dumping of several burning events is unclear, but it is likely that additional species would have been identified from the mixed assemblages of pit 3722 and ditch 3919, had full analysis been undertaken on these contexts. Like the earlier Saxon samples, much of the charcoal came from roundwood.

Medieval

The types of wood identified from the medieval pits and ditch did not vary significantly from the transitional Saxo-Norman period, with *Fagus sylvatica* (beech), *Quercus* sp. (oak), *Alnus glutinosa* (alder), Maloideae and a few rare fragments of other species (Table 10.21; Fig. 10.2). There is, however, a potentially interesting difference in the relative composition of these assemblages, as there is a

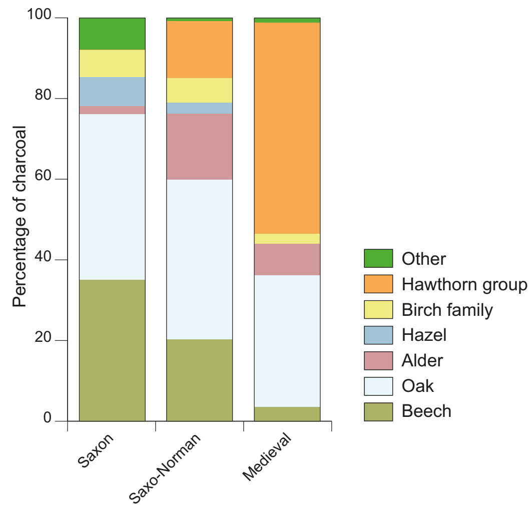

Figure 10.2 Taxonomic composition of charcoal assemblages from Saxon, Saxo-Norman and medieval features (based upon 19 samples; 1090 fragments). Note that the 'birch family' category includes undifferentiated Betulaceae and Alnus/Corylus *and the 'other' category comprises taxa which individually represent <5% of the total assemblage*

Table 10.21 Charcoal from Saxo-Norman and medieval features, RMC Land and ICSG

	Phase	Saxo-Norman							Medieval		
	Site	RMC Land							ICSG		RMC L.
	Feature type	Ditch	Pit	Pit	Pit	Well	Pit	Ditch	Ditch	Pit	Pit
	Feature	7742	1564	3998	6046	6454	3722	3919	11047	16445	2460
	Context	7745	1565	3999	6056	6460	3726	3920	11048	16447	2486
	Sample	438	138	264	379	388	263	244	12027	17015	179
	% flot identified	50	-	-	-	6.25	-	-	25	12.5	-
Species	Common name										
Fagus sylvatica L.	beech	38	1	-	-	7r	8	3	5	-	2
Quercus sp.	oak	18rs	14hs	16hr	1h	45rh	8h	10hr	39rh	12h	15hrs
Alnus glutinosa Gaertn.	alder	5	-	3	19r	19r	-	-	-	16r	-
Corylus avellana L.	hazel	3	1	-	-	3r	1	-	-	-	-
Alnus/Corylus	alder/hazel	1	-	-	11	1	-	-	1	4	-
Prunus sp.	cherry type	1r	-	-	-	-	-	1	-	-	-
Maloideae	hawthorn group	18	3	1	-	10r	2r	-	51r	53r	2r
cf. Maloideae	-	-	-	-	-	-	-	6r	-	-	-
Cytisus/Ulex	broom/gorse	-	-	-	-	-	-	-	1r	-	-
Acer campestre L.	field maple	-	-	-	-	-	-	-	-	-	1
Indeterminate bark	-	-	-	-	-	1	-	-	1	1	-
Indeterminate	-	3	-	-	-	7	-	-	6	8	-
Total		90	20	20	20	103	20	20	104	94	20

r = roundwood; h = heartwood; s = sapwood

notably higher percentage of hawthorn group in the later samples (Fig. 10.2). Figure 10.2 illustrates that oak is still fairly uniformly utilised, but that there is significantly more hawthorn group in the later period. The pollen data (Grant, Chapter 10) indicates limited woodland, but includes hazel and beech, so these taxa were available. The charcoal assemblages are likely to represent the deliberate selection of firewood for domestic uses, as the contexts produced a range of domestic-type debris, including cereal remains, animal bone, fired clay etc. In common with other sites, including Terminal 5, the charcoal assemblages by the medieval period become more diverse with a range of taxa and a strong component of hedgerow-type species.

Conclusion

Evidence from the pollen record (Grant, Chapter 10) and insect remains (Smith, Chapter 10) indicates that the local environment was a largely open, agricultural landscape from the Late Bronze Age through to the medieval period. The charcoal record is not incompatible with this picture, but it suggests that there is some consistency in the availability of woody resources. Oak must have continued to flourish locally to some extent and was widely exploited for domestic and ritual fuel uses. There are clear indications for the deliberate selection of fuelwood (ritual or otherwise is still a matter for debate) for Bronze Age cremations, when contrasted to the gathering practices for domestic fires. In general, riverine or heathland resources were not extensively used, although these were available. There is increased use of beech wood in the later post-Roman periods, which, it is suggested, may have spread through the colonisation of cleared areas. By the medieval period, there is a stronger component of hedgerow/woodland margin and wetland-type species, suggesting that a wider environment was being exploited, as might be expected with greater regulations on woodland. Of course, there are gaps in the dataset, and charcoal is a biased indicator, but these results present a general picture for the usage of the woody environment over time at the ICSG and RMC Land sites.

Insect Remains

by David Smith

Background

The insect faunas described here are from a series of wells/waterholes ranging in date from the Late Bronze Age to the medieval period. These archaeological features were sampled as part of the ICSG excavations. The selection of material for insect analysis was selected primarily on the degree to which waterlogging was observed in the field. The preservation of insect remains was initially assessed by Chris Stevens during the processing and sorting of the plant macrofossils from this site. Context details, dating and phasing is outlined in Table 10.22.

It was hoped that an examination of the insect remains from these locations might provide information on the nature of the environment and landuse surrounding the site and the nature of materials that may have been deposited into these features.

Table 10.22 The insect remains from ICSG (taxonomy follows that of Lucht 1987)

	Phase	M/LBA			RB		Med	Phytophage host plants (data taken from Koch 1989; 1992)
	Feature type	Waterhole	Waterhole	Waterhole	Well	Well	Waterhole	
	Cut	16198	16198	16198	1087	16402	16200	
	Context	16186	16188	16193	4817	16408	16220	
	Sample	17068	17069	17070	2331	17032	17052	
	Ecological codes							
DERMAPTERA								
Forficulidae								
Forficula auricularia (L.)		-	*1*	-	-	-	*2*	
HEMIPTERA								
Family, genus and spp. Indet.		-	-	1	2	-	3	
COLEOPTERA								
Carabidae								
Leistus spp.		-	-	1	-	-	1	
Nebria brevicollis (F.)		-	-	1	3	-	-	
Notiophilus biguttatus (F.)		-	-	1	1	-	1	
Loricera pilicornis (F.)		-	-	-	1	-	-	
Clivina fossor (L.)		-	-	-	-	-	1	
Dyschirus globosus (Hbst.)		-	-	-	-	-	1	
Trechus secalis (Payk.)	ws	-	1	-	-	-	-	
Trechus rubens (F.)		-	1	-	-	-	1	
Trechus quadristriatus (Schrk)		-	-	3	-	-	-	
Trechus quadristriatus (Schrk)/*T.obtusus* Er.		1	-	-	2	-	1	
Trechoblemus micros (Hbst.)		-	-	-	1	-	1	
Trechus spp.		-	-	-	3	-	-	
Bembidion lampros (Hbst.)		-	-	1	-	-	-	
Bembidion doris (Panz.)		-	-	-	2	-	-	
Bembidion biguttatus (Fabr).		-	-	2	-	-	-	
Bembidion spp.		1	-	6	-	1	1	
Asaphidion flavipes (L.)	ws	-	1	1	1	-	-	
Anisodactylus binotatus (F.)		-	-	-	-	-	1	
Harpalusdimidiatus (Rossi)		-	1	2	-	-	1	
Harpalus rupicola Sturm		-	1	1	-	-	8	
Harpalus rufipes (Geer)		-	-	-	1	-	1	
Harpalus spp.		-	-	-	1	-	-	
Acupalpus spp.		-	-	-	-	-	1	
Poecilus ?cupreus (L.)		-	-	1	-	-	-	
Pterostichus melanarius (Ill.)		-	-	3	-	-	3	
Pterostichus madidus (F.)		1	-	-	-	-	1	
Pterostichus spp.		-	3	-	-	-	-	
Calathus fuscipes (Goeze)		-	1	1	-	-	1	
Calathus spp.		-	-	-	1	-	-	
Agonum fuliginosum (Panz.)	ws	-	-	-	-	-	1	
Agonum sp.		-	-	-	-	-	2	
Platynus dorsalis (Pont.)		-	-	3	-	-	4	
Amara aenea (Geer)		-	1	-	-	-	3	
Amara spp.		-	1	5	1	1	-	
Dromius linearis (Ol.)	ws	-	-	-	-	-	3	
Syntomus truncatellus (L.)		-	-	1	-	-	-	
Dytiscidae								
Hygrotus spp.	a	-	-	-	-	-	2	
Hydroporus palustris (L.)	a	-	-	-	-	-	1	
Hydroporus spp.	a	-	1	-	-	-	-	
Notaris clavicornis (Geer.)	a	-	-	-	-	-	1	
Agabus bipustulatus (L.)	a	-	-	1	-	-	2	
Agabus spp	a	-	-	1	-	-	-	
Hydraenidae								
Hydraena testacea Curt.	a	1	-	5	-	-	-	
Hydraena spp.	a	-	-	-	-	2	-	
Ochthebius minimus (F.)	a	-	-	-	-	1	3	
Octhebius spp.	a	-	3	1	-	3	-	
Limnebius spp.	a	-	-	3	-	1	-	
Helophorus grandis (Ill.)	a	-	-	-	2	-	-	
Helophorus spp.	a	2	2	2	4	1	5	
Hydrophilidae								
Sphaeridium lunatum F.	df	-	-	1	-	-	-	
Cercyon impressus (Sturm)	df	-	-	-	1	-	-	
Cercyon analis (Payk.)	df	-	-	1	3	-	1	
Megasternum boletophagum (Marsh.)		1	6	5	2	-	2	
Cryptopleurum minutum (F.)	df	-	-	1	-	1	-	
Hydrobius fusipes (L.)	a	-	1	-	-	1	1	
Laccobius spp.	a	-	-	-	-	-	1	

Table 10.22 Continued

	Phase	M/LBA			RB		Med	Phytophage host plants (data taken from Koch 1989; 1992)
	Feature type	Waterhole	Waterhole	Waterhole	Well	Well	Waterhole	
	Cut	16198	16198	16198	1087	16402	16200	
	Context	16186	16188	16193	4817	16408	16220	
	Sample	17068	17069	17070	2331	17032	17052	
	Ecological codes							
Histeridae								
Acritus nigricornis (Hoffm.)	df	-	-	1	1	-	-	
Gnathoncus sp.	df	-	-	1	-	-	-	
Hister spp.	df	-	1	-	1	-	1	
Silphidae								
Phosphuga atrata (L.)	df	-	-	1	-	-	1	
Silpha spp.		1	-	-	-	-	-	
Catopidae								
Catops spp.		-	-	1	-	-	-	
Liodidae								
Agathidium spp.		-	-	1	-	-	-	
Orthoperidae								
Orthoperus spp.		-	-	-	-	1	4	
Staphylinidae								
Metopsia gallica (Koch)		-	-	1	-	-	-	
Megarthrus sp.		-	-	-	-	1	-	
Phyllodrepa floralis (Payk.)		-	-	-	1	-	-	
Omalium spp.		-	-	1	1	-	1	
Xylodromus concinnus (Marsh.)	h	-	-	-	1	-	-	
Olophrum spp.		-	-	-	1	1	-	
Acidota crenata (F.)		-	-	-	-	-	1	
Lesteva longelytrata (Goeze)	ws	-	-	-	2	-	30	
Lesteva spp.	ws	-	-	1	-	-	-	
Trogophloeus bilineatus (Steph.)	ws	-	-	1	6	-	1	
Trogophloeus spp.		-	-	-	2	-	-	
Oxytelus rugosus (F.)		-	1	1	-	1	2	
Oxytelus sculpturatus Grav.		-	-	4	3	-	1	
Oxytelus nitidulus Grav.		-	-	2	1	-	7	
Platystethus arenarius (Fourc.)	df	-	-	-	2	-	-	
Platystethus cornutus (Grav.)	ws	-	-	3	14	-	7	
Platystethus nitens Sahlb.)	ws	-	-	-	1	-	-	
Stenus spp.		-	-	-	3	1	3	
Paederus spp.		-	1	-	-	-	-	
Stilicus orbiculatus (Payk.)		-	1	-	-	1	1	
Lathrobium spp.		-	-	-	-	1	1	
Gyrohypnus fracticornis (Müll.)		-	-	-	2	-	-	
Xantholinus spp.		-	1	2	3	-	3	
Neobisnius spp.		-	-	4	1	-	-	
Gabrius spp.		-	-	-	1	-	-	
Philonthus spp.		-	-	-	3	1	-	
Philonthus spp.		-	-	4	-	-	4	
Tachyporus spp.		1	1	-	-	-	2	
Tachinus rufipes (Geer.)		-	-	1	-	-	1	
Drusilla canaliculata (F.)		-	1	-	-	-	-	
Aleocharinidae Genus & spp. Indet.		-	2	-	3	-	-	
Cantharidae								
Cantharis sp.		-	-	2	-	-	2	
Rhagonycha fulva (Scop.)		1	-	-	-	-	3	
Malthinus biguttatus (L.)	p	-	-	-	-	-	1	
Elateridae								
Agroties spp.	p	1	2	-	1	-	-	
Adelocera murina (L.)	p	-	-	3	2	-	1	
Athous haemorrhoidalis (F.)	p	-	-	2	-	-	-	
Dryopidae								
Oulimnius spp.	a	-	-	-	1	-	-	
Byrrhidae								
Byrrhus pilula (L.)	p	-	1	-	-	-	-	
Nitidulidae								
Brachypterus urticae (F.)	p	-	1	3	-	-	8	*Urtica dioica* L. (common nettle)
Meligethes spp.		-	-	-	-	-	1	

Table 10.22 Continued

Phase		M/LBA			RB		Med	Phytophage host plants (data taken from Koch 1989; 1992)
Feature type		Waterhole	Waterhole	Waterhole	Well	Well	Waterhole	
Cut		16198	16198	16198	1087	16402	16200	
Context		16186	16188	16193	4817	16408	16220	
Sample		17068	17069	17070	2331	17032	17052	
	Ecological codes							
Cucujidae								
Oryzaephilus surinamensis (L.)	g	-	-	-	-	-	29	
Cryptophagidae								
Cryptophagus spp.	h	-	-	1	1	-	1	
Atomaria spp.	rh	-	-	-	-	1	-	
Phalacridae								
Phalacrus spp.	ws	-	1	1	1	-	-	
Lathridiidae								
Enicmus minutus (Group)	h	-	-	1	5	-	3	
Corticaria/corticarina spp.		-	-	2	1	-	1	
Mycetophagidae								
Typhaea stercorea (L.)	h	-	-	-	-	-	1	
Endomychidae								
Mycetaea hirta (Marsh.)	h	-	-	-	1	-	-	
Coccinellidae								
Coccinella septenpunctata L.		-	-	-	-	-	2	
Scymus spp.		-	-	1	-	-	-	
Halyzia sedecimguttata (L.)		-	-	-	-	-	1	
Anobiidae								
Anobium punctatum (Geer)	h	-	-	4	2	-	4	
Ptinidae								
Ptinus fur (L.)	h	-	-	1	-	-	1	
Anthicidae								
Anthicus formicarius (Goeze)	df	-	-	-	-	-	2	
Anthicus antherinus (L.)		-	-	1	-	-	-	
Tenebionidae								
Palorus ratzeburgi (Wissm.)	g	-	-	-	-	-	1	
Scarabaeidae								
Geotrupes spp.	df	1	5	2	1	-	1	
Onthophagus joannae Goljan	df	-	-	4	-	-	-	
Onthophagus similis (Scriba)	df	-	-	1	-	-	-	
Onthophagus spp.	df	-	2	-	-	-	1	
Oxyomus silvestris (Scop.)		-	-	1	2	-	1	
Aphodius ?arenarius (Ol.)	df	-	7	-	-	-	-	
Aphodius luridus (F.)	df	-	-	1	1	-	-	
Aphodius contaminatus (Hbst.)	df	-	4	-	3	-	18	
Aphodius sphacelatus (Panz.) *or A. prodromus* (Brahm)	df	-	7	5	3	-	-	
Aphodius fimentarius (L.)	df	-	1	1	2	-	-	
Aphodius ater (Geer)	df	-	1	1	1	-	-	
Aphodius granarius (L.)	df	-	-	1	3	-	-	
Aphodius spp.	df	-	-	-	10	1	-	
Phyllopertha horticola (L.)	p	-	5	3	-	-	-	
Cerambychidae								
Leiopus nebulosus (L.)	dw	1	-	-	-	-	-	
Chyrsomelidae								
Donacia/Plateumaris spp.	ws	-	1	-	-	-	-	
Gastroidea viridula (Geer)	p	1	-	-	-	-	1	On *Rumex* spp. (dock)
Phyllotreta spp.		-	3	1	-	1	8	
Haltica spp.		-	-	-	-	-	1	
Crepidodera sp.		-	-	1	-	-	-	
Chaetocnema concinna (Marsh.)		1	-	3	-	-	1	
Psylliodes sp.	p	-	4	-	-	1	1	
Scolytidae								
Scolytus rugulosus (Müll.)	dw	-	-	1	1	-	-	
Leperisinus varius (F.)	dw	-	-	1	-	-	-	Mainly on *Fraxinus* (ash)

Table 10.22 Continued

Phase		M/LBA			RB		Med	Phytophage host plants (data taken from Koch 1989; 1992)
Feature type		Waterhole	Waterhole	Waterhole	Well	Well	Waterhole	
Cut		16198	16198	16198	1087	16402	16200	
Context		16186	16188	16193	4817	16408	16220	
Sample		17068	17069	17070	2331	17032	17052	
Ecological codes								
Cuculionidae								
Apion urticarium (Hbst.)	p	-	1	-	-	-	2	*Urtica dioica* L. (common nettle)
Apion craccae (L.)	p	4	-	-	1	-	-	*Vicia* species (various vetches)
Apion spp.	p	-	-	16	1	3	2	
Otiorhynchus spp.		-	-	1	-	-	-	
Phyllobius sp.	p	1	2	-	-	-	-	
Trachyphloeus spp.		-	1	-	-	-	-	
Barypeithes spp.		-	13	-	-	-	-	
Strophosoma melanogrammum (Forst.)	p	-	10	-	-	-	-	
Strophosoma spp.	p	1	-	-	-	-	-	
Sitona lineatus (L.)	p	-	-	-	-	-	1	*Trifolium* species (clover)
Sitona suturalis Steph.	p	-	-	-	2	-	1	*Vicia* species (various vetches)
Sitona puncticollis Steph.	p	-	-	6	-	-	-	*Trifolium* (clover) and vetches (*Vicia* spp.)
Sitona flavescens (Marsh.)	p	-	-	2	-	-	-	*Trifolium* species (clover)
Sitona waterhousei Walt.	p	-	1	-	-	-	-	*Lotus pedunculatus* Cav. and *L. corniculatus* L. (lesser and greater bird's-foot trefoil)
Sitona hispidulus (F.)	p	-	-	-	-	-	3	*Trifolium* species (Clover)
Sitona humeralis Steph.	p	-	-	2	-	-	-	Often on medicks (*Medicago*) and clover
Sitona spp.		1	-	-	2	-	-	
Bagous spp.	ws	-	-	1	-	-	-	
Notaris acridulus (L.)	ws	-	-	-	1	-	-	Often on *Glyceria maxima* (Hartm.) Holmb. (reed sweet-grass) and other *Glyceria* species (sweet-grasses)
Curclio spp.	tl	-	-	-	-	-	1	
Alophus triguttatus (F.)		3	12	10	-	-	1	
Sitophilus granarius (L.)	g	-	-	-	1	-	-	
Rhinoncus pericarpius (L.)	p	-	-	-	-	-	1	*Polygonum* species (knotweeds)
Micrelus ericae (Gyll.)	m	-	-	1	-	-	-	On *Calluna* and *Erica* spp. (Heathers)
Ceutorhynchus eryisimi (F.)	p	-	-	-	-	-	1	On *Capsella bursa-pastoris* (L.) Medik. (Shepherd's purse)
Ceutorhynchus pollinarius Forst.	p	-	-	-	1	-	-	*Urtica dioica* L. (common nettle)
Ceutorhynchus spp.	p	-	-	1	1	-	-	
Cidnorhinus quadrimaculatus (L.)	p	-	3	1	-	-	7	*Urtica dioica* L. (common nettle)
Gymnetron pascuorum (Gyll.)	p	1	-	1	-	-	-	*Plantago lanceolata* L. (plantain)
Gymnetron spp.	p	-	3	3	-	-	-	*Plantago lanceolata* L. (plantain)
Rhynchaenus ?quercus (L.)	tl	-	-	1	-	-	-	*Quercus* spp. (Oak)
Rhynchaenus sp.	tl	-	-	1	-	-	2	
DIPTERA								
SUBORDER CYCLORRHAPHA								
Family, genus & spp. indet.		6	8	29	12	-	22	
HYMENOPTERA								
Formicoidea Family Genus and spp. indet.		-	1	1	-	-	2	

a = aquatic water beetles; ws = water side species often associated with emergent vegetation; df = species often associated with dung
p = species associated with grassland and open areas; dw = dead wood species; lf = species associated with tree leaf
h = part of Kenward's (Hall and Kenward 1990) 'house fauna' typical, though not limited, to archaeological settlement
m = species associated with moorland; g = species associated with grain

Table 10.23 The proportions of the ecological grouping of Coleoptera from ICSG

	17068	*18023*	*17070*	*2331*	*17032*	*17052*
Total number of individuals	26	124	180	135	27	245
Total number of species	20	46	84	65	22	86
% aquatic	11.5	5.6	7.2	5.2	33.3	6.5
% waterside	0.0	3.2	4.4	19.3	0.0	17.1
% rotting foul/terrestrial	4.3	24.8	13.8	31.4	11.1	13.4
% tree/terrestrial	4.3	0.0	2.5	1.0	0.0	1.6
% grassland and pasture/terrestrial	39.1	29.2	27.0	8.8	22.2	16.0
% moorland/terrestrial	0.0	0.0	0.6	0.0	0.0	0.0
% 'house fauna'/terrestrial	0.0	0.0	4.4	9.8	5.6	5.3
% grain pests	0.0	0.0	0.0	1.0	0.0	16.0

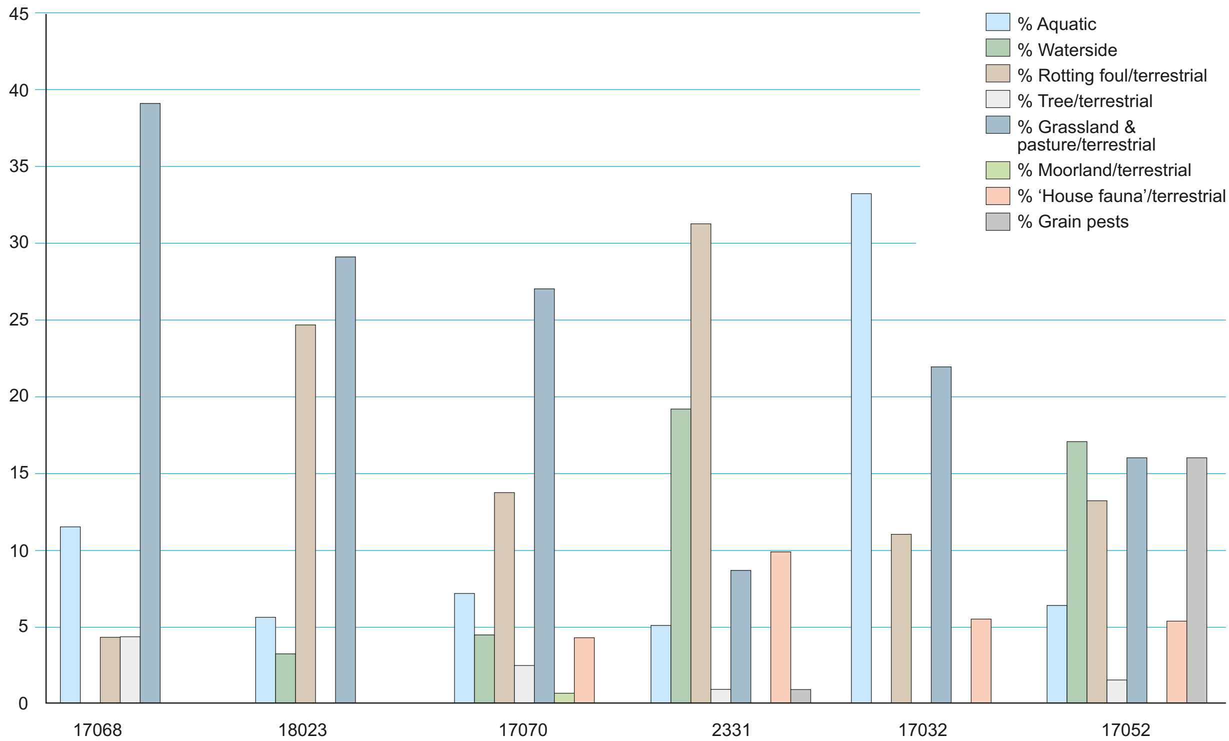

Figure 10.3 The proportions of the ecological grouping of Coleoptera from ICSG

Methods

The samples were initially processed at Wessex Archaeology. Sub-samples of 5 litres were taken from bulk samples from these features. Initial laboratory flotation was undertaken for plant macrofossils with the flots retained on a 0.25 mm mesh and residues on a 0.5 mm mesh. Residues and flots were stored in sealed containers with Industrial Methylated Spirits (IMS). The various flot and heavy residue fractions were re-combined and then were processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). Insect remains were sorted and identified under a low-power binocular microscope at magnifications between x15–x45. Where achievable the insect remains were identified to species level by direct comparison to specimens in the Gorham and Girling insect collections housed in the Institute of Archaeology and Antiquity, University of Birmingham.

Results

The majority of the insect remains present are beetles (Coleoptera), with a few individuals of true bugs (Hemiptera), flies (Diptera) and ants (Formicoidea) present. A list of Coleoptera recovered is presented in Table 10.22. The nomenclature for Coleoptera (beetles) follows that of Lucht (1987). Column 9 in Table 10.22 lists the host plants for the phytophage species of beetle that were recovered and are predominantly derived from Koch (1989; 1992). The plant taxonomy follows that of Stace 1997.

In order to aid interpretation, where possible, taxa have been assigned to ecological groupings. The Coleoptera follow a simplified version of the scheme suggested by Robinson (1981; 1983) with the addition of Kenward's (Hall and Kenward 1990) 'house fauna' and a grouping which contains a number of pests of stored grain. The affiliation of each beetle species to a particular ecological grouping is indicated in the second column of Table 10.22. The meaning of each ecological code is explained in the key at the base of Table 10.22. The occurrence of each of the ecological groupings is expressed as a percentage in Table 10.23 and in Figure 10.3. The pasture/grassland, dung and woodland/timber, 'house fauna' and grain pest beetle species are calculated as percentages of the number of terrestrial species, as opposed to the whole fauna. An individual taxon can occur in more than one ecological grouping and, therefore, the proportions presented in Table 10.23 and Figure 10.3 can exceed 100%.

Discussion

Middle/Late Bronze Age waterhole

Three of the insect faunas examined (sample numbers 17068, 17069, 17070) come from the fills of the Middle/Late Bronze Age waterhole 16198 which contained a log ladder that has been radiocarbon dated to 1210–910 cal BC (OxA-8470 at 95% confidence). The results from the three samples are very similar and will therefore be discussed together.

The insect fauna is dominated by a large number of species that are associated with open and grazed grassland (ecological group 'p' in Tables 10.22 and 10.23 and Fig. 10.3). This is clearly indicated by the range of Carabidae (ground beetles) recovered. Taxa such as *Nebria brevicollis, Notiophilus biguttatus, Loricera pilicornis, Bembidion lampros, Anisodactylus binotatus, Harpalus dimidiatus, H. rupicola, Pterostichus melanarius, P. madidus, Calathus fuscipes, Platynus dorsalis* and *Amara aenea* are typical of open and sparsely vegetated ground in arable fields and waste areas (Lindroth 1974). Similar conditions are also indicated by the several phytophage (plant feeding) taxa that typically occur with arable weeds, or are found in waste ground and rough grassland. There is clear evidence for the presence of common nettle (*Urtica dioica* L.) which is the food plant of the Nitidulidae *Brachypterus urticae* and the Curculionidae 'weevils' *Apion urticarium* and *Cidnorhinus quadrimaculatus*. Other arable weeds and plant of waste ground that are indicated by the phytophages include dock (*Rumex* spp. – the food plant of *Gastroidea viridula*), vetches (*Vicia* spp. – the food plants of *Apion craccae* and *Sitona suturalis*), clover (*Trifolium* spp. – the food plant of *Sitona lineatus, S. puncticollis, S. flavescens,* and *S. humeralis*), birds'-foot-trefoil (*Lotus corniculatus* – the food plant of *Sitona waterhousei*), and plantains (*Plantago lanceolata* L.– the food plant of *Gymnetron pascuorum*). Weedy grassland is also the habitat often favoured by the large weevil *Alophus triguttatus*. The 'click beetle' *Agrioties* spp., *Adelocera murina* and *Athous haemorrhoidalis* are also associated with the roots of grass in pasture and arable fields (Koch 1992) as is the larvae of the 'garden chaffer' *Phyllopertha horticola* (Jessop 1986). The waterlogged plant macrofossil remains from this feature also indicate the presence of an essentially cleared landscape with evidence for some arable and meadowlands in the area (see Stevens, above).

The presence of grazing land in the area is also indicated by the recovery of a large number of insects that are associated with animal dung (ecological group 'df' in Tables 10.22 and 10.23 and Fig. 10.3). Taxa typical of this ecological group include the *Onthophagus*, *Geotrupes* and *Aphodius* 'dung beetles' (Jessop 1986).

Only a small proportion of the insect fauna recovered is associated with trees or woodland (ecological groups 'dw' and 'tl' in Tables 10.22 and 10.23 and in Figure 10.3). This suggests that the landscape was broadly cleared by this period of the Bronze Age. Furthermore, the 'woodland' species recovered, like the 'woodworm' *Anobium punctatum*, the 'longhorn' *Leiopus nebulosus*, the 'bark beetles' *Scolytus rugulosus* and *Leperisinus varius*, and the 'leaf minor' *Rhynchaenus* spp. are not restricted solely to dense woodland and can commonly occur in hedgerows and isolated trees (Koch 1992). The presence of scrub and/or hedgerows is also suggested by the plant macrofossil remains from these deposits where both blackthorn (*Prunus spinosa* L) and hawthorn (*Crataegus monogyn*a Jacq) were recovered (Stevens above). There is the possibility that heather also occurred locally since this is the food plant of the 'heather weevil' *Micrelus ericae* (Koch 1992).

Only a limited part of the fauna recovered is associated with standing water (ecological group 'a' in Tables 10.22 and 10.23 and in Fig. 10.3). These mainly consist of a range of water beetles associated with slow, stagnant and often temporary bodies of water. Typical of these conditions are *Hydroporus* spp., *Agabus bipustulatus*, *Hydraena testacea*, *Ochthebius* spp. and *Limnebius* spp. (Nilsson and Holmen 1995; Hansen 1987). These species may have lived in any body of water that gathered in the waterhole or may have become included as background fauna.

Romano-British waterholes

Two of the insect samples examined came from 1st- and 2nd-century Romano-British wells/waterholes. Sample 2331 from feature 1087 produced a large insect fauna. This consisted of a similar range of taxa to that already described for the Bronze Age waterhole outlined above. The fauna is again dominated by a range of ground beetles which are associated with arable land, rough pasture and wastelands. The plant feeding species of beetle also suggest that a similar range of arable weeds and indicators for disturbed ground are present. Again a similar picture is also suggested by the plant macrofossils recovered from this deposit (see Stevens, above). For example, *Apion craccae* and *Sitona suturalis* are both associated with vetches and *Ceutorhynchus pollinarius* with common nettle (Koch 1992). A large proportion of the terrestrial species recovered are again associated with the dung of grazing animals (ecological group 'df' – 31.4%). There also are indications that an area of muddy wet ground may have been present in the area around the waterhole. The 'ground beetle' *Asaphidion flavipes*, and the 'rove beetles' *Trogophloeus bilineatu*s, *Platystethus cornutus* and *P. nitens* are all associated with this type of environment (Lindroth 1974; Tottenham 1954).

Where there is a difference is that settlement waste may have become incorporated into this waterhole. The terrestrial beetles recovered include a proportion of species that belong to Harry Kenward's 'house fauna' (ecological grouping 'h' in Tables 10.22 and 10.23 and Fig. 10.3, 9.8%). These species are normally associated with settlement deposits and waste in the archaeological record (Hall and Kenward 1990; Kenward and Hall 1995). Typical of this grouping are *Xantholinus concinnus*, the cryptophagids, lathridiids, *Mycetea hirta* and the 'woodworm' *Anobium punctatum*. Also present was a single individual of the 'granary weevil' *Sitophilus granarius*, a species which is associated only with stored grain (Freeman 1980).

Sample 17032 from cut 16402 produced a small fauna of beetles which is essentially similar to that found in sample 2331.

Medieval well/waterhole

Sample 17052 came from the cut of feature 16200 and was part of the fill which was associated with a 12th-century bucket which has been radiocarbon dated (see Chapter 11).

The insect fauna recovered is again large in size and is dominated by species that are indicative of disturbed and agricultural land. This is clearly seen in the large number of carabid 'ground beetles' recovered. Species such as *Notiophilus biguttatus, Anisodactylus binotatus, Harpalus dimidiatus, H. rupicola, H. rufipes, Pterostichus melanarius, P. madidus, Platynus dorsalis* and *Amara aenea* are particularly indicative of this type of landscape (Lindroth 1974). Similarly open and rough ground is indicated by the nitidulid *Brachypterus urticae* and the 'weevils' *Apion urticarium* and *Cidnorhinus quadrimaculatus* which are associated with common nettle. The presence of clover is again indicated by a number of the species of *Sitona* weevil recovered. Both shepherd's purse (*Capsella bursa-pastoris* L.) and knotweeds (*Polygonum* spp.) were also present since these are the food plants of *Ceutorhynchus eryisimi* and *Rhinoncus pericarpius* respectively (Koch 1992). As with the other deposits discussed here a relatively large proportion of the taxa recovered are again 'dung beetles' indicating the presence of pasture and grazing in the area.

One aspect of this fauna that stands out is that 16% of the terrestrial fauna consists of two species of granary pest. However, this results from the very low numbers of terrestrial insects recovered from this sample and this ecological grouping is actually only represented only by two individual specimens. Both *Oryzaephilus surinamensis* and *Palorus ratzburgi* are both associated with spoilt stored grain (Freeman 1980). It may be that spoilt grain was deliberately dumped into this feature but it seems far more likely that it was used as supplementary feed for grazing animals and entered this deposit in dung which was washed into the feature.

Conclusions

The insect faunas recovered here clearly suggest that the landscape associated with the waterholes and ditch systems at ICSG was essentially cleared of trees and used for farming and the pasturing of stock animals. It has been suggested that for this area of the Middle Thames Valley clearance of forest for farming mainly occurred in the period between 2000–800 BC (Branch and Green 2004, Sidell *et al.* 2000; Rackham and Sidell 2000). At the sites of both Runnymede Bridge and Dorney the insect faunas recovered clearly show a transition from closed woodland to open and grazed landscapes during the Middle Bronze Age (Robinson 2000; Parker and Robinson 2003). The insect remains from the Bronze Age waterhole at ICSG, and the radiocarbon date from the log ladder in this feature, suggest that this area developed in the same way and at a similar period. Other sites in the area, such as those at Perry Oaks (Framework Archaeology 2006) and Heathrow Terminal 5 (Emma Tetlow pers. comm.) indicate that this cleared and agricultural landscape persisted into the Iron Age. Similar insect faunas and cleared landscapes appear to have also been present from the Middle to Late Bronze Age onwards both in the Upper Thames Valley (Robinson 1993) and in and around Greater London (Elias *et al.* 2009).

Pollen

by Michael J. Grant

Introduction

Pollen assessment was carried out upon eight features from ICSG and RMC Land. Subsequently two archaeological features were selected for full pollen analysis. At ICSG well G834 (monolith 12089) was analysed. This is interpreted as a possible well (feature 10891, a recut of 10824) containing a number of Late Iron Age/early Romano-British finds. At RMC Land, waterhole 524 (monolith 121, late Saxon/early medieval) was analysed. Additional spot samples were taken from sediments adhering to three wooden objects at ICSG – two Late Bronze Age/Early Iron Age (ONs 18221 and 18222) and one early medieval (ON 18756, two sample).

Methods

Twenty samples were assessed from eight stratified sections (two samples from each – see Tables 10.24–25) and four spot samples from sediment which remained attached to excavated wooden objects

Table 10.24 Features assessed for pollen from RMC Land

Feature no.	*Feature*	*Date*	*Monolith*
5380, 5442	Deep pit or well (and partial recut – 5442)	possible Neolithic	347
5287	Waterhole	Late Bronze Age/Early Iron Age	338
2462, 2054	Well (and recut – 2462)	Saxon	167
524	Well	Late Saxon/early medieval	121

Table 10.25 Features assessed for pollen from ICSG

Group	*Feature no.*	*Feature*	*Date*	*Monolith*
G477	4207	Ditch of rectangular enclosure G3001	Neolithic	2362
G503	4217	Ditch of rectangular enclosure G3001	Neolithic	2361
G2000	19380	Double ring ditch G2007 – outer ditch	Neolithic	18097–8
G834	10891	Possible well, recut within 10824	Late Iron Age/early Romano-British	12089

Table 10.26 Spot samples analysed for pollen from ICSG

Object	*Object no.*	*Feature No.*	*Context No.*	*Date*
Wooden stake	18221	G2156	17581	Late Bronze Age/Early Iron Age
Wooden lid/vessel base	18222	G2156	17581	Late Bronze Age/Early Iron Age
Wooden bucket	18756	16200	16220	Early medieval
Wooden bucket	-	16200	16220	Early medieval

Table 10.27 Sediment description from monolith 12089, feature G834 (10891), ICSG

Depth (m)	*Context*	*Description*
0–0.40	10826 10827	10yr 5/3 brown silt loam. 2% medium size inclusions concentrated at the top of the sequence, small to medium size round inclusions along the sediment. Abundant iron stains and a few manganese. Abundant macropores and some roots present. Burnt clay found at the top of the sample. This sequence has some thick layers. Sharp boundary
0.40–0.80	10827	10yr 5/1 gray silt loam. Few and small rounded inclusions, bigger inclusions concentrated at the bottom of the sediment. Fewer iron stains than the sediment above, fewer macropores too. Some tiny fragments of charcoal. There is more layering and finer than above. Gradual boundary.
0.80–1.00	10890	10yr 4/3 brown silty clay loam. Abundant (40%) small to medium size subangular inclusions. Abundant iron stains. Abundant macropores and roots

Table 10.28 Sediment description from monolith 121, feature 524, RMC Land

Depth (m)	*Context*	*Description*
0–18	525	10yr 5/6 yellowish brown silty clay. Few (2%) small subangular inclusions scattered some charcoal at the top of the sediment. Abundant manganese and iron stains. Few patches of very light yellowish silt. Sharp boundary.
18–20	528	Very thin iron pan, abruptly defined. Also manganese stains.
20–25	528	10yr 5/3 brown silty clay loam. Stone less. Iron and manganese stains. Very uniform and compact sediment. Clear boundary
25–36	529 1400	10yr 5/4 yellowish brown silty clay loam. Stone less. Very few macropores. No organic remains. Some iron and manganese stains, more pronounce towards the bottom of the sequence. Clear boundary
36–46	1400 1401	10yr 5/3 brown silty clay loam. Stone less. Abundant iron and manganese and light yellow silt. Compact and uniform sediment. Clear boundary
46–60	1401 1402	10yr 4/6 dark yellowish brown silty clay loam. No inclusions. Abundant iron stains, especially at the bottom of the sequence. Very compact soil.

Table 10.29 Pollen counts from RMC Land (percentage calculations are shown in brackets for samples where the TLP sum exceeded 100 grains)

Feature	524		2054/2462		5287		5380, 5442	
Monolith	121		167		338		347	
Depth below surface (m)	0.30	0.55	0.45	0.64	0.10	0.60	0.39	0.70
Trees								
Ulmus	3 (0.7%)	2 (0.5%)	-	-	-	-	-	-
Quercus	6 (1.4%)	13 (3.1%)	-	-	-	-	-	-
Betula	-	1 (0.2%)	-	-	-	-	-	-
Alnus glutinosa	1 (0.2%)	-	1	-	-	-	-	2
Fraxinus excelsior	1 (0.2%)	-	-	-	-	-	-	-
Shrubs and climbers								
Corylus avellana-type	1 (0.2%)	2 (0.5%)	3	-	-	-	-	-
Salix	2 (0.5%)	1 (0.2%)	-	-	-	-	-	-
Hedera helix	-	1 (0.2%)	-	-	-	-	-	-
Dwarf shrubs & herbs								
Ranunculus acris-type	2 (0.5%)	3 (0.7%)	-	-	-	-	-	-
Papaver rhoeas-type	1 (0.2%)	2 (0.5%)	-	-	-	-	-	-
Chelidonium majus	1 (0.2%)	-	-	-	-	-	-	-
Urtica dioica	2 (0.5%)	1 (0.2%)	-	-	-	-	-	-
Chenopodiaceae	5 (1.2%)	-	1	-	-	-	-	-
Cerastium-type	1 (0.2%)	-	-	-	-	-	-	-
Silene dioica-type	4 (1.0%)	6 (1.4%)	-	-	-	-	-	-
Polygonum	-	1 (0.2%)	-	-	-	-	-	-
Rumex obtusifolius-type	-	1 (0.2%)	-	-	-	-	-	-
Rumex sanguineus-type	-	1 (0.2%)	-	-	-	-	-	-
Brassicaceae	9 (2.2%)	4 (1.0%)	-	3	2	-	1	-
Calluna vulgaris	1 (0.2%)	-	-	-	-	-	-	-
Filipendula	2 (0.5%)	-	-	-	-	-	5	1
Rubus undiff.	2 (0.5%)	1 (0.2%)	-	-	-	-	-	-
Rosaceae undiff.	-	1 (0.2%)	-	-	-	1	-	-
Lotus	1 (0.2%)	-	-	-	-	-	-	-
Apiaceae undiff.	3 (0.7%)	2 (0.5%)	-	-	-	-	-	-
Stachys-type	2 (0.5%)	3 (0.7%)	-	-	-	-	-	-
Lamium album	1 (0.2%)	-	-	-	-	-	-	-
Mentha-type	3 (0.7%)	-	-	-	-	-	-	-
Plantago lanceolata	14 (3.4%)	9 (2.2%)	-	-	-	-	-	-
Melampyrum	-	3 (0.7%)	-	-	-	-	-	-
Rubiaceae	2 (0.5%)	3 (0.7%)	-	-	-	-	-	-
Cichorium intybus-type	60 (14.4%)	53 (12.7%)	4	3	1	-	-	-
Solidago virgaurea-type	38 (9.1%)	51 (12.3%)	-	3	-	-	-	-
Artemisia-type	-	1 (0.2%)	-	-	-	-	-	-
Cyperaceae undiff.	7 (1.7%)	6 (1.5%)	-	-	-	-	-	1
Poaceae undiff.	238 (56.9%)	243 (58.4%)	9	8	2	2	4	-
Poaceae annulus 8–10 μm	2 (0.5%)	-	-	-	-	-	-	-
Poaceae annulus 10–12 μm	2 (0.5%)	1 (0.2%)	-	-	-	-	-	-
Poaceae annulus >12 μm	1 (0.2%)	-	-	-	-	-	-	-
Polypodium			1	-	-	-	-	-
Pteridium aquilinum	8 (1.8%)	11 (2.6%)	-	1	-	-	-	-
Pteropsida (monolete) indet.	10 (2.3%)	3 (0.7%)	1	-	-	-	-	-
Bryophyte	1 (0.2%)	-	1	-	-	-	-	-
Trees	2.6%	3.9%	-	-	-	-	-	-
Shrubs & climbers	0.7%	1.0%	-	-	-	-	-	-
Dwarf shrubs & herbs	96.7%	95.1%	-	-	-	-	-	-
Indeterminable grains	10	7	1	-	-	-	-	-
Total land pollen sum	418	416	18	17	5	3	10	4
Pollen concentration (grains cm^{-3})	73160	63168	1636	5767	988	929	3203	929

Table 10.30 Pollen counts from ICSG (percentage calculations are shown in brackets for samples with the sufficient pollen sum)

Feature	4205		4217		10891		19380	
Monolith	2362		2361		12089		18097–8	
Depth below surface (m)	0.50	0.70	0.40	0.65	0.60	0.90	0.40	0.65
Trees								
Pinus sylvestris	-	-	-	-	-	2 (1.6)	-	-
Ulmus	-	-	-	-	1 (0.6)	2 (1.6)	-	-
Quercus	-	-	-	-	4 (2.5)	2 (1.6)	-	1
Betula	-	-	-	-	1 (0.6)	-	-	-
Alnus glutinosa	-	-	-	-	-	1 (0.8)	-	-
Shrubs & climbers								
Corylus avellana-type	-	-	-	1	3 (1.9)	-	-	-
Salix	1	-	-	-	-	2 (1.6)	-	-
Sorbus-type	-	-	-	-	1 (0.6)	-	-	-
Hedera helix	-	-	-	-	2 (1.2)	-	-	-
Dwarf shrubs & herbs								
Ranunculus acris-type	-	-	-	-	1 (0.6)	2 (1.6)	-	-
Chenopodiaceae	-	-	1	-	9 (5.6)	1 (0.8)	-	-
Silene dioica-type	-	-	-	-	15 (9.3)	1 (0.8)	2	-
Brassicaceae	1	-	-	-	-	1 (0.8)	-	-
Calluna vulgaris	-	-	-	-	1 (0.6)	1 (0.8)	-	-
Filipendula	-	-	-	-	3 (1.9)	5 (4.1)	1	-
Rubus undiff.	-	-	-	-	2 (1.2)	-	-	-
Rosaceae undiff.	-	-	-	-	1 (0.6)	-	-	-
Bupleurum	-	-	-	-	-	1 (0.8)	-	-
Apiaceae undiff.	-	-	-	-	1 (0.6)	-	-	-
Stachys-type	-	-	-	-	2 (1.2)	1 (0.8)	-	-
Plantago lanceolata	-	-	-	-	3 (1.9)	-	-	-
Succisa pratensis	-	-	-	-	1 (0.6)	-	-	-
Cichorium intybus-type	-	-	-	1	12 (7.5)	36 (29.6)	7	1
Solidago virgaurea-type	1	-	1	-	22 (13.7)	12 (9.8)	-	-
Cyperaceae undiff.	-	-	1	-	-	4 (3.3)	-	-
Poaceae undiff.	3	1	3	-	73 (45.3)	46 (37.7)	4	1
Poaceae annulus 8–10 μm	-	-	-	-	-	1 (0.8)	-	-
Poaceae annulus 10–12 μm	-	-	-	-	1 (0.6)	2 (1.6)	-	-
Polypodium	-	-	-	-	1 (0.6)	1 (0.8)	-	-
Pteridium aquilinum	-	-	1	-	-	1 (0.8)	-	-
Pteropsida (monolete) indet.	-	-	-	-	2 (1.2)	-	-	-
Trees	-	-	-	-	3.7	5.7	-	-
Shrubs & climbers	-	-	-	-	3.7	1.6	-	-
Dwarf shrubs & herbs	-	-	-	-	92.5	92.6	-	-
Indeterminable grains	2	2	1	-	13	3	-	-
Total Land Pollen Sum	6	1	6	2	161	122	14	3
Pollen concentration (grains cm^{-3})	1235	329	1986	235	169312	54864	2443	1042

Table 10.31 Pollen Zone descriptions for feature G834, cut 10891, monolith 12089, ICSG

Zone	*Depth (m)*	*Description*
10891–2	0.72–0.44	Dominated by Poaceae (60–81%), with *Cichorium intybus*-type (3–5%) and *Solidago virgaurea*-type (5–11%). Woodland taxa are limited, with only *Quercus* and *Corylus avellana*-type obtaining values greater than 1%. Herb taxa with a continuous presence that reach vales over 1% include *Ranunculus acris*-type (up to 2%), Chenopodiaceae (up to 5%), *Silene dioica*-type (up to 5%), Brassicaceae, *Plantago lanceolata* (up to 1.5%) and Poaceae with an annulus 8–10 μm (up to 1.5%). *Filipendula*, Apiaceae undif. (up to 1.5%) and *Stachys*-type also obtain values of 1%, but are not continuously present. Pollen concentrations vary between 80460 – 106363 grains cm^{-3}.
10891–1	0.90–0.72	Dominated by Poaceae (49–57%), *Cichorium intybus*-type (12–26%) and *Solidago virgaurea*-type (8–11%). Woodland taxa are limited, with only *Quercus* continuously present (up to 1%). Herb taxa with a continuous presence that reach vales over 1% include *Ranunculus acris*-type, Chenopodiaceae (up to 2.5%), *Cerastium*-type (up to 1.5%) *Silene dioica*-type (up to 1.5%), Brassicaceae (up to 3.5%), *Filipendula* (up to 1.5%), Apiaceae undiff. (up to 2%), *Stachys*-type, *Plantago lanceolata* (up to 1.5%) and Poaceae with an annulus 8–10 μm (up to 1.5%). Fabaceae undif. obtains values of 1.5%, but is not continuously present. Pollen concentrations vary between 26041 – 29452 grains cm^{-3}.

Table 10.32 Pollen Zone Descriptions for feature 524, monolith 121, RMC Land

Zone	*Depth (m)*	*Description*
524–3	0.325–0.150	Dominated by Poaceae (45–57%), *Cichorium intybus*-type (14–38%) and *Solidago virgaurea*-type (4–9%). Woodland taxa are limited, with only *Quercus* and *Corylus avellana*-type obtaining values greater than 1%. Herb taxa that reach vales over 1% include *Ranunculus acris*-type, Chenopodiaceae, *Silene dioica*-type (up to 2%), Brassicaceae (up to 2.5%), *Plantago lanceolata* (up to 3.5%) and Poaceae with an annulus 10–12 µm. *Pteridium aquilinum* is present throughout the zone (up to 2% TLP + Pteridophytes). Pollen concentrations decrease from 36580–7130 grains cm^{-3}.
524–2	0.425–0.325	Dominated by Poaceae (51–66%), *Cichorium intybus*-type (14–26%) and *Solidago virgaurea*-type (9–10%). *Quercus*, *Betula*, *Ulmus* and *Corylus avellana*-type fail to reach 1%. Herb taxa that reach vales over 1% include *Ranunculus acris*-type, *Urtica dioica*, *Silene dioica*-type, Brassicaceae (up to 2.5%), Apiaceae undiff. and *Plantago lanceolata* (up to 3.5%). Pollen concentrations increase from 63907–102334 grains cm^{-3}.
524–1	0.600–0.425	Dominated by Poaceae (35–58%), *Cichorium intybus*-type (13–29%) and *Solidago virgaurea*-type (7–13%). *Ranunculus acris*-type (1–2%), *Silene dioica*-type (1–2%), Brassicaceae (1–3%), Apiaceae (up to 1%), *Plantago lanceolata* (1–4%) and *Artemisia*-type (<1%) are present throughout the zone and increase towards the end. *Ulmus*, *Quercus*, *Betula* and *Alnus glutinosa* are only present as isolated occurrences, though *Quercus* does reach 3% at 0.55 mBGL. *Corylus avellana*-type is present throughout the zone, though at low values (<1%). Poaceae with an annulus >8 µm are present throughout the zone, with total percentages up to 3%. *Pteridium aquilinum* is present throughout the zone (up to 3% TLP + Pteridophytes). Pollen concentrations increase from 3628–40200 grains cm^{-3}.

(Table 10.26). Samples were processed using standard procedure (Moore *et al.* 1991); $2cm^3$ of sediment was sampled. A *Lycopodium* spike was added to allow the calculation of pollen concentration. All samples received the following treatment: 20 mls of 10% KOH (80°C for 30 minutes); 20 mls of 60% HF (80°C for 120 minutes); 15 mls of acetolysis mix (80°C for 3 minutes); stained in 0.2% aqueous solution of safranin and mounted in silicone oil following dehydration with tert-butyl alcohol.

After assessment, it was decided to undertake full analysis upon 17 samples from two of the exposed stratified sections previously assessed. Ten samples were taken from the possible well G834 (cut 10891, monolith 12089) at ICSG, and seven samples from waterhole 524 (monolith 121) at RMC Land. Sedimentary descriptions of the two selected sequences are given in Tables 10.27–28. The four spot samples from ICSG were also fully analysed.

At assessment, counts of 100 Total Land Pollen (TLP – excluding Aquatics, Pteridophytes and Bryophytes) were made for each level and calculated as a percentage of the pollen sum (Aquatics, Pteridophytes and Bryophytes calculated as percentage TLP + Group Sum). At the analysis stage, the pollen count was increased from 100 to a minimum of 400 TLP. Identification was made using a Nikon SE and Nikon Eclipse E400 at x400 magnification. Pollen nomenclature is based on Bennett (1994; Bennett *et al.* 1994) and ordered according to Stace (1997). The pollen diagram was drawn using Tilia v 2.0.2 (Grimm 1991). Numerical zonation was performed using the CONISS program (Grimm 1987) after converting the data into percentages in the above sums.

Results

Results of pollen assessment from the feature based sequences are shown in Tables 10.29–30. Pollen preservation and concentrations were found to be poor in the majority of the features sampled. Concentrations in these low-yielding samples ranged from 235–5767 grains cm^{-3}, with an average of 1730 grains cm^{-3}. In addition, those pollen grains that were encountered were often poorly preserved. Only two features (waterhole/wells 524 and G834) showed sufficient potential for further investigation, and were subsequently taken to the analysis stage.

Results of pollen analysis from monoliths 12089 (well G834) and 121 (waterhole 524) are shown in Figures 10.4 and 10.5, with pollen zones described in Tables 10.31–32. Two local pollen assemblage zones (l.p.a.z.) have been defined for monolith 12089 and three l.p.a.z. for monolith 121.

Assessment of the four spot samples (wooden objects ONs 18221–2, 18756) yielded sufficient pollen to allow full analysis on the four spot samples, results of which are shown in Figures 10.6 and 10.7.

Interpretation and Discussion

Late Bronze Age/Early Iron Age (ONs 18221 and 18222)

Although taken from sediment attached to different objects, both of these spot samples are taken from the same feature (G2156) and context 17581 and so can be considered together. With all spot samples (and indeed all buried soils) an assumption is made that the pollen is largely derived from a local vegetation source and that the sediment sampled is

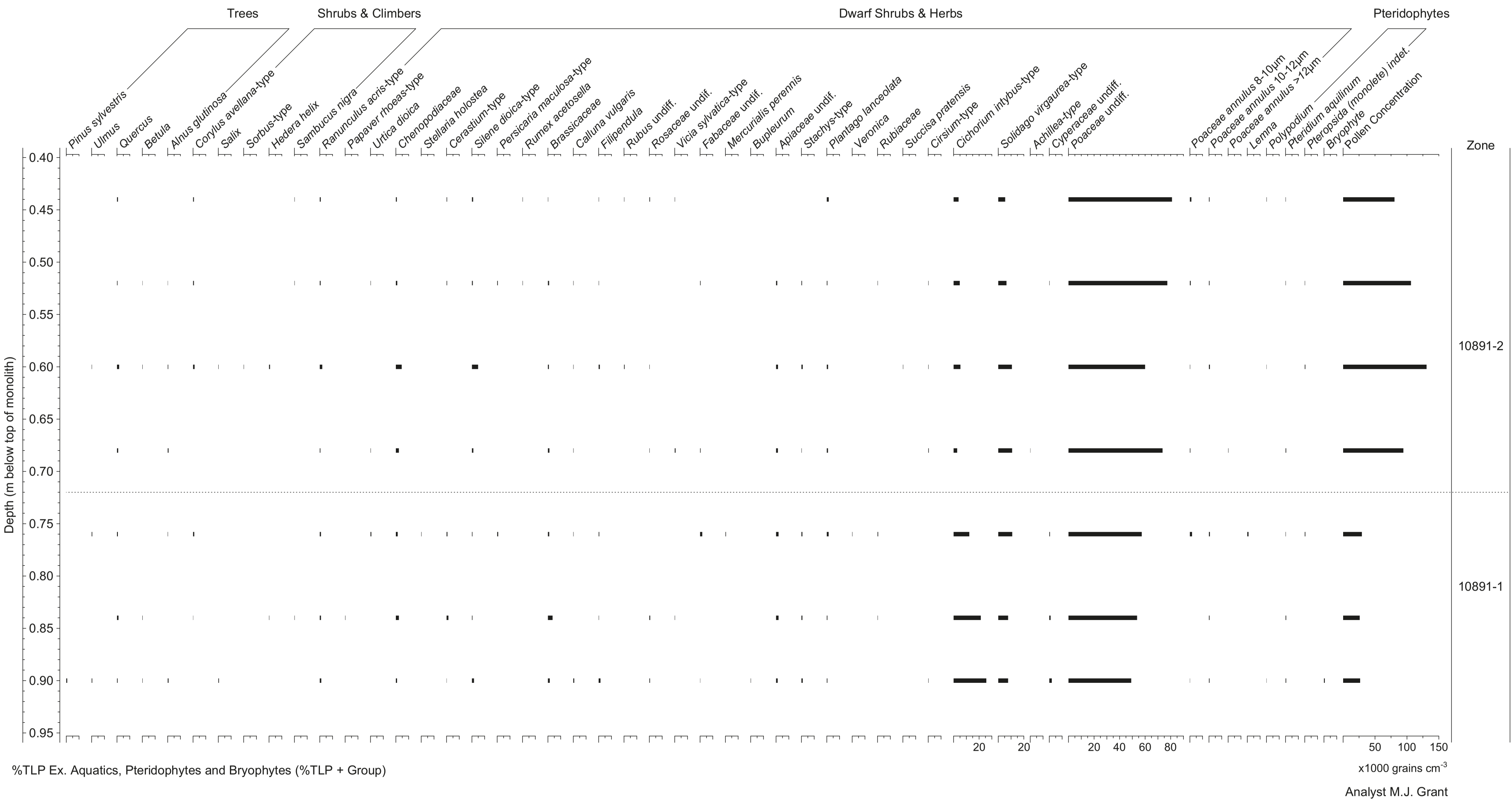

Figure 10.4 Pollen diagram from feature G834, monolith 12089 – Late Iron Age/early Romano-British recut, ICSG

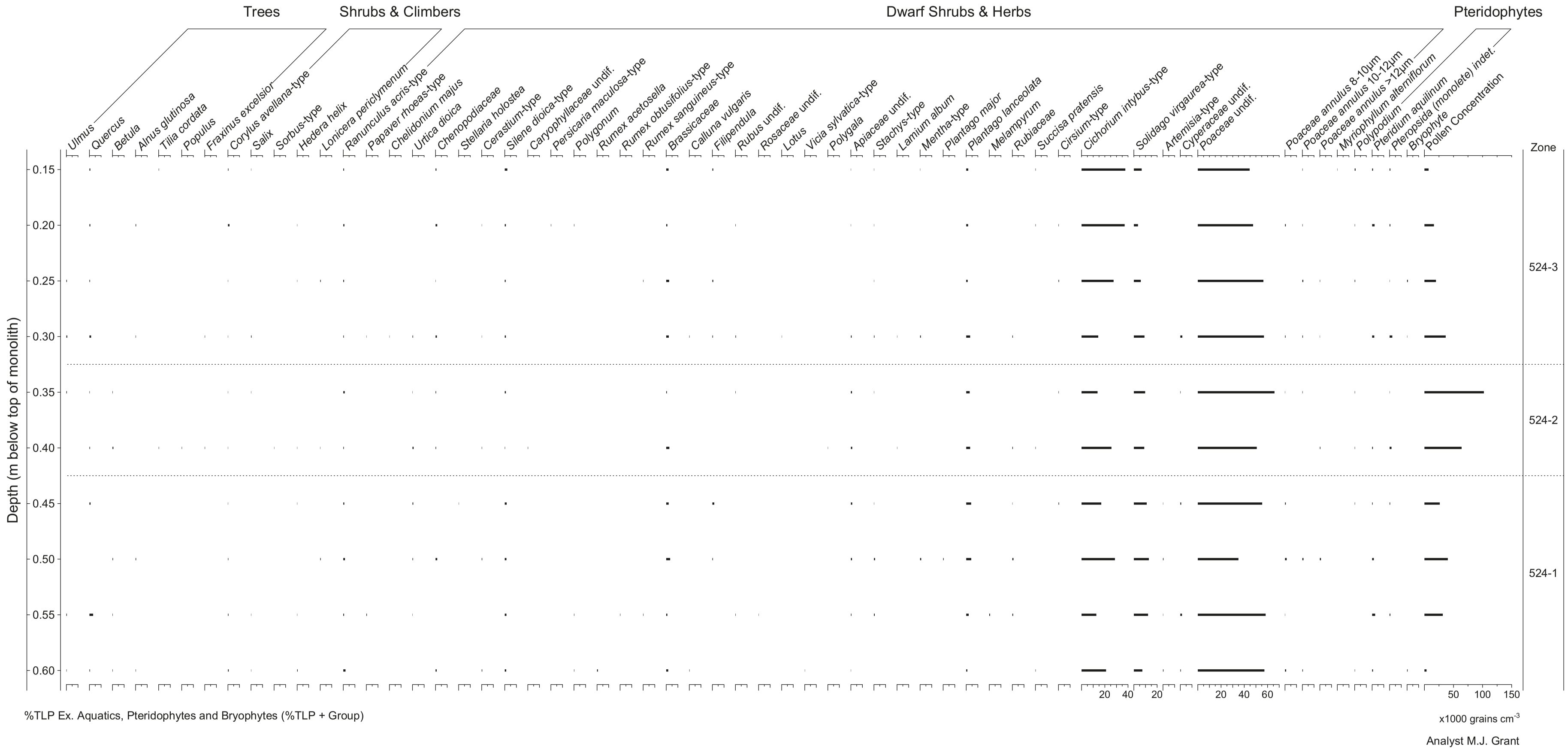

Figure 10.5 Pollen diagram from feature 524, monolith 121 – late Saxon/early medieval waterhole, RMC Land

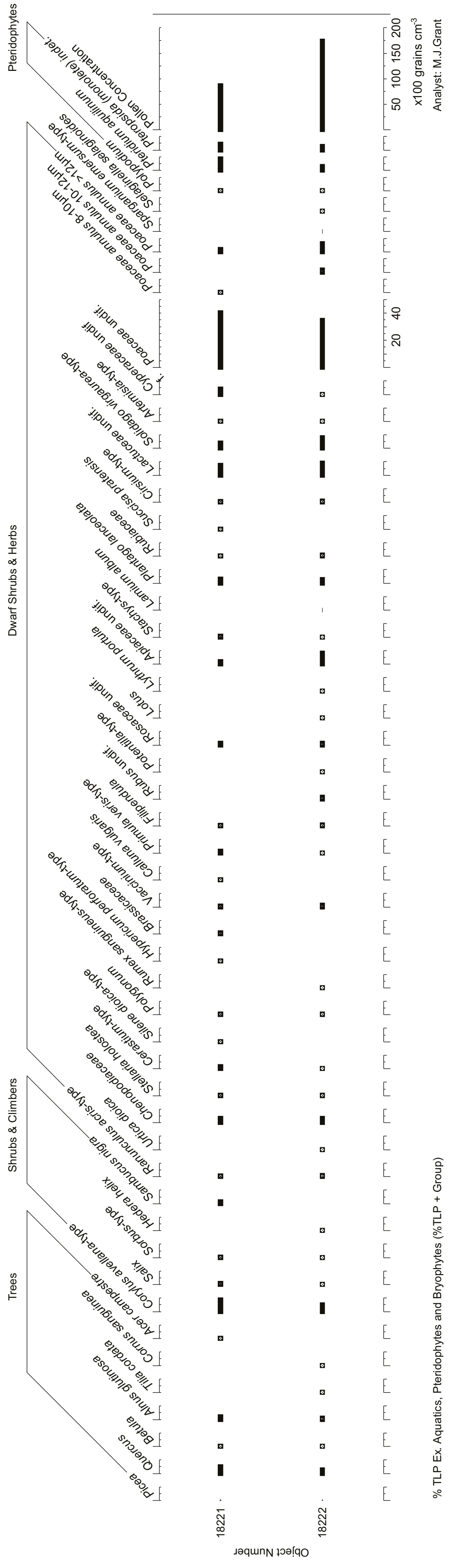

Figure 10.6 Spot pollen samples from Late Bronze Age/Early Iron Age objects 18221 and 18222, ICSG

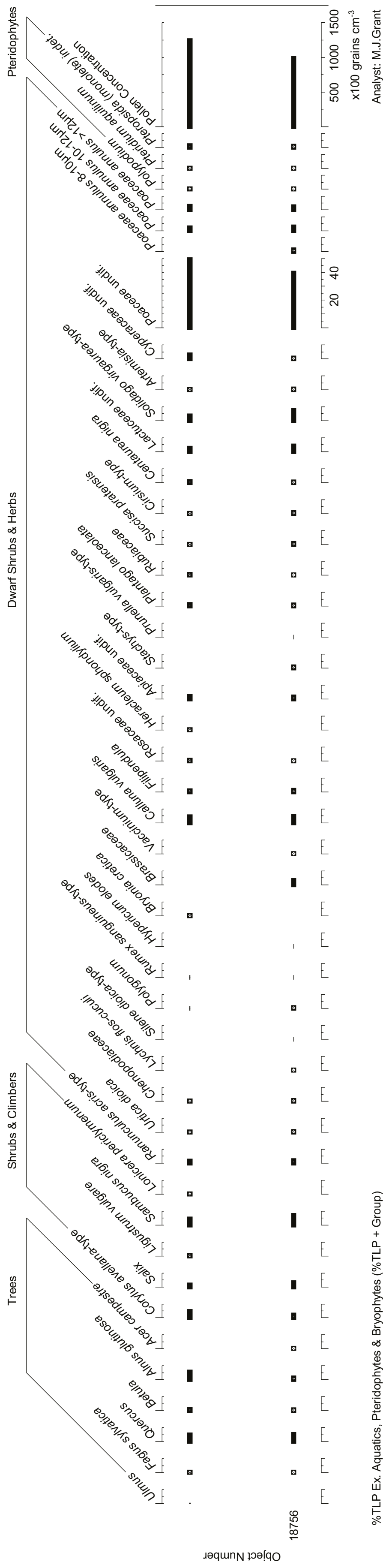

Figure 10.7 Spot pollen samples from early medieval object 18756, ICSG

contemporary with the feature/object under consideration. This therefore assumes that for the wooden objects (especially the stakes – ON 18221) that the pollen is not derived from older sources (eg, sediments into which the object was driven) or from an alternative origin (eg, sediment fill associated with the lid or vessel base (ON 18222).

The pollen assemblage from the spot samples upon the two wooden objects (ONs 18221 and 18222) indicates a largely open environment dominated by Poaceae (grasses), *Cichorium intybus*-type (dandelion/chicory), *Solidago virgaurea*-type (daises/goldenrods) with some *Corylus avellana*-type (hazel). Chenopodiaceae (goosefoot) and Apiaceae (carrot family) are also frequent. The presence of taxa such as *C. intybus*-type and *S. virgaurea*-type, although indicative of grassland and/or rough ground, are also found in poorly-preserved sediments (see below). However, due to the preservation of the wooden artefacts that these samples were taken from and the general waterlogged conditions of the sediment, differential preservation is not suspected to have been a major biasing factor in the resultant pollen assemblage from the spot samples.

The woodland signal from these samples is limited. *C. avellana*-type (5 and 9%) and *Quercus* (oak; 3 and 5%) are present indicating a limited presence of small patches of woodland and/or scrub, though some of this pollen may also be derived from long distance sources. There is also a low presence of *Alnus glutinosa* (alder), *Sorbus*-type (which includes cherry, hawthorn, apple and whitebeam), *Cornus sanguinea* (dogwood), *Acer campestre* (field maple) and *Sambucus nigra* (elder).

In addition to the main open environment taxa outlined above, there are also occurrences of taxa such as *Primula veris*-type (primrose) and *Rubus*-type (bramble) which may be associated with patches of managed woodland, scrub or found within grassy areas such as banks. The presence of low amounts of *Vaccinium*-type (includes heather, heath and bilberry) and *Calluna vulgaris* (heather) suggest small patches of heathland.

The presence of *Plantago lanceolata* (ribwort plantain) and *Pteridium aquilinum* (bracken) are indicative of disturbance and may be related to pastoral activity (*P. lanceolata* is fairly resistant to trampling). The presence of Poaceae grains with an annulus diameter >12 μm are most likely to be derived from cereals and therefore indicative of local cereal production.

Late Iron Age/early Romano-British well G834 (recut 10891)

The pollen assemblage indicates an open environment, dominated by Poaceae, *Cichorium intybus*-type and *Solidago virgaurea*-type (Fig. 10.5). Although the latter two are often indicative of grassland and/or rough ground, *C. intybus*-type is highest in l.p.a.z. 10891–1, and correlates with samples with low pollen concentrations. These taxa have very distinctive and robust pollen walls (exine) and are therefore typically over-represented in pollen spectra where preserving conditions are poor. Interpretation with regard to these must therefore be treated with some caution, though the diverse pollen assemblage present does suggest that poor preservation issues are limited.

The woodland signal from the pollen assemblage is minimal. *Quercus* is consistently present, with *Alnus glutinosa* and *Corylus avellana*-type also frequent, though at percentages of less than 2% TLP. This suggests that there were no trees living near the recut feature and that this pollen is derived from the general background pollen source. Other woodland taxa recorded include *Betula* (birch) and *Sambucus nigra*.

The majority of the remaining taxa can be divided between those indicating open ground, waste ground and grassland. The presence of *Silene dioica*-type (red campion) can be interpreted as indicating woods and hedgerows. However, this pollen group also includes *Silene noctiflora* (night-flowering catchfly) and *Silene gallica* (small-flowered catchfly) which are indicative of cultivated and open sandy ground. The presence of *Ranunculus acris*-type (buttercup), Brassicaceae (cabbage and mustard family), Apiaceae and *Stachys*-type (woundwort) can be indicative of a wide range of environments, but in this setting are likely to be associated with areas of cultivation, disturbance and/or the local waterlogged environment. The presence of taxa such as *Cerastium*-type (mouse-ear), *C. intybus*-type, *S. virgaurea*-type and Chenopodiaceae may also indicate waste ground after abandonment.

The high Poaceae values suggest that areas of grass were extensive. The continuous presence of large Poaceae grains is likely to be derived from local arable activity and cereal production. A continuous presence of *Plantago lanceolata* and occurrences of *Rumex acetosella* (sheep's sorrel) are indicative of grassland and cultivated land, with disturbance from grazing animals. These taxa therefore indicate that areas of the surrounding landscape were open and utilised for agriculture.

The low values of *Pteridium aquilinum* indicate that some areas of disturbance are also present within the pollen catchment area. The only aquatic pollen present is an isolated occurrence of *Lemna* (duckweed) indicative of slow moving or standing water. The absence of other aquatic pollen types is either due to poor preservation, frequent desiccation, or local vegetation cover limiting exposure to light.

Late Saxon/early medieval waterhole (524)

Similar to the recut well G834, the waterhole's pollen assemblage indicates an open environment, dominated by Poaceae (grasses), *C. intybus*-type and *S. virgaurea*-type. *C. intybus*-type and *S. virgaurea*-type values again correlate with samples with low pollen concentrations, and are therefore possibly over-represented as a result of poor preserving conditions.

The majority of the remaining taxa can again be divided between indicating open ground, waste ground and grassland, with a continued presence of *S. dioica*-type, *R. acris*-type, Brassicaceae, Apiaceae and *Stachys*-type. The presence of taxa such as *C. intybus*-type, *S. virgaurea*-type and Chenopodiaceae may also indicate waste ground after abandonment. Occurrences of *Papaver rhoeas* (poppy), *Rumex obtusifolius* (broad-leaved dock), *Rumex sanguineus*-type (wood dock), *Filipendula* (meadowsweet) and *Succisa pratensis* (devil's-bit scabious) are also derived from local wet areas, waste ground and/or cultivated land.

Woodland taxa are rare indicating the limited presence of trees in the local environment. *Quercus* and *C. avellana*-type are consistently present, with isolated occurrences of *A. glutinosa*, *Ulmus* (elm) and *Betula*. Other woodland taxa recorded of note are *Hedera helix* (ivy) and *Lonicera periclymenum* (honeysuckle). The later has very large pollen grains that are not easily distributed, potentially suggesting a local presence. The presence of these woodland taxa, along with the presence of *Sorbus*-type and *Rubus*-type (brambles) are also likely to be derived from areas of scrub, either woodland fringe or isolated small patches of woodland. Similar pollen sequences from buried soils at Perry Oaks were interpreted as indicating that hedgerows were an important element of the Bronze Age landscape and might have persisted right through to the Romano-British period (Wiltshire 2006, 29). One limitation of pollen analysis is that it is often not always possible to identify grains to species level but only to genus, family or a generalised group of grains with similar characteristics, which is also determined by the level of pollen preservation. This means that there are a number of different interpretations can be made for the environment indicated by these taxa. For example, *Sorbus*-type and *Rubus*-type may be derived from small patches of scrub that are present in the open grazed grassland environment or areas of abandoned waste ground rather than designated field-boundaries. In addition, if local patches of woodland were being maintained (even if unevenly temporally and spatially) under a process of active woodland management, such as coppicing, then this would create a large number of internal and external woodland edges (fringing areas of coppicing and agriculture). This process would also help promote the flowering of certain understorey shrubs and plants and improve pollen dispersal (especially if the overstorey maiden canopy was sparse) (Waller *et al.* 2012). The only contribution pollen analysis can therefore make in the interpretation of the surrounding vegetation structure is that the pollen source area contains small mosaic patches of woodland and scrub, yet their orientation and landuse cannot be determined with any certainty.

The high Poaceae values suggest that grassy areas were extensive. The continuous presence of Poaceae grains with a large annulus diameter is again likely to be derived from local arable activity and cereal production. The continuous presence of *P. lanceolata, Plantago major* (greater plantain) and occurrences of *R. acetosella* are indicative of grassland and cultivated land, with disturbances such as grazing animals. These taxa therefore indicate that areas of the surrounding landscape were open and utilised for agriculture.

The low values of *P. aquilinum* indicate that some areas of disturbance are also present within the pollen catchment area. Isolated occurrences of *Calluna vulgaris* may also indicate that small areas of heath were present.

Early medieval (ON 18756)

The pollen assemblage from the spot samples indicate a largely open environment dominated by Poaceae, with lower amounts (less than 8% TLP) of *C. intybus*-type and *S. virgaurea*-type derived from wasteland/ open grassland, *Quercus, C. avellana*-type and *S. nigra* from woodland, *A. glutinosa* from areas of wetter woodland, and *C. vulgaris* derived from local heathland. Additional woodland taxa present (at low amounts) include *Fagus sylvatica* (beech) and *Salix* (willow). Taxa that are likely to be associated with grassland/waste ground include *Urtica dioica* (common nettle), *Heracleum sphondylium* (hogweed), *Cirsium*-type (thistle) and *Centaurea nigra* (common knapweed). Low amounts of *P. lanceolata* and *P. aquilinum* may suggest a reduction in the amount of local pastoral activity, whereas the presence of Poaceae with a large annulus diameter is indicative of arable activity.

Conclusion

The pollen assemblages derived from features G834 and 524 and ONs 18221, 18222, and 18756 suggest that between the Late Bronze Age/Early Iron Age and early medieval period the surrounding environment was largely open and subject to arable and pastoral activity. The majority of the pollen types present are likely to be associated with areas of disturbed and waste ground, much of which is likely to be derived from taxa growing within and in close proximity to the features sampled. Small areas of heathland are suggested by the pollen assemblages from ICSG, though whether this expanded until the early medieval period (as *Calluna vulgaris* and *Vaccinium*-type values are highest in samples from ON 18756) cannot be clarified due to the limited number of sequences investigated and their spatial and temporal disparity. Woodland was extremely limited around the sample areas and, if present locally, is only likely to be in the form of small isolated patches of scrub and trees. Interpretations of more formalised distribution of woodland and shrubs (eg, hedgerows), as suggested from Perry Oaks, is theoretically possible but not explicitly demonstrated based solely upon the pollen assemblages obtained.

Pollen derived from the spot samples suggests a larger presence of woodland during the Late Bronze Age/Early Iron Age and early medieval period. Although these samples (compared with the buried soil profiles) may indicate a retraction and later re-establishment of patches of woodland and scrub, the source of the sediment (and hence pollen) is uncertain within the unstratified single samples. The general limited number of sequences suitable for pollen analysis and absence of phased sequence repetition across the two large sites means that how representative a single sequence is of the two sites and wider area cannot be clarified. The short period over which the features infill only provides a small snapshot of past vegetation, rather than a continuous narrative on the landscape evolution. Finally, the dominance of the pollen assemblages by taxa resistant to poor pollen preserving conditions means that there is the possibility of some bias in the reconstructed environment represented by the two features subjected to full analysis.

Sediments

by David Norcott

Typically of sites on permeable brickearth geology, the sampled deposits from the features of all periods on both sites indicate fluctuations between wet and dry conditions, with pits and ditches frequently holding water, but occasional drying observed even in some deeper features such as waterholes.

Ditches

The shallower features would have been well vegetated but would still have filled rapidly in the unstable brickearth geology, both by erosion of the feature sides and by periodic overbank flooding episodes. The repeated wetting and drying of the ditch fills has led to poor preservation of pollen and other indicators, greatly reducing the potential for palaeo-environmental reconstruction from these features.

Waterholes

Given their function (with access to watering animals accelerating the already rapid erosional processes) the waterholes on both sites are likely to have filled relatively quickly with sediment (derived largely from the feature sides), and will have required periodic clearing out in order to remain in use. The material sampled from such features is therefore likely to represent either the final stages of use or the disuse phase of the feature.

Wells

The steeper-sided deep features interpreted as wells, some if not all of which were probably wood-lined, are certain to have infilled more slowly – this is supported by the fine laminated water-lain sediments filling the lower portion of Late Iron Age/early Romano-British well G834. The presence of fine charcoal within these deposits indicates continued activity in the immediate vicinity during the deposition of these water-lain silts; palaeo-environmental data from these features can therefore be considered much more likely to be contemporary with on-site activity.

Chapter 11
Chronology and the Radiocarbon Dating Programme

by Alistair J. Barclay and Chris J. Stevens

Introduction

Forty-three radiocarbon samples were submitted for radiocarbon dating (three failed). Three radiocarbon measurements were obtained during field excavation on two wooden objects (submitted by M. J. Allen). A further 40 samples were submitted from selected Neolithic, Bronze Age, Iron Age, Romano-British and Saxon features to try and address a number of research aims regarding the sites. Three dates were obtained during the excavation work from the Oxford Radiocarbon Accelerator Unit, 37 dates (three failed) were obtained from Rafter, GNS Science, New Zealand and a further three samples were submitted to the Scottish Universities Environmental Research Centre (SUERC), East Kilbride, Glasgow, Scotland (Tables 11.1–3).

Sample Selection

Samples were selected and identified by the project specialists (J. I. McKinley, J. M. Grimm and C. J. Stevens) from cremated bone, antler, and from deposits containing single identified charred/waterlogged grains/seeds, from waterlogged wood and charred short-lived wood/sapwood. Animal bone was not selected for dating due to its likely poor preservation of collagen from known brickearth sites.

Results and Calibration

The sample dated by Rafter was prepared and measured as described at http://www.gns.cri.nz/Home/Services/Laboratories-Facilities/Rafter-Radiocarbon-Laboratory. The samples dated by SUERC were pretreated as described by Stenhouse and Baxter (1983), graphitised using methods described by Vandeputte *et al.* (1996), and dated by AMS as described by Xu *et al.* (2004) and Freeman *et al.* (2007).

The radiocarbon results (Table 11.1–3) are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977) that have been calculated using the calibration curve of Reimer *et al.* (2009) and the computer program OxCal (v4.2) (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to

Table 11.1 Radiocarbon measurements associated with Neolithic features from RMC Land and ICSG

Laboratory code	*Feature*	*Context*	*Sample*	*$\delta^{13}C$(‰)*	*Radiocarbon age (BP)*	*Calibrated date (95% confidence)*	*Posterior density estimate (95% probability unless otherwise stated) or comment*
Long enclosure G3001							
NZA-32684	4217 cross ditch within encl.	4219	Charred cereal grain	-23.0	890±45	AD 1020–1260	*Intrusive*
ICSG Double ring ditch G2000/2001							
NZA-30920	19006 central grave	19008	Cremated human bone	-23.9	4485±30	3350–3020 BC	*3240–3010 cal BC*
NZA-31017	19123 cuts fill of inner ditch at NE	19122	Cremated human bone	-20.7	4447±40	3340–2920 BC	*3260–2930 cal BC*
NZA-31067	19013 inside inner ditch at NE	19015	Cremated human bone	-21.7	4435±40	3340–2920 BC	*3180–2930 cal BC*
NZA-31074	19380 2nd of 4 fills of outer ditch at SW	19378	Charred onion couch grass tuber	-26.8	4427±40	3340–2910 BC	*3130–2930 cal BC*
NZA-32718	19010 cremation burial within double ring ditch	19012	Cremated human bone	-20.6	4330±45	3090–2880 BC	*3100–2920 cal BC*
ICSG penannular ditch G2002							
NZA-30919	17890 northern grave	17889	Cremated human bone	-23.1	4460±35	3350–3010 BC	*3270–2960 cal BC*
NZA-31018	19203 southern grave	19206	Cremated human bone	-20.0	4367±40	3270–2900 BC	*3100–2940 cal BC*
Neolithic cremation grave							
NZA-32693	40413 cremation burial	40458	Cremated human bone	-25.5	4399±50	3330–2900 BC	*3100–2930 cal BC*
Neolithic pits							
NZA-32687	5783 pit in RMC Area 2	5784	Charred barley grains	-24.9	262±45	AD 1490–1690	*Intrusive*
NZA-36738	11024 pit	11023	Charred barley grains	-23.2	953±30	AD 1010–1170	*Intrusive*

Table 11.2 Radiocarbon measurements associated with Bronze Age and Iron Age features from RMC Land and ICSG

Laboratory code	*Feature*	*Context*	*Sample*	*δ¹³C(‰)*	*Radiocarbon age (BP)*	*Calibrated date (95% confidence)*	*Posterior density estimate (95% probability unless otherwise stated)*
ICSG shaft/well G288							
	16049	16046	'Aurochs' horn core 17009	-	Failed	-	-
	16049	16048	Antler ?pick ON 18737	-	Failed	-	-
NZA-32685	16049	16046	Charcoal (oak roundwood) from around 'aurochs' horncore	-24.7	3602±45	2130–1820 BC	-
NZA-32686	16049	16046	Charred barley grains	-23.5	1583±45	AD 380–580	*Intrusive*
ICSG Early Bronze Age funerary deposits							
NZA-30925	16669 isolated urned (Collared Urn) cremation burial in ICSG Area C	16670	Cremated human bone	-24.6	3516±30	1940–1740 BC	-
NZA-31066	40017 grave in ICSG Area E	40064	Cremated human bone	-23.4	3439±35	1880–1650 BC	-
Middle and Late Bronze Age funerary deposits							
NZA-30918	1206 grave in ICSG Area I cemetery	1205	Cremated human bone	-20.3	3155±30	1500–1320 BC	-
NZA-32717	19230 cremation burial, cuts outer ring ditch, MLBA pottery	19231	Cremated human bone	-21.2	3045±40	1420–1130 BC	-
NZA-30921	1850 grave in RMC Area 1	1851	Cremated human bone	-22.3	2904±30	1210–1000 BC	-
Middle–Late Bronze Age field system and associated features							
NZA-32290	G1211 ditch, cut 16439	16437–17061	Twig charcoal	-24.7	3291±35	1660–1490 BC	-
NZA-31069	G532 ditch, cut 1845	1843–2079	Charred emmer wheat grain	-24.1	3133±35	1500–1300 BC	-
NZA-31068	G532 waterhole at corner of ICSG Area A field	1917–2045	Waterlogged *Rubus* seeds	-25.9	3048±35	1420–1210 BC	-
NZA-31084	3918 well in RMC Area 2	3913–245	Charred cereal emmer grains	-25.5	3037±35	1410–1190 BC	-
OxA-8470	16198 waterhole	16197 (log ladder)	Wood (ID not recorded)	-26.7	2870±45	1210–910 BC	-
Late Bronze Age/Early Iron Age							
NZA-31086	4240 well RMC Area 2	2398–173	Charred emmer/spelt grains	-21.7	2513±35	800–520 BC	-
NZA-32370	G2156 (17580) well/waterhole ICSG Area D	17581/18756	Waterlogged wooden lid-shaped object, oak sapwood	-25.5	2829±35	1110–900 BC	-
NZA-31073	G2156 (17580) well/waterhole ICSG Area D	17587–18023	Waterlogged hazelnut shell fragment	-23.4	2473±35	780–410 BC	-

10 years for errors >25 years. The ranges in plain type in Tables 11.1–3 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

Where applicable a Bayesian approach has been adopted for the interpretation of the chronology from this site (Buck *et al.* 1996; Bayliss *et al.* 2007). Although the simple calibrated dates are accurate estimates of the dates of the samples, it is the dates of the archaeological events, which are represented by those samples, which are of interest. In the case of the Neolithic barrows, the Bronze Age field system and the Saxon settlement, it is the chronology of the features and the associated activity that is under consideration, not the dates of individual samples. The dates of this activity can be estimated not only using the absolute dating information from the radiocarbon measurements, but also by using the stratigraphic relationships between samples. The OxCal programme provides the methodology to combine these different types of information explicitly, to produce realistic estimates of the dates of interest. However, the *posterior density estimates* produced by this modelling are not absolute. They are interpretative *estimates*, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives.

The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v4.2 (http://c14.arch.ox.ac.uk/). Details of the algorithms employed by this program are available from the on-line manual or in Bronk Ramsey (1995; 1998; 2001; 2009). The algorithms used in the models can be derived from the structures shown in Figures 11.1–5.

Objectives

The radiocarbon dating programme was used to target a number of archaeological questions concerning the two sites: in particular the earlier prehistoric monuments, the Middle Bronze Age field system and the late Saxon settlement.

Table 11.3 Radiocarbon measurements associated with Romano-British, Saxon and medieval features from RMC Land and ICSG

Laboratory code	*Feature*	*Context*	*Sample*	*δ^{13}C(‰)*	*Radiocarbon age (BP)*	*Calibrated date (95% confidence)*	*Posterior density estimate (95% probability unless otherwise stated)*
ICSG Romano-British							
	16663 RB trackside ditch ICSG Area C	16664	Charred rye rachises	-26.2	Failed	-	-
NZA-32694	1087 well	4817	Charred rye rachises	-26.5	1680±45	AD 240–510	-
RMC Land Saxon settlement							
NZA-31080	6229 pit RMC Area 3	6231 sample 381	Charred free threshing wheat	-22.4	1253±30	AD 670–880	*680–880 cal AD*
NZA-31079	3972 pit RMC Area 2	3921 sample 255	Charred barley grain	-23.3	1188±35	AD 710–970	*710–950 cal AD*
NZA-31078	3706 pit in alignment 4150	3707 sample 232	Charred free threshing wheat	-22.7	1123±35	AD 770–1000	*890–990 cal AD*
NZA-31076	2872 posthole in structure 4175, RMC Area 2	2877 sample 266	Charred free threshing wheat	-21.9	1119±35	AD 770–1000	*890–990 cal AD*
NZA-31075	2339 waterhole/well RMC Area 2	2537 sample 187	Charred free threshing wheat	-21.8	1118±35	AD 770–1000	*890–990 cal AD*
NZA-31077	2958 posthole, part of structure 4175, RMC Area 2	2959 sample 221	Charred *Avena* grains	-24.5	1077±35	AD 880–1030	*890–1000 cal AD*
NZA-31085	6329 pit RMC Area 3	6336 sample 383	Charred bean	-24.9	1075±35	AD 890–1030	*890–1000 cal AD*
NZA-31081	6632 waterhole RMC Area 3	6633 sample 392	*Prunus domestica*	-26.1	1068±35	AD 890–1030	*890–1000 cal AD*
SUERC-27146	7704 pit RMC Area 3	7703 sample 432	Charred cereal: free threshing wheat	-21.3	1125±30	AD 770–990	890–990 cal AD
SUERC-27147	7405 pit RMC Area 3	7407 sample 417	Charred cereal: *Hordeum* sp	-25.3	1275±30	AD 680–890	*660–880 cal AD*
SUERC-27148	7362 pit RMC Area 3	7363 sample 414	Charred cereal: free threshing wheat	-22.9	1105±30	AD 880–1020	*890–990 cal AD*
ICSG wooden bucket							
OxA-8529	16200 waterhole in ICSG Area C	16220 (bucket base)	Wood oak heartwood	-25.7	1140±50	AD 760–1020	-
OxA-8469	16200 waterhole in ICSG Area C	16220 (bucket handle)	Oak sapwood	-26.3	780±40	AD 1180–1290	-

The radiocarbon dating programme was designed to investigate the following problems:

- To directly date charred cereal remains from Neolithic contexts;
- To determine the age of a group of cremation burials associated with two ring ditches;
- To establish whether those burials belonged to a single phase or multiple phases of funerary activity;
- To determine the age of the Bronze Age field system and associated waterholes and burials;
- To determine the age and duration of the Saxon settlement at RMC Land.

Results

The results are presented in Tables 11.1–3.

Neolithic and Early Bronze Age

A single date (NZA-32684) was obtained on a charred cereal grain from the cross ditch within the long enclosure. As suspected the grain is of early medieval date (890±45 BP, cal AD 1020–1260, at 95% confidence) and is therefore intrusive. Cereal grain was dated (NZA-32687, 262±45 BP, cal AD 1490–1690; NZA-36738, 953±30 BP cal AD 1010–1170 at 95% confidence) from two Neolithic pits, 5783 and 11024, and found to be considerably later than the context and, therefore, in both cases intrusive. These results are important as they support the possibility that cereal was near absent from the archaeological record during the later 4th and for most of the 3rd millennia BC (Stevens and Fuller 2012). Whether this reflects a decline in cereal cultivation during this phase or a change in depositional practice is a moot point.

Eight dates were obtained for cremation and pyre debris deposits associated with a pair of ring ditches that were assumed to be of probable later Neolithic date. However, scraps of Deverel-Rimbury pottery in one of the outer graves, 19230, raised the possibility that at least some of the graves could be later. Seven of the measurements are on cremated human bone and one was on charred onion couch grass tuber. Two measurements are on single fragments of bone that was excavated from a pair of discrete graves within the penannular ditched monument G2002. Of the other six measurements, five are on single bone fragments from discrete graves and one is on charred remains associated with `redeposited pyre debris` (ie, material deliberately collected and deposited from a pyre site) found within the middle fill of the outer

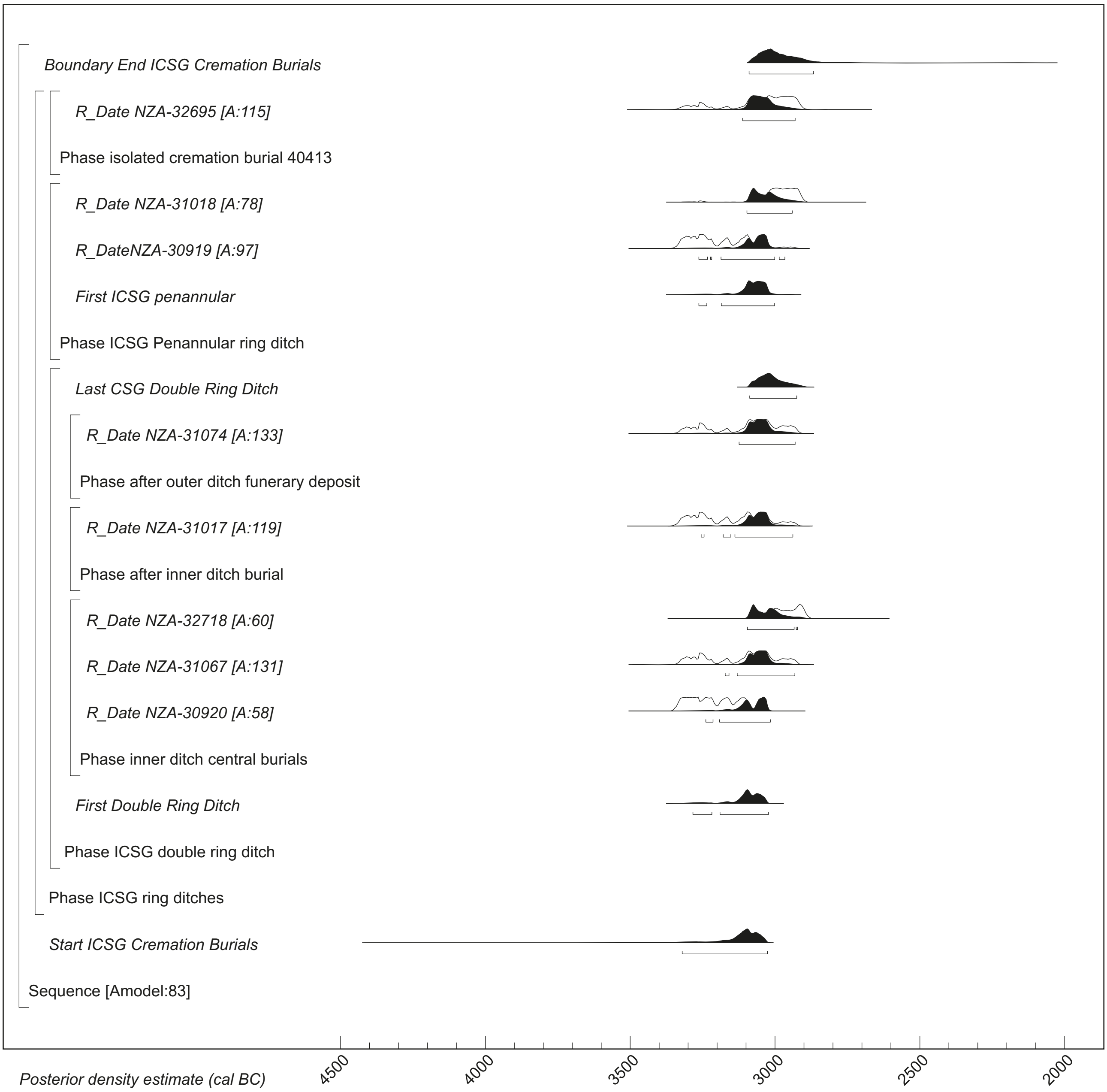

Figure 11.1 Probability distributions for the dates from the Neolithic cremation deposits at ICSG

ditch. On spatial grounds the central grave, 19006, is likely to be earlier than graves 19013 and 19010 that were found in the interior. A third grave, 19123, that cut the silted up inner ditch is on the same SW–NE alignment as 19006 and 19123, and could be later. A fifth grave, 19230, that cut the silted up outer ditch contained scraps of later Bronze Age pottery and indicated the possibility of a later date for the whole cemetery.

The cremation burials (see Chapter 2 and Table 11.1) were made over a period that lasted up to *165 years (68%) or less likely up to 420 years (95% probaility)*. The first burial could have been made in the late 32nd or early 31st century cal BC (Figs 11.1–2).

Five of the deposits returned dates that fall within the later part of the 4th millennium cal BC, while the grave that contained the pottery was confirmed as belonging with the Middle Bronze Age field system and settlement (see NZA-32717 and Table 11.2).

Early Bronze Age

Four dates were obtained on material recovered from two cremation deposits and a large shaft-like feature from ICSG.

Radiocarbon dates were obtained on samples of human bone from two cremation burials (16669 and

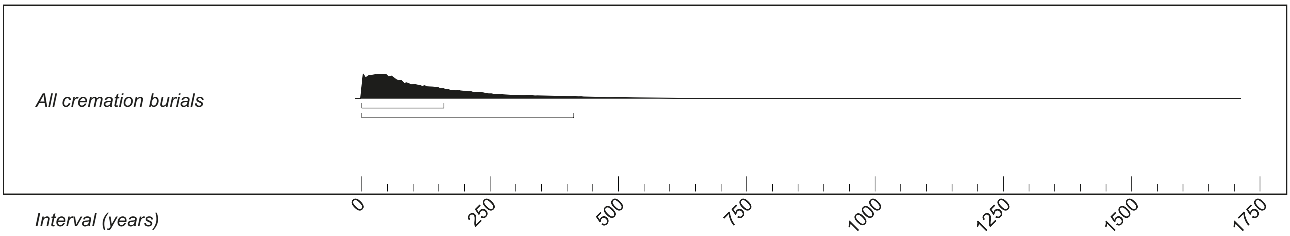

Figure 11.2 ICSG cremation burials, showing the likely span (duration) of the deposits

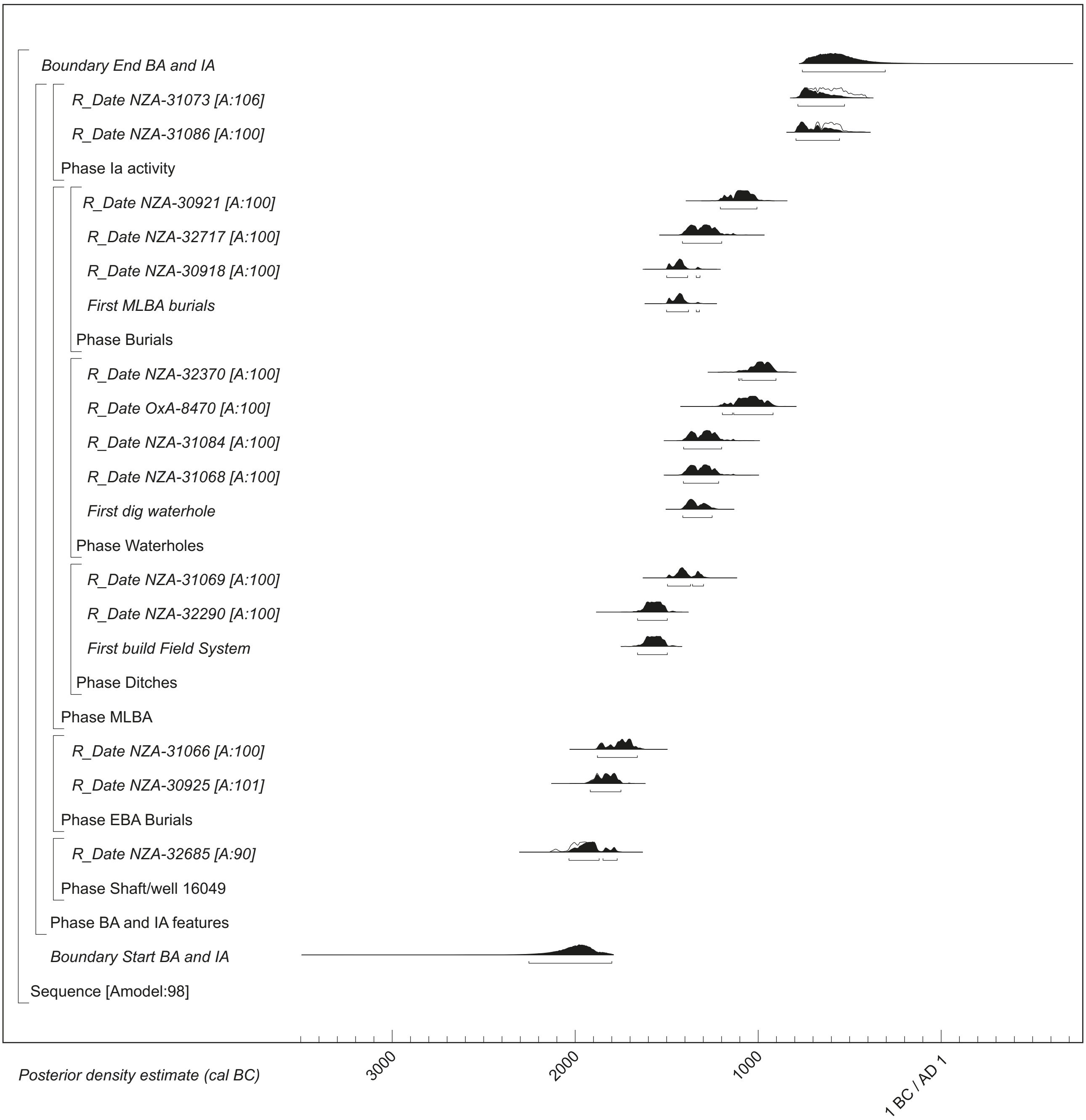

Figure 11.3 Probability distributions for the dates from Bronze Age and Iron Age features at ICSG and RMC Land

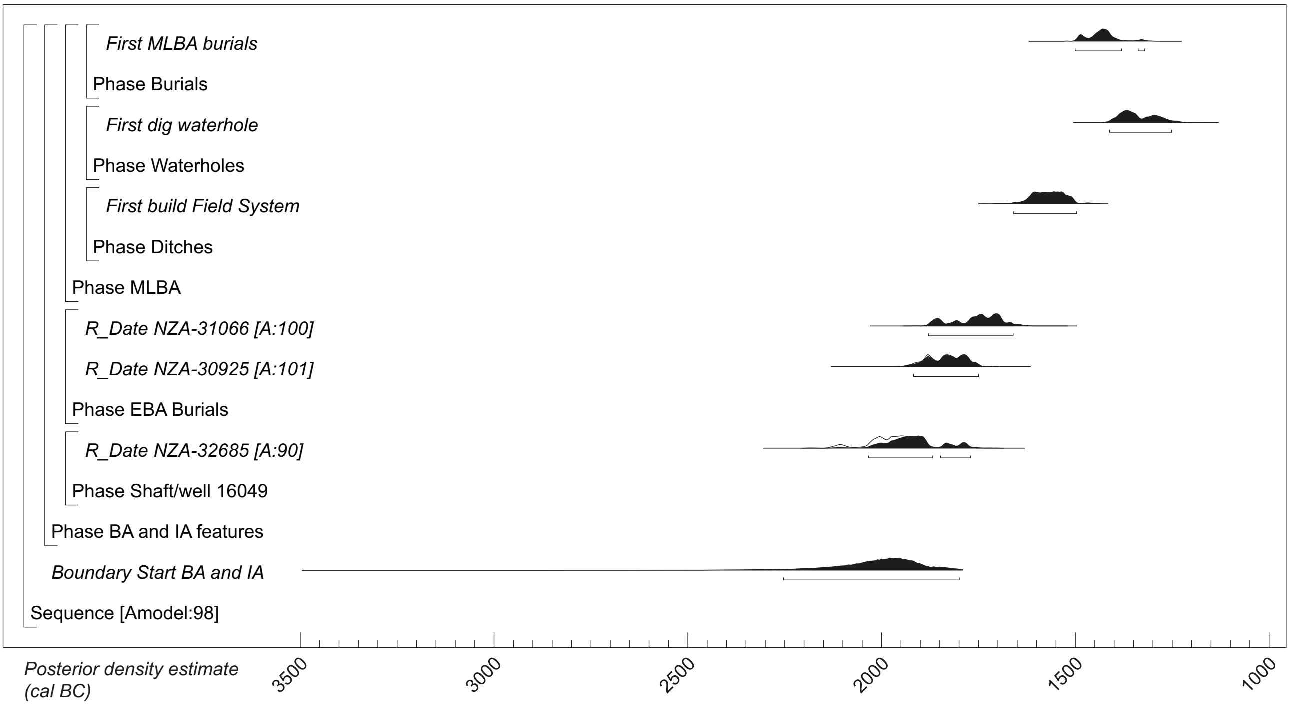

Figure 11.4 Probability distributions for selected Bronze Age features from ICSG and RMC Land

40017). Both are confirmed as Early Bronze Age (Table 11.2 and Fig. 11.3) and are consistent with a post-Beaker date and the widespread use of Collared Urn pottery.

Shaft-like feature 16049 was of ambiguous date, although the presence of a possible cattle or aurochs horn core and an antler pick from fills 16046 and 16048 respectively suggested a possible Neolithic or Early Bronze Age date. Unfortunately both samples were found to contain insufficient collagen for radiocarbon dating. Two further samples were submitted on a sample of oak roundwood and a charred barley grain (both 16046) from a layer of charcoal around the horn core. The oak charcoal sample (NZA-32685, 3602±45 BP) returned an Early Bronze Age date of 2130–1820 cal BC (at 95% confidence), while the charred barley was found to be probably intrusive as the date is early Saxon (NZA-32686 1583±45 BP, cal AD 380–580 at 95% confidence). Alternatively the pick, horn and charcoal could all be redeposited from a disturbed feature with the date providing a *terminus post quem* for the later filling of the feature.

Later Bronze Age and Iron Age

Eleven measurements were obtained on deposits associated with later Bronze Age and Iron Age activity (RMC Land and ICSG: Table 11.2) (Fig. 11.3).

Three dates were obtained on deposits of cremated human bone from funerary deposits (features 1206, 19230 and 1850). Two of which (1206, NZA-30918 and 19230, NZA-32717) returned measurements consistent with a Middle Bronze Age date (Table 11.2). The third measurement (NZA-30921) is consistent with a date in the early part of the Late Bronze Age period (after 1150 cal BC).

Five dates were obtained for features associated with the later Bronze Age field system (Table 11.2). Two are on samples of short-lived plant remains excavated from ditch fills (NZA-31069 and NZA-32290) and three are on short-lived plant material/wood sample material recovered from the base of waterholes/wells 1127, 3918 and 16198 (NZA-31068, NZA-31084 and OxA-8470).

At least part of the field system that can be traced across both RMC Land and ICSG was created at some point during the late 17th or 16th century cal BC (modelled as *First build field system: Figs 11.3–4; 1670–1490 cal BC, 95% probability*). In contrast the cremation burials found within the field system are slightly later with the earliest belonging to the 15th century cal BC (modelled as *First MLBA burials: Fig. 11.4; 1510–1320 cal BC, at 95% probability*). Both are earlier that the waterholes that were chosen for radiocarbon dating, the earliest of which belongs to the 14th century cal BC (modelled as *First dig waterhole: Fig. 11.4; 1420–*

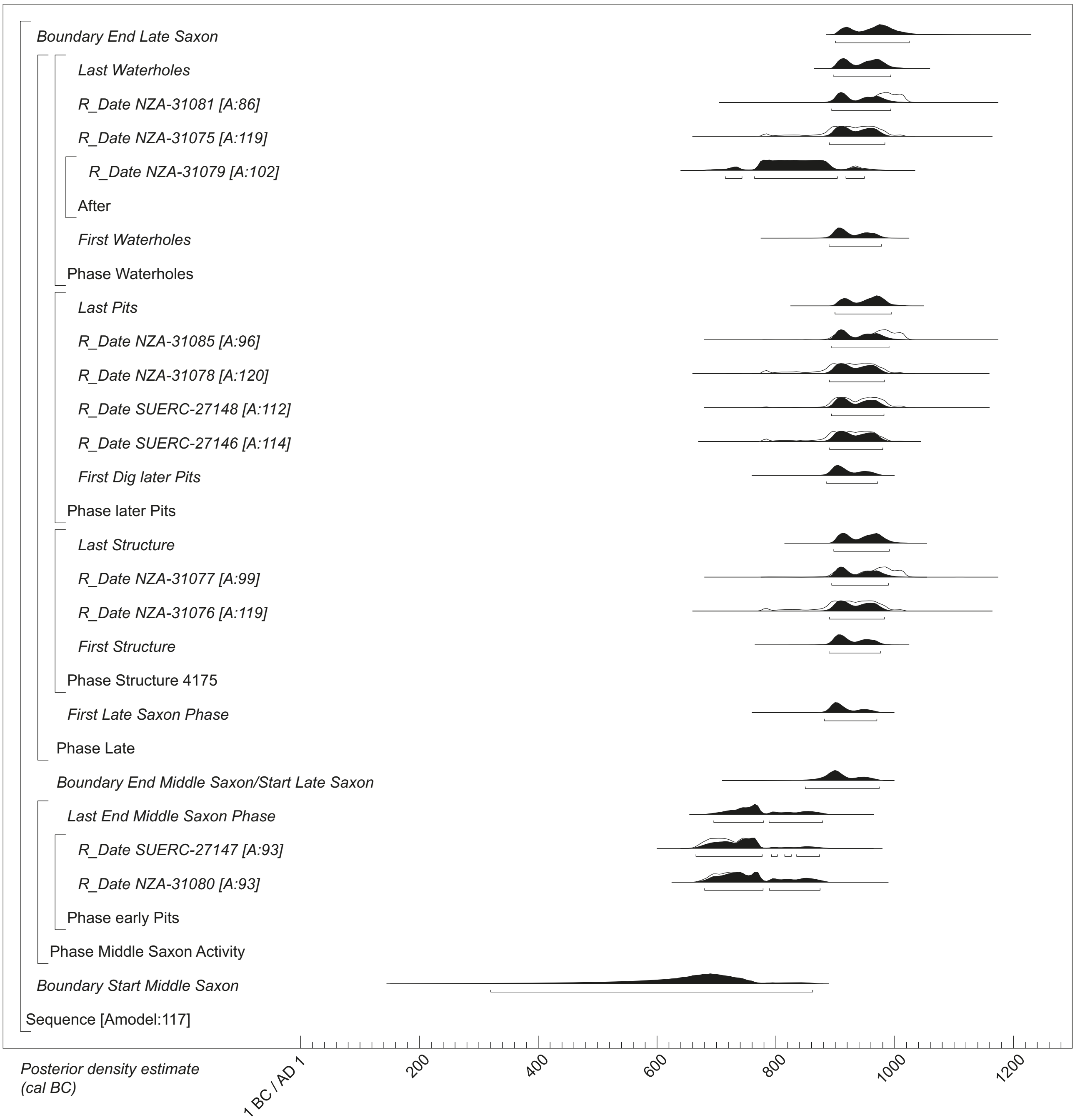

Figure 11.5 Probability distributions for the dates from the Saxon settlement at RMC Land

1250 cal BC, at 95% probability). This activity is not contemporary, although it mostly started at different stages during the Middle Bronze Age period and appears to have lasted for *between 470 to 720 years (at 95% probability) or more likely 530 to 660 years (at 68% probability)* (modelled as *Span MLBA activity)*. The field system appears to have been created relatively early and at a time when Deverel-Rimbury pottery was being introduced and possibly just before (what would be considered the end of the Early Bronze Age). However, it must be stressed that the date estimate for the field system rests on only two radiocarbon dates on short-lived plant remains (NZA-31069 and NZA-32290) that are statistically inconsistent (fails a X^2 test T'=10.19; ν=1; T'(5%)= 3.8), indicating the samples are not of the same age. It is possible that NZA-32290 (1660–1490 cal BC, at 95% confidence), the earlier of the two dates, is on redeposited material and the later date (NZA-31069: 1500–1300 cal BC, at 95% confidence), which is more in keeping with the currency of Deverel-

Rimbury pottery, reflects the possible true age of the field system.

Romano-British

Two samples of charred rye rachises were submitted to confirm their probable Romano-British date. One sample from trackway ditch 16663 failed but that from well 1087 produced a date consistent with the late Romano-British period (NZA-32694, cal AD 240–510, at 95% confidence).

Saxon and Medieval

Eleven samples were selected from features associated with the Saxon settlement at RMC Land. All of the measurements are on a variety of charred plant material from secure deposits within discrete features (mostly pits and waterholes). Two measurements (NZA-31076–7) are on material recovered from the fills of two postholes associated with structure 4175.

RMC Land Saxon settlement
The main objective was to try and securely date the settlement at RMC Land and to indicate whether the period of occupancy was short or long-lived. A simple phased model of the eleven measurements shows that eight of the dates are of a similar age while three (SUERC-27147 and NZA-31080 and potentially NZA-31079) are significantly earlier. SUERC-27147 and NZA-31080 both have poor agreement indices (A=46.8% and A=57.2%, respectively). However, in Figure 11.5 these two results and NZA-31079 have been treated as belonging to a slightly earlier phase of settlement activity. Interestingly these results come from features at both the east and west ends of the settlement, perhaps suggesting that, in terms of extent, the whole site had developed over time rather than any suggestion of settlement shift or creep. Assuming the results are representative of the whole settlement then the earliest features appear to belong to the late 7th or early 8th century AD (*modelled as First features cal AD 730–880 at 68%, or cal AD 690–880 cal AD, at 95% probability*). Modelling all of the results indicates a possible period of occupation of between *100 to 270 years (68%) or 40 to 300 years (at 95% probability)* from the 8th to the 10th century AD.

If just the eight measurements are modelled within a phase then what could be the main episode of activity can be shown to have lasted for a relatively short period of time, of up to 50 years (68%) or 100 years (95%) within the 10th century AD (starting within cal AD 890–970 and ending within cal AD 910–1000 cal AD, at 68% probability).

Bucket from the base of waterhole 16200
Two dates were obtained on samples taken from different structural elements of the bucket, the base (oak heartwood: OxA-8529) and the handle that was made from oak sapwood (OxA-8469). The two results are statistically inconsistent and therefore support the observation that they were fashioned from materials of significantly different ages. It is likely that the oak sapwood date (OxA-8469) is closer to the true age of the object.

Four dates on intrusive charred cereal produced results that range from the medieval period to modern day, details of which can be found in Tables 11.1–3.

Conclusion

The radiocarbon dating programme was only partly successful in addressing the outlined objectives. The attempt to directly date charred cereal remains from Neolithic contexts did provide precise results but importantly highlighted the problem of intrusive grain on multi-period sites and the dangers of accepting grain as Neolithic unless it can be demonstrated by direct radiocarbon dating. More successful was the direct radiocarbon dating of cremated bone, not just for the Neolithic period but for later periods too. The identification of a relatively short phase of burial to the final centuries of the 4th millennium BC and the start of the 3rd is of great importance, not least as they were made during the currency of Peterborough Ware pottery (*c.* 3350–2850 cal BC). The dating programme was also used to try and precisely date the Bronze Age field system, associated waterholes and the cremation burials. The date of the field system rests on only two statistically inconsistent radiocarbon results, accepting the earlier as possibly old material would indicate a construction date around 1500 BC but this explanation is far from robust. Interestingly the results for the waterholes and the burials are later and both support the assumption that associated activity was after 1500 BC. The final objective of the dating programme was to try and produce a robust chronology for the Saxon settlement at RMC Land. This was achieved with a programme of 11 radiocarbon dates from a range of settlement features. The results support the artefactual evidence for some early to middle Saxon habitation but also highlight that the main phase of activity spanned the 10th century AD.

Chapter 12
Overview

by Alistair J. Barclay, Andrew B. Powell and Lorraine Mepham

Introduction: The Long View

The two projects presented an opportunity to investigate an area of the Heathrow terrace landscape between the Rivers Colne and Crane and to examine how it developed over a long period of time spanning the Neolithic until the late medieval period. The evidence, covering over 5000 years of human history, records the ebb and flow of wider social, economic and political influences, and fluctuations over time in the scale and impact of habitation and landuse by the local communities.

Human activity, over these 50 or so centuries, neither remained constant nor did it show any progressive increase. Instead, the settlement pattern is complex and discontinuous, with periods of intense activity (monument building and pit digging in the later 4th millennium BC, and land division in the mid-2nd millennium BC) followed by periods with little visible evidence for any physical impact on the landscape. In contrast to the large-scale activity of the early prehistoric periods, from the later prehistoric period through to the medieval period the overall pattern is notably of smaller farmsteads and shifting settlement foci.

Certain periods, like the Early Bronze Age, have left few archaeological traces, which may be partly explained if the communities chose not to adopt the practices of pit digging and monument building. However, the investment by such communities in maintaining what could have been open pasture may have created the circumstances for the land division, and the laying out of the extensive field system, around 1600 BC. This is a reminder that an evident discontinuity in the archaeological record for certain cultural practices (ditched monuments/settlements) may not always equate to an absence of people.

There is also some evidence for the long-term use and appropriation of features created within this landscape. Perhaps the best example is provided by the funerary and ritual evidence from ICSG. It is argued that the spatial positioning of the U-shaped enclosure G3002 could have referenced both the long enclosure (to the east) and the two ring ditches G2007–8 to the south. In the Early Bronze Age burials were placed along and beyond one of these two alignments (see Fig. 2.3). It is not known whether (and how) the positions of these later burials may have been marked, but given that they represent most of the traces for activity at this time, then this alignment seems hardly coincidental. It is unclear what remained of the Neolithic monuments by the time the field system was laid out around 1600 BC, although the placing of cremation burials in the outer ditch of G2007, to the west of the long enclosure and close to the most western group of Early Bronze Age burials suggest that something of the importance of these earlier sites remained.

In later periods there is clear evidence for the incorporation of what went before, with the assimilation of older features into new layouts of land enclosure. Where useful relict field structures survived these were re-used, enhanced and sometimes developed as new episodes of land management were imposed on the landscape. Thus the Iron Age, Romano-British and Saxon farmsteads adapted what was present. However, sometimes new purpose required designs that cut across what was already there, and a break with the past.

The long view of this landscape is not unique to this project but is one that resonates with the discoveries made elsewhere in the surrounding area of Heathrow and the Middle Thames Valley. The Neolithic monuments and pit scatters belong to a monumental landscape that linked an area over several kilometres. Similarly the same area of land was connected by a massive network of fields some thousand years later. These endeavours would have required organisation above that of any local community and would have served to bind and connect local people together.

Neolithic to Early Bronze Age
by Alistair J. Barclay

Evidence for the transformation of the Neolithic landscape in the early centuries of the 4th millennium BC at RMC Land and ICSG has left little recoverable trace in the archaeological record. The active presence of communities within the immediate area is attested by the finding of timber structures at Cranford Lane and Kingsmead Quarry, Horton, and by the larger and arguably slightly later construction of the Staines causewayed enclosure at the point where the Colne river system meets the Thames. The occupation traces at ICSG in particular suggest nothing more than occasional and short-lived occupation perhaps by a small group of people that may have settled temporarily before moving on. These people may have engaged in some clearance of the land and they may have been responsible for the creation of areas of pasture into which some of the subsequent earthen monuments were built.

The beginnings of monument building are equally vague due to a lack of datable finds and material that could be radiocarbon dated. It is argued that the long enclosure may have been the earliest construction but this is based on evidence from elsewhere and, therefore, this may not be the case. Whatever its date the monument could easily have been constructed by a small group of people and to a design that is widespread across the Thames Valley catchment. Its actual building could have brought groups of people together in a way that was different from the routines and encounters of everyday life. The act of its building would have left memories and created accounts of the time and reason for why it was made. Other monuments of different form, oval and circular, were added in a way that would have been familiar to other people that inhabited the adjoining regions of the Thames Valley and central England.

The precise sequence and date of these monuments is unclear, although their size, spacing and alignment suggest a possible mutual awareness of other constructions. Their spacing at intervals of approximately 250 m and 500 m could be taken as an indicator of how open the landscape was at this time. Contemporaneous with these monuments were the two pit spreads recorded at both ICSG and RMC Land, and, as has been argued above, both may have formed a single cluster over a distance of 800 m. The dynamics of this pattern of features is beyond analysis and it is very likely that this was the result of multiple and repeated visits to the area rather than the result of a single large gathering. The scale of this pit site is without parallel, although it should be noted that this could partly be the result of archaeological methodology and the opportunity to investigate two extensive areas of landscape. At ICSG it is noticeable that the southern part of the pit spread is mostly bounded by the four monuments. Whether this suggests a degree of planning in how landscape was used is a moot point, although the monuments once built may well have influenced and changed how ownership of the land was perceived. As with monument building the act of repeated pit digging may have been more to do with creating a fixed idea of place through return visits and persistent re-use of a piece of land.

Of great significance are the cremation burials of Middle Neolithic date and their association with monuments of Neolithic form, and as a part of a typical monument complex. The discovery of urned cremation deposits through the routine application of radiocarbon dating highlights the possibility that such burials could be more numerous than previously thought, not just at monuments but also within 'non-monumental' circumstances too (see Chapter 2 below). As with other phases of the Neolithic and Early Bronze Age it would appear that these burials were selective and only represent a small proportion of the contemporaneous population (a minimum number of just seven individuals – see McKinley, Chapter 9). Interestingly the spatial pattern of graves within ring ditch G2007, a linear sequence based around a central grave, is one that can be found in much later barrows. In the case of G2007 the 'founder' grave contained the remains of a young woman and an infant. Bearing in mind the small number of individuals represented at ICSG, as McKinley notes there appears to be no clear pattern to selection based on sex and/or age; as she has observed elsewhere.

After about 2900 BC and for all of the 3rd millennium BC there is scant evidence for human activity within the immediate area, although pit deposits with Grooved Ware are known from a number of sites within the lower Colne Valley. This apparent absence of Beaker and Early Bronze Age remains is difficult to understand as both stray and river finds are known from the wider area of the Middle Thames Valley (Barclay 2011). One possibility is that certain practices, such as pit digging, were abandoned, while those of selective formal burial and monument building were never adopted on the scale seen in the adjacent regions of the Upper Thames Valley. This apparent discontinuity in social practices may in fact be more extensive than is often acknowledged as attention often falls on the more significant material deposits recovered from graves, pits and monument ditches. Such deposits are unusual and atypical, and occasionally spectacular like the burial of a dismembered aurochs at Holloway Lane, Harmondsworth (Cotton *et al.* 2006) and the probable burial of a woman with gold beads and a Beaker at Horton (Chaffey *et al.* forthcoming).

Middle Bronze Age to Romano-British Period

by Andrew B. Powell

However one looks at it, the transformation of the prehistoric landscape at the start of the Middle Bronze Age appears to represent a watershed in the relationship between people and the land they occupied. Seemingly out of nowhere, a fully-fledged system of overarching land division – regular, rectilinear, formalised – was implanted upon a landscape which had displayed no indications of what was to come. There is no evidence for incipient Early Bronze Age land divisions requiring only more permanent and visible delineation. No Early Bronze Age pattern of settlements can be discerned out from which might have extended the trackways, fields and enclosures, wells and waterholes. There was nothing in the ritual concerns of the builders of earlier prehistoric monuments, or in burial practices, to herald anything so practical, so functional as the laying out of fields and paddocks.

In the absence of any clear evidence that Middle Bronze Age field systems evolved from pre-existing patterns of landuse, it perhaps not surprising that explanations of their apparently sudden appearance at particular locations, as here on a broad gravel terrace between two tributaries of the River Thames, should be expressed in terms of the local manifestation of a much more widespread (although by no means universal) phenomenon shaped by regional, or even wider social, political and economic forces.

Such explanations imply a fundamental discontinuity in the settlement and economic exploitation of this land, a break in its history. However, unless there was some large-scale incursion of people onto extensive tracts of productive but for some reason largely unoccupied grassland, it would have been the same people who lived in that landscape – who for generations had worked there, who knew their way around it, who retold its history – who quite rapidly enclosed it, laid out the new boundaries, dug the ditches, planted the hedges, and determined where to have their wells and waterholes.

Within the largely open grassland there were four earlier monuments, all within 500 m of each other, giving the long history of this landscape a high visibility even at the start of the Middle Bronze Age, and while the remarkable concentration of Peterborough Ware pits may have been a less obvious sign of the past significance of place, there is no reason that such significance had been lost from the collective memory. Whatever views were taken of that past – and they need not have been consistent – the past is unlikely to have been ignored. The axis of the Neolithic rectangular monument is replicated in the adjacent field system ditches, but the monument was also cut by one of the ditches. The cremation cemetery lies apart from the monument, but another grave was located in the double ring ditch monument, from which some of the field ditches appear to extend.

Nonetheless, the Middle Bronze Age transformation of the landscape appears pretty comprehensive, comprising new, probably permanent settlement (although its location is largely inferred from the distribution of pottery, a spatial relationship that could be more complex if settlement waste was collected in middens), explicit and formalised land division implying important agricultural developments, and the establishment of a nucleated cremation cemetery. Was this some kind of social and economic, or even an ideological and cultural revolution? Or could it be that the apparent coherence of this new landscape conceals tensions between different social and economic interests?

While the apparent coherence of the landscape suggests organisation at a high level within society, more local, family-based farming communities may have had to adapt to a system of land division designed primarily to facilitate the rapid claiming and enclosing of productive land rather than to promote the efficient organisation of agricultural production. Alternatively, its modular form, allowing variable combinations of large and small enclosures, may have given it a flexibility attractive to local communities. One measure of the field system's functionality would be the length of time over which it remained in active use. This is hard to tell – some of the ditches contained only Late Bronze Age pottery, but there was little evidence that they had been recut or otherwise maintained. It is certainly the case that the arrangement of Late Bronze Age features, west of the area of densest Middle Bronze Age pottery, appeared to be related to one of the major axial land boundaries, but it is possible that by this time such boundaries were largely relict and fragmented features within an again more open landscape, having a decreasing and only incidental influence on the disposition of settlement and agriculture.

Certainly, by the Middle Iron Age, when settlement structures are first clearly visible as roundhouse gullies, the layout of the earlier field system, even in the form of relict features such as surviving hedges or the remains of field banks and ditches, appears no longer to have exerted any influence on the new settlement pattern, as evident particularly in the location and orientation of the new square enclosure, which overlay at a distinct angle the corner of an earlier field. Nonetheless, the replication of the enclosure's ESE–WNW axis in the alignment of a later (Romano-British) enclosures and trackway suggests that this trackway was at least of Iron Age origin, if not even earlier – the trackway passed through the areas of densest Late Bronze Age activity and, as it continued west, gradually aligned itself on the Bronze Age ditches. By the Romano-British period, however, most elements of prehistoric 'historic landscape' had been slighted, either by the trackway and its sequence of adjacent enclosures, or by the adjacent field system only traces of which were discernible, although one ditch cut across the Neolithic double ring ditch monument.

Saxon and Medieval Periods

by Lorraine Mepham

It is somewhat simplistic to view the departure of the Roman military presence from Britain in the early 5th century as a single event provoking sudden social changes. Clearly the 'end of Roman Britain' encompassed a much wider series of events, and the political and economic infrastructure of the province had been under pressure for some time. Nevertheless, what archaeological evidence there is for this period in south-east England (and it is by no means plentiful) does appear to reflect a definite discontinuity from the preceding period, at least in terms of the material culture used and the location and types of settlement. The implication is that the region was subject to an influx of a new, dominant population, ethnically distinct from the indigenous inhabitants, and that the latter were quickly displaced from their old areas of settlement and cultivation. The true picture is unlikely to have been so clear-cut, however, and the evidence almost certainly masks a more complex picture. Our task here is to try and interpret the evidence from ICSG and RMC Land against this historical and archaeological background in order to assess the possibilities of the continuity of inhabitation within the landscape of the Colne Valley. A second strand of evidence that can be explored is the increasing influence of *Lundenwic*, and later London itself, on its western hinterland, echoing that exerted earlier by *Londinium*.

On the face of it, the evidence from ICSG and RMC Land tends to support the idea of discontinuity from Roman to early Saxon periods, and this follows a very similar conclusion drawn from the results of the excavations at Heathrow Airport, that 'the early Saxon period may mark the first clear break with the past history of inhabitation at Heathrow' (Lewis and Smith 2010, 379). Certainly the early Saxon structural evidence at the latter site, as at ICSG and RMC Land, conforms to a pattern of dispersed and transitory settlement, of which there is a significant concentration in the Harmondsworth area (Cowie and Blackmore 2008, fig. 64), as opposed to the settlement hierarchy of the Romano-British period, featuring towns, villages, villas and farmsteads. The probable SFBs at ICSG and RMC Land are at the eastern extent of this concentration although, together with further settlement evidence from Hayes, to the north-east, they may form part of a wider spread of settlement between the rivers Colne and Crane. The cultural material, too, is exclusively of Saxon origin (pottery, ceramic loomweights, metalwork, glass and amber beads) although, in the absence of any clearly defined British material culture of the period, it is difficult to see how the indigenous population could be recognised.

It would be wrong, however, to view all this as evidence of a completely new pattern imposed on the Roman landscape. The type of settlement may have been new, but it was constructed within the framework of pre-existing Roman land-units. There is a suggestion that some late Saxon manors (and therefore, by assumption, earlier Saxon land-units) are based on Roman, or even pre-Roman estate boundaries (Poulton 1987, 215), while in 1919 Montague Sharpe interpreted the whole of *Domesday* Middlesex as the surviving elements of the Roman *territorium* of London (Sharpe 1919, 64–8, 97–107). Further evidence for continuity of settlement location is provided by the fact that early Saxon settlements in the London area were often established on land that had been cultivated in the Romano-British period (Cowie with Harding 2000, 178; Cowie and Blackmore 2008, 130). This was certainly the case at ICSG and RMC Land.

Regardless of the possible displacement of the British population, it is debatable how far the social and political changes of the early 5th century affected the rural economy. The archaeological evidence here is hard to evaluate, largely due to the scarcity of environmental data from sites of this period, and it appears to have varied regionally (Hinton 1990, 10), but it seems likely that there was a broad underlying continuity in agricultural practice (*ibid.*, 3; Poulton 1987, 215). What environmental evidence there is from ICSG and RMC Land supports the continuation of arable cultivation, albeit characterised by the replacement of spelt wheat with free-threshing wheat, together with barley and rye, alongside pastoral activity (cattle and pig, but with less sheep/goat than in the Romano-British period). Heathland was apparently already established to the south, in the area of Heathrow Airport, by the Romano-British period, but it is unclear to what extent it was exploited by the adjacent settlements (Cramp *et al.* 2010, 316). What does appear to be the general case, though, is that early Saxon settlements were largely self-sufficient, producing their own requirements in terms of crops and animal products (meat, dairy products, wool), in contrast to the evidence for agricultural expansion during the late Romano-British period (Cowie with Harding 2000, 181). The latter pattern is reflected at ICSG and RMC Land, as well as at Heathrow Airport, and nearby sites in Harmondsworth, in the creation of new enclosure systems and droveways on new alignments, perhaps as a result of the intensification of cattle farming on large, managed agricultural estates. However, although these late Roman field systems were presumably still extant in the early Saxon period, at least as relict boundaries, there is no evidence from either ICSG or RMC Land that they were maintained as boundaries; in fact, there is no evidence for early Saxon field boundaries at all on either site. At Heathrow, and possibly also at Stanwell, evidence of reference to past agricultural landscapes comes instead in the form of the re-use of Bronze Age alignments in the medieval field systems (Cramp *et al.* 2010, 339).

The self-suffiency of the early Saxon settlements of west London was presumably at least partly a result of the total decline, and probable abandonment of London by the early 5th century, although the loss of a coin-using economy and the lack of maintenance of the Roman transport system would also have had an effect. In the absence of such a large administrative centre and its associated infrastructure, goods are unlikely to have been moving around on any large scale. The only evidence from RMC Land of non-local production comprises the grave goods deposited in three inhumation graves – metalwork, glass and amber beads – and such objects have been more frequently used as an indicator of the ethnic origins of the deceased rather than as evidence for trade (eg, Hines 2004, 92–7). This is not to say that, following the collapse of London, other 'market' centres did not exist; Hines raises the possibility of some sites (such as Croydon, for example) acting as focal points for the exploitation and redistribution of produce in a de-urbanised landscape (*ibid.*, 93).

By the middle Saxon period, change is apparent. Perhaps the most important post-Roman evidence from the current project has been the identification of a middle to late Saxon settlement at RMC Land, thus augmenting the extremely small body of settlement data for this period in the London area (although the appearance of various west London place-names, such as Harmondsworth, Hayes and West Drayton, in charters of the 8th and 9th centuries, indicate that this remained an occupied landscape throughout the period). The evidence from the other early Saxon sites excavated in Harmondsworth, and at Heathrow, suggests that all were abandoned by the mid-7th century, while middle Saxon occupation in the area is attested, with varying degrees of confidence, at Staines, Stanwell and West Drayton (Jones 1982; O'Connell 1991, 54–9; Knight 1998).

Evidence for middle Saxon activity at RMC Land (mid-7th to mid-9th century) is sporadic, but possibly included a fenceline and a small, post-built structure as well as a few pits and waterholes. Between the late 9th and 11th centuries this developed into a complex of enclosures, small fields and inter-connecting droveways, which was apparently abandoned by the late 11th century. The settlement (it is described as such, despite the paucity of evidence for dwellings, although the main focus of living accommodation probably lay within the historic core of the present village) operated in a largely open landscape which still supported both arable and pastoral regimes. A similar range of crops and domestic animal species to the early Saxon period was maintained, although with some changes of emphasis (more wheat at the expense of barley and rye, and a more equal division between cattle, pig and sheep/goat, as well as the exploitation of some wild species, such as deer and hare). It has been shown that the settlement at RMC Land, as well as a similar but slightly later settlement at Burrow Hill, Heathrow, falls into a group of similar 'dispersed settlements' found between the Thames and the Chilterns, often located close to parish boundaries (as are both RMC Land and Burrow Hill), which incorporate field systems and structures but lack any apparent focus (Lewis *et al.* 2001).

These developments should be viewed against a background of an increasingly formalised political structure, in which the province of *Middleseaxan* is first mentioned in a charter of 704, and in which the major trading port of *Lundenwic* developed from the late 7th century, growing out of small-scale extra-mural settlement outside the Roman town and later shifting back to that area in the mid-9th century. The site at RMC Land developed during a period of settlement nucleation within large estates (the new villages probably created by the lords of the estates in order to maximise agricultural efficiency), and seems to have been largely abandoned at around the time of the *Domesday* survey of 1086, at a time when the larger middle Saxon estates were being broken up into smaller estates which evolved into manors (of which Harlington, or Hardington, was one). *Domesday* lists 28 inhabitants in Harlington manor; by 1547 this had increased, although not substantially, to 91 (*VCHM* iv, 267).

Traded goods are more apparent in the middle to late Saxon period – at RMC Land these comprise regional pottery wares (Ipswich, Thetford and St Neot's wares) and imported lava quernstones. Any of these could have been traded through *Lundenwic* (eg, Malcolm *et al.* 2003, 187–9), although the precise mechanisms by which they reached the site, either direct or indirect, are unknown. The presence of Ipswich ware in particular is of interest, since despite its wide distribution area across eastern and south-eastern England, it appears to be restricted (outside its core area of East Anglia) to trading emporia, ecclesiastical and 'royal' sites in coastal or riverside locations; it is rare on sites upstream of London (Blinkhorn 2012, 87, fig. 36). Sherds have been found at Staines, at Old Windsor, Berkshire (site of a Saxon royal palace), and at the putative 'market' site at Dorney, Buckinghamshire, which may have been acting as a redistribution centre (Hiller *et al.* 2002, 15–16, 69–70), and at Reading and Thatcham in Berkshire, the possible locations of, respectively, a late 9th-century royal *vill* and a Saxon Minster church (Blinkhorn 2012, 73). However, its putative absence on other middle Saxon sites, at least in this area, may have more to do with the extreme scarcity of such sites, rather than an indication of social or economic status.

Evidence for the movement of non-local goods up the Thames Valley does of course imply that locally-produced goods were travelling in the other direction, towards *Lundenwic*/London, the most obvious of which would be foodstuffs, and possibly textiles. There is no evidence from RMC Land, however, that the production of grain (quernstones, charred grain) and textiles (loomweights and spindle whorls), or the exploitation of domestic animals (faunal remains) was organised at anything above a purely household level, although it remains a possibility that surpluses were exchanged for traded goods (Blinkhorn 2012, 95–7).

There is a steep decline in the evidence for activity at RMC Land post-dating the mid- to late 11th century, but what evidence there is seems to indicate some maintenance of the field system, at least into the 12th/13th century, but the area is likely to have become amalgamated into the village's open field system. Instead, the focus of activity shifted south, to the area of ICSG, where a field system was laid out, probably in the 12th century. This area (later known as 'West End', a hamlet separate from Harlington) would have lain on the northern edge of the heath, and may have originated as an assart into the heath. For both sites, environmental evidence suggests little change in agricultural regimes from the late Saxon period, although by the end of the medieval period, according to documentary evidence, the ratio of pasture to arable was increasing – in 1517 100 acres of arable land in Harlington were converted to pasture (*VCHM* iv, 267). The field layout at ICSG seems to have persisted largely unchanged well into the post-medieval period, and the village retained its rural character well into the 20th century, although it has now been largely subsumed into the west London urban sprawl around Heathrow Airport.

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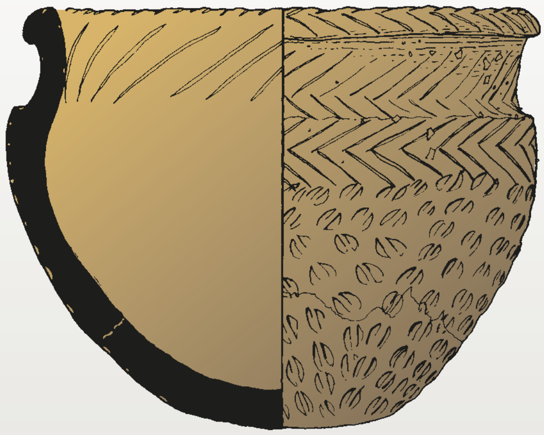
by Susan M. Vaughan

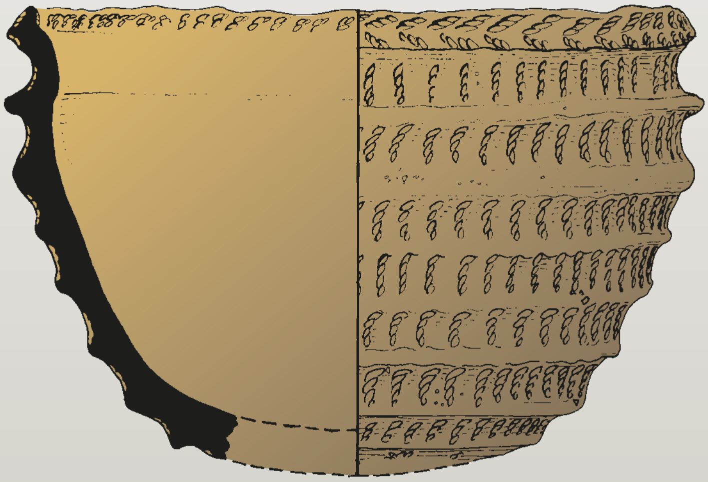
Page numbers in *italics* denote illustrations.

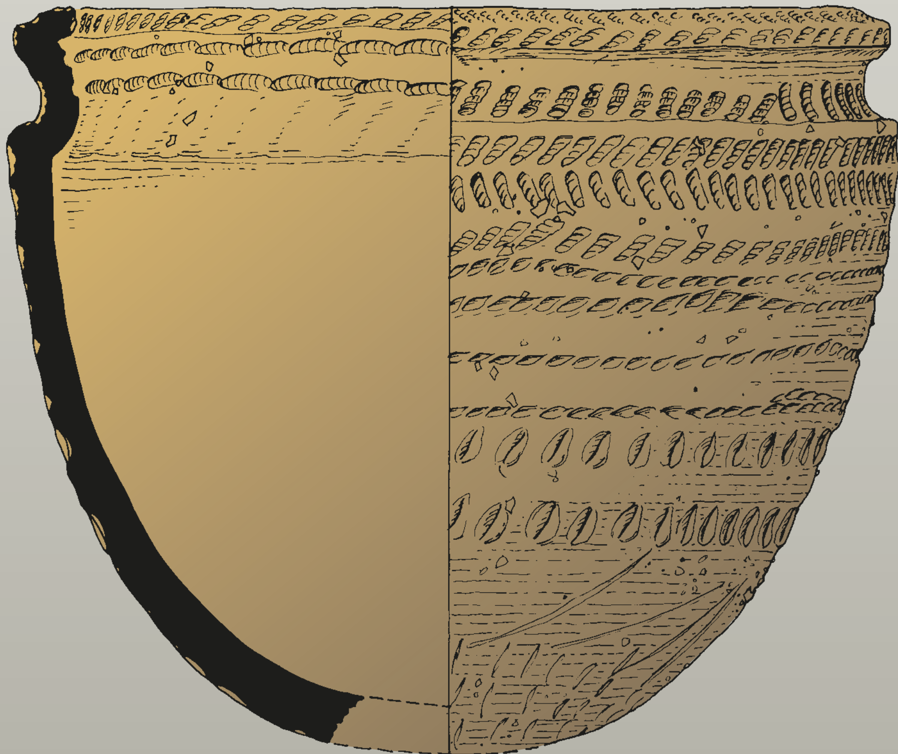
This volume reports on excavations at the former Imperial College Sports Ground, RMC Land and Land East of Wall Garden Farm, near the villages of Harlington and Sipson in the London Borough of Hillingdon, which revealed an archaeological landscape that developed from the Neolithic through to the medieval period.

The Early to Middle Neolithic saw the construction of a rectangular ditched mortuary monument, and the widespread digging of pits, many with deposits containing Peterborough Ware. A dispersed monument complex comprising a double ring ditch and two circular enclosures was associated with rare Middle Neolithic cremation burials.

The Middle and Late Bronze Age saw the formalised organisation of the landscape into extensive rectangular fields, within which was evidence for settlement and an associated cremation cemetery. A small Iron Age nucleated settlement was developed in the Romano-British period with enclosures flanking a trackway, inhumation and cremation burials, middens and quarries. The Saxon period is represented by two possible sunken-featured buildings, burials in a small early Saxon cemetery, and the establishment of a middle Saxon to medieval field system of small enclosures and associated wells.







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