Landscape Evolution in the Middle Thames Valley

Heathrow Terminal 5 Excavations Volume 2

Framework Archaeology

BAA Heathrow

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Principal authors

John Lewis, Matt Leivers, Lisa Brown, Alex Smith, Kate Cramp,

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Principal illustrator

Karen Nichols

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by Matt Leivers

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The Free Viewer CD-Rom

The volume is accompanied by a CD-Rom containing the Framework Free Viewer, specialist reports, tables and illustrations. The Free Viewer GIS viewing software has been developed to enable readers to have access to more data than would be possible in a traditional publication. The monograph and Free Viewer are designed to be used together so that if more data is required in order to view the evidence supporting a particular argument presented in the text, it will be possible to consult the particular dataset via the Free Viewer. Filters can be applied to show different distributions of finds material by date, and a list of queries that are available within the Free Viewer may be found in the CD Contents section below.

Please note that much of the data within the Free Viewer is essentially primary data, in that it represents material and ideas generated on-site.

- This is particularly the case with the written record of the archaeological deposits which has been edited for spelling and other typological errors only.
- Sections and photographs are as scanned / photographed with a digital camera on-site. However some publication photographs of objects represented by plates in the monograph have been included.
- Phasing decisions (i.e. 430 Late Iron Age) are as up-to-date as possible. These data are firstly interpretative in nature (and sometimes uncertainly so) and secondly you should take into account the publication processes that the database has supported. Therefore when judging these data, it is useful to understand that authors have typically used the phasing recorded in the database (either on-site or amended in post-excavation analysis) as the starting point for making final decisions as described in the monograph text.
- In practice it became necessary during the post-excavation process to record phasing at two levels. The primary phasing decision is made for every archaeological feature and stratigraphic group identified during the excavations. However to help manage post-excavation it was found to be useful to assign a summary phasing decision for the construction of each entity. You should be aware that the Landscapes section of the Framework Free Viewer will display both the primary and summary decisions simultaneously and that you can toggle between the primary and summary phasing decisions by ticking or un-ticking the Features and Detailed Entities layers as appropriate.
- Within the database, the description of objects is provided in a unified manner including as far as possible the latest identifications made by specialists during post-excavation.

Because of this there may be the occasional discrepancy with the data as presented within this volume.

In addition to the Free Viewer, the CD-Rom also contains the finds and environmental reports together with tables and illustrations in Adobe Acrobat Reader .pdf format.

Instructions for installing the Freeviewer

1. You will require Administrative rights on Windows Vista and either Power User rights or Administrative rights on Windows 2000 and Windows XP to install both the data and the software. If you do not have sufficient rights please see your local administrator.
2. Insert the CD-Rom in your CD Drive.
3. If Autoplay is enabled then the Framework Archaeology Installer will start. Otherwise double-click on the CD-Rom Drive letter in My Computer or select Autoplay from the right click pop-up menu.
4. Once the Framework Archaeology Installer has started, you may install the data for the ***Terminal 5 monograph volume 2*** (Menu option 1).
5. Click the **Install Data** button to continue. This starts an installation wizard for the data on the CD-Rom. Follow the instructions of this installer which will provide you with the opportunity to choose the location where you would like to install the data.
6. If you wish to use the Framework Free Viewer to explore the data click the **Install Software** and follow the prompts to install the software. If you choose not to install the software you will find that you will need specialist Geographic Information Software (GIS) to open many of the files included with the data.
7. Once you have installed the data you can then exit the Framework Archaeology Installer by clicking the exit button.
8. Now you can start to explore the data using the Framework Archaeology Free Viewer. You will find a short cut on your desktop to start the program.

The Framework Archaeology group within the Programs section of your Start Menu will also contain a folder called Framework Archaeology which contains two short cuts to start the program. You can choose to start the program with map labelling enabled or disabled. You may find that the map labelling is initially useful in getting to know the data but becomes less important with time. The desktop shortcut will start the Free Viewer with labelling disabled.

An additional short-cut links to the help file for the program. Help can be accessed within the Framework Free Viewer by pressing the F1 key or by using the Help option on the pull-down menu.

Finally you will find a short-cut to the location where you installed the data.

Specialist Reports

As specialist reports have been included on the CD, there is a third option in the Framework Archaeology installer allowing you to browse to their location. Click the '**Specialists**' button (menu option 3) to browse to the specialist reports on the CD-ROM.

If you do not intend to install the data (Install Data) or the Free Viewer (Install Software) you will need to copy these files to a suitable location manually.

System requirements

- The Framework Free Viewer application runs on Windows 2000®, Windows XP® and Windows Vista® and Windows 7® operating systems only. Installation on Windows Vista® and Windows 7® operating systems requires administrative privileges.
- The application requires 11MB of disk space to install.
- The data included with the second volume of the Terminal 5 monograph requires 1.1GB of free disk space to install.
- You will require as a minimum a Pentium IV processor or equivalent and 512MB or greater memory is recommended.
- The program is designed to run on a minimum screen resolution of 1024 by 768 pixels on a fifteen inch monitor. However since the program includes a Geographic Information System, it is better where possible to run at a higher resolution or to use a larger monitor.
- If when installing the data on Windows Vista® and Windows 7® operating systems you accept the default installation folder, the data will be installed to the Public Documents folder. On Windows 2000 and Windows XP, the default installation folder for the data will be found in All Users\Shared Documents.
- To run the software user rights only are required on all supported operating systems provided that the user has read and write access to the folder where the data has been installed.

Data formats

The data is presented using the following data formats:

" Database attribute data is in Microsoft Access 2000® format (.mdb) and stored in the AttributeData folder under the project folder, T5 Volume 2.
" The mapping data is stored in ESRI® shapefile format (.shp) and stored in the SpatialData folder under the project folder, T5 Volume 2.
" Supporting images such as sections and digital photographs are in .jpg format and stored under Sections and Photos folders under the project folder, T5 Volume 2.
" Specialist reports are in Adobe Acrobat PDF/A format and stored in the SpecialistReports folder under the project folder T5 Volume 2. The specialist reports can also be accessed directly from the CD-Rom without installation. To do this browse to the folder SpecialistReports on the CD-Rom.
" A data dictionary describing the included files and their structure can be found in the DataDictionary folder under the project folder, T5 Volume 2.

The data can be directly accessed using your preferred Geographic Information Software if required.

Data Licence

The data distributed with this monograph includes data derived from OS OpenData™: Contains Ordnance Survey data © Crown copyright and database right 2010
The data distributed with this monograph includes resampled data derived from USGS (2004), Shuttle Radar Topography Mission, 3 Arc Second scene SRTM_u03_p201r024, Unfilled Unfinished 2.0, Global Land Cover Facility, University of Maryland, College Park, Maryland, February 2000.

Uninstalling the Software
1. On the Windows start menu click Control panel.
2. Select Add/Remove programs.
3. In the list of currently installed programs select Framework Archaeology Free Viewer Software then click Remove or Add/Remove. If a dialog box appears, follow the instructions to remove the program.

Uninstalling the Data
1. On the Windows start menu click Control panel.
2. Select Add/Remove programs.
3. In the list of currently installed programs select Excavations at Heathrow, Volume 2, T5 then click Remove or Add/Remove. If a dialog box appears, follow the instructions to remove the data.

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Summary

This volume presents the results of excavations at Heathrow Airport, London Borough of Hillingdon, between 1996 and 2007, which were carried out in advance of the construction of an additional passenger terminal complex ('Terminal 5'), together with associated facilities. The excavations were undertaken as three main phases of work. In 1996 the Museum of London Archaeology Service excavated *c* 4 ha of sludge stockpile areas (site code POK96), while in 1999–2000, Framework Archaeology excavated approximately 21 ha in the Perry Oaks sludge works (site code WPR98) and adjacent airport sites. The results of these phases of work have been described in Volume 1 of this series (Framework Archaeology 2006). In 2002–2007 further excavations were carried out by Framework Archaeology as part of the construction of Terminal 5. The results of these excavations (site codes PSH02 and TEC05) have been integrated with those presented in Volume 1, and are the subject of this volume.

The earliest evidence for human activity revealed in the Terminal 5 excavations comprised a number of pits

excavated by hunter-gatherers in the 7th or 6th millennia BC at a location on the edge of the Colne floodplain, as well as a complex of stakeholes of similar date on the floodplain itself. During the first half of the 4th millennium BC a posthole complex and a possible settlement were located along the alignment of the subsequent C1 Stanwell Cursus, which we believe to have been constructed in the latter half of the 4th millennium BC. Remnants of at least three other cursus monuments were also excavated, that together with a possible fifth example and a small circular enclosure, clearly demonstrates the transformation of this particular location into a major ceremonial centre. In the space of a few centuries, people had transformed the landscape from one defined by memories of ancient locations to one defined by the architecture of earthen banks and ditches. However, by the latter half of the 3rd millennium, new monuments and practices of artefact deposition signal a change in the way people inhabited the landscape.

By 1700 BC this change was to lead to the replacement of a system that apportioned land and resources through ceremony to one of physical demarcation: the first land tenure and field divisions. Settlements became archaeologically visible and developed within a landscape of small and large fields forming identifiable ‘farmsteads’, which were traversed by double-ditched trackways. A multitude of differing farming units developed within two distinct landscapes, with evidence for a mixed arable / pastoral agricultural economy, supplemented by resources from the innumerable hedgerows which divided the fields. Within these landscapes, people maintained links with the past through ceremonies resulting in particular artefacts being deposited in the base of waterholes. Identifying the a bandonment of the Bronze Age agricultural system is very difficult, though there is little specific evidence for any Early Iron Age activity at Terminal 5, beyond a small number of isolated features. However, major elements of the Bronze Age agricultural landscape appear to have persisted in some form well into this period and beyond.

In the Middle Iron Age we see the emergence of a nucleated settlement of roundhouses, four-post structures and livestock enclosures, practising an entirely subsistence-based agricultural regime that was apparently biased towards a pastoral economy. This settlement in turn became a focal point for continuing occupation through into the later Iron Age and early Roman period, although parts of the landscape were radically altered at this time, with new alignments of field systems largely overwriting the previous land divisions. While pastoralism remained a fundamental part of the agricultural economy, the evidence suggests an increasing emphasis on cereal crops from the Late Iron Age onwards. The settlement complex appears to have been continually modified on a somewhat ad hoc basis into the later Roman period. At this point radically new styles of structure and wholesale changes to the eastern field systems were introduced, resulting in a substantial ‘ladder’ enclosure system, surrounding a major central droveway. This was part of the wider social, political and economic changes of the later Roman Empire. It cannot be proved that occupation continued at Terminal 5 beyond the end of the 4th century AD, although elements of the field and enclosure systems may well have persisted for some time.

The remains of an early Saxon settlement were revealed to the north-west of the main Roman settlement, although there is little indication of any interaction between the two. Instead, the evidence from the Saxon features provides a picture of a drifting settlement within a sparsely occupied land with limited evidence for arable cultivation. An apparent desertion of the landscape is noted during the mid Saxon period, with no further definitive evidence for activity until the 11th or 12th century. New field systems were established across much of the landscape at this period, and a complex of enclosures and post-built structures, possibly related to stock management, was constructed at Burrow Hill within Stanwell parish. The post-medieval landscape included some elements already in place by the late Saxon period, while from the 15th century, further developments of the medieval field system largely took the form of enclosure of the common fields.

The character of the Heathrow area remained predominantly rural well into the 20th century, until the Perry Oaks sludge works were constructed in 1934 and the first phase of Heathrow airport was built between 1944 and 1946.

Acknowledgements

The contributions of all those involved in the Perry Oaks excavations of 1999-2000 have been acknowledged in Volume 1 of the Terminal 5 publication series.

The various phases of the Terminal 5 project since 2002 have involved contributions from the following people.

BAA
Framework Archaeology would like to thank the following BAA staff for their enthusiasm and support in making the archaeological programme such a success, most notably Rob Stewart, Andrew Gibson, Ian Frost, Stephen Ho, Tim Norwood, Ben Olney, Murray Taylor, Anne Watson and Geoff Talbot. Bob Diamond and Kieran Fleming of EC Harris provided valuable commercial and administrative advice. In particular, Framework Archaeology would like to thank Julie King and Sarah Nock for facilitating the very rewarding programme of public lectures which enabled the results of the fieldwork to be disseminated to the local communities.

BAA Consultancy
Framework Archaeology would like to thank BAA's archaeological consultant Gill Andrews and academic advisor John Barrett who have provided constant support, advice and guidance throughout the project. Gill Andrews and John Barrett have been key members of the Terminal 5 team and the project would not have been nearly as innovative or successful without their involvement.

Laing O'Rourke
The staff of Laing O'Rouke provided essential advice and guidance, particularly Alan Burford, David Lloyd and Nick Harris. Graham Mercer, Andrew Lucking, Jim Hodgekiss and Justin Downer managed the plant and other attendances.

Curatorial Advice
We would like to thank Greater London Archaeology Advisory Service (GLAAS) officer Kim Stabler for advice throughout the project, and Jon Finney and Harvey Sheldon who monitored the fieldwork programme on behalf of the London Borough of Hillingdon.

Framework Archaeology
The Terminal 5 project was managed and directed by John Lewis and Ken Welsh. The principal Project Officers during excavation were Nick Wells (1st phase), Brigitte Buss (Twin Rivers, Concourse C South) and Gerry Thacker (Concourse C North). Other site Project Officers and Supervisors were:

Caroline Appleton, Cornelius Barton, Angela Batt, Nick Best, Annie Bingham, Fraser Brown, Dave Budd, Jim Chapman, Nick Dale, Valerie Diez, Guy Cockin, Catriona Gibson, Barry Hennessy, Darko Maricevic, Dave Murdie, Doug Murphy, Nick Pankhurst, John Payne, Robert Radford, Dave Raey, Jon Smith, Pete Swindin, Rob Tannahill and David Thomason.

Niall Donald undertook development and maintenance of the Framework database and GIS and the Framework Freeviewer. Data management and survey were conducted by Emma Noyce, Anna Komar and Gareth Chaffey. Finds processing and assessment was managed by Lorraine Mepham with Leigh Allen and on-site by Rob Court, Steve Legg and Megan Stoakley. The environmental processing and assessment was managed by Dana Challinor and Rebecca Nicholson and on-site by Neil Wigfield, Gaylinne Carter, Carl Champness, Simon Dobinson and Marta Perez.

The site archaeologists involved were:
A Ainsworth., A Grassam, A Lee, A Macintosh, A Mayfield, A Sole, A Stone, A Trevarthen, B Atkinson, B Savine, C A Edwards, C Anker, C Boston, C Coles, C Correa, C Davies, C Gannon, C Gerson, C Jowett, C Lane, C Matthews, C Naisbitt, C Reese, C Sampson, C Swales, D Brown, D Donoghue, D Harris, D Hoffman, D Mahoney, D McNicol, D Patterson, D Stone, D Tinham, D Watkeys, D Wheeler, E Brook, E Davison, E Gill, E Glass, E Nordstrom, F Cope, F Parsons, F Trifilo, G Evans, G Hernandez, G Le Calve, G Owen, G Pyne, G Rees, G Whale, G White, H Brown, H Meara, H Pinto, I Cook, I Dixon, I Kirkpatrick, J Bond, J Collins, J Howorth, J Kitch, J Marchant, J O'Brien, J Powell, J Thorley, J Tierney, J Welsh, J Westmacott, K Brady, K Hoskyn, K Kelland, K Lyden, K Pack, L Bruning, L Couch, L Davison, L Heatley, L Keys, L Norman, L Oglesbee, L Patterson, L Ryalls, M Copley, M Gibson, M Guzman, M Ingram, M Kendall, M Kershaw, M Littlewood, M Nicholls, M O'Conner, M Peters, M Planas, M Pocock, M Sowerby, M Wood , N Guiden, N Hall, N Lambert, N Mohammad, N P Ward, N Pee, N Plunket, P Cooke, P Frickers, P Morrison, P Phillips, P Smith, P Squires, P Wooldridge, R Blackwell, R Flook, R Hamilton, R Kelleher, R Marziani, R McAlley, R Morgan, R Newman, R Oram, R Panes, R Peacock, R Sampson, R Sawyer, R Whalley, S Coles, S Dicks, S Dobinson, S Grifiths, S Leech, S McCann, S Reames, S Rhodes, S Sampson, S Thomson, S Townsend, T Armstrong, T Murphy, T Power, T Richter, T Wells, T Wood-Davies, W Sawtell, Z Griffin.

Post-excavation Assessment, Analysis, Publication and Specialist Support
The post-excavation assessment, analysis and publication phases of the project were managed by Lisa Brown, John Lewis and Alex Smith. The environmental programme was co-ordinated by Rebecca Nicholson.

Specialist expertise and support was provided by Matt Leivers, Rachel Every, Lorraine Mepham, Grace Jones, Kayt Brown, Kate Cramp, Nick Cooke, Ian R Scott, Fiona Roe, Steven J Allen, Jacqueline I McKinley, Jonny Geber, S Knight, J M Grimm, Wendy Carruthers, Dana Challinor, Sylvia Peglar, Denise Druce, Elizabeth Huckerby, Emma Tetlow, E C Stafford, Richard I Macphail, J Crowther, Frances Healy and Christopher Phillpotts

The post-excavation and publication programme involved many more staff in addition to those listed above. In particular, Catriona Gibson undertook a great deal of the post-excavtion assessment work and analysis that contributed to the Neolithic chapter in this volume. Brigitte Buss also worked methodically on the post-excavation assessment programme. Other staff that contributed to the assessment phase of the project include:

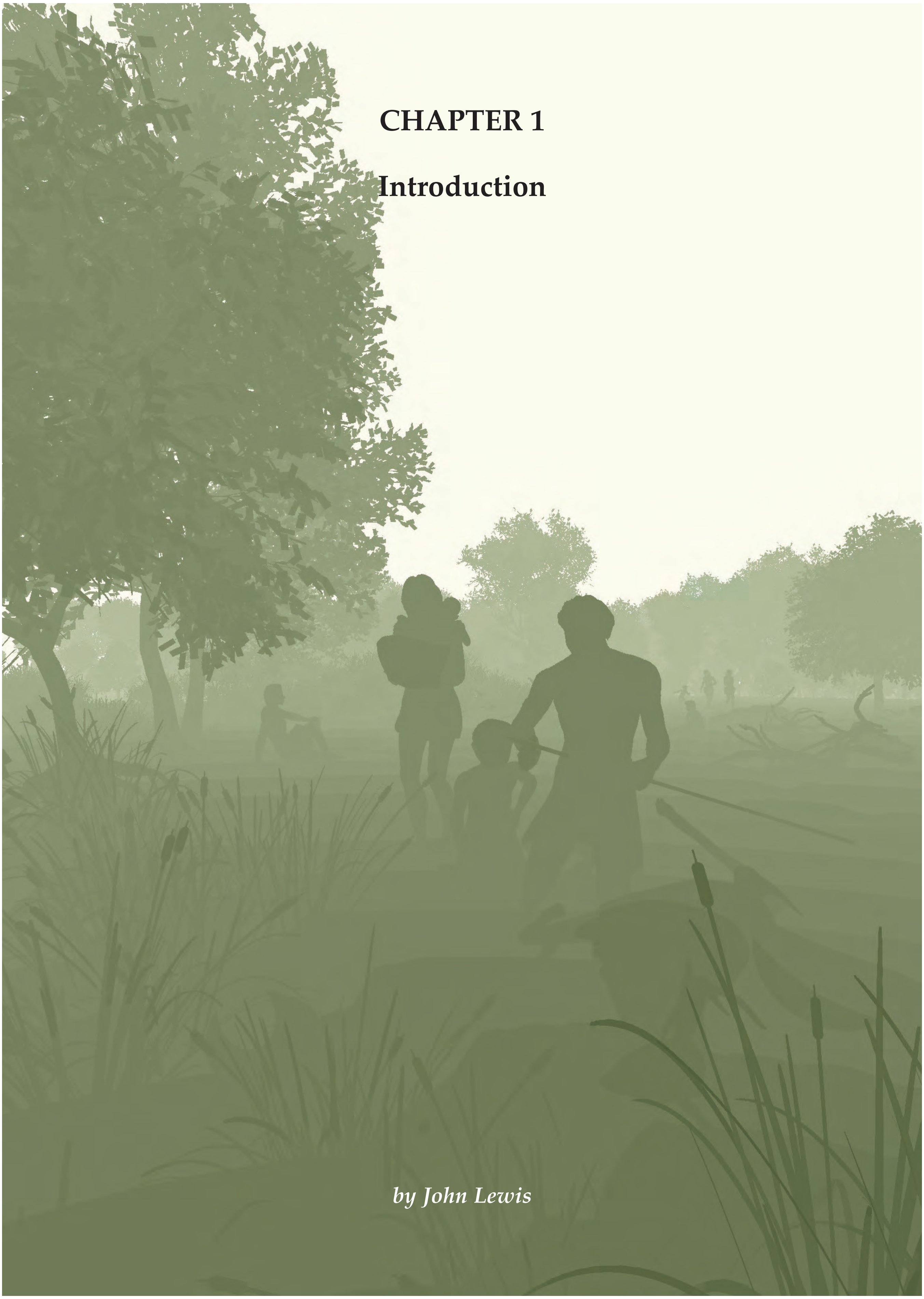
Sandra Bonsall, Gareth Chaffey, F Claxton, Denise Druce, Simon Dobinson, Rose Grant, J Howorth, Jennifer Kitch, Lucy Martin, M McMurray, Jens Neuberger, Emma Noyce, Nick Pankhurst and J Symonds.

The draft publication chapters were kindly reviewed by Andrew Lawson, who made many useful suggestions and comments. Alex Smith edited the volume and Karen Nichols produced the final publication figures, typeset and designed the layout of the monograph. The artefacts were drawn by Elizabeth James and Kitty Brandon. The reconstructions were by Karen Nichols with assistance from Tom Goskar (Plates 2.9, 3.4 and 4.13).

Joint Venture Board and Management Team
The joint venture was overseen by the chief executives of Wessex and Oxford Archaeology, Sue Davies and David Jennings, together with Clive Burrows and Simon Palmer. The Framework management team is composed of John Dillon and Bob Williams.

CHAPTER 1

Introduction



by John Lewis

Introduction

This volume presents the findings of excavations at Terminal 5 ('T5'), Heathrow Airport, London Borough of Hillingdon between 1996 and 2007. It includes and builds upon the earlier results of excavations at Perry Oaks sludge works, previously published as *Volume 1* (Framework Archaeology 2006). The area investigated totalled approximately 75 hectares.

The main excavations were carried out by Framework Archaeology, a joint venture agreement between Oxford Archaeology (OA) and Wessex Archaeology (WA), established to provide archaeological services to BAA. The results of archaeological investigations by other organisations on the site have also been incorporated where appropriate.

The results of the Terminal 5 excavations are presented in the form of a historical narrative, which is ordered chronologically but which seeks to explore a number of historical themes and processes. This introductory chapter seeks to guide the reader through the main body of the report.

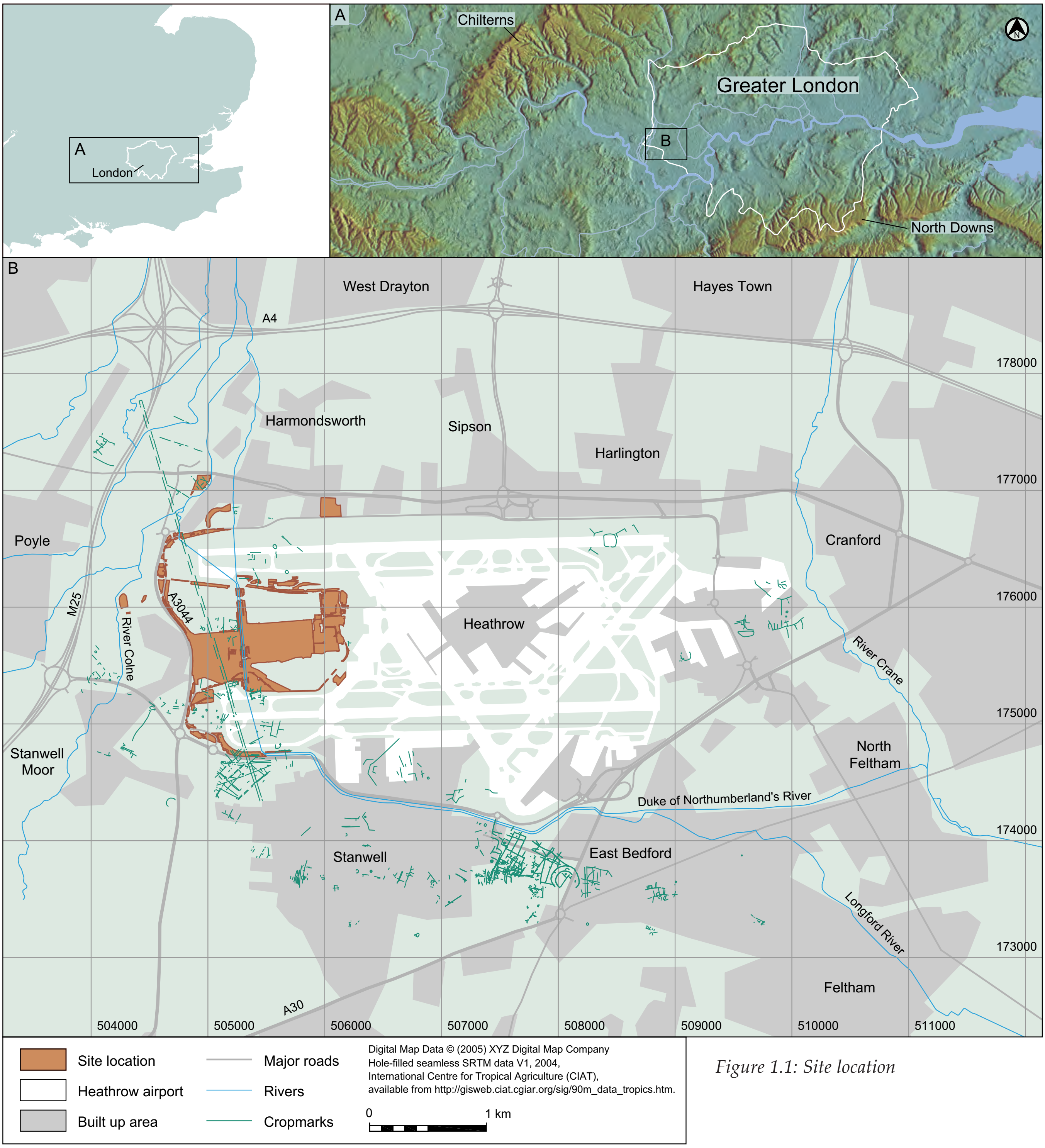


Figure 1.1: Site location

Plate 1.1: Heathrow Airport, aerial view of T5 construction site, May 2006 (© BAA Limited see www.baa.com/photolibrary)

Site location

Terminal 5 is situated in the Middle Thames Valley, approximately 4.5 km north-east of the River Thames, and on the eastern edge of the floodplain of the River Colne, itself a tributary of the Thames. The site (TQ 055 756) is bounded to the north, south and east by Heathrow Airport and to the west by the A3044 and the Western Perimeter Road.

The requirement for excavation

In 1993 BAA plc and Heathrow Airport Limited jointly submitted planning applications for outline planning permission to develop an additional passenger terminal complex ('Terminal 5'), together with the provision of aircraft aprons, taxiways and associated facilities, an air traffic control visual control room, realignment of rivers and landscaping. The planning application was subsequently the subject of a long running Public Inquiry.

The London Borough of Hillingdon and their archaeological advisors English Heritage agreed that the archaeology on the site of the Terminal 5 development could be dealt with effectively by the imposition of an appropriately worded archaeological mitigation condition which should refer to a Written Scheme of Investigation. During the Public Inquiry, agreement was reached between BAA (represented by Gill Andrews, the BAA Archaeological Liaison Officer) and London Borough of Hillingdon on the Written Scheme of Investigation (BAA/454).

As a result of the Public Inquiry, permission was granted for the construction of Terminal 5, and with regards archaeological remains, the Secretary of State imposed the following condition:

None of the development hearby permitted shall commence on any part or parts of the site until within that part or parts the applicant has secured the implementation of a programme of archaeological work in accordance with the document BAA/454 Final, 'Heathrow Terminal 5 Archaeology Strategy: Written Scheme of Investigation'.

The Written Scheme of Investigation adopted the academic and practical concepts developed and deployed during the excavations at Perry Oaks sludge works in 1999 (Framework archaeology 2006, 14–24), and the same approaches were adopted for the Terminal 5 excavations from 2002 to 2007.

Site Name	Site Code	Site sub-division	Excavated area (ha)	Fieldwork period
Perry Oaks Sludge Works	POK 96		3.83	Summer 1996
Perry Oaks Drying Beds	WPR 98	Bed A	6.18	Apr-Oct 1999
Perry Oaks Drying Beds	WPR 98	Bed B	4.39	Apr-Oct 1999
Perry Oaks Drying Beds	WPR 98	Bed C	8.04	Apr-Oct 1999
Perry Oaks Drying Beds	WPR 98	Bed D	1.39	Apr-Oct 1999
Northern Taxiway	GAI 99		1.01	Oct-Nov 1999
Grass Area 21	GAA 00		0.35	Apr-May 2000
Sub-total Perry Oaks (Volume 1)			***25.19***	
Perry Oaks Cottages	WPM 00		0.19	March 2000
Terminal 5	PSH 02	3	0.81	Apr 2002-Apr 2004
Terminal 5	PSH 02	12	2.52	Apr 2002-Apr 2004
Terminal 5	PSH 02	14	1.09	Apr 2002-Apr 2004
Terminal 5	PSH 02	15	0.69	Apr 2002-Apr 2004
Terminal 5	PSH 02	16	0.55	Apr 2002-Apr 2004
Terminal 5	PSH 02	17	0.20	Apr 2002-Apr 2004
Terminal 5	PSH 02	18	0.25	Apr 2002-Apr 2004
Terminal 5	PSH 02	19	0.83	Apr 2002-Apr 2004
Terminal 5	PSH 02	20	1.01	Apr 2002-Apr 2004
Terminal 5	PSH 02	21	0.20	Apr 2002-Apr 2004
Terminal 5	PSH 02	23	0.30	Apr 2002-Apr 2004
Terminal 5	PSH 02	24	2	Apr 2002-Apr 2004
Terminal 5	PSH 02	26	0.46	Apr 2002-Apr 2004
Terminal 5	PSH 02	27	0.86	Apr 2002-Apr 2004
Terminal 5	PSH 02	28	1.92	Apr 2002-Apr 2004
Terminal 5	PSH 02	30	0.09	Apr 2002-Apr 2004
Terminal 5	PSH 02	34	0.75	Apr 2002-Apr 2004
Terminal 5	PSH 02	35	0.37	Apr 2002-Apr 2004
Terminal 5	PSH 02	42a	0.49	Apr 2002-Apr 2004
Terminal 5	PSH 02	45	0.58	Apr 2002-Apr 2004
Terminal 5	PSH 02	47	0.76	Apr 2002-Apr 2004
Terminal 5	PSH 02	49	5.22	Apr 2002-Apr 2004
Terminal 5	PSH 02	51	1.30	Apr 2002-Apr 2004
Terminal 5	PSH 02	52	0.48	Apr 2002-Apr 2004
Terminal 5	PSH 02	54	0.24	Apr 2002-Apr 2004
Terminal 5	PSH 02	54a	0.19	Apr 2002-Apr 2004
Terminal 5	PSH 02	58 "Twin Rivers"	2.75	May-August 2004
Terminal 5	PSH 02	61 "Twin Rivers"	1.55	May-August 2004
Terminal 5	PSH 02	61i "Twin Rivers"	0.10	May-August 2004
Terminal 5	PSH 02	72	1.99	Apr 2002-Apr 2004
Terminal 5	PSH 02	73	1.38	Apr 2002-Apr 2004
Terminal 5	PSH 02	74a	0.84	Apr 2002-Apr 2004
Terminal 5	PSH 02	75	1.76	Apr 2002-Apr 2004
Terminal 5	PSH 02	77	1.59	Apr 2002-Apr 2004
Terminal 5	PSH 02	89b	0.99	Apr 2002-Apr 2004
Terminal 5	PSH 02	89c	0.01	Apr 2002-Apr 2004
Terminal 5	PSH 02	90a	0.06	Apr 2002-Apr 2004
Terminal 5	PSH 02	99	0.63	Apr 2002-Apr 2004
Terminal 5	PSH 02	100	1.23	Apr 2002-Apr 2004
	PSH 02 sub-total		***39.03***	
Terminal 5 Concourse C	TEC 05	P2A1	2.47	March-June 2005
Terminal 5 Concourse C	TEC 05	P2A3	0.21	March-June 2005
Terminal 5 Concourse C	TEC 05	P2A4	1.84	March-June 2005
Terminal 5 Concourse C	TEC 05	P2A5	2.18	March-June 2005
Terminal 5 Concourse C	TEC 05	91	2.92	Oct 2006-Aug 2007
Longford Flood Alleviation	LFA 05		1.34	March-Apr 2005
Total excavated area			**75.38**	

Table 1.1: Areas of excavation at Terminal 5

Extent of the archaeological excavations at Terminal 5

The excavations were undertaken as three main phases of work (Fig. 1.2; Tables 1.1–2):

• 1996: excavations by the Museum of London Archaeology Service of approximately 4 ha of sludge stockpile areas (site code POK96). The results of these excavations were presented in Volume 1 of the Terminal 5 publications (Framework Archaeology 2006).

• 1999–2000: Framework Archaeology excavated approximately 21 ha in the Perry Oaks sludge works (site code WPR98) and adjacent Airport sites, described in Volume 1 of this series (Framework Archaeology 2006). The excavations at Perry Oaks were undertaken to mitigate the deleterious effects of the sludge works operation on the surviving archaeological deposits. However, they were also carried out with the expectation that the construction of the proposed fifth passenger terminal ('T5') at Heathrow Airport would be approved. In the event approval for Terminal 5 was granted and the Perry Oaks sludge works were relocated.

• 2002–2007: excavations by Framework Archaeology as part of the construction of Terminal 5 (see Plate 1.1). The results of these excavations (site codes PSH02 and TEC05) have been integrated with those presented in Volume 1, and are the subject of this Volume.

In addition other areas (such as Bedfont Court and NPC06) were subject to trial trenching or watching briefs. Table 1.1 shows the areas in hectares of all the part of the Terminal 5 site that were archaeologically excavated. Table 1.2 lists the additional areas that were evaluated by trial trenching but where further work was confined to monitoring measures intended to preserve archaeological deposits *in situ*.

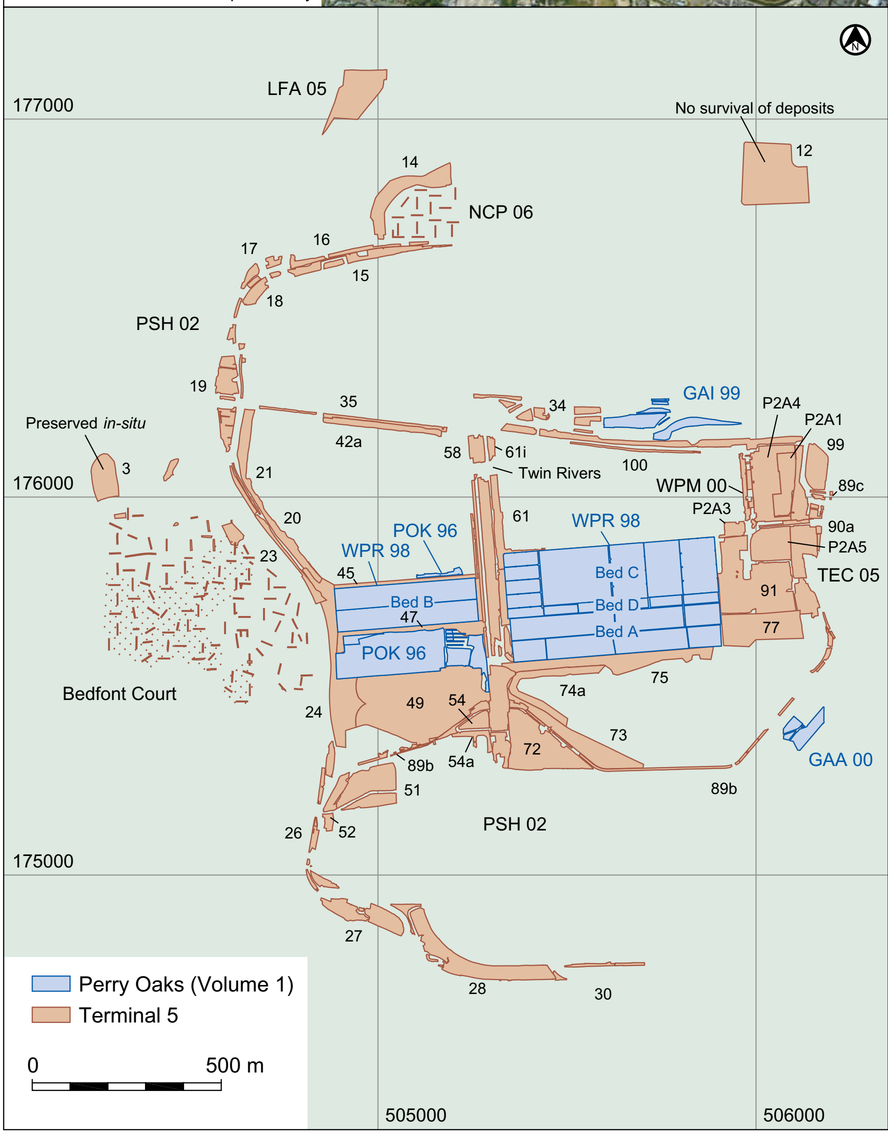


Figure 1.2: Archaeological investigations at Terminal 5

A feature of the Terminal 5 archaeological excavations was the extensive planning and programming that was undertaken before the work commenced. This involved the complete integration of the archaeological work with the construction programme, and resulted in a very productive working relationship between BAA, their consultants, Gill Andrews and John Barrett, Framework Archaeology and the civil engineering contractors, Laing O'Rourke. In consequence, all the archaeological areas were excavated on time and budget, with no delays to the construction programme.

Figure 1.2 shows the location of all the sites in Tables 1.1 and 1.2, together with the site sub divisions (referred to as 'areas' in this volume). The approximately 75 ha which were archaeologically excavated represent all the areas where potential archaeological deposits survived, and where the proposed development would have ensured their destruction. Thus Figure 1.2 shows that the excavated sites are spread over an area measuring approximately 2.1 km

Site Name	Site Code	Site area (ha)	Number of trenches and test pits	Excavated area (ha)	Fieldwork period
Bedfont Court	BU 02	23.7	70 trenches each nominally 2 x 30 m but some extended, 210 test pits each 1 sq m	0.76	Sept-Dec 2002
N3 Staff Car Park extension	NPC 06	2.6	17 trenches 2 x 30 m, followed by watching brief	0.10	March-July 2006

Table 1.2: Evaluations at Terminal 5

north to south, and 1.6 km west to east (excluding the Bedfont Court evaluations). The excavations therefore represent a sample of the Heathrow landscape covering approximately 3.36 sq km.

Geology and topography

The underlying geology consists of Taplow Gravel capped by the Langley Silt Complex ('brickearth') (Fig. 1.3). The Taplow Gravel forms one of the sequences of gravel terraces created during the Pleistocene by the movement of the River Thames.

Throughout this report the area of Hounslow Heath now occupied by Heathrow Airport is referred to as the 'Heathrow Terrace'. We have used this term to describe the block of landscape which is defined by the River Colne in the west and the River Crane in the east (Fig. 1.3). To the north, the Heathrow Terrace is defined by the junction of the Taplow and Lynch Hill Terraces, and to the south by the junction of the Taplow with the Kempton Park Terrace. These geological boundaries appear on the ground as breaks in slope, sometimes almost imperceptible, sometimes quite marked. However, in the past their topographic effect would have been much more noticeable than today.

Terminal 5 lies immediately to the east of the River Colne floodplain at an altitude rising from *c* 21 m OD in the west to *c* 23.5 m OD in the east (Fig. 1.4). It is thus a broadly flat landscape with a very gentle upward slope from west to east. However, the 23 m contour can be

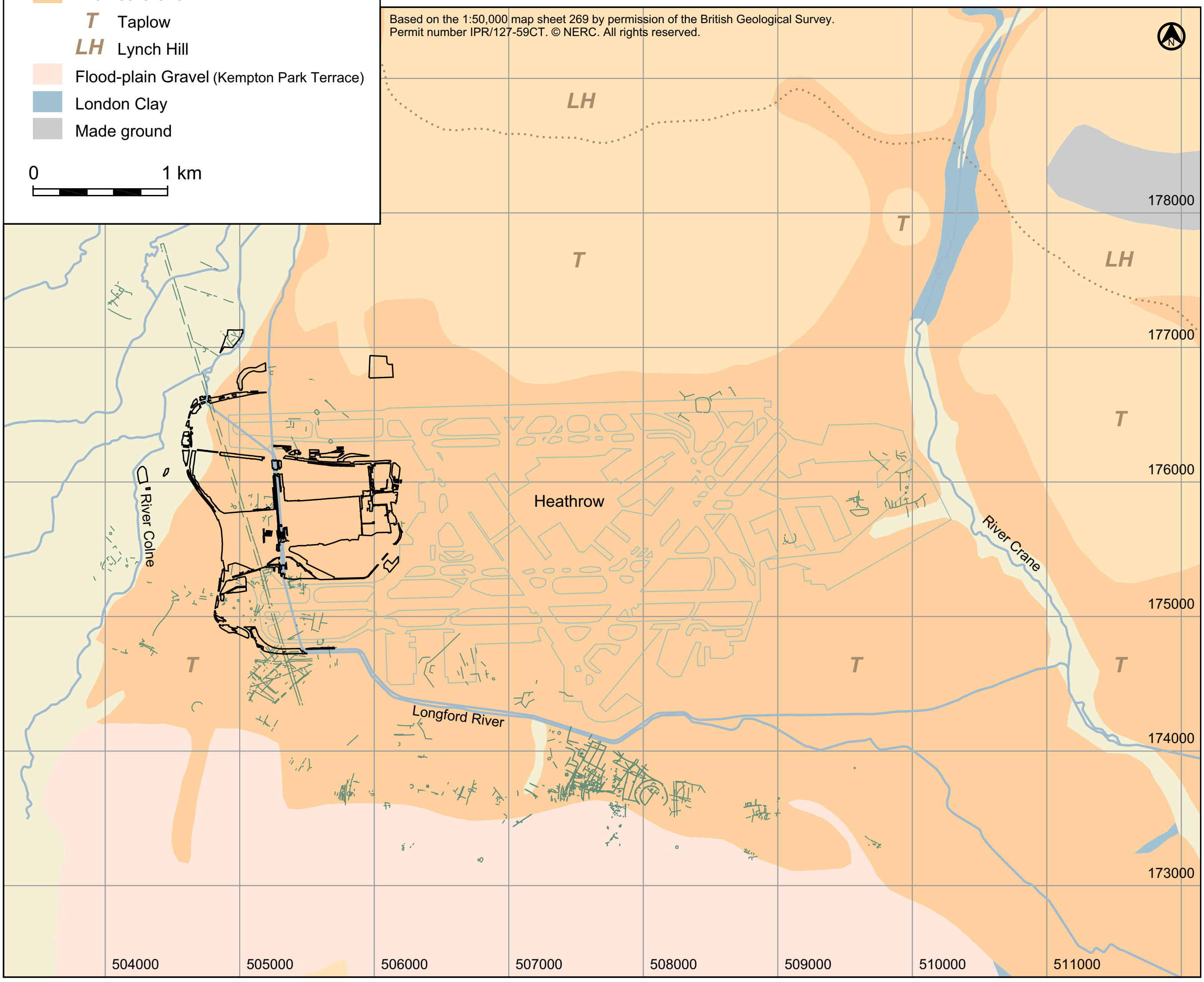


Figure 1.3: Geology of the Heathrow area

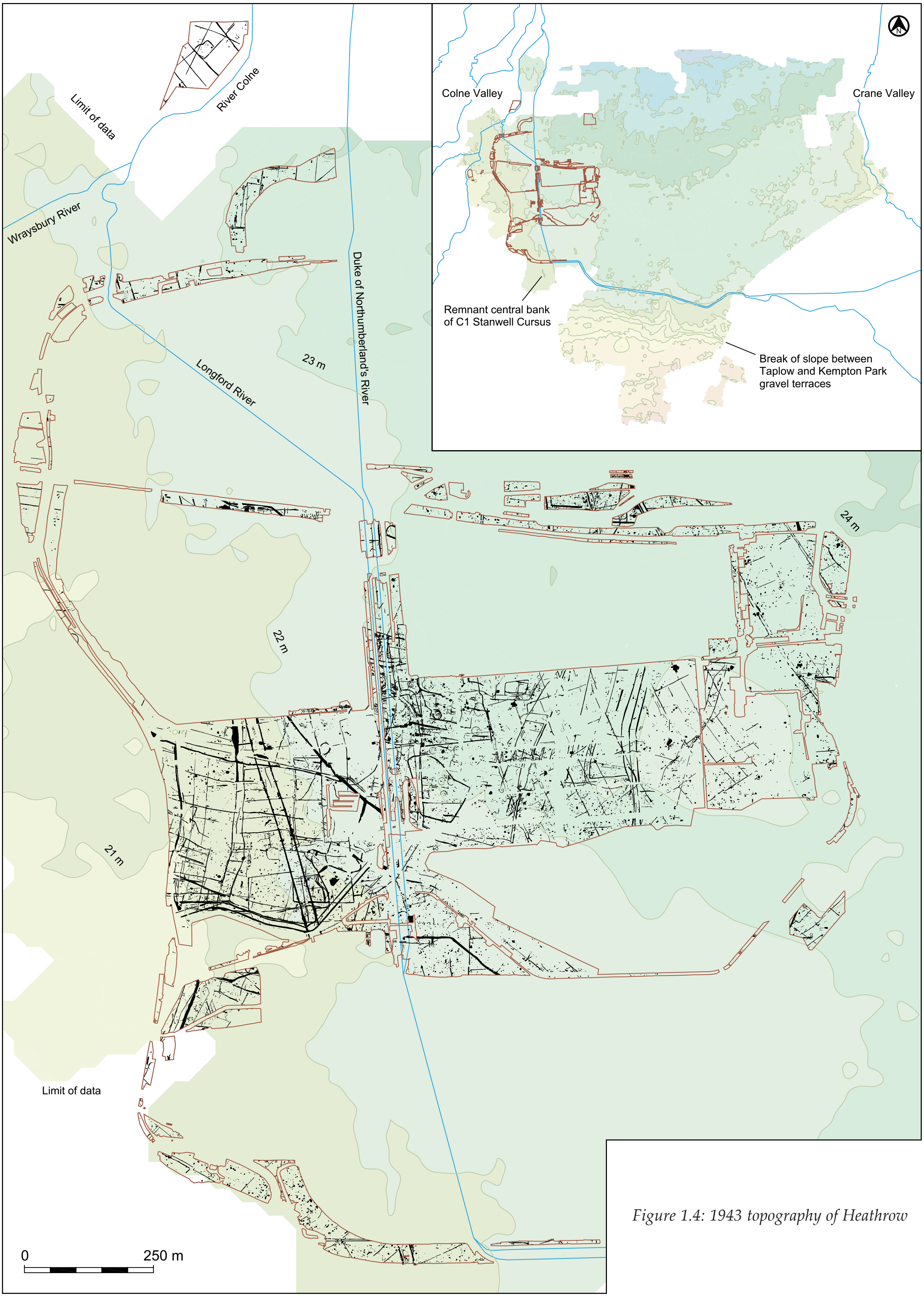


Figure 1.4: 1943 topography of Heathrow

seen to 'swing' away to the south-east. As we will show in Chapter 3 (on the 2nd millennium BC agricultural landscape), field ditches and hedgerows also followed this change in topography.

Throughout the remainder of this volume we will make repeated reference to the flatness of the landscape. This flatness has shaped the 20th-century history of the area; it was one of the reasons for siting the sludge works at Perry Oaks, and of course for the subsequent construction of Heathrow Airport. Prior to any modern changes, however, the topography of the landscape was more varied, with slight rises and lower lying areas (such as palaeochannels), which would undoubtedly have held significant topographical importance (see below). Human modification of the landscape from the 4th millennium BC has utilised these variations, usually to enhance them. Most importantly, almost any human endeavour that resulted in the raising of a mound, bank or other earthwork or timber structure would most likely have made a distinct impression on this landscape.

Topography prior to the construction of the sludge works in the 1930s and the airport in the 1940s

In 1943 the Air Ministry undertook a survey of the ground levels of the Heathrow area prior to the construction of the airport. The survey covered an area of 20 square kilometres of Hounslow Heath and theodolite survey readings were made every 20 feet producing a total of 23,763 points. Framework Archaeology digitised the original survey data and produced a computer-generated model, which also included survey data from the engineering drawings for the sludge works in the 1930s.

For the purposes of this report we have assumed that the 1943 ground surface would have equated with the prehistoric and Romano-British ground surface. Agriculture will, of course, have eroded some parts of the landscape, and colluviation and alluviation will have deposited material in others. Nonetheless, this model has provided the essential topographical framework within which we can consider the architectural modifications made by people since the 4th millennium BC. It also allowed the construction of the Truncation Model described below.

The Truncation Model

The Truncation Model (Fig. 1.5) consists of a contour and wire mesh drawing of the difference in heights between the pre-sludge works ground surface (derived from the 1943 Air Ministry Survey and the Perry Oaks sludge works engineering drawings described above) and the top of the gravel surface following archaeological stripping and survey. This was achieved by using the 'residuals' function in the Surfer computer program to subtract the OD heights in the 1933–43 survey from those of the modern day grid file to produce a third grid file which could be contoured. The degree of truncation was then checked against the surviving archaeological deposits in POK96. It was apparent during excavation, from archive aerial photographs and documentary research, that the eastern part of POK96 had undergone substantial terracing. The truncation model allowed the depth of disturbance to be quantified, and its effect on archaeological features to be assessed.

The truncation model proved to be a very valuable tool during excavation and post-excavation analysis since it could be used to assess the validity of artefact distributions, and to determine if the absence of features in a particular area could be attributed to the effects of the construction of the sludge works.

Modern land-use

The majority of the Terminal 5 site was occupied by the Perry Oaks sludge works. This was constructed as one element of the West Middlesex Main Drainage Scheme, conceived following the First World War at a time when West Middlesex was developing rapidly in both industry and population. The Scheme was devised in 1928 by John D Watson, past President of the Institution of Civil Engineers, in order to replace 27 sewerage works operated by 22 local authorities.

John D Watson reported fully on the construction of the Perry Oaks works in 1937, and this was followed by a further report on the first 10 years of operation by Townend (1947). These reports—and the Thames Water Utilities Ltd engineering drawings—proved invaluable in both recording the history of the development of the works and also in assessing their impact on the surviving archaeological deposits. This impact has been described more fully in Volume 1 (Framework Archaeology 2006, 10–11) and will not be repeated here, except to say that the construction of the drying beds led to variable degrees of truncation of the underlying archaeological deposits (Framework Archaeology 2006, 8; Fig. 1.5). In addition to drying beds, substantial areas of the Perry Oaks works comprised deep sludge lagoons. Some of these were constructed in the 1930s, but as late as 1980 some replaced areas originally set out as drying beds. The depth of these lagoons was sufficient to totally destroy any archaeological deposits. Their impact on the field system of the 2nd millennium BC is particularly striking. Elsewhere, archaeological survival was variable, with Area 49 (Burrows Hill Close) and the Longford Flood Alleviation site having the least disturbance, because they were situated outside the sludge works and airport boundary. Archaeological excavations within the existing airport boundary were rare, the principal sites being Northern Taxiway (GAI99) and Grass Area 21 (GAA00), both of which were described in Volume 1. Paradoxically, survival was very good on these sites, as they had lain relatively undisturbed beneath grass areas adjacent to runways and aprons. Sites along the western boundary of the development and associated with the diversion of the Western Perimeter Road had generally suffered a fairly large degree of disturbance and truncation from services and repeated road realignment.

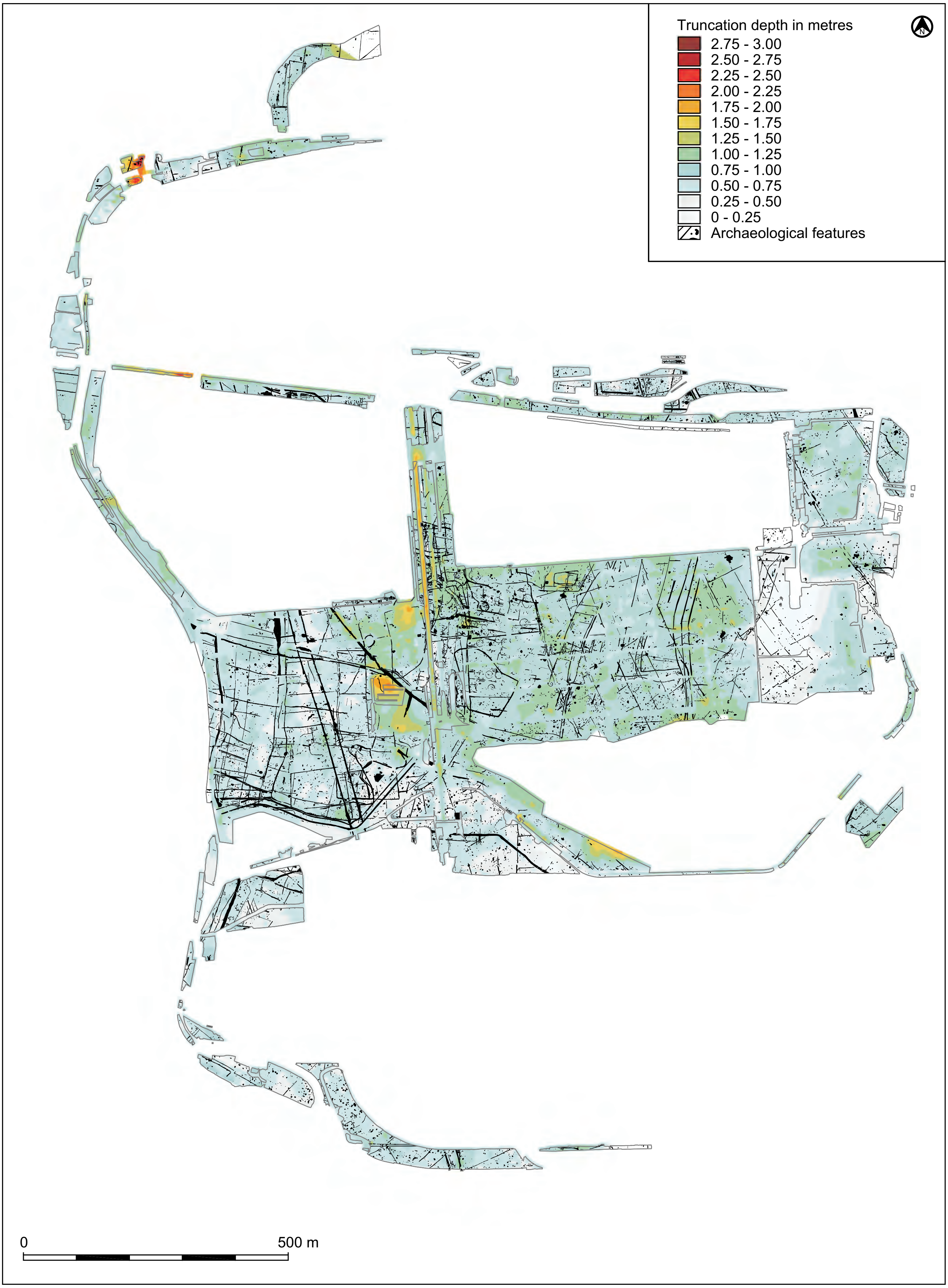


Figure 1.5: The truncation model

The archaeological background to the area

The Terminal 5 excavations were undertaken in a landscape that had been archaeologically investigated for over 50 years. Figure 1.6 shows the scale and extent of the investigations surrounding the site, along with the results of two separate surveys of aerial photographs which were commissioned by the Museum of London Archaeological Service of the Heathrow area (RCHME 1995 and 1997). Most excavations were undertaken by the Museum of London Archaeological Service (MoLAS) (or its predecessors) from the late 1970s onwards, ahead of gravel extraction and other commercial development (MoLAS forthcoming).

Located a few kilometres to the south-west of Terminal 5 (not shown on plan), the Staines (Yeoveney Lodge) Neolithic Causewayed enclosure was partially excavated prior to destruction through gravel extraction in the early 1960s (Robertson-Mackay 1987). In the early 1980s the Surrey Archaeological Unit excavated a length of the Stanwell cursus, the 2nd millennium BC field system and Saxon features to the south of Terminal 5 (O'Connell 1990). In the 1990s Wessex Archaeology excavated large multi-period sites to the north of Heathrow at Prospect Park (Andrews 1996; PPK) and Imperial College Sports Ground (Crockett 2002; A Powell, forthcoming; ICSG, IMC).

While the airport was being built in 1944, Professor Grimes excavated the famous Heathrow Romano-Celtic style 'temple' situated within an Iron Age enclosed settlement (Caesar's Camp) (Grimes and Close-Brooks 1993). The report on this excavation also provided information on the archaeological and historical background of the area, and demonstrated the rapid destructive effects of arable agriculture on standing earthworks (ibid., 306–307). In 1969 Roy Canham undertook limited excavations in advance of the western extension of the northern runway (Canham 1978; HEA69).

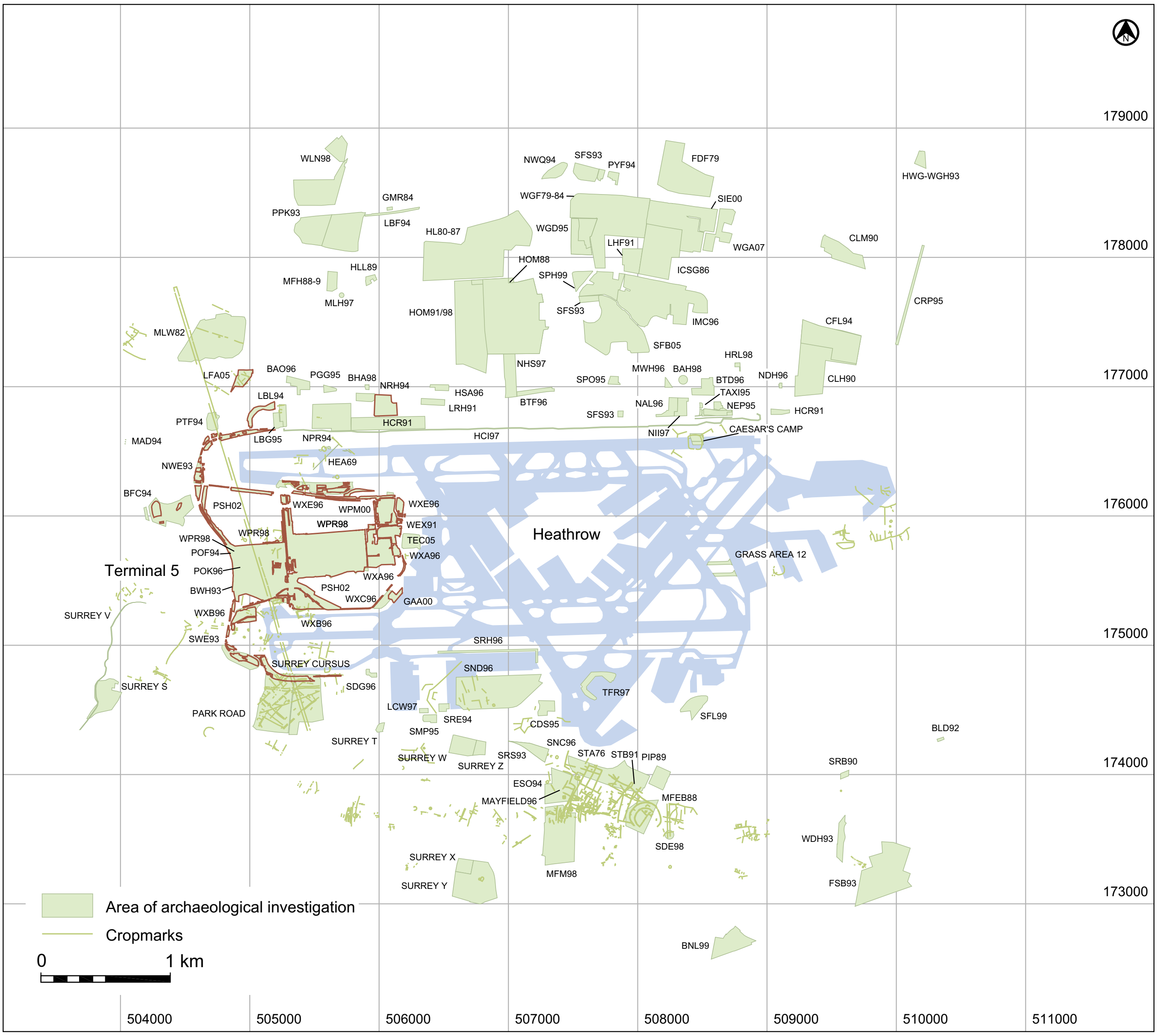


Figure 1.6: Extent of all known archaeological investigations at Heathrow

Slightly further afield, a multi period site at Ashford, Middlesex, has recently been published (Carew *et al.* 2006). It contained a Neolithic ring ditch, Bronze Age fields, Late Iron Age settlement, Romano-British ditches and a possible Saxon building. At Horton, on the Colne floodplain, another Neolithic ring ditch and later field systems have been published (Preston 2003), while further work here at Kingsmead Quarry has revealed extensive evidence for activity from the Late Upper Palaeolithic to medieval periods, including a rare Early Neolithic house (WA 2009).

More general synthesis and discussion has also been published (eg Cotton, Mills and Clegg 1986), along with a recent assessment of the archaeology of Greater London (MoLAS 2000).

Summary of the Heathrow archaeological landscape prior to the Terminal 5 excavations

At the outset of the project, a succession of past landscapes was identified (based on Andrews and Barrett 1998). However, the review of existing evidence highlighted significant shortcomings. These comprised the following:

• *Hunter-gatherer communities and early agricultural practices (300,000–4000 BC)*

Hand axes and other lithic tools of Lower Palaeolithic date were deposited amongst the Thames terrace gravels, but those located within the Taplow terrace, upon which Terminal 5 is located, have been acknowledged as being rolled and reworked from the higher Lynch Hill terrace (Gibbard 1985). The same has been suggested for artefacts within the Colney Street gravels of the River Colne (ibid., 131). Since this material is derived and redeposited, it did not feature as a research priority.

The surface of the Taplow gravels was occupied from the Late Lower Palaeolithic (300,000 BC) onwards. Antiquarian observation and fieldwork over the last 100 years suggest that much of the evidence for occupation during this period lies buried beneath the Langley Silt (Brickearth) deposit capping the gravels. At Terminal 5, the Perry Oaks sludge works had severely truncated this thin capping, and thus this early period did not feature as a research priority.

Evidence for Late Glacial and Mesolithic occupation (from 9000–4000 BC) across the terrace would have taken the form of lithic and bone scatters, deposited on the contemporary land surface. Again, the severe truncation at Terminal 5 would have removed most *in situ* traces of these remains. There was no opportunity for studying occupation of the landscape to the same level of detail as that of the Colne floodplain (Lacaille 1963). However, diagnostic lithics of this period did survive in tree-throws and several contemporary pits, as well as residing in later features.

• *Early agricultural and ritual practices (4000–2000 BC)*

The construction of the first monuments in the Heathrow and West London landscape can be dated to the Neolithic period. These consist of linear cursus monuments (such as the Stanwell example described in this volume) as well as smaller circular or sub-circular enclosures. Notably absent are earthen long-barrows of the early 4th millennium BC. Along the Thames to the west of Heathrow lay a series of larger causewayed enclosures (eg at Yeoveney Lodge Staines and Dorney) of the 4th millennium BC, while the large double-ditched enclosure at Mayfield Farm to the south-east of Terminal 5 may also date to this period.

The construction of small circular enclosures may have continued in the 3rd millennium BC, although the characteristic features of this period (Middle and Late Neolithic) in the area are pits containing either Peterborough Ware or Grooved Ware pottery. Overall, the emergence and chronological development of the monumental landscape was far from clear.

• *Agricultural transformation and the rituals of social reproduction (2000–100 BC)*

During the 2nd millennium BC the monumental landscape of the preceding millennia was transformed into one of fields, settlements and trackways. Exactly when in the 2nd millennium, why and how this took place were uncertain, as were the extent and intensity of the agricultural landscape. Conspicuously absent from West London were many aspects of the Late Neolithic / Early Bronze Age material and monumental ‘package’: round barrows, burials and Beaker pottery. From *c* 1500 BC onwards, cemeteries with Middle Bronze Age Deverel-Rimbury pottery had been recorded (Barrett 1973), and together with the succeeding post-Deverel-Rimbury pottery of the Late Bronze Age, were clearly associated with field and settlement systems. Relatively little was known about the Early Iron Age in the region, although by the middle of the 1st millennium BC, Middle Iron Age settlements comprising roundhouses, pits and four-post structures, were spread across the landscape. The Heathrow ‘temple’ (Grimes and Close-Brooks 1993) was tentatively dated to the Middle or Late Iron Age, although the function of this structure remains far from certain (Black 1986, 203; Smith 2001, 64).

• *Rural landscapes and urban hinterlands (100 BC–AD 1700)*

The transition from Late Iron Age tribal society to post–conquest Roman province was poorly understood in this region. The Romano-British landscape was characterised by small farmsteads consisting of enclosures, field boundaries and (probably) earth and timber buildings, which served the markets of roadside towns such as at Staines and possibly Brentford, and of course the capital, *Londinium*. A growing number of such Roman rural farmsteads have been excavated along the Thames gravel terraces in recent years, and yet there is a notable lack of villas or other high status sites. There are indications of a decline in some settlements during the 2nd and early 3rd centuries AD, though it appears that that the landscape of the later 3rd and 4th centuries underwent some form of reorganisation, seemingly reflecting changes observed within the urban centres at Staines and London.

The archaeological evidence for the early and middle Saxon periods consisted of isolated or small concentrations of sunken-featured buildings. Sometimes these were located away from medieval and present-day villages and in other cases they were found close to villages such as Harmondsworth. Local medieval villages presumably developed from their Saxon predecessors. By the post-medieval period, a number of hamlets and villages were dotted across Hounslow Heath, which began to be enclosed in the 18th century. Finally, some of these settlements, including Heathrow itself, were destroyed by the construction of the airport in 1944.

This briefly sketches the state of knowledge of the West London landscape in general—and Heathrow in particular—prior to the Terminal 5 excavations. The Terminal 5 project thus had the potential to make a significant contribution to our knowledge of the history of human occupation within the Heathrow landscape, and of the Middle Thames region in general. However, the scale of the project presented a number of challenges, both intellectual and practical, that had to be addressed before undertaking any excavation, and these will be discussed in the following section.

The nature of the challenge and the solution

The excavations at Terminal 5 provided a number of important challenges, not least because it became necessary to design an approach to the recording and interpretation of the archaeological data that would enable a sound academic philosophy to be produced. Evaluations undertaken by MoLAS on behalf of BAA during the early 1990s demonstrated that elements of the Heathrow ancient landscapes described above survived to varying degrees within the confines of the Perry Oaks sludge works (BAA Series reports). Subsequent excavations by MoLAS (Site Code POK96; see Fig. 1.2) confirmed these results and served to refine the research philosophy and approach. It was clear from the POK96 excavations that archaeological deposits, though truncated, probably remained beneath the active sludge works and were thus threatened by the daily workings of the drying beds.

Framework Archaeology was appointed by BAA in 1998 to undertake all archaeological mitigation for the Terminal 5 project. One of the first tasks was to record the archaeological remains that were being destroyed by the daily workings of the sludge works. This would entail stripping a very large open area within an operating sludge works, which itself posed problems with regard to working practice and Health and Safety. However, were the proposal to build Terminal 5 to be approved, the archive record of the Perry Oaks excavations (and those undertaken by MoLAS) would have to fit seamlessly into those resulting from investigation of subsequent excavations. The huge extent of the area that might ultimately be exposed demanded a digital recording system. Large quantities of written and graphical records, as well as artefactual and environmental material, were likely to be produced. The only practical way to manage these data was to adopt a database system, linked to digital plans via a Geographical Information System (GIS). Importantly, by adopting a GIS approach, and by processing and assessing as much of the finds and environmental data as possible on site, the data could be used to inform the excavation strategy.

The adoption of digital survey techniques, along with a standard recording system and database, through the entire life of the Terminal 5 project was essential in allowing the standardised capture and analysis of data. Table 1.1 shows that most of the PSH02 and TEC05 excavations were relatively small sites. Many of these were spatially close together, but several years may have separated their excavation. The GIS allowed the data from all these excavations to be assembled into one unified plan.

The process of historical inquiry that was demanded by the academic philosophy at the heart of the project (see below) could now be pursued through an iterative excavation and interpretative process. At the same time, the opportunity was taken to design a recording system based on those of the parent companies, but which focussed on those processes of excavation and interpretation. The GIS and database were then designed around the recording system.

Academic aim and approach

Various 'research designs' have been prepared with the aim of providing guidance for British archaeological work. The most recent examples have operated within period-specific remits at either a regional or a national level and have tended to specify research issues in terms of particular categories of material, or with reference to particular period-specific research questions.

By contrast the Terminal 5 Research Design prepared by BAA's archaeological consultant, Gill Andrews, and academic advisor, John Barrett (Andrews and Barrett 1998), was developed at a more 'generic' level of analysis. It established an approach towards the archaeology of all periods that was intended to be applied with reference to the resource model for the Terminal 5 development area and with reference to our current understanding of the archaeology of the Middle Thames Valley.

Principles

The aim of the Terminal 5 archaeological programme was to move beyond the recovery and description of archaeological remains as they are distributed across the landscape and to arrive at an understanding of the history of human inhabitation. The archaeology of inhabitation demands more than the recording of the traces of human activity and the history of inhabitation involves more than tracing the changing organisation of activities in a landscape.

Inhabitation concerns the practical ways in which people established their presence in the material, social and political conditions of their day. To establish a presence involves having the power, common to all human agency, to move and act in the world according to available opportunities and constraints, where such actions express knowledge of various levels of technical proficiency, social adequacy and moral authority. The archaeology of inhabitation is therefore an investigation of the various ways the human presence was established in and contributed towards maintaining or transforming the material and social conditions of history. It is an investigation of the material, moral and political contexts of human diversity.

This understanding of history is therefore not a matter of simply tracing changes in material forms (be they cultural or 'environmental') as expressed by phased sequences of material, nor is it a matter of noting that people in the past 'did things differently'. Rather, it concerns the ways lives were shaped in terms of social and political realities. These realities created different identities by virtue of varying access to resources and to modes of authority. Historical change arose as these differences were negotiated or were otherwise transformed by human practices, and by virtue of the cumulative changes in material conditions.

Plate 1.2: Excavations at Terminal 5 in all conditions

Human practice necessarily occupies areas of time and space. Spaces are 'opened up' by the activities that people carry out within them, and attempts can be made to define them in material terms by such things as enclosures, pathways and focal markers. Spaces and times may be appropriated and allocated to people and resources.

Application

Current excavation procedures normally treat the recovered material as data that represent historical processes. This means that field technicians record evidence that is destined for future interpretation. Our approach treats the materials excavated as components of the material conditions of history. It therefore treats excavation as primarily the investigation of history, rather than a preliminary stage in facilitating future interpretation. This places a clear interpretative responsibility with the excavators, and it ensures that the production of a coherent and empirically validated site narrative remains the fundamental objective of the excavation programme.

As we have seen, inhabitation may be regarded as the creation of human realities with reference to certain material conditions. Consequently the interpretative emphasis must be placed upon the ways people brought social conditions into existence through their performance of different practices.

Two concepts frame our inquiry. These are defined as *structural conditions,* which concern the ways in which the existing material conditions operated upon the lives of the landscape's inhabitants in any one period, and *structuring principles*, which describe the organisation and interrelationship of the practical performances by which the various schemes of political and cultural order were reproduced.

Structural Conditions

Structural Conditions identify the ways in which the occupation of time and space was partly circumscribed and partly guided by existing material conditions, including the various

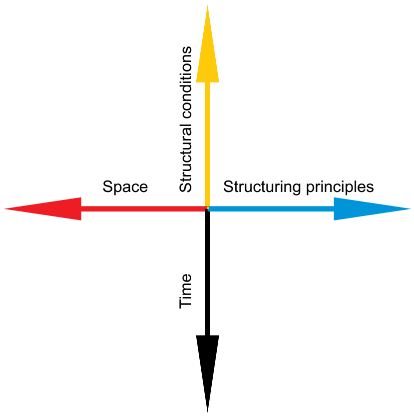


Figure 1.7: Diagram showing relationship between Structural Conditions and Structuring Principles

structures in their different stages of decay that had been built into the landscape by previous generations. It is possible to identify these major structural components at various levels of generality or detail as excavation and interpretation progresses. These components will be labelled as *entities*.

The definition of *entities* enables the isolation of major architectural components through and around which lives were performed, and significant deposits and residues associated with these activities accumulated. Talking about *entities* enables us to trace the ways the physical conditions of the world were modified. *Entities* will map out, for example, the ways in which different places were linked and thus different movements may have been choreographed, the way activities may be framed by various forms of architecture, and the dominant points of reference, both monumental and topographic, that were negotiated in the occupation of the landscape.

Each generation lives within its own archaeology of standing buildings, of ruins, and of a managed landscape of high antiquity. Understanding something of the structural modifications undertaken in any period should inform an understanding of the ways by which this archaeology of the past was accommodated in the contemporary landscape and thus the ways in which that archaeology was utilised, remembered or eradicated.

Structuring Principles

By emphasising the active ways in which social life is created we can identify four broad *spaces* which facilitated that activity. These spaces were inhabited with reference to those material conditions that are represented by the excavated evidence (the structural conditions). Analysis is directed at the ways these spaces were designed and the ways in which they interrelated. The four spaces are:

Routine. These were the spaces of every day activities. They were built by acting out commonly held, if conflicting, values for often mundane and routine purposes. These activities expressed the realities of life that were taken for granted.

Explicit order. These spaces brought into being explicit statements and claims to authority, political power and the demonstration of various kinds of supernatural, or indeed natural, orders that were presumed to govern the wider order of the world. Where routine knowledge is likely to have been taken for granted, these spaces evoked a more explicit form of knowledge.

Inscription and control. These were the spaces by which resources (material resources, forms of knowledge and people) were defined by others and could be acted upon. These spaces were made in the operation of power over the lives and material conditions of others.

Exclusion, marginality and resistance. These are the spaces that may have lain beyond dominant political authority. They may have been the routines that rarely expressed their own identities, or the spaces in which arose attempts to challenge or avoid the normality of routines and the control of dominant authority.

Each of the different kinds of space outlined above are always related through performance.

- Routine practices must involve action on and control of resources, operate against the background of explicit forms of political and religious order, and contain alternatives within them.

- Explicit order always makes sense by reference to routine experience, supports power wielded over some portion of the world, and may ignore, seek to silence or capture those actions that question its validity.

- The inscription and control of resources is achieved by an effective authority, imposes itself upon the routines of life, and its boundaries partly define the spaces of alternatives and resistance.

The hidden and marginal spaces of the world contain their own routines, may express alternative views of order and seek to avoid forms of dominant control. In other words none of the performances defined here occupied spaces that did not require mediation, negotiation or confrontation with other regions of social performance. The material entities that are identified in fieldwork formed part of the technology by which these social dramas operated, and history is driven by such processes.

The different ways in which these practices brought these spaces together is what defines the character of different historical periods, and can be summarised in Figure 1.7.

Application: the recording system and data presentation

The Framework Archaeology recording system and fieldwork methodology were developed to apply the academic approach outlined above. The field procedures and database structure have been described previously (Framework Archaeology 1999a; 2002) and are documented in the *Framework Archaeology Field Manual*. This section will summarise the definitions of the key concepts employed in excavation and post-excavation analysis, demonstrate how those concepts are used in the analytical process, and briefly describe the final product in terms of published output.

Definitions

The following section defines the key concepts of *context*, *intervention*, *stratigraphic group*, *feature*, *entity* and *interpretative group* as used in the Framework Archaeology Database (Fig. 1.8).

Context

The uniquely-numbered *context* is traditionally the primary conceptual unit of recording in British archaeology and the usual means by which artefacts and ecofacts are located to their site of recovery. Contexts are primarily sub-divided into cuts (stratigraphic events) and deposits (stratigraphic units—fills or layers that might contain finds or samples). A context can be a stratigraphic unit or stratigraphic event, but the practice of excavation means that a context may represent a sub-division of a single stratigraphic unit or event. For example, two excavators might excavate the same deposit in two different locations, assigning different context numbers to the deposit. This produces the need for the *stratigraphic group* (see below).

Intervention

An *intervention* binds groups of contexts together in an area of archaeological investigation. It is usually a stratigraphic event (cut) and at least one stratigraphic unit (deposit—taken here to include masonry and structural timbers). The intervention must exist on the digital site plan and must represent an area of archaeological investigation. The latter is usually excavation but may on occasion be the result of a non-invasive recording method. The intervention is used for producing artefact distribution plots within the Geographical Information System (GIS) and is also used in displaying archaeological deposits three-dimensionally.

Stratigraphic group

The *stratigraphic group* is used to link equivalent contexts exposed in separate interventions within the same feature. For example, a stratigraphic group would be used to link together the separate context numbers given to the cut of a ditch in each of the interventions excavated, provided that it can be demonstrated to a reasonable level of confidence that they are equivalent. The same process would be applied to all deposits within the ditch.

Feature

A *feature* is defined as one or more interventions that represent the remains of a past activity. It represents something that existed in the past, such as a ditch or a pit, which has been rediscovered through the process of archaeological investigation.

Entity

The *entity* is the basic tool of structural synthesis, a means of linking a group of related features together. For example, a number of postholes might have formed a structure or a number of ditches an enclosure. This can be employed at an extremely detailed or a very broad level (eg an entity linking all the features making up a Bronze Age field system might contain hundreds of ditches). By definition, the entity includes all deposits within the assigned features. Not all features need belong to an entity, whereas some features may be assigned to more than one entity, depending on the analytical perspective.

Interpretative group

Interpretative groups can be used in one of two ways:

- To sub-divide entities into phases of time, which are defined as representing the construction of the entity, the use or disuse of the entity or the demolition of the entity. The distinction between disuse and demolition of the entity is defined by the visibility of the entity in the landscape. Disuse indicates that the entity was no longer used but still visible. Demolition indicates that the entity was no longer used and no longer visible in the landscape.

- To provide a method of linking deposits by a means unrelated to entities. An example would be the analysis of a landscape which no longer exists as features, such as a Neolithic landscape where all features have been removed by later activity. Only Neolithic finds re-deposited within later features would indicate the existence of such a landscape.

The decision to define interpretative groups within an entity depends on the perceived degree of analysis required. Not all entities will be sub-divided into interpretative group periods. The diagram in Figure 1.8 shows how the Stanwell Cursus would be represented by *contexts*, *stratigraphic groups* and *interpretative groups* and as

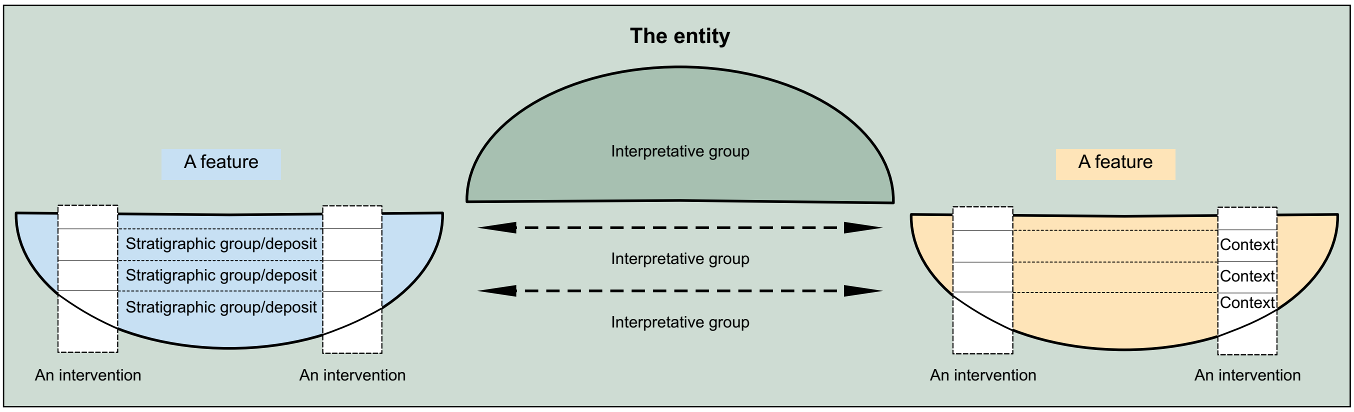


Figure 1.8: Modelling archaeological deposits

an *entity*. These elements can be used to model change through time and space, as demonstrated by the diagram (Fig. 1.7) showing *structuring principles* and *structural conditions*.

Information technology implementation

A computer system was installed on-site consisting of databases for matching up the excavation records, initial object identifications and the environmental samples with the plans of excavated and unexcavated archaeological features.

The purpose of the system was to allow cross-referencing of the recovered records and materials to produce initial phase plans and distribution plots of artefacts and samples which could be used to inform the excavation process.

Fieldwork procedures

The aim of the fieldwork programme was the creation of narratives of inhabitation, and those narratives were then further refined by off-site analysis. Interpretation at this level was the responsibility of the excavating team, rather than it being deferred to a post-excavation stage of analysis. Entities, soils, organic and inorganic residues were therefore examined in the field in order to establish the changing form of the landscape, the processes operating across that landscape and the history of the landscape inhabitation. The development of *landscape generic* to *landscape specific* sampling, and the analytical shift between *structural conditions* and *structuring principles* were designed to facilitate the development of this line of analysis.

The issues raised as structuring principles are not derived from the material itself but from an inquiry into the way human life was ordered by occupying that material. For example, the inhabitants of an Iron Age settlement established and extended that settlement within the remnants of an ancient landscape; some worked the land, food was prepared, material needs were satisfied unequally, rubbish was deposited, the dead were given funerals, gods and spirits were acknowledged. Generally expressed they may be, but these issues impinge directly upon our understanding of the archaeological resource.

The above analytical sequence is one of increasing generalisation through which it will be possible to relate the archaeology of specific practices to more general historical themes and thus to a wider level of regional analysis for both the Middle Thames Valley and for southern Britain. In contrast, the excavation programme will, of necessity, have to move from the general to the particular, by initially assigning deposits to the chronological model proposed in the Research Design before interrogating those deposits to understand the operation of the structural principles through which the landscape was occupied.

Practical application

The excavation consisted of removing any overburden by 360 degree tracked excavators under archaeological supervision. The archaeological features which were soon exposed were then digitally surveyed using electronic distance measurers (EDMs) and (from 2002 onwards) portable GPS survey devices to produce a digital map of the archaeological deposits.

To achieve the levels of analytical resolution demanded during the excavation, two main stages of investigation were identified, *Landscape Generic* and *Landscape Specific*. The main elements of these two stages were as follows:

Landscape Generic

- To characterise the overall nature of the archaeological resource and to understand the processes of its formation;

- To define in plan all archaeological features;

- To establish the character of those features in terms of cuts, deposits and interfaces;

- To recover across the site a sample of organic and inorganic material residues in order to understand site formation processes;

- To establish in outline a dated sequence of structures and thus to define changes in landscape organisation over time;

- To establish, within that dated sequence, the priorities for the investigation of a landscape specific archaeology of inhabitation.

The digital survey following the removal of overburden partially met some of the above aims. Confidence in the interpretation of some entities prior to excavation (eg the cursus monument) was more developed than for example, interpretation of linear ditches as field systems or enclosures. Our knowledge of these entities was in turn more advanced than features such as pits and isolated postholes, about which little was known. The purpose of the Landscape Generic phase was both to build on our present interpretation and add to our knowledge of other landscape elements, and it thus addresses the need to understand the *Structural Conditions*.

In order to manage the excavation programme the Landscape Generic investigations were sub-divided into two stages: LG1 and LG2. The information recovered at each stage was used to inform subsequent interpretations and guided decisions on future excavation strategy. This staged approach facilitated a fluid and dynamic approach towards the management of the excavation and ensured that critical feedback and the construction of a narrative of human inhabitation was achieved within the constraints of the programme. Within these two stages therefore, excavation, analysis and interpretation was an on-going process in which objectives and the means of achieving them were the subject of constant critical review. This iterative approach also had the advantage of allowing appropriate account to be taken of the varying levels of confidence in interpretation with which we started (see above).


Plate 1.3: Working shot of excavations at Terminal 5

LG1 was principally concerned with the following:

- characterising a sample of the main types of features (eg linears, circular structures etc.);
- establishing a basic chronology and relative stratigraphy of the above features;
- assessing the quantities and analytical value of the artefactual and environmental material from these features.

The information gathered from LG1 sampling was analysed during excavation and the results determined the approach to the next stage (LG2).

LG2 was principally concerned with:

- determining the stratigraphic relationships between the excavated features to refine the chronological development of the landscape;
- increasing the sample size of excavated features in response to trends in spatial patterning of finds, environmental evidence and trends in constructional technique of linears etc.

In practice, LG1 interventions were located away from the junction of two features so that relatively uncontaminated finds and environmental samples could be obtained. LG2 interventions were located at the intersection of features to determine stratigraphic relationships. In addition, some LG2 interventions were located to clarify questions raised by LG1 interventions or to obtain more meaningful finds assemblages.

Constant re-assessment of data retrieved during LG1 and 2 allowed the appropriate sample size for investigation of unexcavated elements of LG1 to be determined. For instance, if LG1 determined that a meaningful sample excavation size for roundhouses was 50%, then the remaining unexcavated samples would be excavated to this proportion.

Following LG1 and LG2 the main entities and elements of the stratigraphic groups were built (see Recording System above). Completion of the Landscape Generic phase provided the following:

- an understanding of the formation processes which led to the archaeological features and deposits which exist;
- a broad understanding of the structural conditions existing in successive landscapes;
- a baseline for future comparisons between human occupation of the different landscapes.

Landscape Specific

A series of period divisions in the history of landscape inhabitation was already defined in terms of the dominant traditions by which those landscapes were inhabited (see previous work above). On-site analysis interrogated this model of chronological development, moving between the details of human inhabitation at a site-specific level of analysis and at the more general regional level.

In practice, the results of the Landscape Generic phase of work produced a number of research-focussed tasks which were communicated in a Project Design Update Note in September 1999 (Framework Archaeology 1999b) whilst excavation was continuing.

It is important to note that none of the individual elements described below, or the processes that were used, are in themselves new. The basic level of recording remained the context, and these were grouped to form features, which in turn formed entities. Finds and environmental processing and assessment and analysis were undertaken in standard ways. The difference lay in where these tasks were positioned within the excavation and analytical sequence. For instance, Stratigraphic Groups (SGs) were produced at the end of the Landscape Generic (LG) phase of excavation: indeed, the construction of satisfactory SGs was a major test of whether enough data had been gathered during LG excavations. The creation of SGs allowed the excavators to interpret the construction, use and decay of features and deposits rather than disconnected contexts, and to consider how these operated in relation to contemporary and ancient landscapes. This was the beginning of the process that addressed the analysis of structural conditions and structuring principles (see above).

The requirement to address this level of interpretation during excavation, using finds and environmental data processed on site, facilitated the construction of the historical narrative in the field. The emerging narrative then acted as a source of inquiry for the Landscape Specific (LS) investigations, which may or may not have modified the initial interpretations. Excavation thus returned to the process that almost all archaeologists would agree it should be: a process of investigation of the past driven by questions and inquiry which demand observation, thought and interpretation, rather than attempting to achieve an arbitrary percentage sample across different features and deposits.

This system required site excavators and supervisors to engage with many elements such as grouping contexts and assessing dating evidence that has over the past 20 years tended to be deferred to the post-excavation phase of a project. It is our experience that one of the results of this deferral has been to segregate the skills base in British field archaeology, since field excavators usually have limited finds expertise and little experience of post-excavation analysis. This project provided extensive training in an attempt to raise the quality of excavators' interpretations from the context and intervention level to the feature, entity and landscape level. The results are contained in the interpretative text for the features and deposits, and can be viewed through the Freeviewer software first distributed with Volume 1, and which also accompanies this volume (see below). The content is variable, but provides a much richer record than some archives: we feel it is useful for the excavator to tell us his/her interpretation of what a feature actually *is*, rather than trying to work this out from the convoluted 'context speak' we often encounter.

As the Terminal 5 excavations progressed, the digital archive consisting of contexts grouped into features and deposits continued to grow, and was available for use by the excavation team. The artefactual assemblages were quantified and dated (where possible) and the environmental samples had mostly been processed and assessed for potential. In most respects the dataset was at a stage which most projects achieve after the post-excavation assessment phase, as defined by the Management of Archaeological Projects (English Heritage 1991). Nonetheless, a period following the excavation was required to enter a backlog of records into the database and to check through the digital archive for digitising, stratigraphic and dating errors. The archive was then used to refine the narrative and proposals for analysis and publication were presented in the Project Design Update Note 2 (Framework Archaeology 2005). This document was produced prior to the final phase of excavations at Terminal 5 at the far eastern limits of the site (TEC 05; Fig. 1.2). Data from this area was integrated within the archive in the normal way, and did not greatly affect the publication proposals.

Post-excavation analytical procedures

The analytical phase of the project comprised specialist analysis of the artefactual assemblages and environmental samples, in conjunction with the stratigraphic evidence through the medium of the GIS, a process that took several years. Could this process be shortened? Is it possible to come off site with all this detailed analysis complete? In theory yes; however a number of practical factors prevent this.

Firstly, some forms of detailed analysis such as palynology simply take a long time, especially with a large project and numerous samples. Pottery fabric and form analysis is best undertaken once the whole excavated assemblage is available, not whilst more material is being recovered. Samples for radiocarbon determinations (as with samples for environmental disciplines) need to be carefully selected and prioritised in the light of the full data set for reasons of cost-effectiveness.

Secondly, the structure of British archaeology is such that suitably qualified and experienced finds and environmental specialists are simply not able to move and work on a single site for months or years at a time. They are based in offices or laboratories with extensive existing commitments. However, the publication of the narrative in these volumes is dependant on this work, and until those skills can somehow be returned to the field then a lengthy post-excavation programme will remain. Nonetheless, Volume 1 in this series was published in 2006, five and a half years after the completion of fieldwork. This volume is published in 2010, just under three years after completion of fieldwork at Terminal 5. Given the scale of the excavations, we feel this is comparatively speedy. At Stansted Airport, major excavations (covering 33 ha) undertaken on behalf of BAA by Framework Archaeology between 1999 and 2004 were published as a monograph (Framework Archaeology 2008) in February 2008. The recording, data processing and interpretative systems developed by Framework Archaeology have thus contributed greatly to the efficiency of publication for both Heathrow and Stansted.

Publication: scope, concept, presentation and archive

Scope of Volumes 1 and 2

Volume 1 (Framework Archaeology 2006) reported on the MoLAS POK96 excavations, plus the WPR98, GAI99 and GAA00 excavations undertaken by Framework Archaeology from 1999 to 2000 (Fig. 1.2; Table 1.1). These excavations occupied the central area of what would become the Terminal 5 development.

The subsequent excavations undertaken as part of the Terminal 5 construction programme (PSH02, TEC05 and LFA05) greatly extended the spatial coverage of the investigations, and in the case of Areas 58 and 61 (the Twin Rivers), proved valuable in linking together drying beds B, C and A excavated in 1999. Therefore, the only realistic strategy was for Volume 2 to report on the entire landscape, including reassessment of the areas already described in Volume 1. However, wherever appropriate, the features described in detail in Volume 1 would receive less attention in Volume 2.

All the periods of human inhabitation considered in Volume 1 have benefited from reconsideration in the light of the Terminal 5 data.

- The Neolithic monumental complex of the late 4th millennium BC is now seen to have been much more extensive, and the evidence for activity in the 3rd millennium BC is more abundant.

- The development of the 2nd millennium BC field system has been re-interpreted, and has benefited from modelling of a much greater number of radiocarbon determinations.

- The evolution of the settlement of the later 1st millennium BC and the Romano-British period have also been reconsidered in the light of the evidence from Areas 58 and 61 of PSH02.

- The Saxon and medieval periods were not discussed in Volume 1, and these have been reported in Volume 2.

In many ways, Volume 1 served as an interim publication, and due to the close interrelationship between that volume and this, a PDF version of the first volume is included on the *CD-Rom* accompanying this publication.

Publication concept, presentation and archive

Volume 1 developed the historical narrative and explored the major themes of landscape inhabitation, while at the same time presenting the archaeological data. This was always a challenging process, with a tension between satisfying two main readerships. Firstly, those who wish to read about the history of human inhabitation of the landscape and are content with a historical narrative supported by detailed example. Secondly, there are those who want to 'know what pottery they found there' (Mercer 2002, 363); that is, archaeologists who wish to use the data in their own research, or are simply content with descriptions of how many monuments and trackways were excavated, their dating and finds assemblages. Our ideal, of course, would be to produce a publication that would satisfy both these groups and allow people to move from narrative to data and back again with ease.

Volume 1 was experimental in other ways, not least of which was the development of a process of analysis using digital data, and then disseminating the data. The lessons learned from Volume 1 (and the Stansted project) were used by Niall Donald to comprehensively redesign the database and GIS structures to enable data to be accessed and analysed in a far more intuitive way, as well as to facilitate the transfer of data from the Framework database into the Freeviewer software.

The Freeviewer software was developed to solve the problem of dissemination of digital data. This is a GIS viewer, which allows the reader to view and interrogate a much larger dataset than would be possible with a normal publication. A CD-Rom containing data and software was distributed with every copy of Volume 1, and this has been repeated with this volume. The Freeviewer software has been developed to include more features, and of course the datasets are considerably larger. Recognising that the Freeviewer software will eventually become obsolete as computer operating systems progress, Archaeology Data Service (ADS) have been commissioned to develop a web-based alternative which will be maintained in the future. This can be found at **http://ads.ahds.ac.uk/**

Should a reader want more detail than the Freeviewer can provide, then the full digital archive will be deposited with the ADS, and the physical archive with the Museum of London.

This approach seeks to provide a historical narrative backed by key analysis and data, but also provides a structured path into increasingly more complex data via the Freeviewer and the full digital archive.

Summary of the historical narrative

This section summarises how the results of the pursuit of the academic philosophy in the field has been presented in this volume, providing a summary account of the history of human habitation at Terminal 5.

Hunter-gatherers and first farmers, 500,000 to 1700 BC

Chapter 2 outlines the chronological evidence before considering some of the historical processes through time. We will consider the significance of pits excavated by hunter-gatherers in the 7th or 6th millennia BC at a location on the edge of the Colne floodplain, as well as a complex of stakeholes of similar date on the floodplain itself.

There is evidence of activity in the 4th millennium BC, prior to construction of the major monumental complex. This consisted of numerous tree-throws, a posthole complex and a possible settlement consisting of pits, postholes and gullies. These were located along the alignment of the great C1 Stanwell Cursus, which we believe to have been constructed in the latter half of the 4th millennium BC. Remnants of at least three other cursus monuments were also excavated, that together with a possible fifth example (detected as a cropmark outside the area of excavation), clearly demonstrates the transformation of this particular location into a major ceremonial centre. In addition, a small circular enclosure was built. We will explore the social context for the construction of these monuments and the consequences for the community that built them. In the space of a few centuries, people had transformed the landscape from one defined by memories of ancient locations to one defined by the architecture of earthen banks and ditches. We will go on to suggest how people lived within this new world during the early part of the 3rd millennium BC. We will examine the processes that linked deposition of Peterborough Ware pottery in the cursus monuments with the deposition of this pottery in pits scattered across the landscape. This theme is continued through the 3rd millennium BC with the use of Grooved Ware pottery, and the possibility is considered that new, small circular monuments were linked with this material. However, by the latter half of the millennium, new monuments and practices of artefact deposition signal a change in the way people inhabited the landscape. By 1700 BC this change was to lead to the replacement of a system that apportioned land and resources through ceremony to one of physical demarcation: the first land tenure and field divisions.

The emergence of the agricultural landscape and its development in the 2nd and 1st millennia BC (c 1700 BC– 400 BC)

In Chapter 3 we will suggest a time and origin for the first land tenure boundaries that divided the Heathrow landscape in the first half of the 2nd millennium BC. We will show how settlements became archaeologically visible and developed within a landscape of small and large fields forming identifiable 'farmsteads', which were traversed by double-ditched trackways. The development from a single extensive farmstead to a multitude of differing farming units within two distinct landscapes is explored, along with evidence for a mixed arable / pastoral agricultural economy, supplemented by resources from the innumerable hedgerows which divided the fields. We will explore how the creation of these field systems and settlements need not imply any disjunctive or revolutionary change, but instead may indicate the continuation of successful social practices. What is beyond doubt, however, is that the ways in which people chose to physically construct their environments altered dramatically. Why those choices were made and what the results of those choices might have been are the basic questions this chapter attempts to address.

We will also show that during the middle of the 2nd millennium BC, people maintained links with the past and the overtly ceremonial world of monuments of the 3rd millennium BC through ceremonies resulting in particular artefacts being deposited in the base of waterholes. The repeated deposition of objects such as ard spikes, whole or broken pots, valuable metal objects, wooden bowls etc in waterholes points to the continued importance of these locations in the creation and maintenance of the Bronze Age world at Heathrow. We will see how from the late 2nd millennium the settlement pattern changed, with a return to a single large focus of settlement in one landscape and the continuation of the pattern of smaller dispersed settlements in another. We can also see this change reflected in different patterns of artefact deposition at the base of waterholes.

Identifying the abandonment of the Bronze Age agricultural system is very difficult, though there is little specific evidence for any Early Iron Age activity at Terminal 5, beyond a small number of isolated features. However, we shall see how major elements of the Bronze Age agricultural landscape appear to have persisted in some form well into this period and beyond.

Development of the agricultural landscape from the Middle Iron Age to the end of the Roman period (c 400 BC–4th century AD)

Chapter 4 deals with the later Iron Age, after the abandonment of the small, dispersed settlements occupied by the Bronze Age inhabitants. We shall suggest that the Terminal 5 landscape came under the control of new cultural and economic influences and designs, culminating in a gradual transformation which saw the emergence in the Middle Iron Age of a nucleated settlement of roundhouses, four-post structures and livestock enclosures. The daily and seasonal routines of the Middle Iron Age inhabitants continued to be dictated by the requirements of a localised, probably entirely subsistence-based agricultural regime that was apparently biased towards a pastoral economy.

We will examine how this settlement in turn became a focal point for continuing occupation through into the later Iron Age and early Roman period. However, we will demonstrate that parts of the Terminal 5 landscape were radically altered at this time, with new alignments of field systems largely overwriting the previous land divisions. While pastoralism remained a fundamental part of the agricultural economy, the evidence suggests an

Plate 1.4: Mesolithic landscape

increasing emphasis on cereal crops from the Late Iron Age onwards.

We will demonstrate how the settlement complex appears to have been continually modified on a somewhat *ad hoc* basis into the later Roman period. At this point radically new styles of structure and wholesale changes to the eastern field systems were introduced, resulting in a substantial 'ladder' enclosure system, surrounding a major central droveway. This was part of the wider social, political and economic changes of the later Roman Empire. It cannot be proved that occupation continued at Terminal 5 beyond the end of the 4th century AD, although elements of the field and enclosure systems may well have persisted for some time.

The post-Roman landscape (5th/6th century–20th century)

In Chapter 5 we examine the history of occupation at Heathrow from the Saxon period to near the present day. We investigate the remains of an early Saxon settlement and any potential overlap between this and the late Roman settlement and enclosure system. The organisation and historical context of the early Saxon landscape is explored, providing a picture of a drifting settlement within a sparsely occupied land with limited evidence for arable cultivation.

An apparent desertion of the landscape is noted during the mid Saxon period, with no further definitive evidence for activity until the 11th or 12th century. New field systems were established across much of the landscape at this period, and a complex of enclosures and post-built structures, possibly related to stock management, was constructed at Burrow Hill within Stanwell parish. The origins and development of the medieval landscape of Heathrow are explored, along with evidence for pastoralism, arable cultivation and hay making.

The post-medieval landscape is seen to include some elements already in place by the middle Saxon period, while from the 15th century, further developments of the medieval field system largely took the form of enclosure of the common fields. We show how the character of the Heathrow area remained predominantly rural well into the 20th century, until the Perry Oaks sludge works were constructed in 1934 and the first phase of Heathrow airport was built between 1944 and 1946.

Running through all four chapters are two main historical themes:

- The strategies used to decide access to land and resources and how these changed through time;
- How these strategies were intertwined with the tensions between individuals, families and communities, and how these dynamics changed through time.

The description of the archaeological remains will be considered in terms of these historical themes and used as examples of change or continuity in these processes.

An environmental overview of the Heathrow landscape
by Wendy Carruthers

Chapters 2 to 5 of this volume draw on reports by environmental specialists where they are relevant to the features, farmsteads and settlements under discussion. Here, an attempt is made to integrate information from the different environmental disciplines (eg pollen, insects and waterlogged plant remains) in order to reconstruct the Heathrow landscape, bearing in mind that the vast majority of evidence was recovered from Middle Bronze Age deposits. A much fuller overview, together with the individual specialist reports, can be found on the *CD-Rom.*

The pre-monument landscape

It is unfortunate that little environmental evidence was recovered from the early prehistoric period and no buried soils survived to provide baseline information about the ancient forests that became established following the last Ice Age in the Heathrow region. Environmental evidence from excavations along the Middle and Lower Thames Valley suggests that, as warming of the climate moved towards the 'climatic optimum', succession in the Heathrow area followed the classic Holocene pattern described by Godwin (1975), ie birch followed by pine, with hazel and other deciduous trees such as oak, elm and lime, becoming established as the climate warmed. Alder moved in to wetter soils at around 8000 BP. Alder carr became a dominant vegetation type along the floodplains of river valleys in southern England, from the Mesolithic through to the Bronze Age.

The scant evidence from Late Mesolithic features at T5 suggests low levels of human activity within a mixed pine and oak woodland, with hazel and hawthorn as part of the understorey (Plate 1.4). Pollen sequences through palaeochannel sediments considered to be Mesolithic to Neolithic in date were dominated at their bases by tree pollen of primarily oak and hazel, with some pine, elm and willow, with occasional grains of alder. It is clear that these samples pre-dated the spread of alder onto damp soils of the British Isles, an event dated to *c* 8000 BP by Birks (1989) and 8000–7500 BP at Runnymede (Scaife 2000, 181). Grasses and sedges growing in open, marshy areas amounted to 20% of the total land pollen. Microscopic charcoal levels were high, perhaps due to burning activities taking place in the forest. This was followed by a sudden fall in tree pollen, accompanied by a rise in fern spores. At this time marsh or fen appears to have been developing in cleared areas around the channel. Pollen from dry land trees was much reduced after this point and there was an abrupt rise in alder pollen, indicating that alder carr replaced willow on wet soils along the channel.

Neolithic monument building

According to the ceramic dating evidence the two parallel ditches and central bank of the C1 Stanwell Cursus were constructed in the mid to late 4th millennium BC. Pollen evidence from deposits pre-dating the monument's construction indicates that the western half of the excavated area was primarily open, although some oak/hazel/lime woodland existed on drier ground, with the low count for elm confirming the post-elm decline date. The relatively high occurrence of lime suggests that clearance associated with the *Tilia* decline, which occurred at around 3000–3700 years BP in other sites in the area such as West Heath

Plate 1.5: Early-middle Neolithic landscape

Spa, Hampstead Heath (Greig 1991) and Tilbury (Devoy 1979), had not yet taken place. The herbaceous pollen was dominated by grasses and taxa associated with cultivated land and pastures, while cereal pollen was quite high suggesting that arable cultivation was occurring locally. A burnt humic topsoil suggests that grazing land may have been managed by fire at this time; large scale woodland clearance by burning evidently occurred in the area some time before the construction of the cursus. Relict organic matter, possibly from dung, was observed in soil thin sections from the western cursus ditch.

Towards the eastern edge of the excavated area, a primarily 'open landscape' during the early-middle Neolithic is indicated by the pollen evidence; clearance was more extensive than just a corridor along the cursus (Plate 1.5). By the Late Neolithic, substantial woodland regeneration seems to have taken place, with up to 80% total land pollen and spores consisting of arboreal pollen.

Unfortunately, Neolithic features produced very few, poorly preserved charred plant remains and in some cases radiocarbon dating revealed that upper fills had become contaminated. Small numbers of charred emmer/spelt wheat grains and hazelnut shell fragments considered to be *in situ* demonstrated that both wild and cultivated foods were being consumed in the Early Neolithic period.

The Late Neolithic to Early Bronze Age

Relatively little information exists for this period from either Heathrow or Runnymede, or from the Middle and Lower Thames Valley as a whole on the floodplain. Molluscs from tufaceous silts thought to date to the Late Neolithic/Early Bronze Age suggest flowing water with marsh and some dry open country close by.

Scaife (2000) notes that in many cases early woodland clearances were only partial and short lived, with regeneration occurring, indicated by the influx of taxa such as ash, holly and secondary elm (eg Gatcombe Withy Bed, Isle of Wight; Scaife 1980; 1987). He suggests that in the Later Neolithic the economy of many sites moved towards woodland pastoralism and this is certainly a model that fits in with the scant evidence from Heathrow. Samples from Late Neolithic and/or Early Bronze Age pits produced no cereal remains but strong evidence of thorny scrub, including sloe, purging buckthorn and hawthorn-type in the charcoal assemblage; these thorny taxa are at an advantage when woodland is grazed by large mammals. Tree-throw holes dotted across the excavated area provided further evidence of clearance, although these mostly date to the period before and during the construction of the cursus complex, and no obvious pattern of felling was observed to confirm that humans were definitely involved.

Although scarce, the Neolithic to Early Bronze Age animal remains suggest that pastoral farming was taking place in the area, or at least that animals were being brought to the site, possibly for ritual purposes. Gathered foods, including hazelnuts and sloe, were clearly still important at this time.

By the Early to Middle Bronze Age, pollen evidence suggests that the area near the cursus was again 'open landscape', perhaps with some hedgerows or scrub. Livestock were grazing areas of grassland (indicated by pollen species characteristic of nutrient-enriched soils) and cereals and flax were being grown. Perhaps this cultivation represents small-scale, early stages of development of the Middle Bronze Age settlements, since cereals and flax were also the main crops grown at the later date.

The restricted distribution of waterlogged alder seeds and 'cones' in Bronze Age features along only the western side of the excavated area suggest that alder carr grew close by, and that periodic flooding washed these very buoyant remains into the waterholes and ditches closest to the floodplain.

The Middle Bronze Age agricultural landscape

Major reorganisation of the land occurred during the 2nd millennium BC, while preservation of waterlogged plant and insect remains in all types of features across the excavated area indicated that water levels were relatively high at this time. Even allowing for truncation of the deposits by the construction of the sewage works, soils must have been damp, with seasonal waterlogging being a regular occurrence for many of the settlements. There is also some evidence that such flooding may have become excessive towards the end of the period of occupation. The numerous field boundary and trackway ditches were therefore probably just as important for drainage as for marking boundaries and controlling livestock (Plate 1.6). The scarcity of obligate aquatics in the ditch samples shows that they functioned well, since

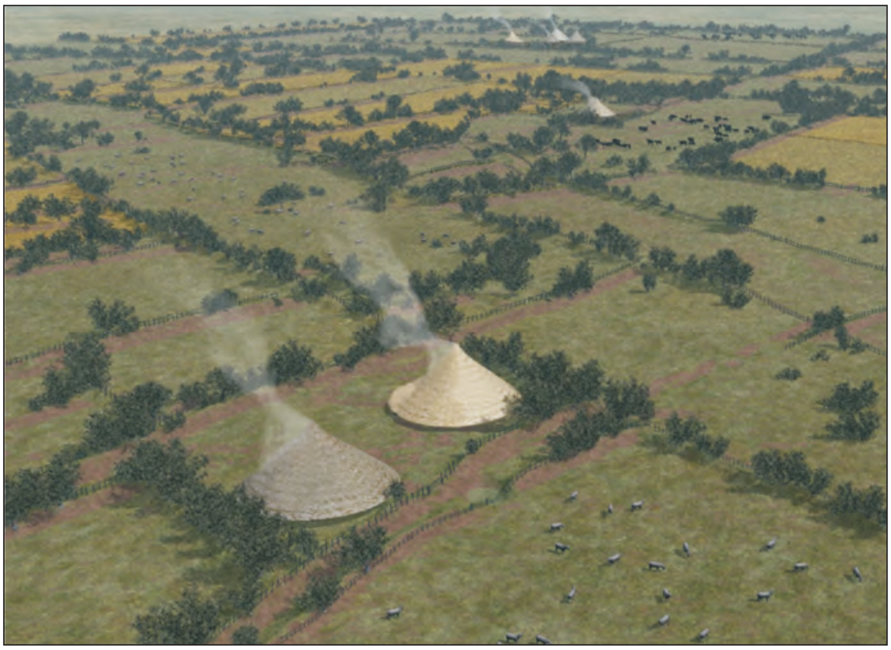


Plate 1.6: Mid-late Bronze Age landscape

standing water cannot have been present for much of the year. In contrast, more than half of the Mid to Late Bronze Age waterholes and waterlogged pits contained the remains of some obligate aquatic plants, such as water-starwort and water-plantain.

Whilst the evidence is inconclusive, it is possible that occupation was seasonal during this period, as suggested for the Middle Iron Age site at Farmoor, located in the Upper Thames Valley on the floodplain and first gravel terrace (Robinson 1979). Alternatively, and perhaps more likely, water levels may have risen during the period of occupation and may have been a contributory factor in the temporary decline in activity at around 1200 cal BC (see Chapter 3), particularly if crops and livestock were affected. The damp soils, at least in the lower lying western part of the Heathrow landscape, would, nevertheless, have provided lush pastures, particularly if seasonal flooding replenished the soil with nutrients. Cattle require a large amount of drinking water and are well suited to grazing damp pastures. Their predominance along the Thames Valley floodplain is typical during the Bronze Age and Iron Age.

Fruits and seeds from plants that grow on wet-ground occurred most frequently in samples containing charred flax seeds and capsule fragments rather than those containing cereal waste. This suggests that flax was being grown on the damper soils along the floodplain of the River Colne to the west, and that either the cereals were grown on higher ground to the east, or that the water table was much lower on the gravel terrace during the main period of occupation.

All of the environmental evidence indicates that the landscape was predominantly open in character, with grassland (probably both pastures and meadows) being the main vegetation type (Plate 1.6). The insect fauna was dominated by terrestrial species characteristic of well-drained, warm, open habitats, with frequent evidence for grazing animals in the form of dung beetles, some of which are typically now found further south in Europe.

Wood and tree dependent insects made up a small percentage of the records, and tree pollen from the lowest levels of most of the Middle Bronze Age features amounted to only 5 to 25% of total land pollen, although this rose to 60% at the east of the site, with oak pollen particularly frequent. This suggests that areas of heavier soils to the north may have remained wooded, perhaps consisting of fairly open oak / hazel wood pasture that could have been used for grazing as well as a source of fuel wood. An increase in tree pollen in the Middle to Late Bronze Age may indicate some reduction in agricultural activity followed by some limited woodland regeneration (eg small copses). By the Middle Iron Age, however, very little woodland remained in the Heathrow area.

Waterlogged remains from wet ground taxa (alder and willow) were confined to features on the western side of the excavated area, closest to the River Colne.

As discussed further in Chapter 3, and *CD Section 14*, evidence for hedgerows was equivocal from the pollen evidence alone; a number of waterholes contained frequent woodland/scrub/hedgerow plant macrofossils, but palynological evidence was difficult to interpret, since most of the features produced fairly low tree pollen counts. To maintain a hedgerow that is dense enough to control livestock requires regular cutting, but severe cutting reduces flowering and the production of pollen. Nevertheless, the fact that the macrofossil evidence for thorny shrubs was consistently abundant in most of the Bronze Age features does suggest that hedgerows or scrub existed close by, and on balance the existence of hedgerows to control livestock and mark boundaries seems likely. An additional possibility is that areas of woodland pasture may have existed in some areas, with livestock reducing pollination to some extent by browsing. This would not explain the presence of woodland herb macrofossils, but could apply to some areas of the site. Soil analysis suggested that the ever-present evidence of trampling, enhanced phosphate and dung residues along the ditches, may have been due to livestock being able to roam between areas for most of the time, rather than being confined within enclosures for long periods. If soils were fairly damp, confining livestock in a small area for a long period would cause severe poaching of the soil and soon destroy pasture.

Hazel was probably growing on higher ground to the east where the soils were drier. The fact that hazel was not being used for construction, craft and only rarely for fuel, even though it is well suited to all of these purposes, suggests that the supply was limited in the Middle Bronze Age. This suggests that the soils were damp in the western half of the Heathrow landscape during the life of the settlements, rather than just around the time of abandonment.

Economy

Arable agriculture was clearly a major component of the Middle Bronze Age economy at Heathrow, as indicated by the large quantities of charred cereal remains (Plate 1.7). The principal crops grown were emmer (*Triticum dicoccum*) and spelt (*T. spelta*) wheat, hulled barley (most likely 6-row hulled barley; *Hordeum vulgare*) and flax (*Linum usitatissimum*). Spelt wheat was a newly introduced crop at this time and emmer was much more frequent. This is likely to be due to limited availability of seed corn, since over time, and prior to the widespread cultivation of free-threshing bread-type wheats in post-Roman Britain, spelt became the dominant cereal crop grown in southern England. Although spelt is a more robust and higher yielding crop than emmer, it is more demanding of nutrients. Increased cultivation of this crop at the expense of emmer during the Middle Bronze Age may have contributed towards soil impoverishment and acidification that appears to have been taking place on the river terrace gravels.

Unfortunately, the animal bone assemblage is too small to elucidate the pastoral economy or husbandry methods. Both mature and immature cattle and sheep were represented, suggesting both were reared locally. Cattle are better suited to damp pasture, while sheep probably grazed the higher and more marginal ground. Pig and red deer were also present, although the latter was represented only by antler fragments and a split skull with attached antler. Honey may have been utilised in the Mid-Late Bronze Age; fragments of honey bee (*Apis mellifera*) were recovered from Perry Oaks.

Plate 1.7: Bronze Age arable agriculture

Soil acidification

The removal of woodland, cultivation of the soil and grazing over many centuries would have caused the gradual loss of calcium from the terrace gravels and alluvial soils. Two shrubs of base-rich soils, purging buckthorn (*Rhamnus catharticus*) and dogwood (*Cornus sanguinea*), were represented at low levels by plant macrofossils, charcoal and pollen in Neolithic to Late Bronze Age features but not thereafter, suggesting acidification, which was confirmed by the appearance of remains from heathland vegetation in the Iron Age samples.

Plate 1.8: Middle Iron Age landscape

Changes during the Late Bronze Age

Continued use of some of the Farmsteads into the Late Bronze Age, including the large D-shaped enclosure (Farmstead 3), meant that changes in the environment from the Middle Bronze Age to Late Bronze Age period were not easy to identify. The waterholes continued to contain frequent woodland /hedgerow plant macrofossils and alder carr continued to occupy the area towards the Colne floodplain. The most obvious change was the reduction in the numbers of archaeologically detectable features. With smaller numbers of samples being available for study it was difficult to characterise this period of change, but pollen indicated that limited open woodland continued to occupy some areas of the site, and that grazed pastures still dominated the landscape as a whole. Cereal cultivation was still taking place in the area but this was undoubtedly on a much smaller scale than before, suggesting that by this time the lansdcape was largely pastoral. The Late Bronze Age features produced very little bone; one deposit may represent ceremonial activity or feasting.

The Middle Iron Age

By the time the Middle Iron Age nucleated settlement was established the landscape was extremely open with very few trees and shrubs, and there was no obvious pollen or plant macrofossil evidence of hedgerows (Plate 1.8). However, woodland fuel resources were available in the area, albeit perhaps in short supply, since species such as alder and sloe were recorded amongst the charcoal assemblage, as well as oak and elm. Although oak and elm burn well, alder burns poorly unless well seasoned or made into charcoal. Close cropping of hedgerows, and regular pollarding and coppicing of the limited woodland resources may have reduced pollen and seed production to a minimum.

Some arable cultivation and animal husbandry was clearly occurring locally, but pollen evidence suggests that grazing pressure, although initially high, may have fallen later, although the large increase in grass pollen could be explained by cultivation of hay. The latter explanation seems likely in view of the substantial evidence for rebuilding stock enclosures throughout the period, and the reduced reliance on grain and cereal processing waste for winter fodder. Charred cereal remains were very scarce and were poorly preserved, such that the only cereals identified were emmer/spelt and barley. The small charred weed assemblages indicated that damp, acidic and clay soils were being cultivated, and that soil impoverishment may have been a problem. The cultivation of heavier soils, probably to the north, suggests that soils on the gravel terrace may have become too acidic, impoverished and perhaps damp to produce good yields, and this may have been one factor leading the change to a pastoral-based economy.

The Late Iron Age/ early Roman period

The Late Iron Age to early Roman period saw the start of a return to arable cultivation on a similar level to the Middle Bronze Age. This intensification continued into the middle to late Roman period, perhaps in response to the emergence of the new towns at Staines and London nearby (see Chapter 4). Changes in the balance between arable and pastoral farming must have involved reorganisation of field systems and the ploughing up of some pastures or new areas of land. Some gradual, piecemeal changes to the eastern and southern fields are described in Chapter 4, although the main focus of settlement remained in the central area of the site. The Bronze Age field system on the floodplain in the west remained largely unchanged, and it is likely that summer grazing and hay-making continued in this area into the late Roman period. New areas of arable cultivation are likely to have been located on higher ground on the gravel terrace in the eastern half of the site, and probably also beyond the excavated area. As before, the presence of charred and uncharred stinking chamomile seeds in some of the assemblages indicated that some cultivation may have taken place on the heavier brickearth soils immediately to the north, or on the London Clay, 6-7 km to the north-east or south-west. Crops may also have been imported from further afield.

Spelt wheat had become the dominant cereal grown for human consumption, although emmer was still an important crop. Oats and hulled barley were probably primarily grown for fodder. The introduction of cultivated oats to the Heathrow area must have been a significant advance, since oats are well suited to poor acidic, damp soils. At Heathrow oats appear to have replaced barley as a fodder crop to some extent, particularly in this period.

A large number of cotton thistle seeds (*Onopordum acanthium*) were recovered. Cotton thistle has great economic value since different parts of the plant can be used in a variety of ways; the stems can be boiled, peeled and eaten, the large seeds provide oil that can be used for cooking and lighting; downy fibres from the plant have been used to stuff pillows and mattresses in the past.

Charred seeds from wet-ground taxa such as spike-rush, sedge and buttercup provided evidence for the deposition of burnt waste from marsh or damp meadow hay from wetter soils on the floodplain. Either there were hay meadows in the vicinity and/or unburnt hay had been deposited as waste but had rotted away.

The presence of relatively mature woodland, or hedgerows managed for fuel by regular pollarding or coppicing, is suggested from the charcoal evidence, and this could explain the very small woodland signal in the pollen record. Pollen evidence continued to indicate a very open landscape with meadows and grassland, cereal cultivation and areas of waste ground. Traces of heather (*Calluna*) pollen were present in most of the samples, but the absence of insect species that feed on heathland vegetation suggested that this habitat was located some distance away.

Plate 1.9: Late Roman landscape with 'ladder' enclosure

The early/mid Roman and mid/late Roman periods

As discussed in Chapter 4, some degree of intensification seems to have taken place in the Roman period. The most obvious change was alteration to field boundaries in the eastern area during the 3rd century AD, creating a 'ladder enclosure' complex system with a central wide droveway, possibly in response to increased demand for meat products in the developing market towns (Plate 1.9). Unfortunately poor preservation of the bone meant that it was difficult to detect any changes affecting livestock as a result of intensification or 'Romanisation'. As with previous periods, cattle continued to be the most abundant species with some horse, sheep, sheep/goat and pig. Traces of red deer and roe deer were also found.

Plant macrofossil evidence suggests that water levels may have risen at the start of the Roman period, probably causing increased seasonal flooding and waterlogging in some areas of the site. Although standing water was not present on a permanent basis (since obligate aquatic plants were not represented), organic material was well preserved, particularly in the early/mid Roman pits. It is possible that by the mid- late Roman period more effective drainage systems (or reduced water levels) had improved the soils to some extent, since ditches from this period onwards did not contain organic material preserved by waterlogging. The absence of anaerobically preserved organic deposits could also be explained by greater levels of maintenance, with ditches being cleaned out on a regular basis.

As in the Iron Age, the landscape appears to have been extremely open during the Roman period, with very little woodland apart from perhaps a few scattered trees and possibly old, gappy, impoverished hedgerows. The pollen evidence suggests that grassland and meadows would have dominated the landscape, although evidence for cereal cultivation was more prominent than in earlier periods. A single grain of hemp/hops hints at other possible horticultural crops being grown for fibres, flavouring/preservative or medicinal use.

The scarcity of pollen from woodland taxa was again not borne out by the charcoal evidence, possibly because either a rigorous management regime was in operation, reducing tree/shrub flowering to a minimum, or that wood was brought in from some distance, perhaps being traded for agricultural produce. There was no evidence for the exploitation of heathland for fuel, despite traces of shoots and leaves being found amongst the charred and waterlogged plant macrofossils.

Arable cultivation appears to have increased gradually from the Late Iron Age period through to at least the mid Roman period. This may have been achieved by improvements in crop husbandry practices and improvements to the land, such as increased drainage and manuring. Nitrophilous plants such as henbane, black nightshade, hemlock and nettles were common, again suggesting middening. Other improvements in comparison with the Middle Bronze Age include changes in harvesting methods, from uprooting in the Middle Bronze Age to cutting below the ear in later periods.

Uprooting was demonstrated by the presence of cereal straw nodes and stem bases in Middle Bronze Age samples, together with the presence of low growing, twining and scrambling weeds. These were largely absent in samples of later date. Heavier soils were clearly cultivated in the Roman period. It is likely that clay soils would have primarily been used for growing spelt wheat, although a little more evidence for the cultivation of bread wheat was recovered from the mid/ late Roman samples. The gradual transition from cultivating primarily emmer to primarily spelt in was almost complete by this time. Rye (*Secale cereale*) may also may have been introduced to cope with poor, acidic but well-drained soils in the area.

A single grape pip demonstrates that luxury foods were being eaten, and probably represents imported dried grapes or raisins being purchased from a town nearby. Crops grown on the heavier soils may also have been imported. The high concentration of honey bee remains from Perry Oaks suggests that the Roman settlement was involved with beekeeping.

The early /middle Saxon period

Samples with potential for paleoenvironmental reconstruction were very limited. Charcoal included oak (perhaps reflecting structural timbers but also possibly deriving from post-abandonment dumping of domestic waste) as well as maple, ash, hazel, sloe and hawthorn-group. Clearly, oak was still readily available, although scrub or hedgerow species were also being used, perhaps from hedge-cutting or scrub clearance. It is interesting to note that heathland was still not being used as a fuel source, even though there was evidence for this at the nearby Saxon sites at Hounslow and Kingston upon Thames (Smith 2002, 33). Hawthorn, hazel and blackberry macrofossils suggest soils in the western area of the site might have become drier during this period and indeed features in Area 14 were not waterlogged. Elsewhere, there was some, albeit very limited, evidence for the presence of nutrient-enriched soils, with waterholes used by livestock fairly intensively over a long period.

The evidence for exploitation of wild animals was again very limited, as is typical for the period. While the sample size is small, sheep were probably the most frequent species (though making up a smaller proportion of the bones than on other Saxon sites), but pig and horse were common and cattle comprised a lower proportion of the bone assemblage than before. The relative frequency of pigs when compared with the general trend of decline in pig numbers in the Saxon period (King 1991) could indicate that areas of scrub and woodland were readily available as wood pasture.

Alongside the evidence for a reasonably diverse pastoral aspect to the economy, the evidence for arable cultivation was fairly minimal. Although it is uncertain whether the few cereal remains in these samples were representative of the settlement as a whole, the change to the production of more fodder crops than grain for human consumption could mirror changes seen in the Late Bronze Age to Middle Iron Age, reflecting a change in the arable / pastoral balance towards pastoralism. The small amount of evidence from the arable weed ecology indicated that clay soils were being cultivated, perhaps with some damp areas and manuring was probably taking place. Cereals being used on the site during this period included bread-type wheat, barley and probably oats.

Three different species of plant used to produce fibres were present in one waterhole, perhaps indicating small-scale craft activities taking place.
As before, cotton thistle seeds were present, and there were a few fragments of possible hemp (cf. *Cannabis* sp.) seed and fragments of cultivated flax capsule, suggesting that the waterhole may have been used for retting. Since retting would cause pollution and eutrophication of standing water, the remains must represent a secondary use of the feature, having been abandoned as a waterhole.

The medieval period

Although the landscape was still predominantly open, woodland taxa were much more in evidence than at any time since the Bronze Age. Tree pollen in the area had increased to relatively high levels, particularly oak and ash, though also including holly, rose, elder and honeysuckle. The high oak values may indicate areas of wood pasture, consisting of large standard oak and ash trees surrounded by grazed grassland (Plate 1.10). Insects also provided evidence for woodland, with tree-dependant species including beetles found on ash (scolytid beetles *Hylesinus oleiperda* and *Leperisinus varius*), and willow/poplar (curculionid beetle *Dorytomous* spp.). The presence of pig and deer in the bone assemblage also suggests nearby woodland.

Heathland was exploited and probably existed close by, as confirmed by pollen and insect evidence as well as the recovery of frequent charred heather capsules and gorse/broom charcoal. As with the woodland taxa, heathland vegetation could have been brought onto the site for use as fuel, bedding, fodder and thatch. However, evidence for use of this valuable resource was very limited from earlier periods, despite pollen and some macrofossil evidence for heathland development in the area from at least the Iron Age. Therefore, either heathland was established in the area by the medieval period, or rapid-burning gorse/broom and heather was being brought onto the site as fuel for a particular purpose. It would appear that good fuel wood such as oak was not in short supply, as the charcoal was predominantly oak, although beech was used in reasonable quantities for the first time.

The fact that oak may have been growing so near to the western side of the excavated area and beech was more readily available suggests that water levels may have fallen by this period, a theory supported to some extent by the scarcity of waterlogged plant remains in features from all areas of the site.

Further specialisation in animal husbandry could be seen, with pigs

Plate 1.10: Medieval landscape

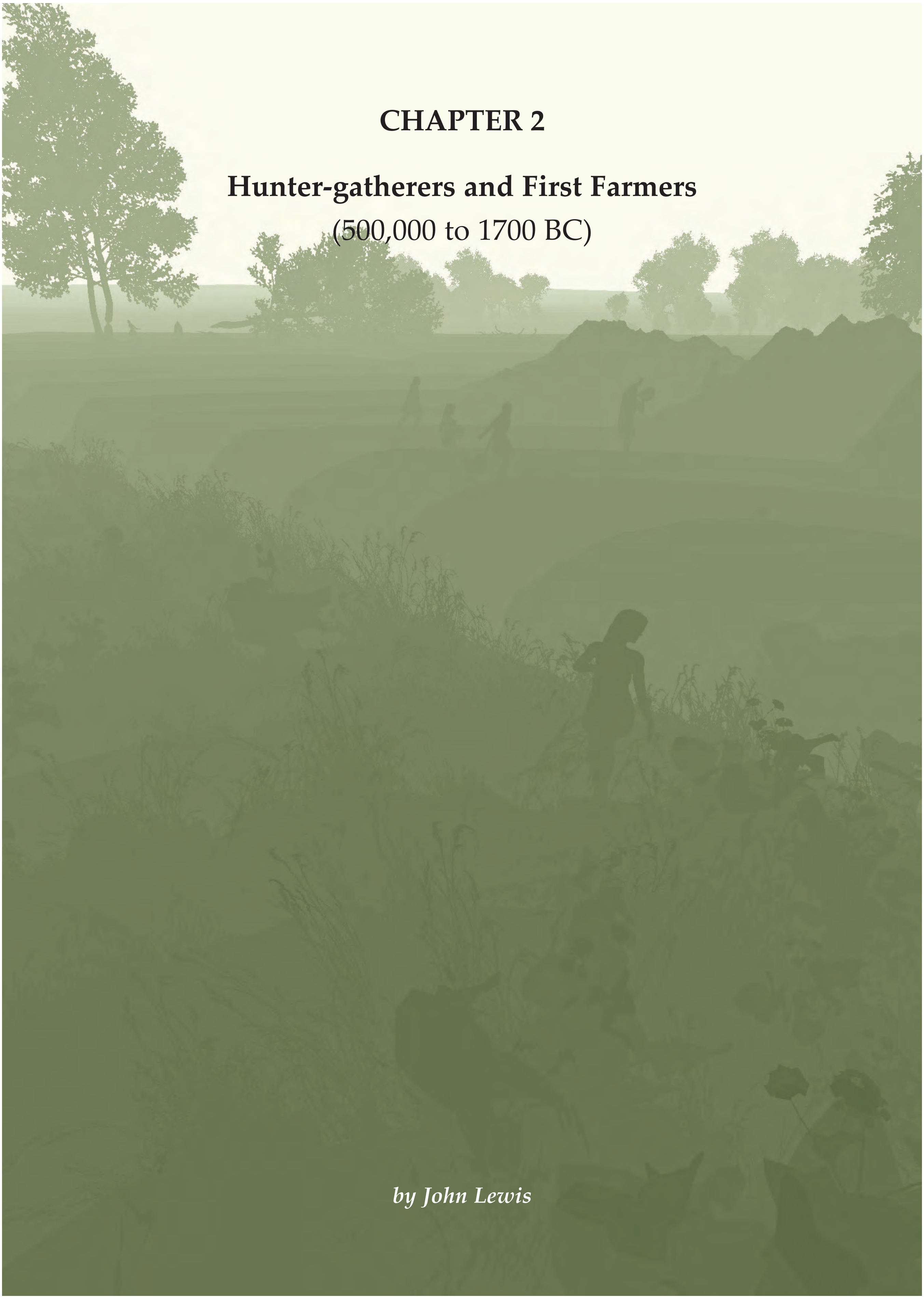
being killed relatively young for meat and cattle kept to maturity to provide secondary products such as milk, manure and traction. The main species of livestock represented were horses and cattle, with smaller numbers of sheep/goat and pig. The small proportion of sheep in what might be assumed to have been a wool-based economy was notable. However, preservation was, again, often poor and the origin of the remains unclear. Plant macrofossil and insect species represented in a rare waterlogged waterhole were typical of open grassland and disturbed habitats, including some plants of grazed meadows (eg thistles) and some of drier hay meadows (eg fairy flax). These may have originated from hay brought in for winter fodder. The damp alluvial soils of the floodplain would have been used for hay meadows and summer grazing, as in the centuries before.

High levels of weed infestation in an assemblage of charred cereal remains recovered from the remains of a burnt down barn imply the cultivation of impoverished, heavy clay soil. The stored crops included bread-type wheat, hulled six-row barley, oats and rye. Additional crops grown during this period may indicate crop rotation was taking place in order to help restore soil fertility. Cultivated vetch (*Vicia sativa* ssp. *sativa*), Celtic beans (*Vicia faba* var. *minor*) and possibly peas (cf. *Pisum sativum*) are leguminous plants that were commonly grown during the Saxon and Medieval periods for fodder, and sometimes for human consumption. Peas and beans may have been grown as garden plants, or on a larger scale in rotation with cereals. It appears that at this site they were probably being grown as field crops since they were found amongst charred cereals in all four samples.

The presence of several charred hazelnut shell fragments and a sloe/cherry/plum (*Prunus* sp.) stone fragment in the pits hints at other wild and possibly garden fruits and nuts that were being consumed. Flax cultivation seems to have continued. More or less the same range of crops was being grown in the later medieval period (13th-14th centuries).

The post-medieval period

There is little environmental evidence from this period, including some limited pollen evidence to suggest that woodland gradually increased, with ash and oak showing notable rises in frequency. This may suggest some reduction in farming intensity, enabling ash and then oak to become established in drier areas that were no longer farmed. Aquatic and marsh plants (including duckweed, water crowfoot and flote-grass) grew in damp areas around the former palaeochannel; flooding episodes were evident. Plant macrofossils from meadow plants such as meadowsweet and buttercups represent floodplain meadows growing along the Colne valley.



CHAPTER 2

Hunter-gatherers and First Farmers
(500,000 to 1700 BC)

by John Lewis

Introduction

This chapter deals with the hunter-gatherer landscapes prior to *c* 4000 BC (the Palaeolithic and Mesolithic), the appearance of the first agriculturists and transformation of the landscape through the construction of ceremonial monuments between 4000 BC and 1700 BC (the Neolithic and Early Bronze Age). The chapter first lays out the framework of material evidence and assumptions regarding dating that will guide our analysis, relative to the research approach established in Chapter 1. This is then followed by a chronological narrative, set against a background of the wider Heathrow landscape. Figure 2.1 shows the location of the main sites in the Heathrow area mentioned in the text.

Summary of the evidence

Palaeolithic and Mesolithic

A handful of heavily rolled flint artefacts (including a small handaxe), none of which was *in situ*, are our only testimony to the Palaeolithic at Heathrow Terminal 5, whilst the Mesolithic is represented by flint artefacts mostly residing in features of much later date. However, a cluster of pits was excavated in the northern part of Perry Oaks Bed B and Area 45 of Terminal 5 ('Pre C1 features' on Fig. 2.2) which contained burnt flint. This material provided thermoluminesence dates suggesting activity sometime in the 8th to 6th millennia BC. Trial trenching at Bedfont Court detected a small complex of post and stakeholes, one of which contained material which was radiocarbon dated to *c* 6000 cal BC (wk-11773) (Fig. 2.2).

Neolithic

The Neolithic evidence from Perry Oaks and Terminal 5 consisted of two posthole complexes and a possible settlement comprising pits, postholes and two gullies. These were superseded sometime between *c* 3600 and 3300 BC by four cursus monuments (C1–C4), each of different length, width, orientation and architectural form. A fifth cursus monument (C5), visible as a crop mark, lay outside the excavated area, and may have been part of the C3 monument (see below and Fig. 2.2). Three small sub-circular 'horseshoe' enclosures (HE1 – HE3) were also excavated and tentatively dated to the late 4th (HE1), the 3rd (HE2) and the late 3rd / early 2nd (HE3) millennia BC. Other features include tree-throws and occasional postholes of the 4th and 3rd millennia, as well as scatters of pits containing Plain Bowl, Peterborough

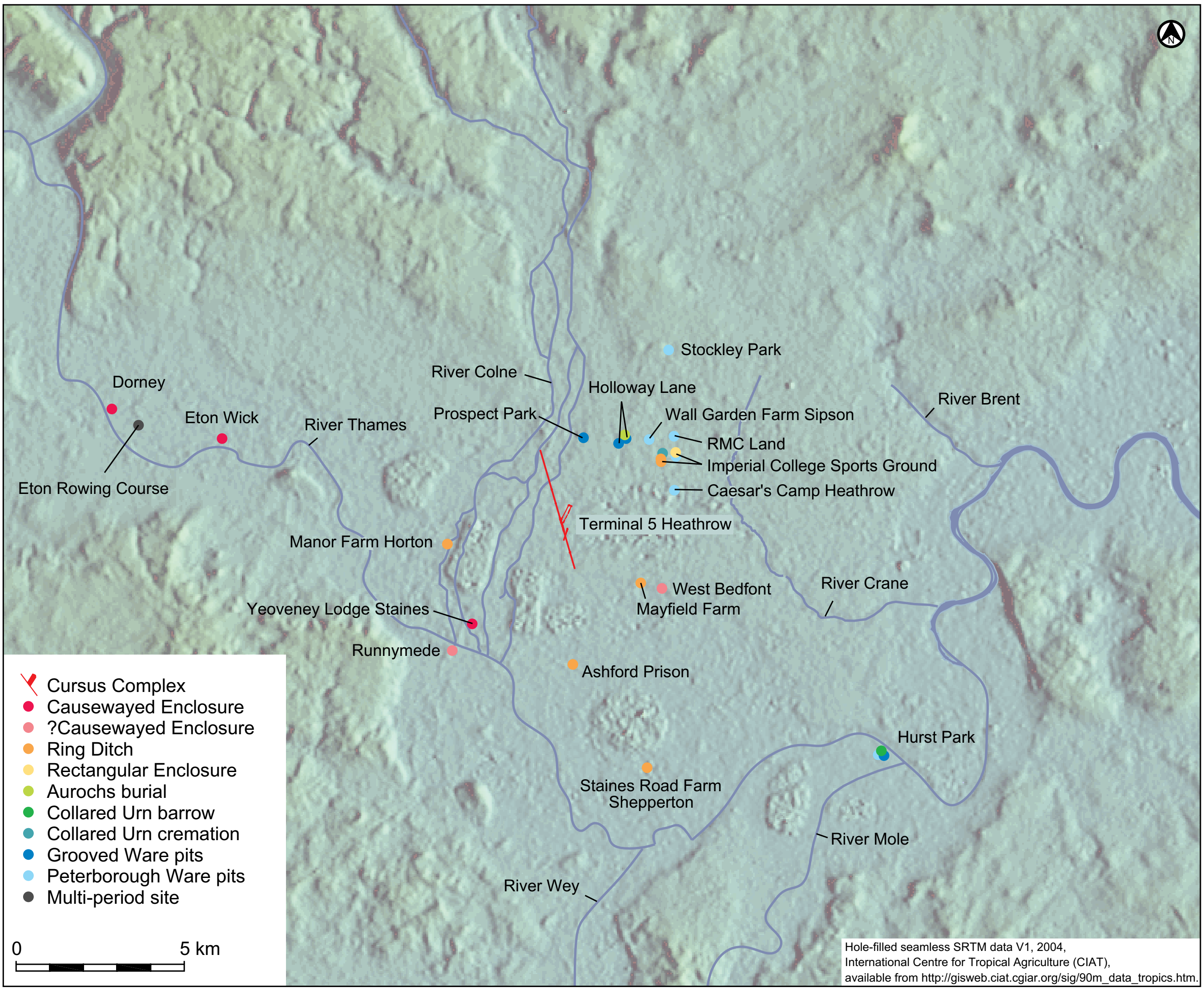


Figure 2.1: Location of sites mentioned in the text

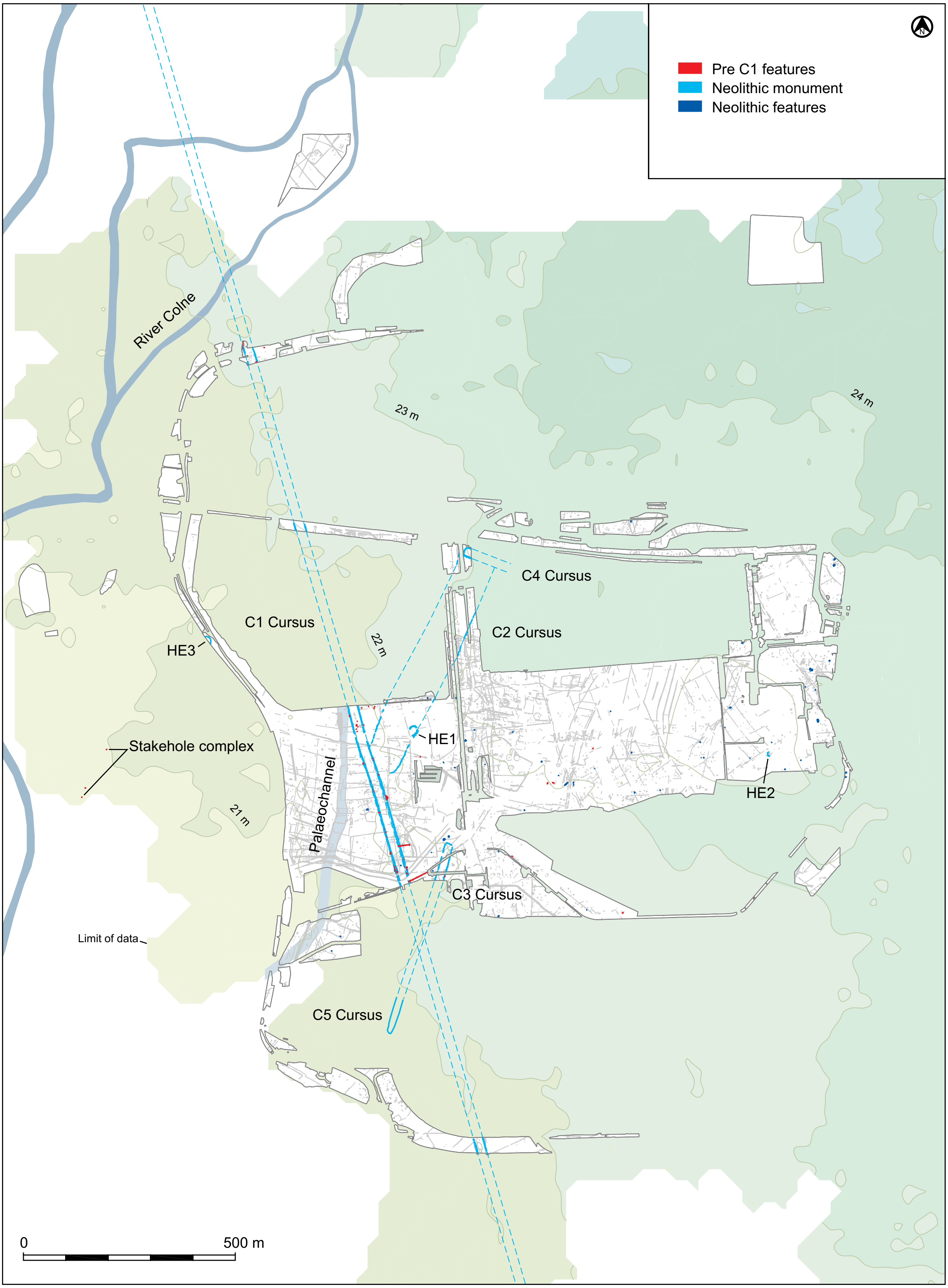


Figure 2.2: Overview of the hunter gatherer landscape at Heathrow Terminal 5

Ware and Grooved Ware pottery and associated lithic material. Neolithic flint artefacts and pottery fragments were also found residing in later features, as well as in the Neolithic features themselves.

The specific Neolithic monuments excavated were as follows:

- A posthole complex located in the POK96 excavations, which was stratigraphically earlier than the construction of the C1 Stanwell Cursus (see Fig. 2.14).

- A possible settlement located in Area 49 of the Terminal 5 excavations consisting of pits, postholes and two gullies (see Fig. 2.15). These features were stratigraphically earlier than the C1 Stanwell Cursus.

- The C1 Stanwell Cursus. This monument consisted of two parallel ditches *c* 20 m apart, orientated NNW-SSE. It ran for at least 3.6 km and possibly up to 3.8 km. The cursus ran through the 8th–6th millennium pit complex and earlier posthole complexes, and was unusual in having a single central mound. More posts were erected in the area of the posthole complex when the cursus ditches began to silt up, suggesting a reaffirmation of this location. Roughly contemporary with this event, a second cursus (the C2 monument) was constructed.

- The C2 Cursus consisted of two parallel ditches, *c* 60 m apart and orientated NNE-SSW. This monument probably had the more usual arrangement of an internal bank adjacent to each of the two ditches. The C1 Stanwell Cursus served as the southern terminal of the C2 Cursus and the Terminal 5 excavations suggest this monument ran for at least 480 m. On the basis of pottery, stratigraphy and analogy with other monuments of this type, both the C1 and C2 Cursus were probably constructed sometime between 3600 BC and 3300 BC.

- The C3 Cursus was 230 m long with ditches 19 m apart and orientated NNE-SSW. It appears to have formed a north-eastward extension of the C5 Cursus which was unexcavated but visible as a crop mark on an aerial photograph. The C5 monument is approximately 230 m long, excluding a section linking it to the C3 Cursus.

- The C4 Cursus survived only as a short (82 m) length of twin ditches (*c* 21 m wide) and a terminal. It appeared to be a later addition to the terminal of the C2 Cursus.

- The HE1 'horseshoe' shaped enclosure was located within the C2 Cursus. It is unclear whether this enclosure pre- or post-dated the C2 Cursus. No ceramic dating evidence was retrieved from the enclosure and the lithic material is inconclusive, but suggestive of a period of use in the late 4th millennium BC. The enclosure was *c* 17 m in diameter and probably consisted of ditch sections with an internal bank. It was orientated on the mid winter sunset and the mid summer sunrise.

- The HE2 Enclosure was very badly truncated by the construction of the sludge works. It was an irregular horseshoe shaped earthwork of approximately 10 m diameter. The fills of the ditches contained fragments of Peterborough Ware, Grooved Ware and a chisel shaped arrowhead. Its construction is dated to the 3rd millennium BC.

- The HE3 Enclosure was a partially excavated circular monument of approximately 19 m diameter. The fills of the ditch contained fragments of Collared Urn or Beaker pottery and animal bone. It is tentatively dated to the late 3rd / early 2nd millennia BC. Apart from the HE3 Enclosure, remains dating to the Early Bronze Age (2400 – 1600 BC) consisted of a few pits and fragments of pottery residing in later features.

Environmental evidence for the entire Neolithic period was very limited, with a single pollen diagram from a pit relating to the pre-cursus settlement of Area 49. This suggested that the previously wooded landscape had undergone a significant amount of woodland clearance prior to the construction of the C1 monument.

A second pollen diagram presenting the results from a pit cutting one of the ditches of the C1 Stanwell Cursus suggests the location was either in a glade or on the woodland edge.

Outline of the narrative

Next we will outline the evidence for constructing a chronological framework for human activity during the huge time-span under consideration. The nature of the evidence for Palaeolithic and Mesolithic occupation is assessed, before turning to look at the locations of Mesolithic activity in more detail. These locations are interpreted as meeting places for kin-groups, with the pit complex being especially important.

Moving forward to the Neolithic, the sequence of monument construction is explored. The construction of the Cursus complex is seen as revolutionary, both in terms of an architectural modification to the landscape, but also in being a physical manifestation of kin-groups coming together to form a community. This was achieved by communal effort to build a monument whose architecture linked locations of great importance (such as the Mesolithic pit complex, the pre-cursus timber complexes and the settlement) to kin-groups over several millennia. We suggest that this transformation occurred in a landscape which was becoming increasingly cleared following the 'elm decline', and may have occurred in response to the need for new mechanisms to apportion land and resources. These new mechanisms may have required architectural settings for ceremonies to negotiate these matters.

This transformation set in motion ceremonies associated with access to land and resources which rapidly became established as the way in which the community developed. Material (eg pottery and flint) in tree-throws and the occasional pit show that occupation was spreading across the landscape at this time, probably in the many woodland clearings that were being exploited for transient arable and pastoral agriculture.

This pattern of ceremony associated with monuments seems to have lasted through the currency of Peterborough Ware pottery, until the middle of the 3rd millennium BC. At this time, evidence from other West London sites suggests changes in the landscape, with a marked increase in the deposition of artefacts in isolated pits, starting with Peterborough Ware and continuing with Grooved Ware. These pit deposits can be interpreted as the end point in a sequence of ceremonies, which started at the now ancient earthwork monuments. The pit deposits were the final act, which sealed the agreement over which kin-group had rights over a particular clearing or parcel of land. This represents the first demonstrable physical act of marking a kin-group's rights over a piece of land, however small or however transient it may have been.

Other evidence from West London and the Terminal 5 excavations suggests that small circular monuments continued to be constructed in association with the use of Grooved Ware pottery from the latter half of the 3rd millennium BC onwards. There was thus a renewed requirement for architectural settings in which representatives of the kin-groups would meet and maintain the cohesion of the community.

The mechanisms by which the community had operated cohesively had been changing since the construction of the cursus monuments, up to 1500 years before, and so it is perhaps not surprising that we see changes at the turn of the 3rd and 2nd millennium BC. During this period, Beaker pottery and the associated burial rights seem to have been almost ignored in the Heathrow area. Instead, Collared Urn appears to have been utilised in similar ways to the Grooved Ware of earlier centuries, except that now it sometimes incorporated the remains of the dead in making claim to land. In many ways this marked the 'last gasp' use of monuments, ceremonies and discrete artefact deposits to negotiate access to land and resources in what was by now an increasingly open landscape.

Chronological framework

In order to describe the human inhabitation of the Mesolithic, Neolithic and Early Bronze Age landscapes, and to understand the transformation of one to the other, it is necessary to define the tools available to build a chronological framework for these periods. Unfortunately, very few reliable radiocarbon determinations were successfully obtained from Mesolithic or Neolithic deposits due to the effects of groundwater on organic remains. This framework is thus largely defined by ceramic and lithic artefacts, which can be dated with varying chronological precision.

The chronological framework adopted in this chapter is one that is generally accepted for southern Britain. Recent developments in the dating of particular Neolithic ceramic traditions have allowed some refinement of chronology of the Neolithic monumental landscape at Heathrow. In particular, more radiocarbon determinations on Neolithic pottery from the London region have become available since the publication of Volume 1 (Framework Archaeology 2006), and important research into modelling radiocarbon dates of Neolithic monuments has been published (Bayliss *et al.* 2008).

Absolute dates

Absolute dates from the Mesolithic to Early Bronze Age at Terminal 5 are extremely sparse, though a range of Thermoluminesence, Optically Stimulated Luminesence and radiocarbon dates was obtained, and these have been reviewed and modelled using Bayesian techniques by Healy *(Healy, CD Section 20).*

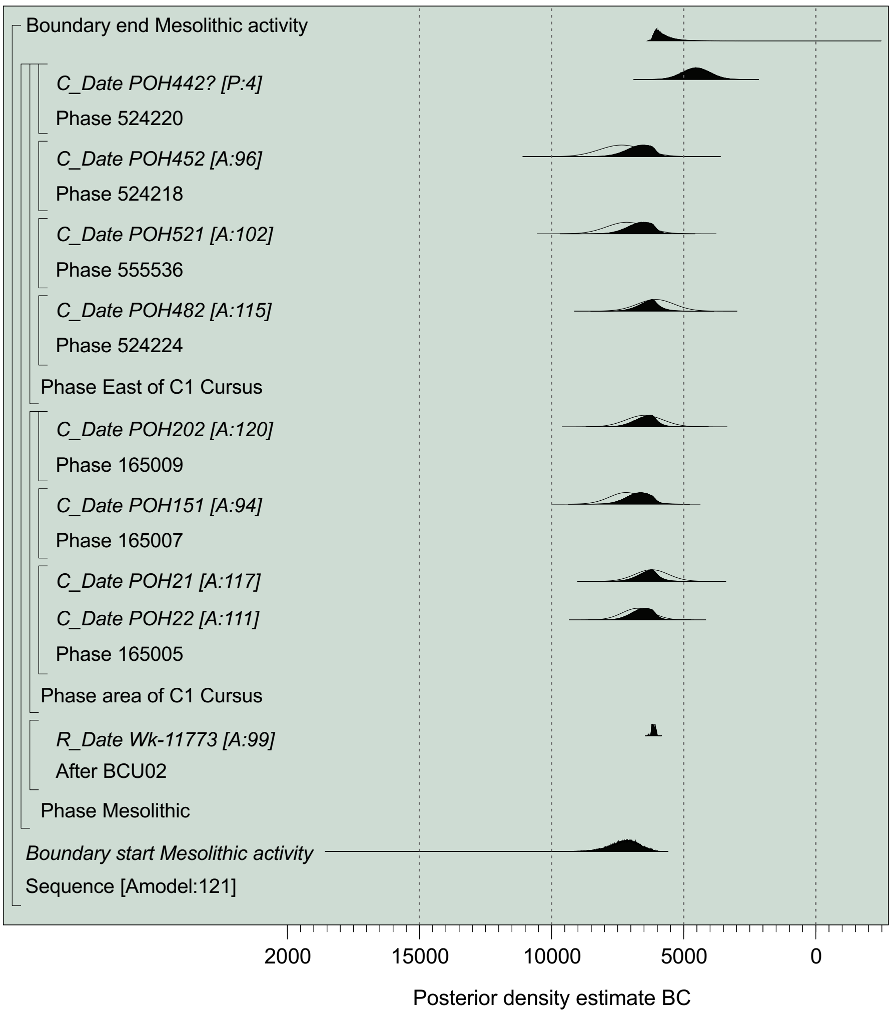


Figure 2.3: Thermoluminesence dates from two groups of features containing high concentrations of burnt flint and radiocarbon date for a waterlogged post to the west of the main excavated area.

Mesolithic dates

Four thermoluminescence dates have already been published in Volume 1 for burnt flint from three pits in the area of the C1 Cursus (Framework Archaeology 2006, 39–44 and Healy CD Section 20, POH21, POH22, POH151, POH 202). These can now be modelled with four further TL measurements on burnt flint from four pits 20 m to the north-east (CD Section 20: PO442, PO452, PO482, PO521). Some 675 m west of the first group of dated pits, a radiocarbon date [of 6240–5990 (cal BC 2 sigma) Wk-11773] provides a terminus post quem for a waterlogged post of unidentified timber which survived in one of a row of three postholes found during the Bedfont Court evaluation in tufa deposits among a network of palaeochannels.

Seven of the eight TL measurements are statistically consistent (T'=3.1; T'(5%)=12.6; ?=6). The eighth, from pit 524220 (POH442?), seems to have resulted from a separate episode of activity, in 5590–3470 BC (95% confidence), and is therefore excluded from the model. The other measurements show good agreement when modelled in a single bounded phase (A_{model}=120.9, $A_{overall}$=119.1). Regardless of location, they indicate activity between 8540–6150 and 6300–4850 cal BC (95% probability), probably between 7760–6610 and 6190–5640 cal BC [68% probability; Fig. 2.3: start Mesolithic activity, end Mesolithic activity], spanning a period of 69–2120 years (95% probability), probably of 410–1430 years (68% probability; distribution not shown).

(Healy, CD Section 20)

Neolithic dates

Two dates from features excavated at Perry Oaks were reported in Volume 1 (Framework Archaeology 2006, 31). The earlier Neolithic radiocarbon date came from sediment in a pit (150011) that cut the Stanwell Cursus ditch fills, but the date (4349–4047; NZA14902 cal BC 2 sigma) was very early, suggesting that the organic material tested was residual *(Healy, CD Section 20)*. A radiocarbon date of 3030–2870 BC (WK11473 cal BC 2 sigma) was obtained from a bowl-shaped pit (137027) containing small amounts of cremated human bone. Unfortunately this feature had also been contaminated by later material (Framework Archaeology 2006, 84).

Regarding these dates and others from the main Terminal 5 excavations, Healey makes the following observations:

The difficulty of dating features generated between the Mesolithic episode and the establishment of the Bronze Age land divisions (Framework Archaeology 2006, 49–52, 74–77, 82–85) has not diminished…Shallow features and fine sediments made for problems of intrusion and redeposition... Such problems were compounded by a dearth of samples suitable for radiocarbon dating from the C1 Cursus. This prompted a series of optically stimulated luminescence measurements, one on fine-grained polymineral grains from a sherd in a basal deposit in the west cursus ditch, 12 on sand-sized quarts grains from the fills of the cursus ditches, and 4 on sand-sized quarts grains from the fills of features in stratigraphic relation to them (Rhodes and Schwenniger 2003). The problems of bioturbation, incomplete zeroing, and the estimation of both water content and overburden over time, detailed by the authors, are illustrated by the results for samples from the cursus ditches, which range from 5930±510 BC for a secondary fill of the east ditch (OxL-1461) to 1150±290 BC (OxL-1463) for the sherd from the base of the west ditch. By modelling two local sequences and a series of five measurements from a single context at a third location separately it is possible to achieve internally consistent, but disparate, results for each. In 537124/537136 the estimated construction date would be 10660–3890 cal BC (95% probability), probably 6530–4350 cal BC (68% probability; build C1 cursus in 537124). In 527200/527201 it would be 2850–2120 cal BC (95% probability), probably 2660–2290 cal BC (68% probability; build C1 cursus in 527201). In 527107 it would be 6430–4020 cal BC (95% probability), probably 5350–4320 cal BC (68% probability; build C1 cursus in 527107). The internal consistency of the local sequences suggests that the variation is due to the immediate circumstances of each sampling location…

The dating of cursus monuments remains problematic because they are characteristically clean. A late 5th to mid 4th millennium BC estimate for a cursus at Eynesbury, Cambridgeshire, was calculated based on a consistent series of OSL measurements (Rhodes 2004, 61)… There remains the inference that the C1 Cursus/bank barrow was built within the span of other such monuments in Britain, from 3640–3380 to 3260–2920 cal BC (95% probability; Barclay and Bayliss 1999, 25), based on modelling an admittedly inadequate collection of 54 radiocarbon dates from 15 sites…

Beyond the monuments at Terminal 5, a TL date of 3230±600 BC (4430–2030 BC at 95% confidence; POH323) is not inconsistent with the Late Neolithic character of the associated flint industry in pit 129109. Rather later activity is evidenced by a further TL date of 2090±610 BC (3310–870 BC at 95% confidence; POH331) from feature 129086.

(Healy CD, Section 20)

It has to be concluded that the attempt to create a calendrical Neolithic chronology of the Heathrow landscape at Terminal 5 using absolute dates has failed. For radiocarbon, this was due to poor preservation of suitable material, contamination by later material, and the inherently 'clean' nature of cursus and ring ditch monuments. For OSL, the multiplicity of assumptions demanded by the technique produced a very wide scatter of dates. As with Volume 1, we must rely on a relative chronology based on artefacts dated from other sites.

Relative chronology

Lithic technology and typology

We will now look at the context and distribution of the Mesolithic and earlier Neolithic flint work within the Terminal 5 and wider Heathrow landscape, and try to construct a non-monumental geography of the period 9000 to 3000 BC.

Lithic artefacts and assemblages have an important part to play in defining a relative chronological sequence. However, in chronological terms, it is generally only possible to speak in terms of the following:

- Early and Late Mesolithic
- Mesolithic or Neolithic,
- Earlier and later Neolithic.

This is partly due to the relatively undiagnostic nature of lithic waste and debitage. These terms cover much broader periods of time than the ceramic evidence and so the chronological resolution of the historical narrative is coarser when relying on lithic evidence alone, as Table 2.1 indicates. Cramp, who analysed the lithic assemblage from Perry Oaks, made the following observations on the chronologically diagnostic Mesolithic and Neolithic flint assemblages:

Lithic Period Division	Calibrated BC
Late Glacial	10,300-8800
Early Mesolithic	8800-7000
Late Mesolithic	7000-4000
Earlier Neolithic	4000-3200
Later Neolithic	3200-2400
Early Bronze Age	2400-1500

Table 2.1: Chronological divisions of lithic artefacts

Date of object	No. of objects	Object	Feature No.	Date of feature	Feature interpretation
Early Mesolithic	1	Retouched bladelet	-	-	Unstratified
Early Mesolithic	1	Microlith	588343	Mesolithic or Neolithic	Palaeochannel
Early Mesolithic	1	Blade	129013	Early Neolithic	Posthole
Late Mesolithic	1	Microlith	515231	Middle Bronze Age	Ditch
Mesolithic	1	Blade	502002	-	Subsoil
Mesolithic	1	Axe or adze	623027	-	Ditch
Mesolithic	1	Miscellaneous retouch	100000	-	Backfill of previous archaeological trench
Mesolithic	1	Spall	-	-	Unstratified
Mesolithic	1	Blade	516168	Prehistoric	Posthole
Mesolithic	1	Blade	163135	Mesolithic or Neolithic	Tree-throw
Mesolithic	1	Bladelike flake	172081	Mesolithic or Neolithic	Tree-throw
Mesolithic	1	Tertiary flake	121173	Neolithic	Ditch
Mesolithic	1	Bladelet	156191	Early Neolithic	Tree-throw
Mesolithic	1	Blade	156191	Early Neolithic	Tree-throw
Mesolithic	1	Bladelet	156191	Early Neolithic	Tree-throw
Mesolithic	1	Blade	156191	Early Neolithic	Tree-throw
Mesolithic	1	Retouched flake	511067	Early Neolithic	Tree-throw
Mesolithic	1	Axe or adze thinning flake	961501	Early Neolithic	Ditch
Mesolithic	1	Unclassified burin	617042	Early Neolithic	Ditch
Mesolithic	1	Core prep or crested blade	588324	Middle or Late Neolithic	Ditch
Mesolithic	1	Bladelike flake	531011	Late Neolithic	Pit
Mesolithic	1	Microburin	127022	Late Neolithic	Pit
Mesolithic	1	Core prep or crested blade	588324	Late Neolithic or Bronze Age	Ditch
Mesolithic	1	Blade	534004	Bronze Age	Tree-throw
Mesolithic	1	Blade	544092	Middle Bronze Age	Waterhole
Mesolithic	1	Blade	555561	Middle Bronze Age	Ditch
Mesolithic	1	Blade	963218	Middle Bronze Age	Ditch
Mesolithic	1	Blade	594133	Middle Bronze Age	Ditch
Mesolithic	1	Blade	515316	Middle or Late Bronze Age	Gully
Mesolithic	1	Rejuvenation flake core face or edge	573052	Middle or Late Bronze Age	Ditch
Mesolithic	1	Unclassified	817065	Middle or Late Bronze Age	Pit
Mesolithic	1	Bladelike flake	106013	Late Bronze Age	Cremation
Mesolithic	1	Microburin	142010	Late Bronze Age	Pit
Mesolithic	1	Blade	160016	Late Bronze Age	Ditch
Mesolithic	1	Retouched bladelet	180080	Late Bronze Age	Well
Mesolithic	1	Burin spall	401075	Late Bronze Age	Ditch
Mesolithic	1	Core prep or crested blade	582319	Late Bronze Age	Ditch
Mesolithic	1	Burin spall	160104	Late Bronze Age	Ditch
Mesolithic	1	Rejuvenation flake tablet	148303	Middle Iron Age	Pit
Mesolithic	1	Microlith	107084	Late Romano-British	Ditch
Mesolithic	1	Dihedral burin	819054	Unphased	Natural feature
Total	41				

Table 2.2: Mesolithic flints by feature and feature date

While diagnostic tool types, such as microburins and microliths, provide a more reliable and quantifiable resource, it is possible that a significant quantity of undiagnostic Mesolithic flintwork is present but has been subsumed by the Early Neolithic assemblage with which it shares many technological characteristics. This invisible element may, not entirely but to some extent, account for the apparent under-representation of the earlier period in terms of flintwork from the site. Examples include some of the blades, bladelets and rejuvenation flakes, along with the two blade cores from WPR98. These pieces were isolated according to general technological traits, such as the presence of platform edge abrasion and evidence for the use of soft-hammer percussion.

(Framework Archaeology 2006, 32)

These observations equally apply to the Terminal 5 lithic assemblages, and no further refinement of chronological resolution has been possible. For example Table 2.2 lists the 41 flint artefacts that could be attributed to the Mesolithic period with some certainty, and also shows the date range of the later features from which they were recovered (none came from cut features attributable to the Mesolithic). In addition, 165 struck flints could be dated no more closely than Mesolithic or Neolithic.

Date	Fabric	No. sherds	Weight (g)	ASW (g)
Early Neolithic	FL4	1010	4033	-
	FL8	1	15	-
	FL15	54	607	-
	FL16	51	315	-
	FL17	11	77	-
	FL18	23	286	-
	QU13	23	152	-
	QU17	5	56	-
	Sub-total Early Neolithic	1178	5541	4.70
Middle Neolithic	FL19	22	172	-
	FL20	7	48	-
	FL21	148	684	-
	FL22	225	772	-
	FL23	49	887	-
	Sub-total Middle Neolithic	451	2563	5.68
Late Neolithic	GR2	216	1186	-
	GR3	348	1252	-
	Sub-total Late Neolithic	564	2438	4.32
Early Bronze Age	GR1	104	325	-
	GR9	52	521	-
	Sub-total Early Bronze Age	156	846	5.42
	Total	**2349**	**11,388**	**20.12**

Table 2.3: Relative ceramic chronology

Ceramic chronology

The ceramics cannot be used to achieve accurate absolute dating, but they can support the general sequence established using absolute methods. It is important to stress that the dates referred to in this section reflect the main period of use of the ceramics concerned throughout southern Britain.

The relative ceramic chronology at Terminal 5 allows us to discuss historical change within the time periods outlined in Table 2.3. A number of caveats must be applied in using this relative chronology. Firstly, the currency of different ceramic types overlaps—they are not *chronologically* mutually exclusive. This overlap may be a product of the vagaries of radiocarbon dating, as discussed by several authors (eg Garwood 1999; Gibson and Kinnes 1997). Of particular importance for us is the overlap between Undecorated Plain Bowl and decorated vessels and Peterborough Ware in the period 3600 BC to 3300 BC, which recent radiocarbon dates (see below) confirm. Secondly, the ceramic types (particularly Peterborough Ware) cut across traditional chronological subdivisions of the Neolithic, 'earlier and later' or 'early, middle and late'. Thirdly, the chronology is based on national reviews of the ceramics but the regional and even local ceramic sequence could show significant variations.

In the following section we will summarise the ceramic evidence from Terminal 5 within the relative chronological framework outlined above.

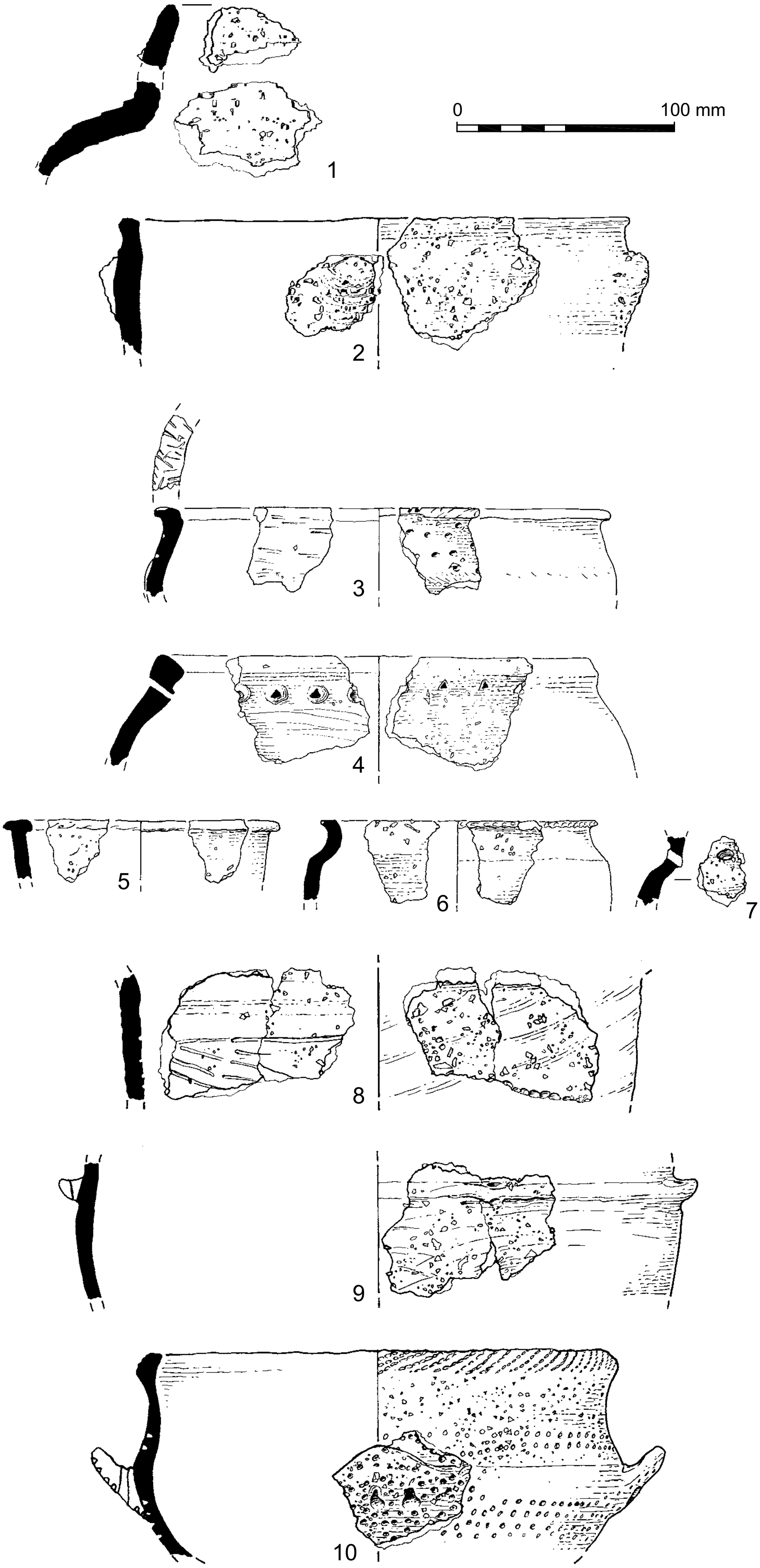
Carinated Bowls 4000–3600 BC

The earliest ceramic form identified in Britain is the Carinated Bowl, generally dated to *c* 4000–3600 BC (Herne 1988; Gibson 2002, 70). However, Cleal has recently re-appraised the type, and concluded,

…that the majority were carinated in some way, but were not all of the Classic Carinated Bowl form, which should focus our attention and interest particularly on the minority which were not carinated at all.

(Cleal 2004)

The evidence for this tradition at Terminal 5 is elusive, but could be represented by a single sherd from tree-throw 156191, although the remaining pottery from this feature appears to be later (see below). Within the Thames Valley, the excavation of a single crouched inhumation that was directly associated with sherds of carinated bowl near the Thames at Yablsey Street, Blackwall, London (Coles *et al.* 2008) is of great importance. A radiocarbon date from a retaining timber in the grave demonstrated that the burial (and hence the associated pottery) took place sometime between 4220 – 3970 BC. Furthermore, charred plant remains indicated the collection of both wild plant remains and cultivated cereals was occurring at this time. This is one of the earliest Neolithic burials from the British Isles.



Undecorated Bowls and Decorated Vessels 3600–3300 BC

The bulk of the early ceramics from Terminal 5 probably dates within the Early Neolithic sequence encountered elsewhere. This part of the assemblage consists of undecorated Plain Bowl Ware types, with a small proportion of decorated vessels (Fig. 2.4).

These types are thought to have emerged *c* 3600 BC, continuing in use to *c* 3300 BC (Gibson 2002, 70). These dates correspond with Cleal's 'High' or Developed Neolithic (*c* 3650–3350 BC).

This is the phase with features of the 'classic' earlier part of the Neolithic most fully developed: causewayed and 'tor' enclosures (and cursus) emerge here, joining long barrows, and ceramics; it also includes the origins of Peterborough Ware as part of a widespread developing pattern of impressed wares.

(Cleal 2004)

The Terminal 5 assemblage contained:

A total of 1178 sherds weighing 5541g was identified as Early Neolithic. Some uncertainty remains in the separation of Early Neolithic and Middle/Late Bronze Age flint-tempered fabrics, but the increased numbers of diagnostic sherds has aided this distinction somewhat.

Figure 2.4: Early Neolithic Undecorated Bowls and Decorated Vessels. 1. Plain rim; fabric FL4. PSH02, context 561288, pit 561277 (secondary fill); 2. Plain rim; fabric FL15. PSH02, context 602086, ditch 602079 (secondary fill); 3. Externally thickened rim; impressed decoration; fabric FL4. PRN 1766, context 148109, tree-throw 156191; 4. Expanded rim with pre-firing perforations; fabric FL4. PRN 2927, POK 96, context 961734, ditch 961508; 5. 'T'-sectioned rim; fabric FL4. PRN 3138, context WPR 98, 148109, tree-throw 156191; 6. Angular rim; fabric FL4. PRN 3140, WPR 98, context 148109, tree throw 156191; 7. Body sherd from just below rim, with pre-firing perforation; fabric FL4. PRN 1753, WPR 98, context 148109, tree-throw 156191; 8. Body sherd; fabric FL4. PRN WA-22, PSH02, context 558059, tree-throw 558057; 9. Body sherd; fabric FL15. PRN U-26, context 659083; 10. Expanded rim; fabric FL18. PRN WA-2, 3 & 4, TEC05, context 836047, pit 836044.

Eight fabrics were identified, six flint-tempered (FL4, FL8 and FL 15-18) and two sandy (QU13 and QU17). 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 Valley, such as Staines (Robertson-Mackay 1987, 67) and Runnymede Bridge (Kinnes 1991, 158).

The assemblage includes 51 rim sherds, which derive from a maximum of 34 vessels (a maximum of 12 from tree throw 156191, and three from ditch 961508).

Most are too small to ascertain overall vessel profile, or even rim orientation, and it is therefore not possible to place the vessels in any classificatory scheme such as Cleal's (1992). However, most appear to derive from open or neutral forms, at least one is carinated (Fig. 2.4, 6), and two appear to be shouldered (Fig. 2.4, 1, 10). Three vessels are decorated, one with impressed dots (Fig. 2.4, 3); a second with incised lines on the interior (Fig. 2.4, 8); and a third with impressed dots on the body and twisted cord on the rim (Fig. 2.4, 10). Four have pre-firing perforations just below the rim, which may also be considered as decorative (Fig. 2.4, 4 and 7), and four have applied lugs (Fig. 2.4, 2, 9 and 10). On one of the latter, the lug is elongated and tapering, and has a vertical perforation made when the clay was leather hard (Fig. 2.4, 9); a second has a series of lugs approximately 25mm below the rim, at least one of which has a horizontal incision across its width (Fig. 2.4, 2), and a third has a lug with a pair of pre-firing perforations (Fig. 2.4, 10).

(Leivers with Every and Mepham, CD Section 1)

In recent years, Bayseian modelling of radiocarbon dates for the Early Neolithic has started to yield results. It would appear that long barrows began to be constructed before causewayed enclosures, with very few long barrows constructed before 3800 BC and causewayed enclosures being constructed from the 37th century BC (Bayliss *et al.* 2008). Although some causewayed enclosures (such as Hambledon Hill and Windmill Hill in Wessex) were used for over 300 years, the majority were in use for no more that a few generations or shorter (ibid., 33). By analogy, this is the period which sees the main phase of construction of large enclosures in the Heathrow area, such as Yeoveney Lodge, Staines (Robertson-Mckay 1987), Eton Wick (Ford 1986) and possibly Runnymede (Needham and Trott 1987, 482 and fig. 2). Turning to Cursus monuments, it is now accepted that they were mostly constructed during the period 3600–3000 BC (Barclay and Bayliss 1999), and would seem to have been built slightly after the Causewayed enclosures. By analogy, we can attribute the construction of the Terminal 5 cursus complex to the same period.

Several cursus appear to be associated with Peterborough Ware (eg Drayton North, Oxfordshire (Barclay *et al.* 2003, 203), Springfield, Essex (Buckley *et al.* 2001, 128)). However, the Dorset Cursus produced sherds of Early Neolithic pottery from the basal primary fills, with larger quantities of Peterborough ware from an adjacent 'occupation site' in the uppermost fills (Barrett *et al.* 1991, 46 and 71, fig. 2.13). This sequence is similar to that from the Stanwell C1 Cursus at Terminal 5.

Parallels for the bowl fabrics and forms occur locally, for instance at Staines and Runnymede Bridge (Robertson-Mackay 1987; Kinnes 1991; Longworth and Varndell 1996; Needham 2000). The range of forms and predominantly coarse flint tempered fabrics is better matched at Staines, as the published Runnymede material tends to be finer and to have a greater proportion of carinated forms. These differences are perhaps chronological, with the Runnymede material earlier. This difference may also be visible in terms of decoration. As at Staines, the lack of decoration among the bowls from Heathrow T5 is notable (the ratios of decorated to plain vessels are 1:17 at Heathrow T5; 1:23 at Staines; totals for Runnymede are not available). In this respect the Heathrow T5 assemblage is similar to 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 possible that the emergence of decoration in the Heathrow area is concordant with a shift in depositional focus: the only contexts containing definite Decorated Bowl occur on the east of the excavations, in areas where Middle Neolithic Impressed Wares replace Early Neolithic Bowls in pit sequences. The best parallels for the Heathrow T5 Decorated material come from the middle and upper Thames, at Whiteleaf Hill, Buckinghamshire, some 25 miles to the north-west (Childe and Smith 1954, fig. 5) and Abingdon, Oxfordshire (Avery 1982, fig. 15).

Herne argues that the emergence of decoration in the Early Neolithic ceramics of the English south-east is a late development (Herne 1988). However, two points should be considered in any consideration of the chronological significance of this material: firstly, the assemblage is quite small and fragmentary; and secondly, decorated vessels did not necessarily replace plain ones. Whittle (1977) has typified the ratio of decorated to plain vessels in assemblages of his Decorated Style (within which the Heathrow T5 material would lie) as 3:7. Given these factors, it is not possible to determine whether the very low proportion of decoration is necessarily a chronological trait, rather than a deliberate choice by the users of the pottery.

It has been argued that some assemblages in the locality represent a distinct and new regional style (Kinnes 1991, 158), or that the differences perceived in each newly-excavated assemblage represent a strongly regional character to the Early Neolithic ceramics of the region (Robertson-Mackay 1987, 92). Both of these suggestions fit with the general recession of relevance of the traditional generalising culture-historic schemes of categorising Earlier Neolithic pottery. Instead of attempting to fit the Heathrow T5 ceramics into a Mildenhall or Abingdon cultural tradition, or an Eastern or Decorated one, we should instead see the vessels as locally-adopted solutions to particular sets of needs. The resulting assemblages will have similarities and differences to other local and regional assemblages manufactured by the same people, their contemporaries, forebears or descendants, as solutions to other sets of needs. The possibility of different depositional activities involving different types of ceramics and contexts (plain bowls in tree throws towards the cursus; Decorated vessels and later Impressed Wares in pit sequences *further east) indicates that those needs may not have been simply utilitarian. Sadly, the lack of suitable material precluded direct dating of these two styles, and their precise chronological relationships at Heathrow T5 are therefore unknown.*

(Leivers with Every and Mepham, CD Section 1)

Peterborough Ware 3400 (and possibly earlier)–2500 BC

Radiocarbon dating has established a currency for Peterborough Ware ceramics *c* 3400–2500 BC (Gibson and Kinnes 1997). However, there are an increasing number of radiocarbon dates which suggest that Peterborough Ware pottery was in use prior to 3400 BC. For example, dates from the Drayton North Cursus in the Upper Thames, which suggest the monument was constructed between 3620 and 3390 BC, were associated with Peterborough Ware (Barclay *et al.* 2003, table 8.1, 184). In Kent, the residue attached to a sherd of the Ebbsfleet style of Peterborough Ware from Ebbsfleet produced a date of 3640–3370 cal BC (NZA-29079 4723+/- 35BP) (Barclay and Stafford 2008). *This date 'approximates well to the suggested range of 3550 to 3350 cal BC for this style of pottery'* (ibid.). Closer to Terminal 5, two radiocarbon dates (OxA-4057 and OxA-4058) from the primary fills of the Staines Road Farm, Shepperton (Surrey) ring ditch cover the period 3640–3100 and 3780–3350 cal BC respectively (Jones 2008, 73). The author suggests that the Peterborough Ware pottery associated with these dates *'may be the earliest reliably dated Peterborough Ware...'* (Jones 2008, 74; *op cit.* Barclay and Stafford 2008). However, the presence of carinated and uncarinated plain Neolithic pottery within the assemblage (Jones 2008, 28) suggests an earlier phase of activity at this site.

At Imperial College Sports Ground to the north-east of Terminal 5, recent dates from cremations from within two ring ditches associated with Peterborough Ware centre on *c* 3000 BC (A. Barclay pers. comm.). Within the Terminal 5 assemblage:

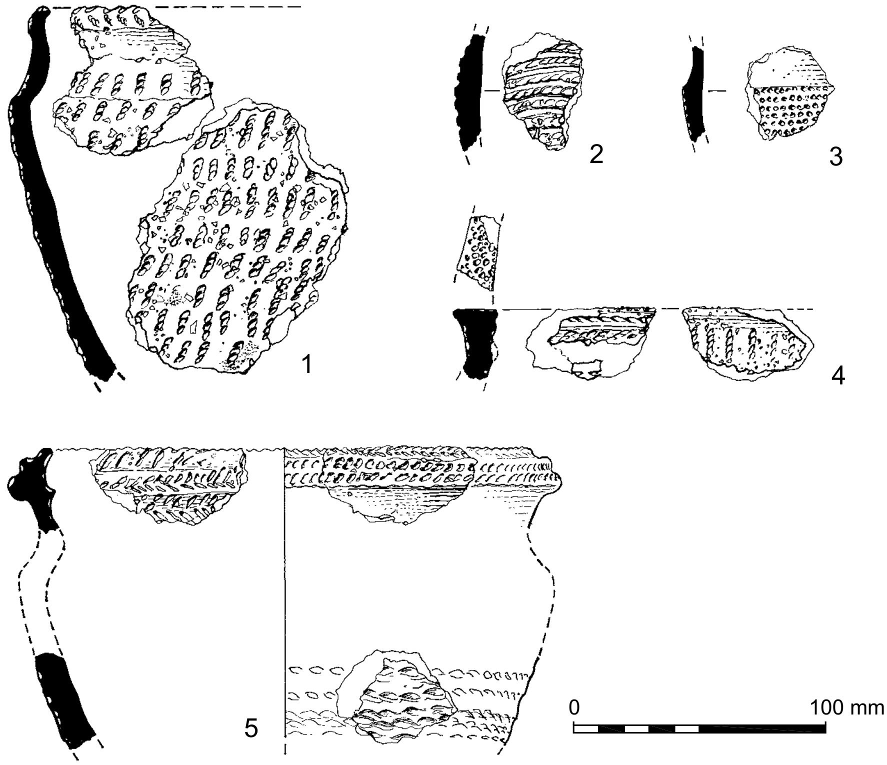


Figure 2.5: Middle Neolithic Peterborough Ware pottery. 1. Ebbsfleet bowl; fabric FL23. PRN WA-335 and WA-336, PSH02, context 555930, pit 555922 (deliberate backfill); 2. Body sherd; fabric FL20. PRN WA-345, PSH02, context 585009, Stanwell Cursus (secondary fill); 3. Shoulder sherd; fabric FL20. PRN WA-312, PSH02, context 527113, pit 527124 (secondary fill); 4. Rim; fabric FL21. PRN WA-325, PSH02, context 527114, pit 527124 (secondary fill); 5. Mortlake bowl; fabric FL22. PRN WA-320 and 321, PSH02, context 527113, pit 527124 (secondary fill).

Middle Neolithic Peterborough Wares were represented by 451 sherds weighing 2,563g in five flint-tempered fabrics (FL19 – FL23) (Fig. 2.5). All appear to be of local manufacture. With the exception of a large portion of an Ebbsfleet-type bowl from pit 561278 (Fig. 2.5, 1), the assemblage consisted of small fragments of Mortlake-type vessels. For the most part, vessels are too fragmentary to suggest forms.

In terms of distribution, Peterborough Wares were found across the site (see Fig. 2.13 below). At the very south in Area 28b a small number of sherds clustered around an opposed pair of terminals to segments of the ditches of the Stanwell Cursus. On the eastern ditch, the northern terminal contained a single fingernail impressed sherd in a distinctive ferrouginous fabric (FL19), while the southern contained a single plain sherd in fine flint-tempered fabric FL20. This terminal cut an earlier pit which itself contained one rim, three body, two shoulder sherds in coarse flint-tempered fabric FL21, all with whipped cord maggots (the rim also has an incised line along the top and other incised impressions).

In the western ditch, the northern terminal contained a single sherd from a cavetto zone in FL21 with fingernail impressions on one surface and a whipped cord maggot herringbone on the other. The southern terminal contained two sherds in FL19, one (a cavetto fragment) with whipped cord maggots and a second probably from the same vessel with fingernail impressions.

A further sherd was recovered from the western ditch of the Stanwell Cursus in the centre of the excavation. This sherd (in FL20) has a series of very deep, rather coarse impressions which may be twisted cord forming at least six pronounced ribs (Fig. 2.5, 2). This type of decoration is paralleled elsewhere at Heathrow (Grimes 1960, 191 and fig. 77 nos. 9-11). A single plain sherd in FL21 was recovered from the eastern ditch at the extreme north of the excavations.

In the north-east corner of the excavations, pit 555922 in Neolithic Pit Complex 1 contained 40 sherds of an Ebbsfleet-type bowl (Fig. 2.5, 1), heavily encrusted with residues. With the exception of a very small number of featureless sherds, this Ebbsfleet *vessel is the only instance of fabric FL23, suggesting that—while no doubt contemporary with the other Peterborough Ware styles—Ebbsfleet-type vessels do form a distinct sub-set of Peterborough ceramics. The vessel was represented by 32 body, five rim and three shoulder sherds, with fingernail impressions on the body (the sherds are abraded and many obscured with a heavy deposit, but some at least have all-over decoration), above the shoulder in the neck and on top of rim. Earlier pits in the sequence contained single flint tempered sherds that cannot be accurately identified, but which probably derive from similar vessels.*

Immediately to the north, Neolithic Pit Complex 2 contained both Early and Middle Neolithic ceramics. In this instance, pit 561277 containing Early Neolithic bowl sherds was cut by pit 561278 containing fragments of one or two Mortlake vessels. The distinction between the two pit complexes in terms of the style of Peterborough Ware they contain is very marked.

South of these pit groups, ditch SG 547363 contained small portions of three vessels, including 14 sherds of a vessel in FL22 (one with a very deep fingertip impression), a sherd in FL21, and two in FL19.

Other widely scattered Middle Neolithic features contained contemporary ceramics. Immediately north of the C3 Cursus, ditch SG 561136 contained a single sherd in FL19, while pit 527124 (the uppermost pit in a sequence of intercutting features) contained fragments of four vessels. One (in FL20) was represented by a single sherd with fingernail impressions on the oxidised exterior, while a second necked sherd in the same fabric had a smoothed exterior decorated with rows of impressions below the neck possibly made with the end of a bird bone (Fig. 2.5, 2). The other two vessels were present in much larger proportions: 69 sherds of a vessel in FL21 included some with fingernail impressions, and one with a row of twisted cord either side of a blank 'panel'. The three rim sherds from this vessel were 'T'-sectioned and flat topped, with the top, outer and inner surfaces all decorated with fingernail impressions. On the inner surface these were between raised ridges (Fig. 2.5, 4). The fourth vessel was represented by 138 sherds in FL22. Some sherds were plain, while others had fingernail decoration. The rim was an elaborate 'T'-shape, with fingernail and stick or bird bone impressions (Fig. 2.5, 5). Hedgerow 527115 cut this pit group and also contained Mortlake sherds, which may have derived from one of the earlier pits. Nearby, tree-throw 561096 contained a pair of featureless body sherds in FL23.

Further north, pit SG 561075 contained 29 sherds in FL22, one of which had an inturned rim with three rows of circular impressions on the top and three rows of possible bird bone impressions on the interior surface. The remaining sherds were mostly plain, although one (possibly a shoulder) has two lines of circular impressions. Two sherds in FL20 including a rim with whipped cord maggots on the top and fingernail impressions below were residual in Middle Bronze Age ditch 556014 in this area. Other featureless sherds came from the fills of later pits and ditches across the excavated areas.

(Leivers with Every and Mepham, CD Section 1)

Grooved Ware 3000–2000 BC

The ceramic sequence at Terminal 5 continues with the use of Grooved Ware. The overall currency of this ceramic tradition in southern Britain, based on radiocarbon dating, falls *c* 3000–2000 BC (Garwood 1999, 152).

Although across southern Britain as a whole there appears to be some chronological overlap between Peterborough Ware and Late Neolithic Grooved Ware, in West London the two are rarely found in the same contexts, the HE2 enclosure at Terminal 5 being an exception. In this region, Grooved Ware is most frequently found deposited with lithics and often with charred plant remains such as hazelnuts and crab-apple pips, suggesting a ritual autumnal deposition. At Terminal 5, Grooved Ware was recovered from a small number of pits, but without the correspondingly rich deposits of organic and lithic material found elsewhere. Turning to monuments associated with Grooved Ware, large henge monuments are conspicuously absent from the Middle Thames around London. It has been suggested (eg Framework Archaeology 2006, 38) that, small circular or hengiform monuments were constructed during this period. For example, a ring ditch at West Bedfont (approximately 600 m north-west of the large double ditched enclosure; see Fig. 2.1) was originally investigated in 1971 (Farrant 1971). It was subsequently re-excavated in 1996, when six sherds of Grooved Ware pottery were recovered from the uppermost fills of the ditch (Wessex Archaeology 1997). However, there are no convincingly unequivocal examples of the construction of these small monuments being associated with Grooved Ware, as our excavations of the HE2 enclosure at Terminal demonstrate.

Late Neolithic pottery is not common in the Heathrow area: only 564 sherds weighing 2438g were recovered during the T5 excavations (Fig. 2.6). To some degree, identification is hampered by a dependence on fabric type, and the similarity of Late Neolithic and Early Bronze Age fabrics, but the combination of fabric and characteristic decoration indicates two grog-tempered groups, which break down into a division of more or less vesicular (GR5 and GR2 respectively).

The majority of sherds came from three features on the eastern side of the excavations (see Fig. 2.56 below). Pit 695027 contained eight small sherds from two vessels in its lower fill, one in GR2 and one in GR5… Pit 708007 contained a second pair of vessels in its single fill. As with 695027, there was an example of each fabric type, with 76 sherds in GR5 and 48 in GR2. It is possible that the sherds in both pits derive from the same pair of vessels…

The GR5 vessel has an asymmetrical rim with a slight convex external collar, from which depends a series of vertically grooved applied cordons (at least two, probably more). The small fragments of flat base suggest a slight protruding foot. The decorative scheme is complex, but basically consists of the upper portion of the body divided into panels infilled alternately with incised herringbone and impressed finger tip decoration (Fig. 2.6, 8). Below both is a horizontal panel of incised parallel lines above a zone with only intermittent and less well-executed herringbone incision. The wall is thin throughout (never more than 10mm).

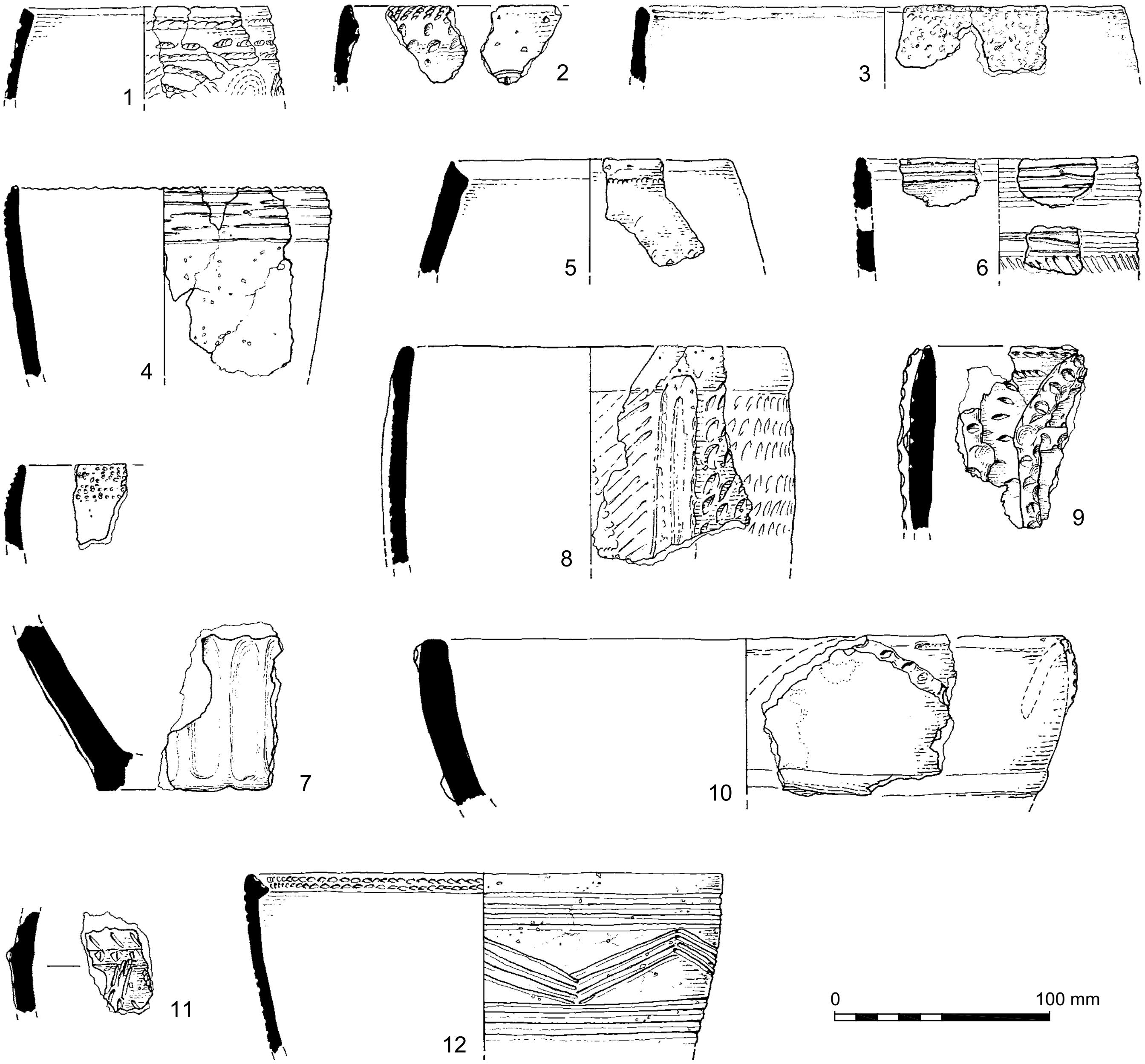


Figure 2.6: Late Neolithic Grooved Ware pottery. *1. Rim; fabric GR5. PRN WA-579 and 580, PSH02, context 531013, pit 531011 (deliberate backfill); 2. Rim; fabric GR5. PRN WA-582, PSH02, context 531015, pit 531011 (deliberate backfill); 3. Rim; fabric GR5. PRN WA-588, PSH02, context 531022, pit 531011 (placed deposit); 4. Grooved Ware rim; fabric GR2. PRN 2709, GAI99, context 216120, pit 216009/216118; 5. Rim; fabric GR2. PRN WA-590, PSH02, context 559505, ditch 559506 (secondary fill); 6. Rim; fabric GR2. PRN WA-575 and 576, PSH02, context 517174, ditch 517173 (secondary fill); 7. Grooved Ware vessel; fabric GR2. PRN WA-591 and 592, PSH02, context 561105, pit 561104 (secondary fill);8. Grooved Ware vessel; fabric GR5. PRN WA-4291, TEC05, context 708008, pit 708007 (fill);9. Rim; fabric GR2. PRN WA-597. PSH02, context 580311, pit 580310 (secondary fill); 10. Rim; fabric GR2. PRN WA-596. PSH02, context 580311, pit 580310 (secondary fill); 11. Body sherd; fabric GR2. PRN WA-600, PSH02, context 615116, ditch 615115 (secondary fill); 12. Grooved Ware vessel; fabric GR5. PRN WA-35, 36 and 37, TEC05, context 836010, pit 836009.*

The GR2 vessel is more fragmentary, and generally less well-preserved, but it appears to have had a simple upright rim, below which was a zigzag pattern of broad incised lines covering much of the body. There does not seem to have been any division of the surface into panels. The base appears to have been flat. Both of these vessels are Durrington Walls-type.

Pit 836009 contained 96 sherds (275g) forming approximately 65% of the rim of a vessel 280mm in diameter (Fig. 2.6, 12)… Externally, the vessel has a band of four horizontal incised lines above and below a panel of four lines of zig-zag. This vessel most probably belongs to the Clacton type.

Pit 580310 contained large rim sherds from a pair of vessels in a variant of GR2, the form and decoration of which indicate the Woodlands sub-style (Fig. 2.6, 9–10). Both have sinuous raised cordons with slash-marks. At points along these cordons on one vessel (in one instance at the convergence of two cordons) are larger impressions apparently made with a finger end – these may replicate the more elaborate applied 'stops' at the convergence of cordons on more typical Woodlands vessels. The atypical feature of these sherds is the presence of two lines of twisted cord impressions below the rim of one (Fig. 2.6, 9), suggesting a Woodlands/Durrington Walls hybrid.

Slightly further to the west, 97 sherds from three vessels in GR5 were recovered from pit 531011 (9 sherds of one vessel in fill 531013 (Fig. 2.6, 1); 22 sherds of a second vessel (Fig. 2.6, 2) spread between fills

531015 and 531019; 66 sherds of a third vessel in fill 531022 (Fig. 2.6, 3)). All were burnt and extremely friable.

Another sizeable group came from pit 216009/216118 (respective secondary fills 216011 and 216120 (Fig. 2.6, 4); 41 sherds: 134g); sherds from 216011 were noticeably more abraded than those from 216120, which almost certainly derived from the same vessel. Diagnostic sherds include part of the rim with horizontal grooved decoration below (Fig. 2.6, 4). This appears to be a relatively thin-walled, bucket-shaped vessel, with a simple rounded rim. Form and decoration are sufficient to assign this vessel to the Durrington Walls sub-style.

The majority of the identifiable vessels belong to this same sub-style (Wainwright and Longworth 1971, 240-2). Here, the characteristic traits are whipped and twisted cord (Fig. 2.6, 1 and 5); internally-bevelled and concave rims, often with incised decoration below (Fig. 2.6, 6); vertical plain cordons (Fig. 2.6, 7) and external incised or grooved decoration (Fig. 2.6, 1, 2 and 6). Much of the material derives from a series of closed vessels, although very few profiles can be reconstructed. In addition to those already described, a further 10 sherds with grooved decoration from other contexts (pits 127022, 141228, 170007; ditches 146205 and 961747) are also probably of the same sub-style, although too small to make a definitive identification. The remaining sherds are plain and undiagnostic.

(Leivers with Every and Mepham, CD Section 1)

Beaker and Collared Urn c 2500/2400–1700 BC

The chronology of Beaker ceramics has been discussed in detail elsewhere (eg Kinnes *et al.* 1991; Case 1993; Needham 2005), and here our main concern is the relationship between Grooved Ware and Beaker ceramics. A review by Garwood (1999) has concluded that there is little overlap between the two and argues that Beaker funerary deposits in southern Britain belong to the period after *c* 2500/2400 BC and persist until 1700 BC (also Needham 1996, 124). Collared Urns emerged at around 2050 cal BC and lasted until *c* 1500 cal BC (Needham 1996, fig. 2). However, reliable radiocarbon dates for Collared Urns are rare and there is insufficient evidence to demonstrate continuous development from Fengate Ware (Gibson and Kinnes 1997; Gibson 2002, 96).

Early Bronze Age pottery remains elusive, with only 156 sherds weighing 846g identified (still predominantly on the grounds of fabric alone). All sherds are grog-tempered, and have been assigned to two fabric types (GR1 and GR9). While the fabrics are visually very similar to the Grooved Ware fabric GR2, sherds in GR1 and GR9 are invariably oxidised, at least externally, and the few recognisable sherds are characteristic of Early Bronze Age ceramic traditions. Diagnostic sherds include rim and collar fragments from Collared Urns, and rims and comb-impressed body sherds from Beakers. The remaining sherds are all plain body sherds; some are tentatively identified as Beaker or Collared Urn where they are visually identical to diagnostic sherds.

Sherds are widely scattered across the site, usually in very small quantities (Fig. 4). Condition overall is poor: with the exception of the material from pit 707016 sherds are very small and abraded with a mean sherd weight of only 2.99g and only one context producing more than 30g of pottery.

The diagnostic Beaker sherds came from a primary ditch fill (ditch recut 105009), from pit 588271 (dated to the Early Bronze Age), and from a ring ditch (possibly a round barrow) 544182. Collared Urn was recovered from the same ring ditch, and also from ditch 511058, tree-throw 570144, in Middle Bronze Age waterhole 544085, and in Neolithic pit 527124.

In all these contexts sherds can be regarded as residual finds, with the exception of the single sherd from the upper fill of the Stanwell Cursus ditch, eight sherds from ditch 511188, ten from 588271 and six from ditch 594103. The Beaker and Collared Urn sherds (six sherds; 12g) from ring ditch 544182 and pit 588271 are highly abraded and unlikely to be in situ, although the occurrence in 544182 of these otherwise-rare ceramic types in association with at least one contemporary lithic tool does seem to point to contemporary activity in the vicinity, which may have been associated with this putative barrow.

On TEC05 the situation is rather different. Only one context contained Early Bronze Age ceramics (pit 707016), but the group consisted of 51 sherds weighing 509g, all from a single large Collared Urn. This group appears to have been in situ, and probably represents discard of a broken vessel.

(Leivers with Every and Mepham, CD Section 1)

Conclusion of ceramic technology

In the absence of radiocarbon dates, the relative ceramic chronology described above will be used when outlining the Neolithic to Early Bronze Age narrative. The continuing efforts to refine Neolithic chronology in general, and ceramic chronology in particular, are extremely important if our understanding of the period is to improve.

We will now turn to the chronological narrative of inhabitation of the Heathrow landscape, and commence with the Palaeolithic period.

Palaeolithic occupation (400,000– 9500 BC)

The Terminal 5 excavations have added a small number of lithic artefacts to the Lower Palaeolithic material collected at Perry Oaks (Framework Archaeology 2006, 39).

The Lower Palaeolithic period is represented by one handaxe from a land drain on WPR 98 (context 100000) and one Levallois flake from PSH 02 (area 61, LBA/EIA waterhole 516082). Several possible but uncertain Palaeolithic pieces were also recovered. These pieces are technologically undiagnostic, but were isolated on account of their deep iron-staining and heavily rolled condition.

Using these criteria, additional pieces of possible Palaeolithic origin include an end scraper made on a non-flake blank from GAI 99 (area 1B, MBA ditch 214015) and *a piercer from WPR 98 (topsoil 100000). A few stray flakes of highly speculative Palaeolithic date were also recovered from the following SG deposits: 216064 (GAI 99 area 1A, LBA pit), 100000 (WPR 98, topsoil), 502001 (PSH 02 area 49, topsoil), 502002 (PSH 02 area 49, subsoil), 512059 (PSH 02 area 49, eastern cursus ditch), 528129 (PSH02 area 77, ditch recut 510190), 529135 (PSH 02 area 49, medieval waterhole 529139), 551195 PSH 02 area 34, voided context) and 581170 (PSH 02 area 77, LBA/EIA waterhole 581168).*

Without exception, these isolated pieces occur as residual finds in much later deposits and, given their heavily rolled and iron-stained condition, probably originate from the gravels. While they indicate that the wider area was occupied by human groups in the Palaeolithic period, their contribution to a discussion of Palaeolithic activity in the west London area, otherwise well-documented (eg Wymer 1968; Wymer 1991; Lewis 2000), is somewhat limited.

(Cramp and Leivers, CD Section 4)

This small collection does little other than to reaffirm the presence of artefacts in the Taplow gravel deposits. Upper Palaeolithic artefacts from Terminal 5 are even scarcer.

Context 579132 (PSH 02 area 49, medieval gully 579154) contained a possible long blade, heavily iron-stained, which is the only piece that could indicate a late Upper Palaeolithic presence at Heathrow T5. Material of this date is very scarce in the area, although Healey and Robertson-Mackay note 'a possible graver of late Upper Palaeolithic type' from the Yeoveney Lodge causewayed enclosure at Staines (1987, 95), and a small number of large blades (some retouched) and a single core with long blade affinities were recovered from Kingsmead, Horton (Leivers 2005).

(Cramp and Leivers, CD Section 4)

The absence of late Upper Palaeolithic material from the gravel terraces is in contrast to the pattern of the floodplain of the Colne valley, where sites such as Church Lammas (Jones 1995), Three Ways Wharf, Uxbridge (Lewis 1991; Lewis *et al.* 1992; Lewis in prep.), and Horton (see above) furnish us with analogies for the kind of inhabitation we might expect in the immediate area. These sites were characterised by distinctive late Upper Palaeolithic long-blade lithic technology used by the first reindeer hunters to re-colonise major river courses from a North Sea Basin that was dry and habitable at that time. It is perhaps unsurprising that we have retrieved no long-blades from Heathrow, as these hunting bands were probably merely passing through the area, following the migrating herds that were most populous in the valley networks. As such, these people would have had little material need to venture up on to the terrace. Even if they had, the effects of recent agriculture and development would have destroyed any lithic scatters that may have existed.

The Terminal 5 excavations can therefore add very little to our understanding of the Palaeolithic occupation of the area, and it is the Mesolithic period that we next turn our attention.

Period	Interpretation	Feature	Site Code	Entity
Mesolithic	Tree-throw	555539	PSH02	-
Late Mesolithic	Pit	120028	WPR98	Complex of burnt-flint pits in and near C1 Cursus
	Pit	137021	WPR98	
	Pit	159025	WPR98	
	Pit	160021	WPR98	
	Pit	162010	WPR98	
	Pit	165003	WPR98	
	Pit	165005	WPR98	
	Pit	165007	WPR98	
	Pit	165009	WPR98	
	Pit	524218	PSH02	
	Pit	524220	PSH02	
	Pit	524224	PSH02	
	Pit	555536	PSH02	
	Pit	578138	PSH02	
	Pit	801012	BCU02	Pit, post and stakehole complex at Bedfont Court
	Pit	807017	BCU02	
	Posthole	801076	BCU02	
	Posthole	807023	BCU02	
	Posthole	807024	BCU02	
	Stakehole	806028	BCU02	
	Stakehole	806030	BCU02	
	Stakehole	806032	BCU02	
	Stakehole	806034	BCU02	
	Stakehole	806036	BCU02	
Mesolithic or Neolithic	Palaeochannel	588343	PSH02	-
	Pit	122084	WPR98	
	Pit	178054	WPR98	
	Pit	621094	PSH02	
	Tree-throw	120072	WPR98	
	Tree-throw	122086	WPR98	
	Tree-throw	163135	WPR98	
	Tree-throw	172081	WPR98	
	Tree-throw	525481	PSH02	
	Tree-throw	527229	PSH02	
	Tree-throw	532033	PSH02	
	Tree-throw	592048	PSH02	
	Tree-throw	651024	PSH02	

Table 2.4: Mesolithic and possible Mesolithic features

Mesolithic geographies

The Colne floodplain has a rich archaeological record of human inhabitation during the Mesolithic (Lacaille 1963; Lewis 1991; Lewis *et al.* 1992, fig. 22.1). It has become clear that the floodplain contains (in areas where deposits remain *in situ*) a relatively dense pattern of lithic scatters, sometimes with associated faunal remains dating from the final stages of the late glacial period to the Late Mesolithic. These scatters are often well preserved in the fine grained alluvial deposits of the Colne. For example, the Early Mesolithic occupation at Three Ways Wharf Uxbridge centred on hunting red and roe deer—sylvan species suited to such an ecology—as well as swan (Lewis *et al.* 1992). The people who hunted these animals had adapted their technologies and inhabitation strategies to suit their needs and to the local ecology. They probably restricted their movements to smaller territories than their reindeer-

Plate 2.1: Artist's reconstruction of Mesolithic pits in use at Terminal 5

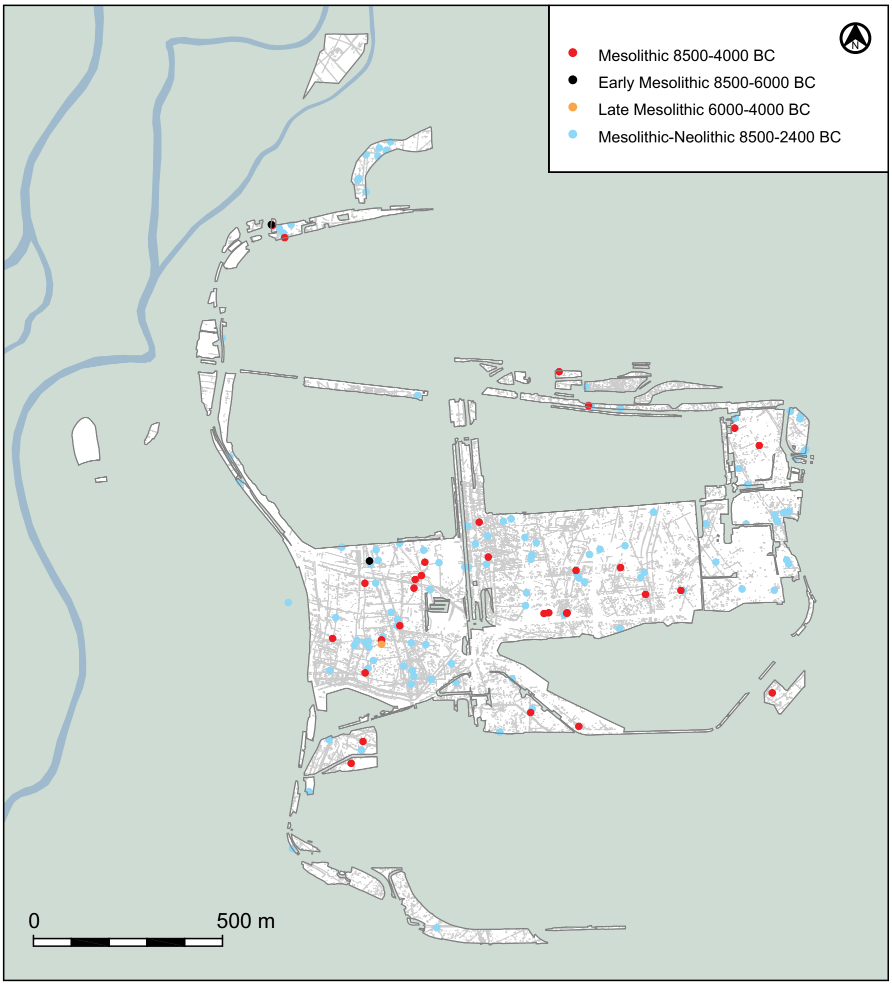


Figure 2.7: Distribution of Mesolithic and Mesolithic/Neolithic flintwork in later features

hunting predecessors and were, as such, the first post-glacial residents of the Colne and Heathrow landscape. The pollen data from Three Ways Wharf (ibid.) shows that the Boreal landscape consisted of a sedge/reed swamp with the valley sides populated by pine, oak, hazel, birch and elm.

In contrast, evidence of human occupation of the Heathrow Terrace has come from lithic material which has been recovered from the archaeological excavation of later prehistoric and historic period features and deposits. Centuries of agriculture and the harsher depositional environment of the gravel and brickearth subsoil has resulted in a much poorer record of human inhabitation away from the Colne floodplain. This bias is not confined to Heathrow, but can be seen across Greater London generally (Lewis 2000, 49–50; map 2).

The past history of the Terminal 5 site has added difficulties in studying the inhabitation of the Heathrow landscape. The construction of the sludge works and airport in the 20th century led to the removal of much of the topsoil and subsoil, and thus the major part of any lithic scatters that may have existed. The Mesolithic material that has been retrieved has come from later archaeological features (Figure 2.7). However, the absence of large lithic assemblages has meant that chronological refinement of the Mesolithic evidence is extremely difficult. For example, although a few artefacts may be typologically distinctive enough to assign to the Early or Late Mesolithic, the majority can only be attributed to the Mesolithic, or even more imprecisely to the Mesolithic or Neolithic.

Nonetheless, the presence of Mesolithic flintwork in later archaeological features does demonstrate a human presence across the western part of the Heathrow Terrace between 8500 and 4000 BC.

The taphonomy of Mesolithic flintwork as recovered from archaeological features of later periods has been considered in Volume 1 (Framework Archaeology 2006, 39–42) and will not be considered further here. Instead we will focus on the features (Fig. 2.8 and Table 2.4) which have been dated to the Mesolithic or the Mesolithic / Neolithic, usually on the basis of tentative artefactual evidence but also on the basis of thermoluminescence or radiocarbon dating. It is worth noting that in contrast to the dense lithic scatters encountered elsewhere on the Colne floodplain (eg the Early Mesolithic Scatter C West at Three Ways Wharf Uxbridge (Lewis 1991 and in prep), none of these features produced significant quantities of lithic artefacts.

Setting aside features which can not be dated closer than the Mesolithic or Neolithic, the remaining features date predominantly to the Late Mesolithic and occur in two locations: a cluster of shallow pits containing burnt flint situated within the C1 Stanwell Cursus, and a complex of stake and postholes situated on the Colne floodplain in Bedfont Court (see Plate 2.1 for artist's reconstruction of Mesolithic pits in use at Terminal 5).

Pit complex, c 7000–6500 BC

The complex of shallow pits filled with burnt flint was reported in Volume 1 (Framework Archaeology 2006, 41–4). Further excavations have added more pits between 6 m and 35 m to the east of the eastern C1 Cursus ditch. An additional pit was recognised from the Perry Oaks excavations located within the C1 Cursus. In total 14 shallow pits were excavated (Table 2.4, Fig. 2.8). All contained burnt flint, and some contained fragments of burnt stone. Several of the pits (159025, 160021, 165005, 165007, 165009) also contained small quantities of chronologically undiagnostic flakes and broken blades. The condition of this material suggests that it was incorporated into the pits sometime after its manufacture.

Other features such as postholes and a cluster of stakeholes were excavated in the area of the pit complex, but all

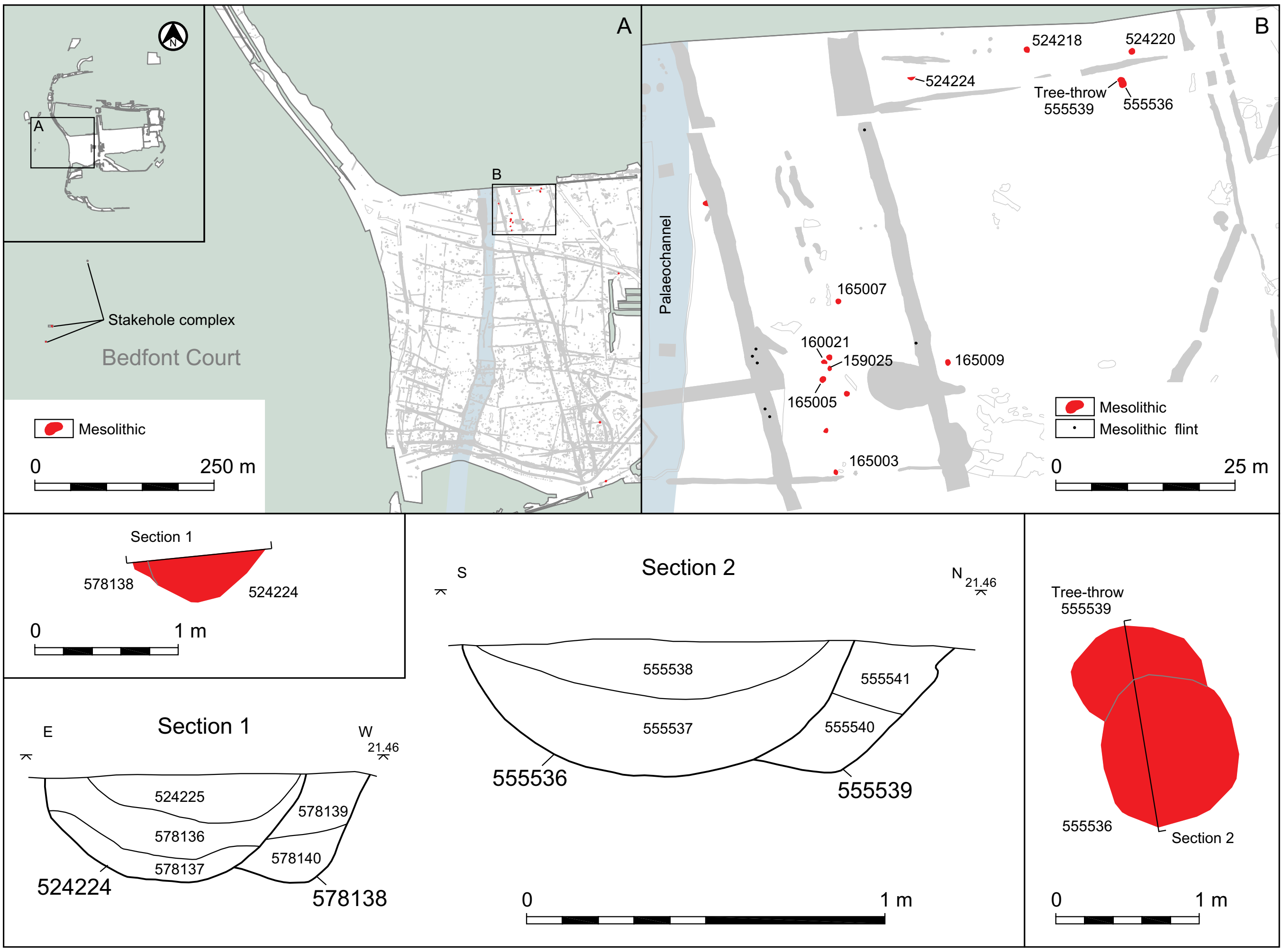


Figure 2.8: Late Mesolithic pit complex

were undated and thus impossible to associate with the pits. A total of eight thermoluminesence dates was obtained from seven of the pits from the WPR98 and PSH02 excavations (see Fig. 2.3 above and Table 2.5).

We can thus be very confident that the pits are Mesolithic in date, although refining the date of the occupation is more difficult. However, it is *probable* (at 68% probability) that the occupation dates to the period from the middle of the 8th to the middle of the 7th millennia BC and the late 7th to the middle of the 6th millennia BC. The lower end of the date range (middle of the 6th millennium BC) is approximately two thousand years before the construction of the Terminal 5 Cursus complex.

The dates provide no clarity for the length of occupation that produced the pits: whether they were dug during a single stay or over repeated visits. Two pieces of evidence suggest the latter. Firstly, as already mentioned, the condition of the small lithic assemblage indicates that it had lain on the surface of the ground before becoming incorporated within some of the pits, suggesting more than one phase of activity. Secondly, pit 578138 was cut by another burnt flint-filled pit, 524224, again suggesting at least two phases of occupation (Fig. 2.8; Plate 2.2).

Plate 2.2: Mesolithic pit 524224

Feature	Upper date (BC)	Determination (BC)	Lower date (BC)	+/- (68% confidence level)
524220	5057	4527	3997	530
524224	6747	6057	5367	690
165005	6840	6210	5580	630
165007	7160	6460	5760	700
165005	7330	6750	6170	580
165009	7810	7180	6550	630
555536	7917	7157	6397	760
524218	8187	7347	6507	840

Table 2.5: Thermoluminesence dates from burnt flint pits

The pit complex was located approximately 10 to 20 m east of the course of a palaeochannel which flowed from north to south-west through the Terminal 5 excavations. The channel marked the boundary between the gravel terrace to the east and the start of the Colne floodplain to the west, and its presence would subsequently shape the architectural development of the landscape through later prehistory and into the medieval period. However, although the course of the channel probably still ran with water and was at least wet and boggy, it is likely that the channel had largely silted up by the time the pit complex was in use (Framework Archaeology 2006, 43). We have no environmental evidence to allow us to reconstruct the landscape at the time, but there is some indication that the pit complex may have been located within a small woodland clearing. This evidence consists of pit 555536, which cut through an existing tree-throw 555539 (Plate 2.3). The tree-throw is undated, and may have been considerably older than the Late Mesolithic occupation, but it does hint at a very localised opening in the woodland canopy.

We can therefore envisage (during the 7th millennium BC?) a small clearing in the woodland canopy adjacent to a sluggish stream on the edge of the Colne floodplain. This would have been a favourable location between two different landscape zones with different resources and in close proximity to water. It would thus not be surprising if this became a focus for repeated occupation by hunter-gatherer groups. The nature of that occupation is more difficult to reconstruct, but the shallow pits filled with burnt flint may be the remains of 'earth ovens', where flint is heated to high temperatures and used to slowly roast joints of meat. The composition of the hunter-gatherer groups is unknown: were they a single family group that used this location for a short while each year, or was it a seasonal meeting place for several families to join together for feasting and other social events? We will never know, but it is likely that the repeated occupations would have resulted in burnt flint, charred and

Plate 2.3: Mesolithic pit 555536

discarded animal bone, upcast earth from the pits and burnt wood that would have accumulated over the years to form a low mound or midden, which in turn would have acted to reinforce the importance of the location as a focus in the landscape. The pits and possible midden are the first archaeologically visible human modifications of the landscape at Terminal 5. The low mound would have persisted as a physical entity in the landscape, and as we will see in the following sections, appeared to have had an influence on the construction of the C1 Stanwell Cursus.

Stake and posthole complex at Bedfont Court, c 6000 BC

Our second focus of occupation is located on the Colne Floodplain at Bedfont Court, 670 m to the SSW of the burnt flint pit complex (Fig. 2.9). The remains consist of three postholes (801076, 807023 and 807024) and a pit (807017) aligned north-south. Five stakeholes arranged in a 'T' shaped pattern were situated 22 m to the NNE. Finally, 102 m to the north-east of the 'T' shaped array of stakeholes was a single pit (801012). All these features cut a calcareous tuffa deposit (807016) and were in turn sealed by a further tuffa deposit (807015). A sample from a waterlogged stake of unidentified species from feature 807024 gave a radiocarbon date of 6240–5990 cal BC (WK-11773: 7264 ? 69 BP: 95.4% confidence). If the other features are contemporary (and the stratigraphic relationships with the tuffa deposits suggest they broadly are) then the Bedfont Court complex would appear to date to the very end of the 7th millennium BC, perhaps 500 to 700 years later than the pit complex near the C1 Cursus.

The Bedfont Court complex was detected in trial trenches and test pits, and would probably have been more extensive. If the locations of the postholes and stakeholes are mapped against the topography of the surface of the underlying Colney Street gravels, it is clear that the complex is located along the edge of a gravel island on the Colne floodplain. We must assume therefore that at some time around the end of the 7th millennium BC, the tuffa deposits that had formed on and around this island stabilised and dried out sufficiently to allow occupation, before another sequence of tuffa deposition commenced. What sort of structures the postholes and stakeholes formed is uncertain due to the limited nature of the excavation. However, they could represent a series of shelters such as that excavated at Broom Hill in Hampshire (Selkirk 1978). Alternatively, they could represent fishing or hunting apparatus at the edge of active stream channels.

Whatever their use, it is clear that the activity would have been a very different setting to the pit complex on the edge of the Colne floodplain discussed above. The Bedfont Court environment would have been one of shifting channels and low gravel islands on a wet floodplain, whereas the gravel terrace would have been predominantly covered by deciduous Boreal woodland.

Evidence from Three Ways Wharf Uxbridge suggests that there were major changes to the environment of the Colne valley during the 7th millennium BC (Lewis *et al.* 1992). Palynology showed that sedge swamps formed on the Colne floodplain during the Boreal period (Zones V/Va to Vc; *c* 8200 to 6000 BC), and many other instances of peat and organic deposits broadly dated to this period in the Colne valley have been recorded over the years (ibid.). In addition, high concentrations of microscopic charcoal in the sedge swamp deposits at Three Ways Wharf suggested that widespread burning of the forest and sedge swamp itself occurred throughout this period, although an anthropogenic origin was difficult to prove (ibid.). A similar pattern of increasing charcoal content

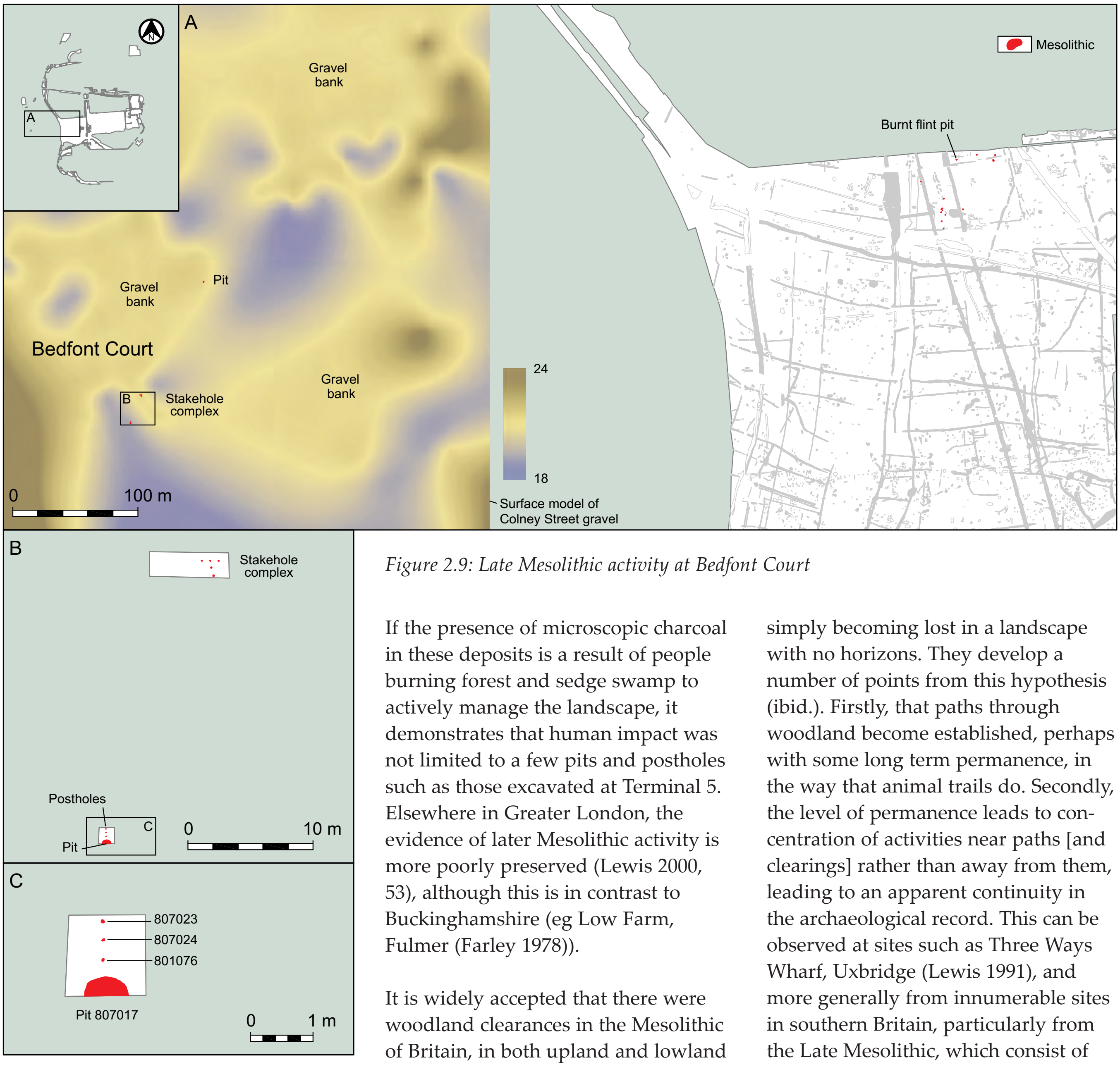


Figure 2.9: Late Mesolithic activity at Bedfont Court

of sediments was also observed in the Lea Valley at Enfield Lock (Chambers and Mighall 1991) and it is clear that not only the Colne, but other tributaries of the Middle and Lower Thames were undergoing similar changes. At Meadlake Place, Egham (approximately 6 km SSW of Terminal 5), palaeoecological evidence suggests a reduction in forest cover accompanied by burning and cereal cultivation sometime during the Late Mesolithic / Early Neolithic transition. Furthermore, increased rates of deposition of mineral rich sediment suggest that this activity led to erosion and redeposition of sediments (Branch and Green 2004, 12).

If the presence of microscopic charcoal in these deposits is a result of people burning forest and sedge swamp to actively manage the landscape, it demonstrates that human impact was not limited to a few pits and postholes such as those excavated at Terminal 5. Elsewhere in Greater London, the evidence of later Mesolithic activity is more poorly preserved (Lewis 2000, 53), although this is in contrast to Buckinghamshire (eg Low Farm, Fulmer (Farley 1978)).

It is widely accepted that there were woodland clearances in the Mesolithic of Britain, in both upland and lowland settings, and whatever the debate about their anthropogenic origins, it is also accepted that they were used for food procurement by Mesolithic people. However, as with much of the Mesolithic period, this reduces human agency to the level of economic interaction with the environment and an overriding concern with procurement strategy. In a recent paper, Davies *et al.* (2005) have raised several important points which seek to re-situate human agency and society within a landscape of Mesolithic clearings and pathways. They propose that one of the primary reasons for establishing paths through forests may have been a level of fear of the woodland surroundings, whether of animals, spirits or simply becoming lost in a landscape with no horizons. They develop a number of points from this hypothesis (ibid.). Firstly, that paths through woodland become established, perhaps with some long term permanence, in the way that animal trails do. Secondly, the level of permanence leads to concentration of activities near paths [and clearings] rather than away from them, leading to an apparent continuity in the archaeological record. This can be observed at sites such as Three Ways Wharf, Uxbridge (Lewis 1991), and more generally from innumerable sites in southern Britain, particularly from the Late Mesolithic, which consist of repeated scatters of lithic material often over a long time scale. For example, the site at West Heath, Hampstead contained earlier and later Mesolithic microliths, suggesting several phases of occupation (Collins and Lorimer 1989). Thirdly, the concept of 'wilderness' must be considered in the Mesolithic, rather than regarding environment as a backdrop or as inherently benign. Finally, some clearings may be created as purely social phenomena, for example clearings emerging where paths meet as corners are cut. Thus clearings may have been created / maintained for purely social reasons, to keep paths open and maintain a buffer against the woodland around rest sites (Davies *et al.* 2005, 286).

It is against this framework that we can consider the evidence from Terminal 5. We have shown how the slight evidence for structures at Bedfont Court and the distribution of Mesolithic flintwork from later features at Terminal 5 demonstrates human activity on the Colne floodplain and the Heathrow gravel terrace. By analogy with other sites, it is possible that greater landscape changes, in the form of burning of the woodland from *c* 8000 BC onwards, was also occurring. The evidence of the burnt flint filled pits at Terminal 5 implies that a certain awareness had dictated some highly structured activity at that specific location. Slight though these remains are, their significance lies in the fact that in the 7th or 6th millennia BC, a community had marked a significant place in the landscape by digging into the surface of the earth, piling up the residue and filling the void with culturally derived material. These activities had now become incorporated in the permanence of the place. The practice of breaking the ground and processing the earth in a way that explicitly realised human intent, operating within a structure defined by the natural topography and a geography of clearances and places linked by pathways, was to give rise to the inscription of a monumental landscape that pre-figures the Neolithic.

Trends in landscape changes in the 4th and 3rd millennia BC

We have previously discussed how the lithic assemblages are not chronologically distinctive enough to be used do differentiate late 5th and early 4th millennia activity from that associated with the monumental landscape. The earliest ceramics (carinated bowl) are absent from Terminal 5, whilst Plain Bowl Ware pottery would have been in circulation prior to and during the construction of the cursus monuments. Despite these obstacles, we can study landscape change at a broad level during the 4th and 3rd millennia, using the relative pottery chronology to quantify the frequency of different archaeological features through this period, and make inferences on the nature of human activity.

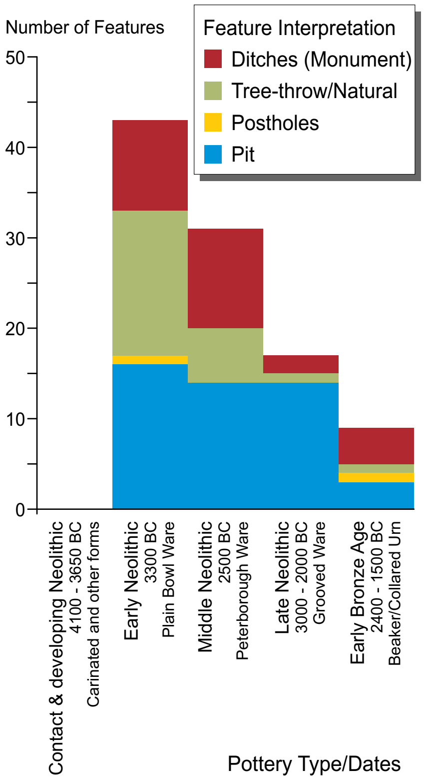


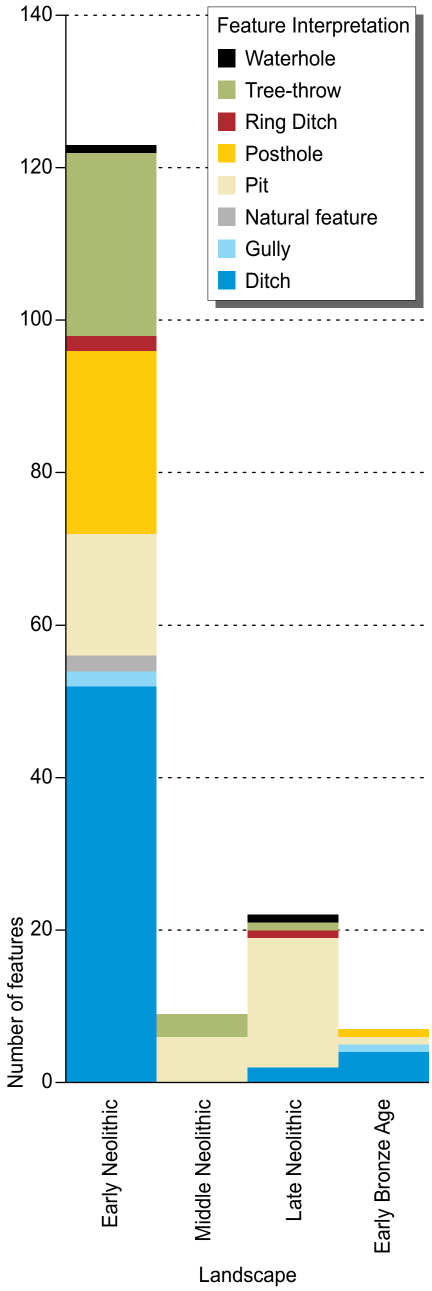
Figure 2.10: Neolithic and Early Bronze Age pottery by feature type

Using the ceramic chronology described previously, and noting the distribution of Neolithic ceramics by feature type at Terminal 5, the chart published in Volume 1 (Framework Archaeology 2006, fig. 2.2) can be updated (Fig. 2.10). This provides an indication of the type of activities that modified the landscape during the 4th and 3rd millennia BC. Of course, this chart is also a product of people choosing the sort of feature to deposit pottery in, and there is a large body of work (eg Evans *et al.* 1999, Thomas 1991, Cotton *et al.* 2006, Garwood 1999, 154) that has explored the variation in depositional signatures of different types of Neolithic pottery.

Figure 2.10 shows that prior to 3600 BC there appears to have been little human activity in terms of monument construction. The decline through disease of the elm population in Greater London (the 'elm decline') has recently been dated to 3750 BC (Rackham and Sidell 2000, 22). The effects of the elm decline on human behaviour are outside the scope of this volume, but it is surely no coincidence that following this event, during the currency of Plain Bowl Ware pottery, we see a sudden and extraordinary flowering of monument construction in the form of large causewayed and small circular enclosures and cursus monuments. Recent work also suggests a sharp increase in the frequency of charred cereal grains in domestic contexts between 3800 and 3000 BC (Brown 2007). The chart reflects the impact of the C1 Stanwell and the other cursus monuments, but also the level of tree clearance at this time. Whether this was deliberate felling or removal of dead trees (perhaps groups of dead elms) to produce (or expand existing) glades and clearances in the forest is uncertain. These local clearances may have acted as foci for shifting settlement and agriculture, which left their mark in the form of pits excavated for domestic refuse and ritual deposits. However, it is clear that the construction of major linear monuments such as the cursus monuments would have required at least local clearance of the forest along their course. This is particularly true of the C1 Stanwell Cursus, which deviates only slightly from a straight course over at least 3.6 km.

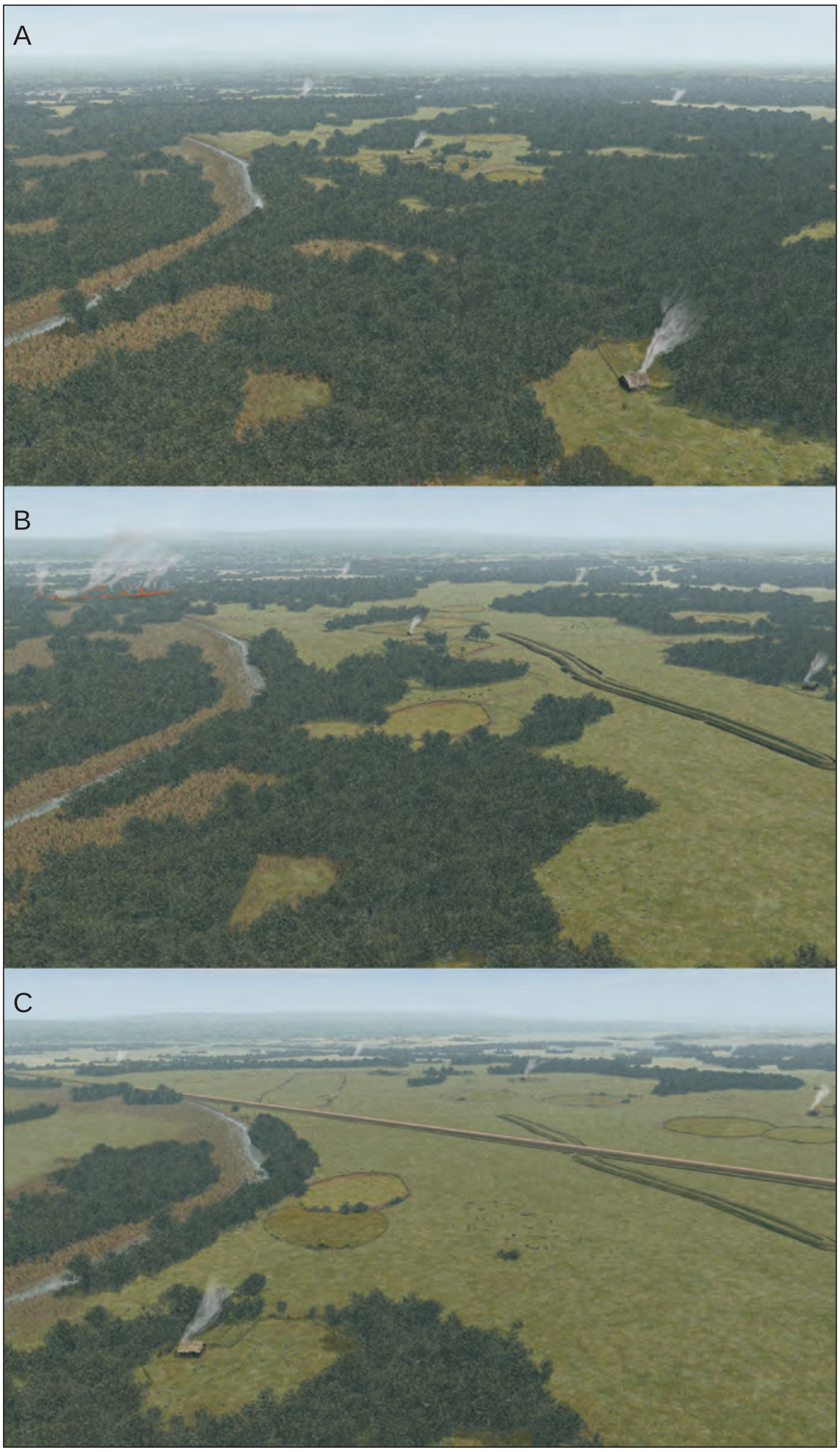
Figure 2.10 also demonstrates that whilst pits form the major type of receptacle for Peterborough Ware, ditches are almost as well represented. However, whilst the pits tend to be contemporary with Peterborough Ware, the ditches in the chart largely reflect the presence of Peterborough Ware in the upper fills of the Stanwell Cursus. Tree-throws appear to show a reduced level of clearance in the Middle Neolithic. The pattern of deposition of Late Neolithic Grooved Ware is markedly different, being found overwhelmingly in pits. Ditches are represented by the HE2 enclosure in Area 77, and a few sherds in the upper fills of the Stanwell Cursus. The lack of tree-throws is suggestive of a cleared landscape, or a deliberate choice not to deposit this pottery in these features.

Most of the Early Bronze Age pottery was recovered from a few pits, the remainder being from the upper fills of the Stanwell Cursus or the HE3 enclosure in Area 23. However, it is the small number of features containing



Above
Figure 2.11: Neolithic and Early Bronze Age features by type and construction date

Right
Plate 2.4: Artist's reconstruction of the changing Neolithic landscape at Terminal 5 (A to C)



low quantities of Early Bronze Age pottery that is perhaps the most striking observation.

The patterns in Figure 2.10 are even clearer when features are counted by type and date of construction (Fig. 2.11). This figure adds stratigraphic relationships to the presence of arte-facts as dating evidence, and reduces the effects of residuality of pottery.

Figure 2.11 omits features where dating cannot be assigned to a specific period: thus features dated to the Late Neolithic or Early Bronze Age are not shown.

The preponderance of tree-throws and pits, as well as the presence of the post-hole complexes and cursus monuments prior to 3300 BC, is well illustrated in Figure 2.11. From then onwards through the 3rd millennium BC, the scale of architectural construction is much smaller, with pits the most important form of feature. A chart showing the depositional context of Peterborough Ware from Greater London, also shows that pits are by far the most common receptacles of this type of pottery (Cotton with Johnson 2004, fig. 15.6). A comparison of the Middle Neolithic elements of Figures

2.10 and 2.11 confirms that the number of newly constructed features of this date is much lower than the occurrence of Peterborough Ware pottery in the higher silts of earlier features. In addition to pits, 3rd millennium BC features also include ditches and ring ditches, with the HE2 enclosure in Area 77 being the sole representative of its type. The Early Bronze Age appears to be completely different to the pattern of the 4th and 3rd millennia, with very few features being excavated. These consist mainly of the ring ditch (HE3 enclosure) in Area 23, and a few pits and gullies.

In summary we can conclude that:

- the landscape saw little human modification prior to 3600 BC (Plate 2.4, A)
- the landscape underwent clearance and became locally monumentalised from 3600 BC to 3300 BC (Plate 2.4, B and C)
- the community that adopted Peterborough Ware as part of a strategy of living in the monumental landscape in the late 4th millennium BC deposited pottery in pits and modified earlier monuments
- the trend towards deposition of pottery in pits came to dominate during the 3rd millennium with the use of Grooved Ware, but there is a suggestion that small circular monuments may have started to be constructed
- The Early Bronze Age is characterised by a lower level of activity and a decline in the preoccupation with deposition in pits, whilst possibly maintaining the focus on small circular monuments.

In the next section we will examine the archaeological features that predate the construction of the monumental complex at Terminal 5, the environmental evidence that we have obtained for this period, and the broader background of the environment in this part of the Thames Valley.

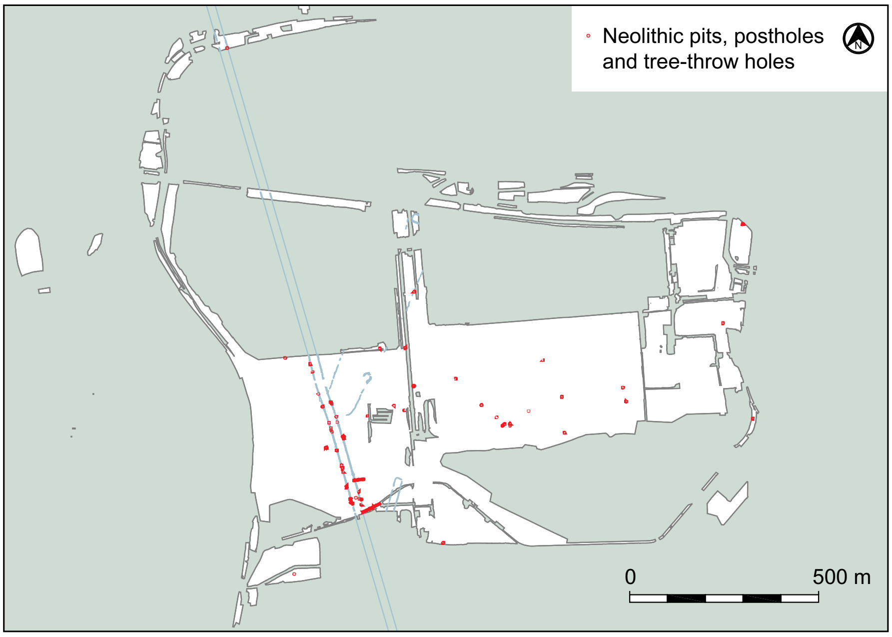


Figure 2.12: Distribution of Early Neolithic pits, postholes and tree-throws

The landscape of the 4th millennium BC

In a previous section we showed that there is a general signature of human occupation across the Heathrow terrace and the Colne floodplain during the Mesolithic period. By analogy with pollen records from other sites, we have suggested that wider management of vegetation using fire was practiced. We have also shown that certain locations, such as the burnt flint-filled pits, attest to a particular form of activity.

We will now go on to explore (as best we can) human activity and the wider landscape from the end of the 5th and early 4th millennia BC to 3300 BC (prior to and during the construction of the cursus monumental complex), using artefacts and stratigraphic relationships between features.

Our meagre environmental evidence (see below) and the scale of the cursus complex confirms that woodland clearance took place during this period. Figure 2.12 shows the scatter of pits, postholes and tree-throws that can be dated to this period, mostly on the basis of small fragments of Plain Bowl Ware pottery and/ or lithic material datable broadly to the 4th millennium BC, but also using stratigraphic relationships between features. The figure naturally demonstrates clustering

Feature Type	Feature No.	Pottery Fabric	No. Sherds	Weight (g)	Average weight
Tree-throw	120092	FL4	33	58	1.8
Tree-throw	156191	FL4	524	1325	2.5
Tree-throw	156191	QU13	17	119	7.0
Pit	158121	FL4	13	53	4.1
Tree-throw	511067	FL17	6	43	7.2
Tree-throw	525372	FL16	19	68	3.6
Pit	527200	FL4	7	96	13.7
Tree-throw	527288	FL4	31	259	8.4
Pit	548010	FL4	14	41	2.9
Tree-throw	558057	FL4	31	191	6.2
Tree-throw	558057	FL18	4	50	12.5
Pit	561277	FL4	76	565	7.4
Tree-throw	659082	FL15	10	75	7.5
Tree-throw	962200	FL4	13	118	9.1

Table 2.6: Pits and tree-throws with more than 40g of Early Neolithic Plain Bowl Ware pottery

Figure 2.13: Distribution of Early Neolithic pottery

Interpretation	Feature No.
Ditch	529516
	529520
Gully	527233
Natural feature	521022
	579142
Pit	527200
	569066
	579136
	587028
	178054
Posthole	962054
	962063
	962067
	962081
	962132
	524204
	529196
	529198
	529210
	575149
	582115
	598027
	605003
	605005
	605007
	605009
	605011
Tree-throw	128032
	962200
	512103
	513080
	525481
	527229
	555449
	555466
	559507
	579140
	588042

Table 2.7: Features stratigraphically earlier than the C1 Stanwell cursus

of these features along the course of the cursus monuments, since these provide one of the few reliable stratigraphic tools with which to date earlier features. The distribution of Plain Bowl Ware pottery (Fig. 2.13) is more widespread, and shows that people occupied and utilised a much wider landscape than simply that near the monuments, at least during the period 3600 to 3300 BC. Due to the likely overlap in dates in the currency of Plain Bowl and Peterborough Ware pottery, Figure 2.13 also displays the distribution of the latter. The Peterborough Ware appears to have a more peripheral distribution, with none being recovered during the Perry Oaks excavations. This may be a result of the destruction of more ephemeral pits (the main receptacle for Peterborough Ware) by the sludge works drying beds, but if so, then it appears not to have affected the tree-throws and pits containing Plain Bowl pottery to the same degree.

At certain locations in the landscape (for example, feature 156191), particularly high concentrations of Plain Bowl pottery and flintwork in tree-throws have led us to suggest that they were the locations of domestic settlements or the deliberate deposition of midden material (Framework Archaeology 2006, 65–7, fig. 2.17). Table 2.6 shows the pits and tree-throws containing over 40 g of Plain Bowl pottery, and Figure 2.13 shows the distribution of these features. Unsurprisingly, the average weight of sherds from tree-throws (3.4 g) is half that of pits (6.9 g).

Since the artefactual evidence cannot determine with sufficient chronological precision activity that pre-dated or was contemporary with the construction of the cursus, we will now focus on features that are stratigraphically earlier than the monuments.

Pits and postholes pre-dating the cursus monuments

A single posthole (539196) which was cut by the eastern ditch of the C2 Cursus demonstrates some form of activity at this location prior to construction of the monument (see Fig. 2.41, section 6, below). Likewise, activi-

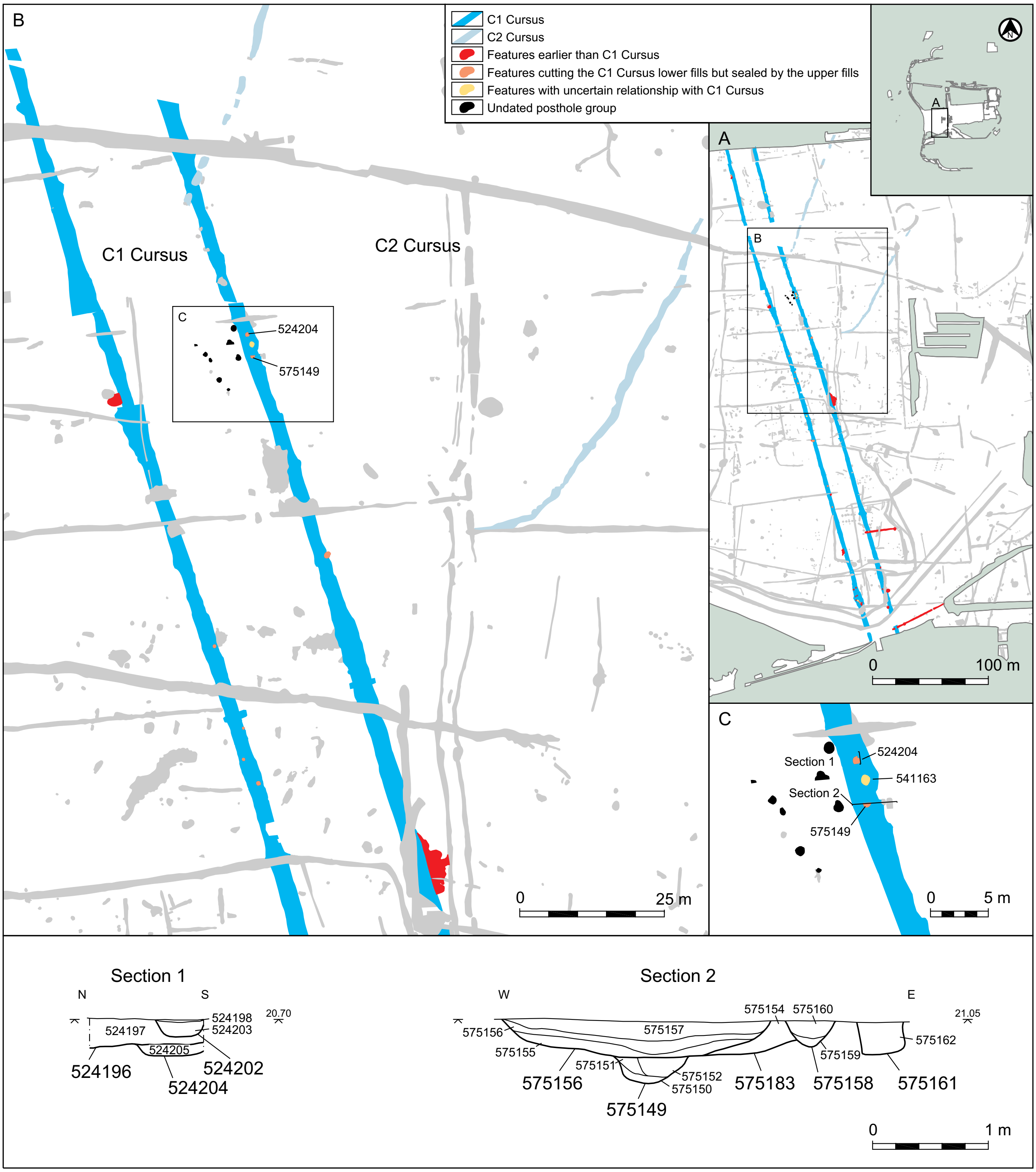


Figure 2.14: Posthole complex near the junction of the C1 and C2 cursus monuments

ty which predates the construction of the C3 monument is demonstrated by pit/posthole 580401, which was cut by the eastern cursus ditch (see Fig. 2.24, section 13, below). However, it is the C1 Stanwell Cursus that provides the greatest evidence of pre-monumental activity (Table 2.7 and Fig. 2.12).

The Terminal 5 excavations revealed a number of pits and postholes that were stratigraphically earlier than the C1 Cursus (Fig. 2.12). The question is do these early features represent activity specific to particular locations, or are they simply a sample of more widespread activity which has been identified through the destructive cutting of the cursus ditches as they cut across the landscape? If we look along the length of the cursus as excavated, it is only in the large central area (POK96, WPR98 and PSH02 Area 49) that features pre-dating the cursus were detected. None were recorded in the northern and southern extremities of the excavated monument, but of course, less of the monument was exposed in these areas. A total of 663 square metres of the C1 Cursus was excavated by hand, and this revealed eight tree-throws and 13 pits or postholes which had been cut by the cursus ditches. It is likely that such a long transect as the cursus would encounter by chance the remnants of previous activity at some point along its course, although there does appear to be actual concentrations of postholes along the C1 Cursus (Fig. 2.14).

Posthole complex near the junction of the C1 and C2 cursus monuments

A scatter of postholes lies near the intersection of the C1 and C2 monuments, cut by both the eastern and western C1 ditches, and has been partially described in Volume 1 (Framework Archaeology 2006, 46–7; fig. 2.8). It was suggested that the postholes may have served as 'totem poles', or part of a timber screen or monument, or have been associated with the construction of the cursus (Framework Archaeology 2006, 46–7; fig. 2.8). In addition, other postholes were excavated which cut the lower fills but were sealed by the upper fills of the cursus ditches, and it was suggested that these served to mark the significant places which were subsequently sealed by the C1 Cursus, but which remained as important ceremonial locations (Framework Archaeology 2006, 59; fig. 2.13).

The Terminal 5 excavations have added two more postholes (524204/524202, and 575149) to this scatter, though located further north along the eastern cursus ditch; the relationship of a third (541163) was uncertain (Fig. 2.14). All three are 0.6 to 0.7 m wide and, allowing for truncation since 1943, would have been approximately 1.1 to 1.3 metres deep. They could thus have held substantial posts.

None of these postholes has been independently dated, so the chronology of these features is based on that stratigraphic relationships with the C1 Cursus. The length of time between the erection of the putative posts and the construction of the cursus is therefore uncertain.

Just to the west of the eastern cursus ditch lie three more postholes, with a further five some four metres to the south-east (Fig. 2.14). None of these postholes has a stratigraphihc relationship with the C1 Cursus, and none contained artefacts, so they all remain undated. Indeed, another posthole (559285; not on plan) contained modern material, so caution must be exercised when considering these features. However, it does appear that at least the three postholes cut by the C1 Cursus ditch do pre-date the monument, and what is more, they lie on the sightline from inside the HE1 enclosure (see Fig. 2.19 and Plate 2.9 below) towards the sun as it would have set behind the C1 Cursus at the midwinter solstice (Framework Archaeology 2006, 74–81). This raises the possibility that (contrary to the sequence expressed in Volume 1) the HE1 enclosure and (at least three) postholes were contemporary, and predate the C1 Cursus.

A number of cursus monuments have associated post or stakeholes, and Loveday (2006, 38–40) groups them thus:

- Definition purely by contiguous or near contiguous posts as at Bannockburn, Douglasmuir and other Scottish sites

- Spaced settings of large posts as at Holywood (internal) and probably Scorton (external)

- Slight, partial and perhaps later stake / post lines as at Maxey

- Settings in the base of the ditch as with the C1 Stanwell Cursus and Scorton. In addition Loveday suggests that the solution hollows found in the base of the North Stoke bank barrow could be interpreted as postholes.

It does appear as though the long mound / bank barrow form of cursus monument such as Stanwell, Scorton and possibly North Stoke provide the clearest evidence of these monuments being preceded by timber posthole structures and alignments (Loveday 2006, 39). Indeed, it may be a function of these long mound monuments to seal and incorporate earlier places of special significance within their plan.

We will now turn to the second concentration of features at Terminal 5 that predate the C1 Cursus.

Pre-cursus settlement complex, Area 49

The second concentration of features lies at the southern part of the PSH02 excavations in Areas 49 (Burrows Hill) and 89b (Fig. 2.15). These revealed a complex of gullies, ditches, postholes, pits and tree-throws that are very difficult to interpret either individually or as a complex. They are important in that most of these features are stratigraphically earlier than the ditches of the C1 Cursus (Plate 2.5). Furthermore we are fortunate to have a single pollen diagram from a pit (527200) which pre-dates the eastern ditch of the C1 Stanwell Cursus, and provides an insight into what the landscape looked like immediately prior to the construction of the C1 monument.

The stratigraphically earliest traces of activity are represented by two post-

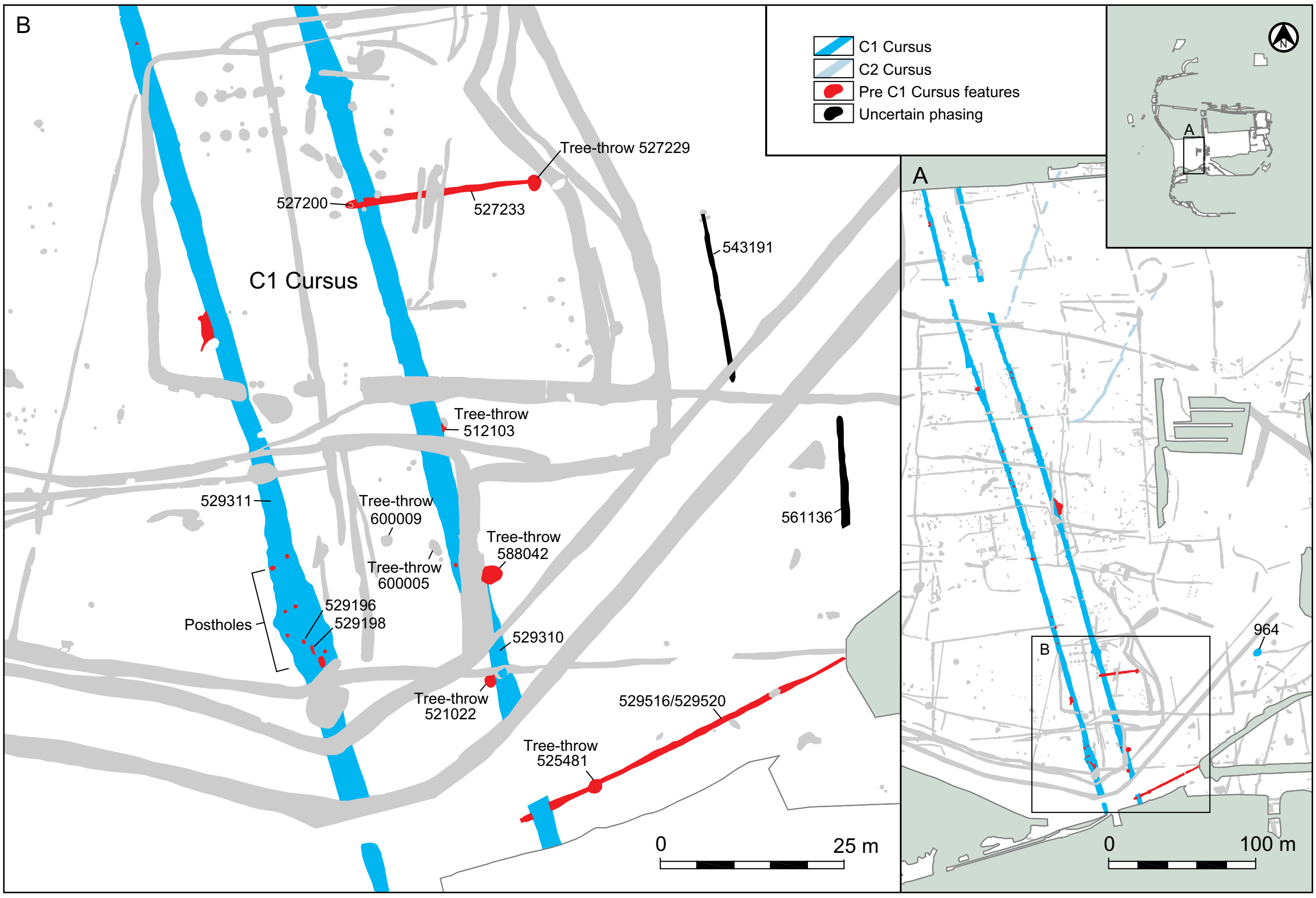


Figure 2.15: Pre-cursus settlement complex, Area 49

holes (529196 and 529198) and tree-throws 512103, 521022 and 588042 which were cut by the two parallel ditches (529310 and 529311) of the C1 Cursus. Tree-throw 600009 contained fragments of Neolithic Plain Bowl Ware, and 600005 a flint blade, but as both features were located in the centre of the C1 Cursus, it is impossible to determine if the artefacts are contemporary with the tree-throws. If they are, then combined with those stratigraphically earlier than the cursus, they are evidence for clearance prior to construction of the subsequent monuments. Other tree-throws and postholes are scattered across the area, but are undated, do not make a meaningful pattern and have no stratigraphic relationships with Neolithic features. It is possible that the clearance originated as a localised glade, and the postholes could represent remnants of a settlement within the clearing. The concentration of Neolithic finds from features around this area is not perceivably higher than elsewhere, which tends to militate against this interpretation. However, there is a pit (527200) 1.10 m deep, which was subsequently cut by gully 527233 and then the eastern C1 Cursus ditch (Plate 2.6). The lower fills of pit 527200 contained seven sherds of Plain Bowl pottery and a handful of flint flakes and nodules. The lower fills (527206 and 527291) also produced a pollen diagram (from the lowest part of monolith 17094; Fig. 2.16), which provided the following sequence:

Plate 2.5: Postholes and pit pre-dating C1 ditches towards the west

A few odd grains of obligate aquatics were found (duckweed (Lemna), and pondweed (Potamogeton)), showing that there was standing water in the pit during the time of fill. An interesting find is a spore of hornwort (Anthoceros), a liverwort-like taxon found growing on damp soils probably around the edge of the pit. There is no evidence of faecal material within the sediments suggesting that this pit may have been used for the disposal of domestic debris.

Eight sub-samples were analysed from this sample, 5 from the lowest contexts (527206), and 3 from the overlying context (527191)…Pollen concentrations are low, suggesting quite rapid accumulation of the sediments particularly those of the lowest context (527206). This context also contained a number of fungal spores including those of Glomus, a taxon found in soils, and may thus be reworked . The presence of fungal spores, the poor preservation of grains which may indicate they have been subjected to aerobic conditions, and the rapid accumulation rate, suggest that this fill was perhaps 'dumped' into the pit.

The diagram (Fig. 2.16) shows that at the time the contexts were being deposited or dumped, the area around the sample site was very open, with herbs dominating the pollen percentages. Some woodland was still extant in the area on the drier ground. This woodland contained very little elm (Ulmus), suggesting that the sample is post 'Elm decline' (dated to c 3700 BC). However, the woodland was made up of deciduous tree and shrub taxa, oak (Quercus), hazel (Corylus) and particularly lime (Tilia). Lime trees, even though insect pollinated, produce quite large amounts of pollen, which is heavy and falls close to the trees that produced it instead of being whisked up into the air. Lime is thus under-represented in the 'pollen rain'. Therefore, although lime percentages appear low in this fill, the tree probably formed a large component of the woodland on drier ground nearby. The so-called 'Tilia decline', associated with anthropogenic forest clearance, occurred at different times at different sites, but has been shown to occur about 3000–3700 years BP in this area (West Heath Spa, Hampstead Heath (Greig, 1991), Tilbury (Devoy, 1979). This suggests that the fills were laid down between c 5000 and 3000 years BP and that they therefore confirm a Neolithic age for these contexts. Alder and willow (Salix) were probably growing on wetter ground. Although a few grains of pine (Pinus) were found, it is unlikely that pine, other than the odd tree, was growing in the vicinity as pines produce copious amounts of pollen and would have much larger percentages if locally present. It was probably growing on the sandier soils north of the area. There is some slight evidence for an increase in trees and shrubs towards the top of the diagram, with other shrub taxa characteristic of somewhat open woodland, including holly (Ilex), buckthorn (Rhamnus cathartica) and guelder rose (Viburnun opulus), appearing. This could imply increased grazing within the woodland, opening the woodland further, so that taxa characteristic of woodland glades and edges, such as holly, buckthorn and guilder rose, either increased or flowered more profusely. The decrease in fern spores and increase in bracken (Pteridium aquilinum) seen at the same time could support this hypothesis. A few grains of dwarf ericaceous shrubs (heather and heaths (Calluna and undifferentiated Ericales) also appear towards the top of the diagram but were probably not growing close to the site but on sandier soils to the north.

Plate 2.6: Photograph showing relationship between east cursus ditch, gully 527233 and pit 527200 under excavation, looking east

The herbaceous taxa are dominated by grasses and many taxa associated with arable fields and pastures. Quite high percentages of cereal pollen types including the oats and/or wheat group, Avena/Triticum) suggest that cereals were being grown very close to the site as these grains are large and do not travel far, although some grains may have been incorporated into the pit as waste cereal processing material (Robinson & Hubbard, 1977). Taxa characteristic of arable fields include many composites, brassicas (Brassicaceae), chickweeds (Caryophyllaceae undiff. (undifferentiated), Cerastium-type), black bindweed (Fallopia convolvulus), and knotgrass (Polygonum aviculare-type). Many of these taxa are also characteristic of ruderal communities, disturbed ground and footpaths. Other taxa may be associated with pastures and meadows such as grasses, ribwort plantain (Plantago lanceolata), greater and hoary plantains (Plantago major/P.media), clover (Trifolium-type), buttercups (Ranunculus-type), sedges (Cyperaceae), cow parsley family (Apiaceae), composites (daisy-type, dandelion-type, thistles (Cirsium/Carduus)), yellow rattle-type (Rhinanthus-type), bedstraws (Rubiaceae), sorrels (Rumex acetosa-type) and selfheal-type (Prunella-type). Monolete fern spores are quite abundant, particularly in the lower part of the diagram: this may be due in part to differential preservation as fern spores are very resistant and are recognisable even when pollen is badly preserved, but nevertheless there must have been quite a number of ferns growing close by, perhaps around the pit and also in the woodland which may have been quite open and subjected to grazing.

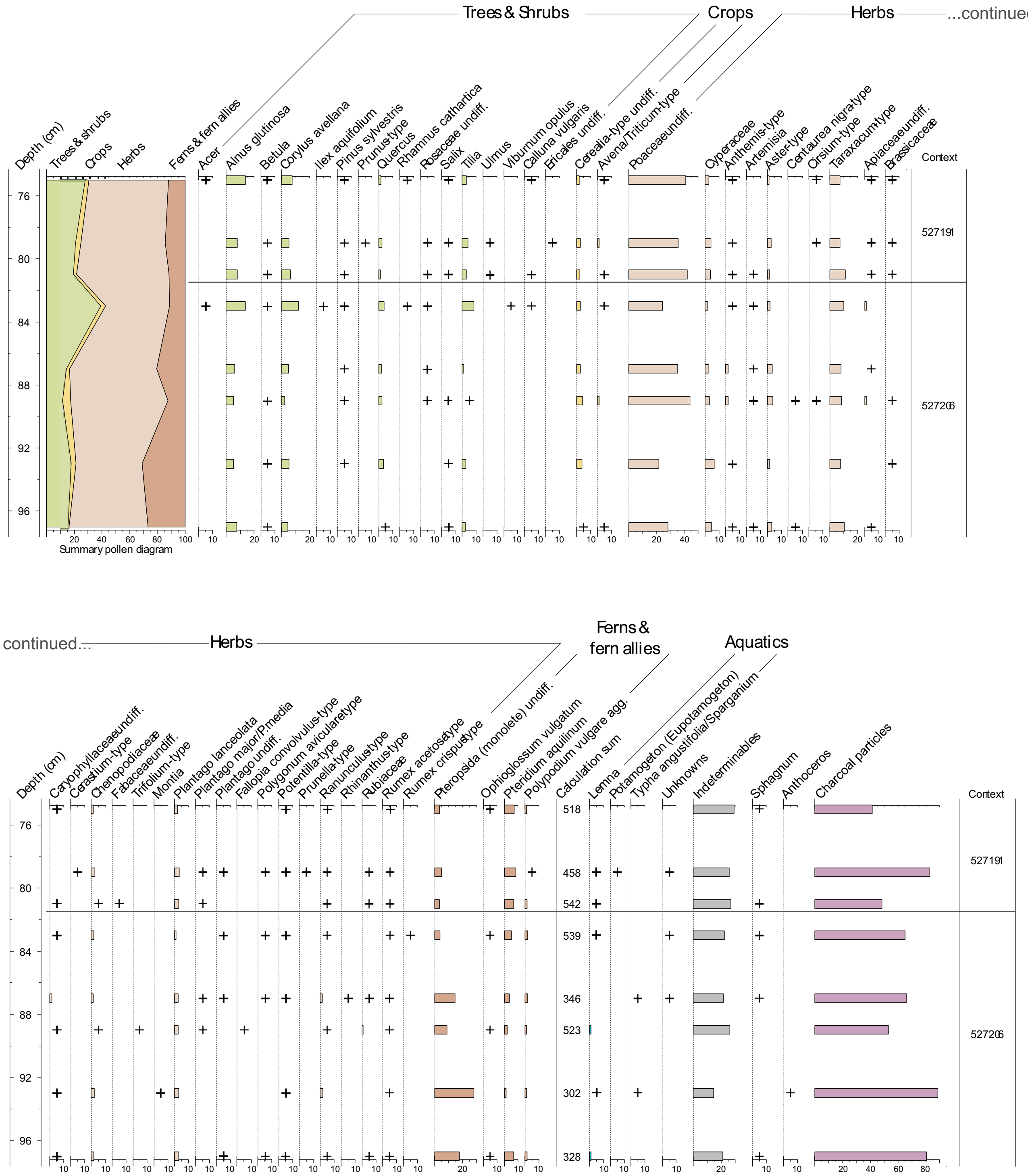


Figure 2.16: Pollen percentage diagram: Sample 17094, the fill of Early/Middle Neolithic Pit 527200

All subsamples contained many micro-charcoal particles, and the material sieved off during pollen preparation also contained larger pieces of charcoal which are more conclusive evidence of local fires. The sievings contained several rush (Juncus) seeds, particularly from levels 0.79 and 0.81 m (context (527191)). Pollen of rushes are very rarely preserved, and these seeds show that rushes were growing in and around the site at this time, suggesting that the pit was perhaps no longer in use and that context (527191) represents a natural infilling of the pit. The higher pollen concentrations in this context, suggesting a lower sedimentation rate, are perhaps further proof of this.

(Peglar et al., CD Section 16)

The pollen diagram (Fig. 2.16) is important in that it suggests that the pit (and thus the Stanwell Cursus) was dug after the elm decline (dated to 3750 BC in London, Rackham and Sidell 2000, 22). It is also important in that it suggests a landscape that although having woodland nearby, was opened up to a large extent with areas given over to grassland, pasture and arable fields. This is similar to the interpretation of the Early Neolithic landscape in Southwark, central London. Here, the evidence from Joan Street suggests cereal cultivation in the pollen record following secondary clearance after 3500 BC (Sidell *et al.* 2002, 47). At Bryan Road, cereal cultivation follows directly after the elm decline in the early 4th millennium BC (ibid.). Removal of the woodland cover would have transformed north Southwark and Lambeth into a relatively open landscape, probably interspersed with intermittent woodland on higher ground to the south, with some arable fields and pastures (probably in the river margins in summer). Sidell also makes the connection between an open landscape, monuments and sightlines between monuments (ibid.). However, Branch and Green (2004, 13) caution that there is very little evidence for the elm decline in the Middle Thames Valley upsteam of central London. For example Meadlake Place and Runnymede in Egham, Surrey provide no evidence of the elm decline, with interference in the woodland succession being minimal (ibid.). Whilst this may be correct for the first third of the 4th millennium BC, the circumstantial evidence of monument construction and frequency of tree-throws, together with the direct pollen evidence from pit 527200, shows that certainly from 3700 BC human impact was considerable.

Unfortunately at Terminal 5, soil micromorphology was less successful in providing evidence of the Early Neolithic soils:

There is little soil data on the pre-Neolithic soils other than that these were gleyic brown earths, with iron-depleted clay loam upper subsoils and clay subsoils. As no fragments of old woodland Moder and/or Mor humus horizons (Goldberg and Macphail, 2006, table 3.2) were encountered it is impossible to attempt to identify the presence of completely undisturbed woodland soils prior to Neolithic impact and cursus construction.

(McPhail, CD Section 19)

Following the excavation of pit 527200, the next event was the construction of two gullies, 527233 and 529516 / 529520 (Fig. 2.15). The northern gully, 527233, was a shallow feature approximately 26 m long and 0.80 m wide. It was orientated ENE, and it cut a pit (527200) and a tree-throw (527229). The gully was in turn cut by the eastern C1 Cursus ditch, 1.6 m to the east of the eastern gully terminus. The gully contained a scrap of unidentifiable prehistoric pottery and a handful of flint flakes of broadly Neolithic date.

Located 86 m to the south-east, a second gully, consisting of features 529520 and 529516, was orientated ENE and was approximately 50 m long (the ENE terminus was destroyed by later features). The gully was cut by the eastern ditch of the C1 Cursus. Only two flint flakes were recovered from 529520. Two other gullies (543191 and 561136) near those described could also be roughly contemporary, but the absence of stratigraphic relationships makes it difficult to determine if the finds they contain can be used reliably to date them.

The precision with which the Stanwell C1 Cursus ditch cut the ends of gullies 527233 and 529516, 1.6 metres from their termini, strongly suggests that both gullies terminated at or against a pre-existing feature or structure. If so, this has left no direct trace. The alternative explanation is that the stratigraphic relationships of the gullies and the cursus ditch were incorrectly recorded, and the gullies post-date the cursus ditch and terminate against the bank. However, these features were carefully excavated and recorded, and we respect the excavation records in this interpretation.

Lying 106 m to the east of pit 527200, near the north-western corner of the C3 Cursus, was a series of inter-cutting pits (Entity 964) contained Plain Bowl pottery, flints and quern stone fragments. This pit complex will be discussed more fully later in this chapter but we interpret the lower fills of the pits as containing domestic refuse from the settlement features cut by the C1 Cursus.

Interpretation of the landscape

Interpreting the sequence of postholes, pits, ditches and gullies described above is extremely difficult, and many alternatives are possible. The following is one alternative.

Sometime around 3700 BC, the first small localised arable and pastoral clearings created by people in the woodland cover provided a route for the massive expansion of elm disease, carried by the beetle *Scolytus scolytus* (Sidell *et al.* 2002, 46–7). This opened up the forest canopy into larger and more frequent glades and clearings (see artist's reconstruction in Plate 2.7). Within these expanding clearings, shifting cultivation and animal husbandry were practiced by family groups. These family groups left traces of their occupation in the form of the postholes described above. Along with these, there was a conscious attempt to inscribe the presence and ancestral past of the family on the land that they had cleared and occupied. As families grew and coalesced into larger groupings, and more land was exploited, this inscription and the negotiations over access to land and resources became more important. We believe that it was these concerns that caused people to construct an early monument in the shape of the two complexes of postholes near to what would become the junction of the C1 and C2 Cursus.

Further south, in Area 49, the excavation of the deep pit 527200, served functional purposes but was also as an inscription on and in the landscape: a 'vertical land cut' (Russell, 2004, 174). What happened next and when is unclear: it is possible that the two gullies (527233 and 529520 / 529516) formed part of the occupation activity in the clearing, perhaps part of an enclosure around the settlement or a stock pen. However, as discussed above, their apparent alignment with a monument (the C1 Cursus) that post-dated them suggests that some sort of structure already existed for them to be orientated on. The ditch fills of the C1 Cursus between the two gullies (527233 and 529520 / 529516) in this area are unusual and suggests a more

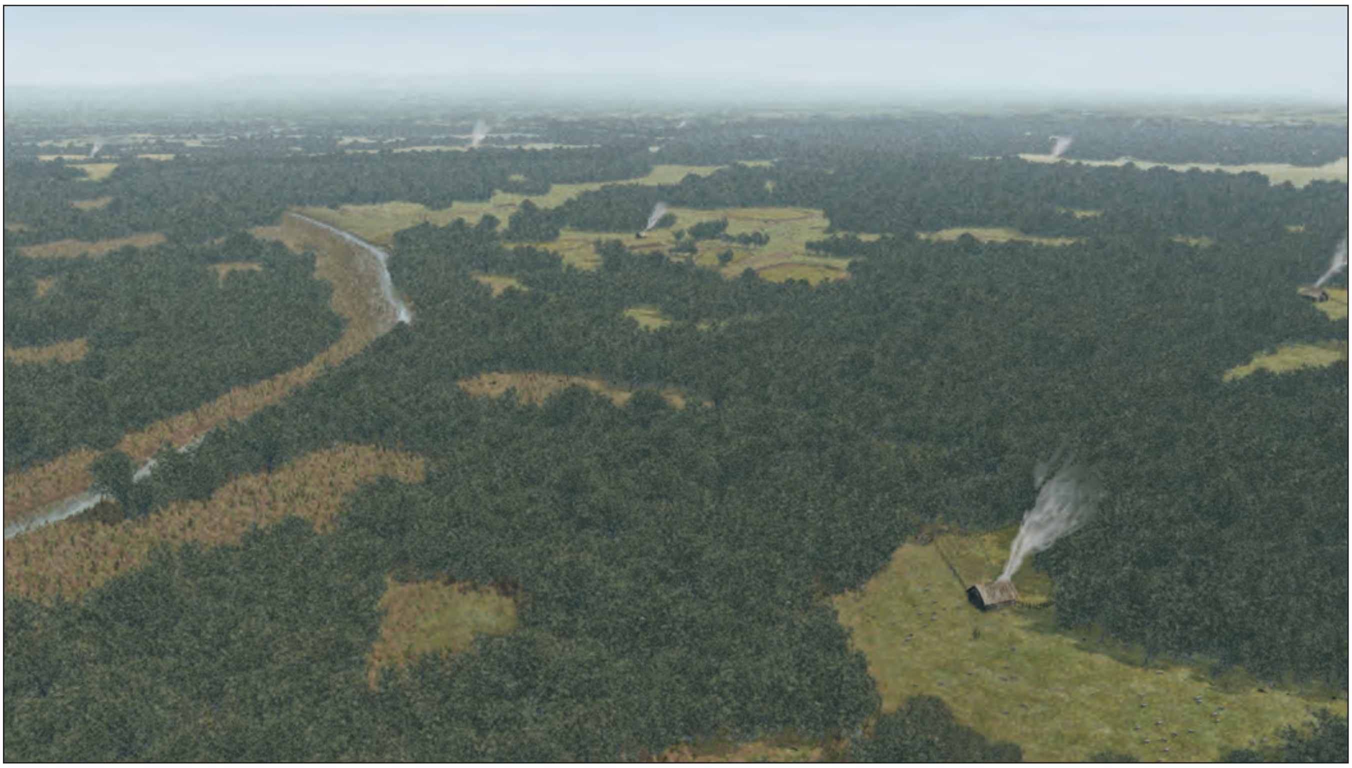


Plate 2.7: Artist's reconstruction of Neolithic pre-monument landscape

complex history of remodelling the monument than elsewhere along its course. This sequence will be described later, but it adds weight to the conclusion that this particular place in the landscape, both before and after the construction of the C1 Cursus, was of considerable importance.

Having described the timber post complex and the settlement complex, we will next turn to the construction of the first earthen monuments.

The monument complex

In the previous section we showed that immediately prior to the period of cursus construction (sometime between 3600 BC to 3300 BC) the landscape had already been opened up, with areas given over to grassland, pasture and arable fields. Within this landscape, ancient locations of human activity dating back to the Late Mesolithic (such as the burnt pit complex) were supplemented by possible settlement areas (the pit and gully complex in Area 49) and potential timber markers or monuments (the posthole complex near the junction of the C1 and C2 Cursus monuments). Within the wider landscape (Fig. 2.17), it is likely that the interrupted ditch enclosure at Yeoveney Lodge Staines (Robertson-Mckay 1987) had already been built, together with others along the Thames such as Dorney (Carstairs 1986, 164), Eton Wick (Ford 1986) and possibly Runnymede (Needham and Trott 1987, 482 and fig. 2). If the Mayfield Farm double ditched crop mark is also a causewayed enclosure (Lewis 2000, 73), then it too may have been in existence (and even gone out of use) by the time the cursus complex was constructed at Terminal 5.

The Terminal 5 monument complex was thus constructed in a world where people had already built large circular monumental enclosures, and as we have seen, had already had an impact on the Heathrow area. We will now turn to the monument complex (Fig. 2.18) itself.

Table 2.8: Terminal 5 monuments and possible sequence of construction

			Construction sequence	
Construction Date	Monument Name	Monument Type	Favourite	Alternative
2400 - 1500 BC ?	HE3 enclosure	Circular ring ditch	7	6
3000 - 2000 BC ?	HE2 enclosure	Irregular "horseshoe" shaped enclosure	6	5
3600 - 3300 BC ?	C4	Long Enclosure (cursus)	5	4
3600 - 3300 BC ?	C2	Minor Cursus (?)	4	2
3600 - 3300 BC ?	C1 Stanwell	Mega Cursus	3	3
3600 - 3300 BC ?	C3	Cursiform Long Enclosure	2	2
3600 - 3300 BC ?	HE1 enclosure	Irregular "horseshoe" shaped enclosure	1	2
3600 - 3300 BC ?	Settlement on Area 49	Pits, postholes and gullies predating C1 Cursus	1	1
Pre 3600 BC ?	Posthole complex	Postholes predating C1 Cursus	1	1

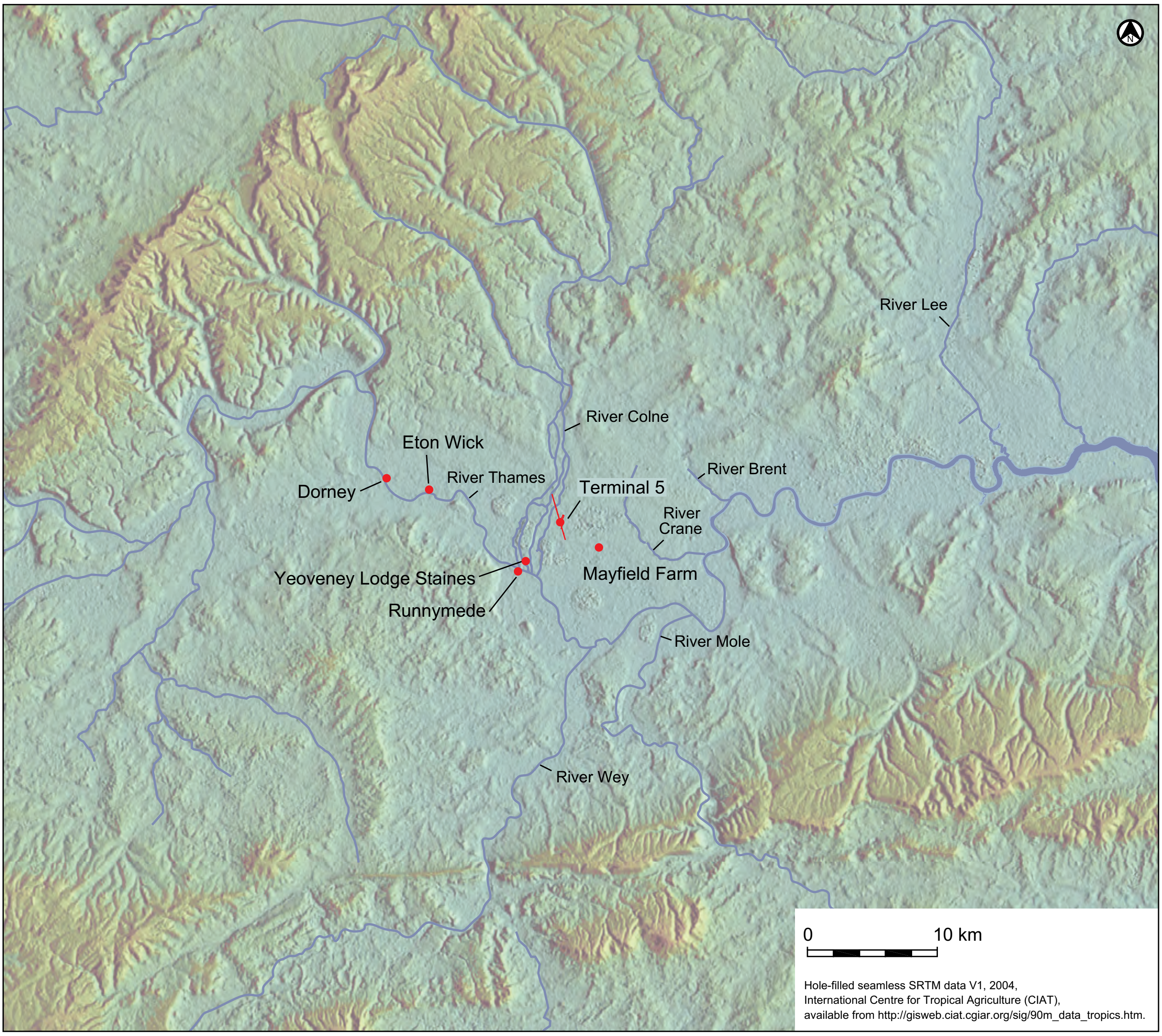


Figure 2.17: Causewayed enclosures near Heathrow

Sequence of construction

Table 2.8 lists the monuments excavated at Terminal 5, their estimated date and relative sequence of construction. We have already described the settlement and the post-hole complex, and of course the scatter of Late Mesolithic burnt flint filled pits. All these pre-date the C1 Stanwell Cursus, but the relative sequence of construction of the HE1 Enclosure and the cursus monuments themselves remain a matter for conjecture. Table 2.8 shows the sequence presented in this volume, and an alternative sequence, but several other alternatives are also possible.

The monuments at Terminal 5 fall into two clear categories:

- the small circular enclosures / ring-ditches of different forms which were constructed over a much longer period from the middle of the 4th millennium to the early 2nd millennium BC

- the cursus complex, consisting of long linear enclosures with banks or central mounds, constructed over a relatively short period sometime between 3600 and 3300 BC

The two categories of monuments clearly represent different scales of human endeavour and involvement.

The cursus monuments were conceived by the local community against the background of a national phenomenon of cursus construction. They were executed within a clear social framework, resulting in a large and coherent monumental complex. The small ring ditches were also constructed against a national background of small circular monuments, however their form is far more varied, as is their scattered distribution. In particular, they would have required far less labour to construct, and would not have required the participation of large sections of the entire community. Furthermore, the architecture and function of these monuments clearly varied over nearly two millennia.

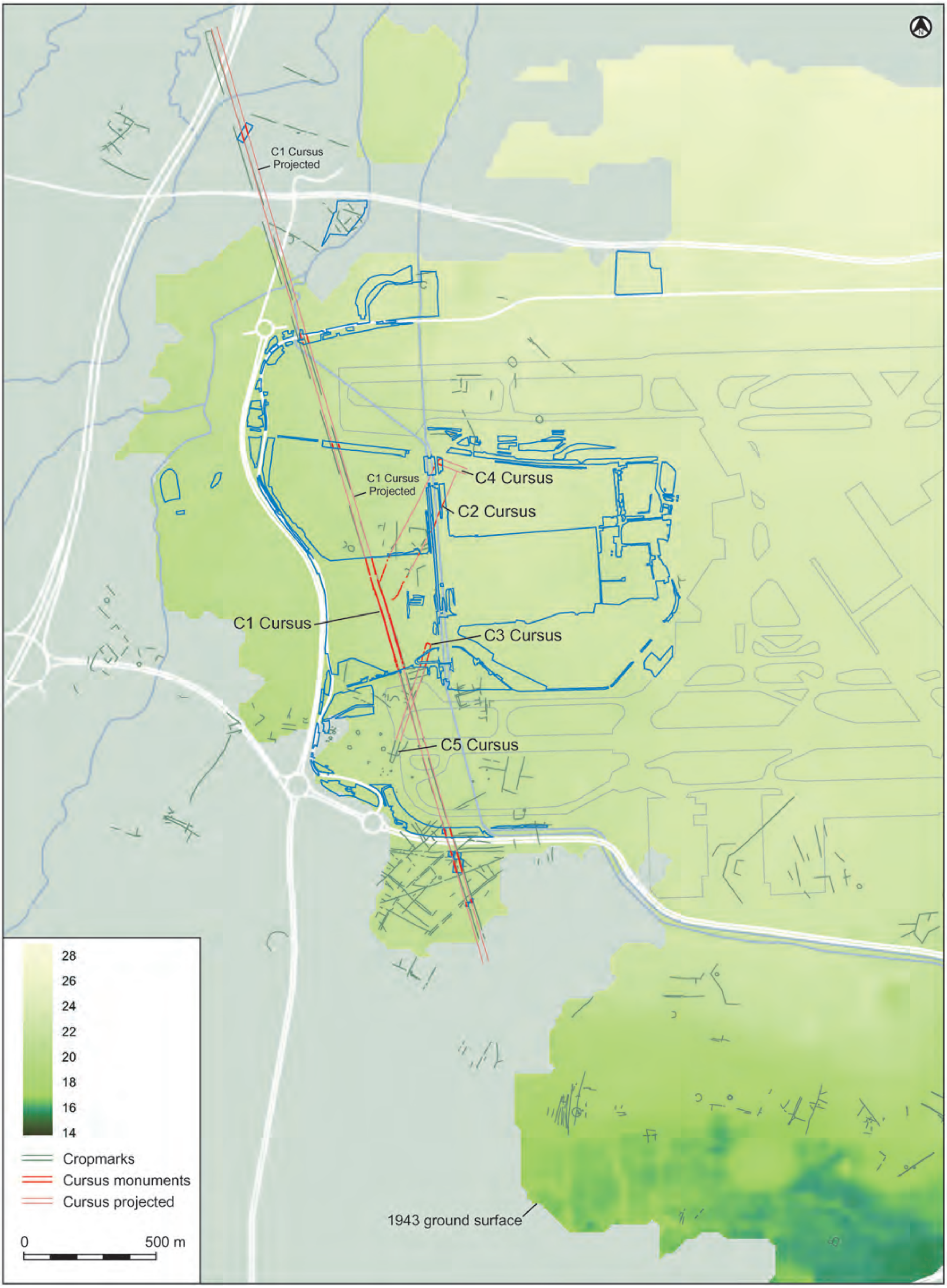
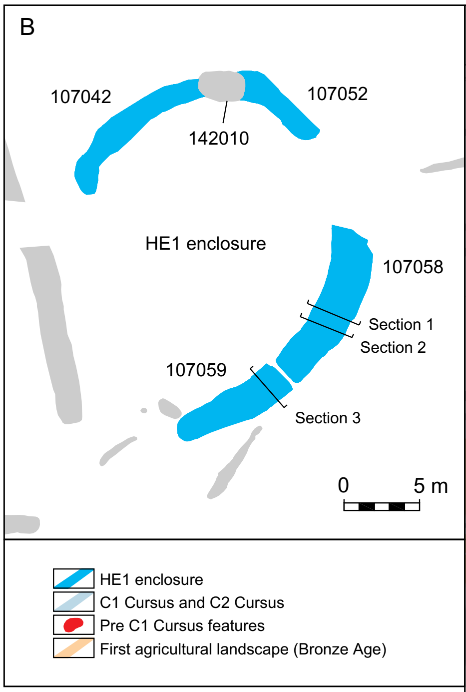


Figure 2.18: Terminal 5 cursus complex



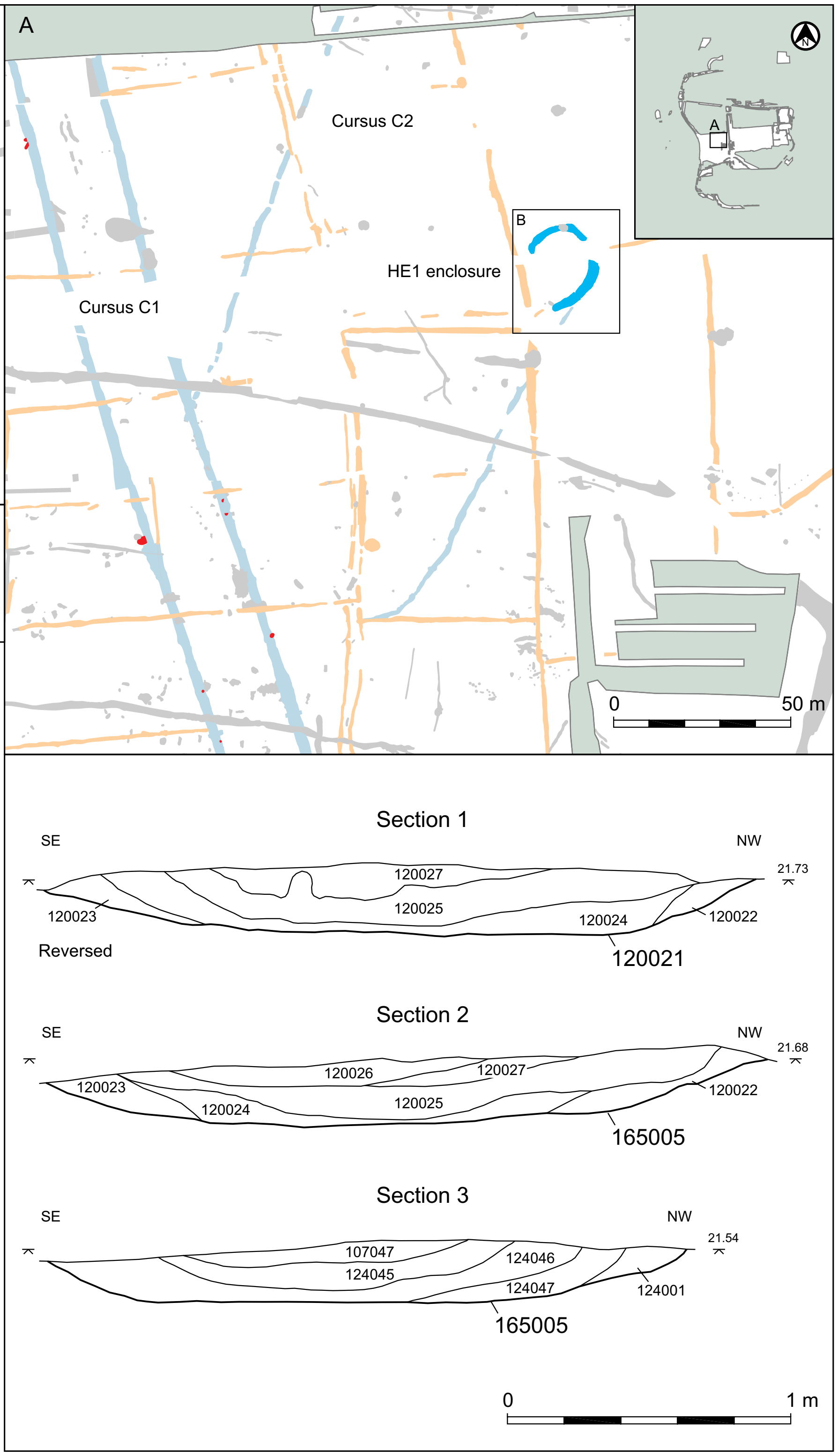


Figure 2.19: HE1 Enclosure: Plan and sections

Two of the three small circular enclosures (HE2 and HE3) have been tenuously dated to the 3rd millennium BC. The HE1 Enclosure, has, on balance, been re-assigned (compare Volume 1, 72–80) to the latter half of the 4th millennium BC. Unfortunately, due to a lack of stratigraphic relationships between the HE1 and the C2 Cursus, it has been impossible to determine if the HE1 Enclosure predated, was contemporary with, or post-dated the construction of the cursus complex. For the purposes of this narrative, we will assume that the construction of the HE1 Enclosure pre-dated the construction of the cursus complex, but that it also continued in use once these monuments had been built. Accordingly, we will consider the HE1 Enclosure first, before examining the cursus complex. We will then go on to consider the landscape and monuments of the 3rd millennium BC.

The HE1 Enclosure

In Volume 1, it was considered on the basis of the lithic assemblage that the HE1 Enclosure dated to the 3rd millennium BC. We have subsequently changed our opinion based on a reappraisal of the lithics and the possibility that the HE1 Enclosure was aligned on the posthole complex, and thus predated the C1 Stanwell Cursus. This is very tenuous evidence, and the HE1 Enclosure could equally post-date the C1 Cursus, but for the purposes of this report we will assume the former.

The horseshoe shaped enclosure HE1 (Fig. 2.19; Plate 2.8) was fully described in Volume 1 (Framework Archaeology 2006, 72–80). Since the Terminal 5 excavations added no further information on this monument, the detail will not be repeated here.

In summary, the HE1 Enclosure had been heavily truncated and could not be closely dated (see above). It was suggested that the poor condition of the flintwork from the lower fills indicated that the location had seen a long history of occupation prior to the construction of the monument. The surviving upper fills contained lithics, burnt flint, charcoal and fragments of animal bone (but no human bone) and it was suggested that this material was the result of feasting, associated with activities inside the enclosure (Fig. 2.20).

The enclosure was reconstructed as having internal banks, and it was suggested that the monument could have accommodated 10 to 12 people standing around the inside of the bank. It was noted that the south-western and north-eastern entrances were roughly aligned on the orientation of the setting sun at mid winter, and the rising sun at mid summer respectively (Fig. 2.21; see artist's reconstruction in Plate 2.9). We concluded that the primary use of the monument was to facilitate the meetings of groups of people at particular times of the year, such as the equinoxes. These people negotiated, through various media, access to land, water and other resources. The negotiations may have taken place via ceremonial occasions such as marriages, births and rites of passage and may have been facilitated through rituals which involved slaughter and / or consumption of animals. Although fragmentary, the finds signature from the remnants of the ditches could be interpreted in this way.

Plate 2.8: Section through ditch of HE1 enclosure

Thus the HE1 Enclosure was built for a small group of people to meet, perform ceremonies and observe solar events in relative seclusion. However, *Leivers (CD Section 4)* has undertaken…

…a comparison of the assemblages from two ostensibly very similar earthworks: the inner ditch at Manor Farm, Horton (Ford and Pine 2003) and the Heathrow T5 HE1 Enclosure. Ford considers the Manor Farm enclosure to belong to the class of non-megalithic funerary monuments. The suitability of this assignation is open to question, but there is certainly no reason to suppose that the HE1 Enclosure was associated with any funerary activity. That being said, the depositional signatures at the two sites have a number of similarities…The quantities and range of types present (and absent) are very similar (as are the relative proportions), and both assemblages are associated with a range of other materials (stone, bone, fired clay).

The most notable difference between the two sites is that while at Horton most of the lithics were recovered from the lower ditch silts, in association with a rich ceramic assemblage, at Heathrow the pieces were spread fairly evenly throughout the fill sequence, with those in the lower fills having more evidence of residuality (in the form of post-depositional damage) than those from the surviving upper fills, which were fresh and apparently associated with the use of the structure. Ceramics were most notable by their absence, which fact is perhaps the greatest difficulty in accepting the tentative suggestions that the HE1 material derives from food processing and consumption (perhaps feasting); the Horton material is interpreted as 'domestic material being deposited in… apparent clusters and concentrations… suggest[ing] that this is at least partly deliberate' (Ford and Pine 2003, 32).

(Leivers, CD Section 4)

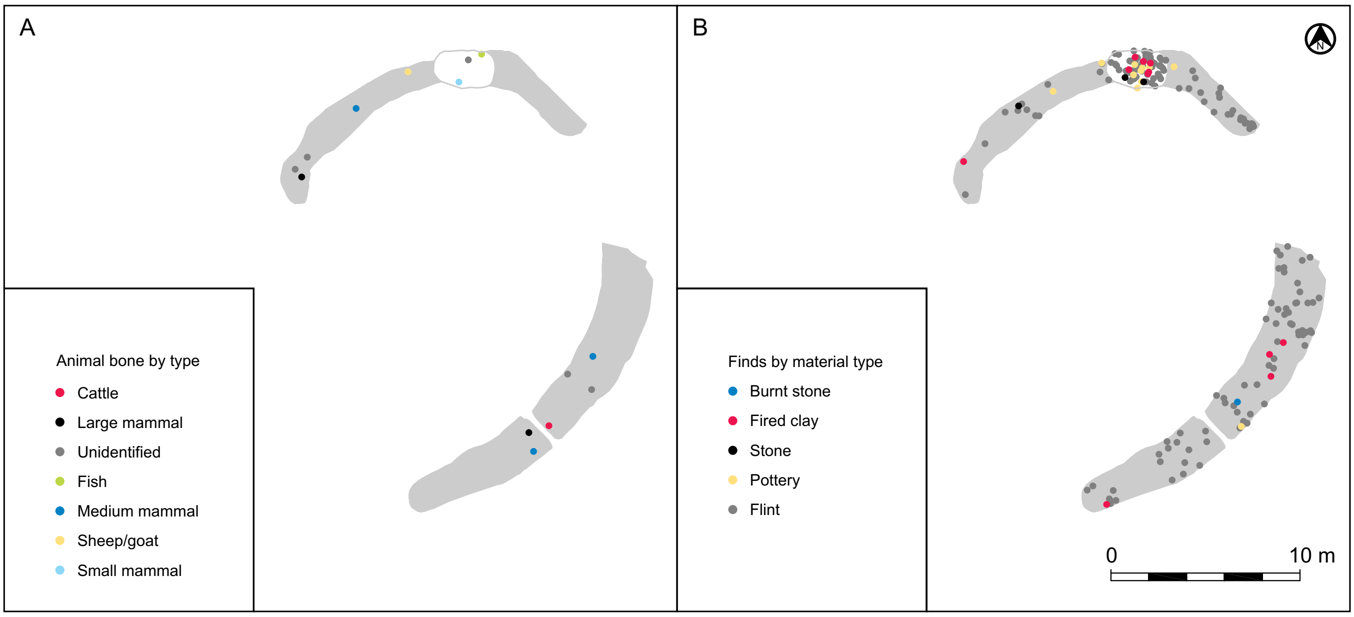


Figure 2.20: Distribution of artefacts and ecofacts within the HE1 Enclosure

Plate 2.9: Artist's reconstruction of solstice ceremony within the HE1 enclosure

Nevertheless we maintain our original interpretation of the HE1 Enclosure, since it is difficult to distinguish between domestic refuse that has been 'placed' in a pit or ditch as part of a ceremony, and material which has accumulated in a context as a result of activities such as feasting which are a by product of ceremony. The occasional inclusion of human remains within deposits that would normally be described as 'domestic' shows that 'ritual' permeated all aspects of life in the Neolithic, and was not exclusively confined to certain sites or monuments (see Allen *et al.* 2004, 97). Conversely, we may also infer that what we would think of as 'domestic' activities also intermingled with 'ritual' at sites we do think of as ceremonial monuments. What we would concede is that dating the monument on the very meagre and largely undiagnostic lithic assemblage to the 3rd millennium BC was probably optimistic, and that based on similarities with the inner enclosure at Horton, it is at least as likely that the HE1 Enclosure dates to the latter half of the 4th millennium BC.

As outlined above, the major orientation (judging by the size of entrance) of the HE1 Enclosure was towards the setting sun at mid winter, with a minor orientation on the rising sun at mid summer. The orientation of the inner Horton enclosure is the opposite of this, with the large open end of the horseshoe aligned directly towards the mid summer sunrise. There are hints that the closed south-western end may originally have been open (Ford and Pine 2003, 20). If so, then the narrower opening would have been orientated towards the sunset at midwinter. In Volume 1 we have suggested that regardless of whether the monument was built before the construction of the C1 and C2 Cursus, it remained in use afterwards (Framework Archaeology 2006, 77). The excavation of the posthole complex, which would have held substantial posts and which predates the C1 Cursus, has been mentioned previously. Figure 2.21 shows that they lay on the sightline from inside the HE1 Enclosure towards the sun as it would have set behind the later position of the C1 Cursus at the mid winter solstice (Framework Archaeology 2006, 74–81). This raises the possibility that (contrary to the sequence expressed in Volume 1) the HE1 Enclosure and the (at least three) postholes were contemporary, and thus predate the C1 Cursus. If correct, then the HE1 Enclosure and the post-hole complex would have been contemporary, and acted in tandem. Alternatively, the HE1 Enclosure may have been built specifically at a location which was already of some importance, and from which people could view the sun as it set behind an already existing posthole complex. We have suggested in Volume 1 that even after the construction of the C1 and C2 Cursus, the HE1 Enclosure still acted as a meeting place for a select group of individuals from the community who continued to meet at mid winter to view the sun setting behind the mound of the C1 monument (see Plate 2.9).

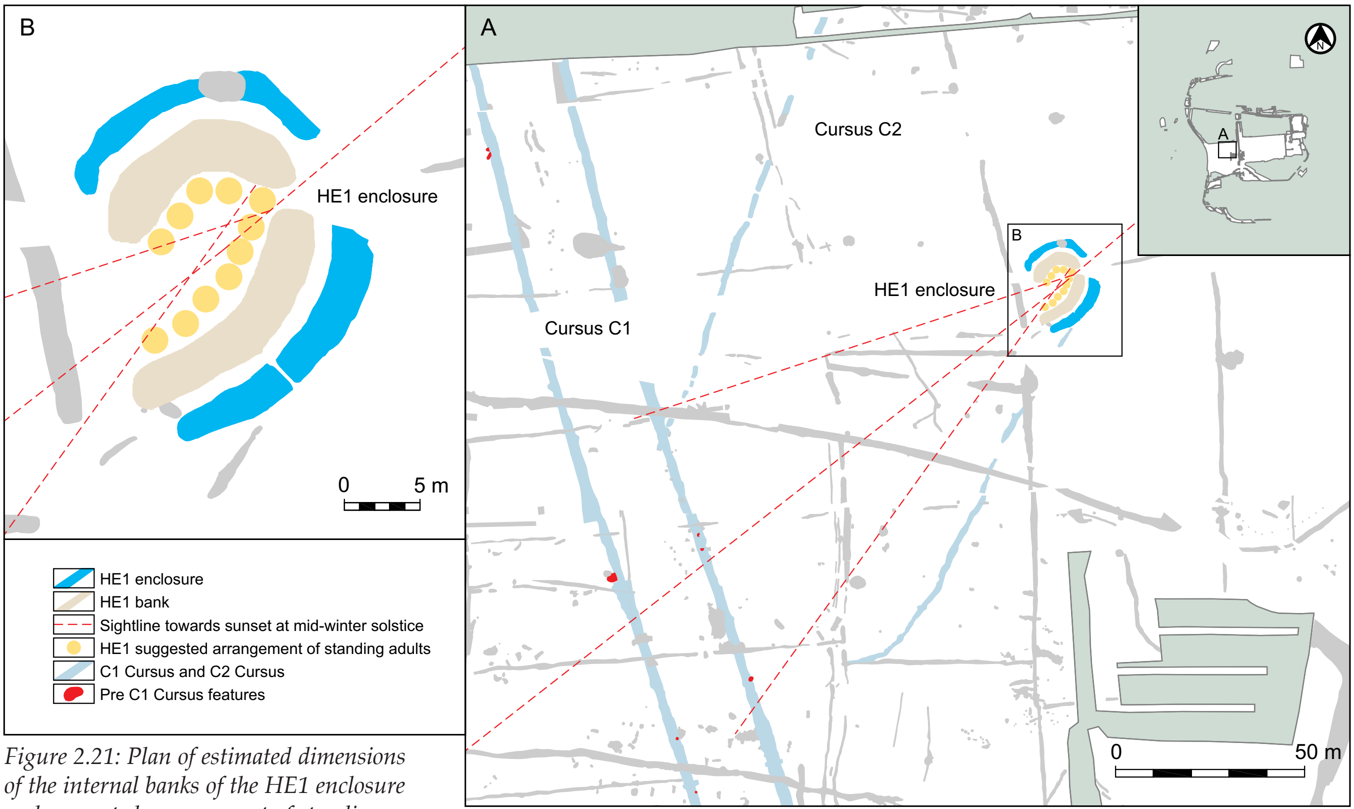


Figure 2.21: Plan of estimated dimensions of the internal banks of the HE1 enclosure and suggested arrangement of standing adults with site lines

Comparison with other circular monuments in west London

The HE1 Enclosure is one of a number of small prehistoric circular or sub-circular monuments that have been excavated in West London. Figure 2.22 compares the plan of these monuments. Table 2.9 shows that small circular monuments are generally very poorly dated, but that they appear to have been constructed from the late 4th to the early 2nd millennia BC. We will consider all the examples from the Neolithic / Early Bronze Age here (for references see Table 2.9).

Monument architecture included internal mounds (Hurst Park) and internal banks, although the evidence of the location of any earthen upstanding features is very slight at all sites. There are no distinctive morphological indicators, other than some of the horse-shoe shaped enclosures, which appear to date to the late 4th millennium BC. The two ring ditches excavated during the extension of the northern runway at Heathrow in 1969 produced inconclusive dating evidence, nor was there clear evidence for the original above ground architecture of the monuments.

The Ashford Prison ring ditch may have originated as a horseshoe shaped enclosure but the circuit was subsequently closed (Carew *et al.* 2006, 18), while the Staines Road Farm monument had a small entrance in the north-east. The excavators of both monuments have drawn attention to the emphasis on the north-eastern part of the circuit of these sites. In addition, the open side of the inner enclosure at Manor Farm Horton also faces to the north-east. It has been suggested that the gap in the circuit of the Shepperton site was aligned on the mid summer sunrise, (as with the HE1 Enclosure) although the excavator is doubtful of this (Jones 2008, 77). The presence of Plain Bowl Neolithic pottery at the Shepperton site suggests an earlier phase of activity, and the inner enclosure at Horton is certainly associated with Plain Bowl pottery. The ditch of the inner enclosure also cut three postholes, whilst another three appear to have rotted *in situ* (Ford and Pine 2003, 20). This suggests the site was the location of a timber structure prior to the construction of the inner ditch, a situation similar to the post complexes pre-dating and contemporary with the C1 Cursus.

The Ashford Prison ditch was cut by a posthole circle after it had silted up.

Construction of the outer ditch at Horton and its association with Peterborough Ware is the clearest demonstration of the tendency to modify and re-invent existing enclosures (including perhaps Staines Road Shepperton?) or to construct new monuments (Ashford Prison). Both the Shepperton and Horton outer enclosure were receptacles for deliberate deposition of human and wolf / dog remains (Shepperton) and containers manufactured from birch bark (Horton). Both the enclosures at Imperial College contained human cremations associated with Peterborough Ware pottery inside their circuits, which have produced radiocarbon dates of approximately 3000 BC (A. Barclay pers. comm.)

The range of the finds assemblage at Horton (including extraordinary bark containers) and the burials at Staines Road Farm Shepperton illustrate the range of organic material that may once have exited at the Heathrow Terminal 5 sites. However, only the HE1 Enclosure contains anything

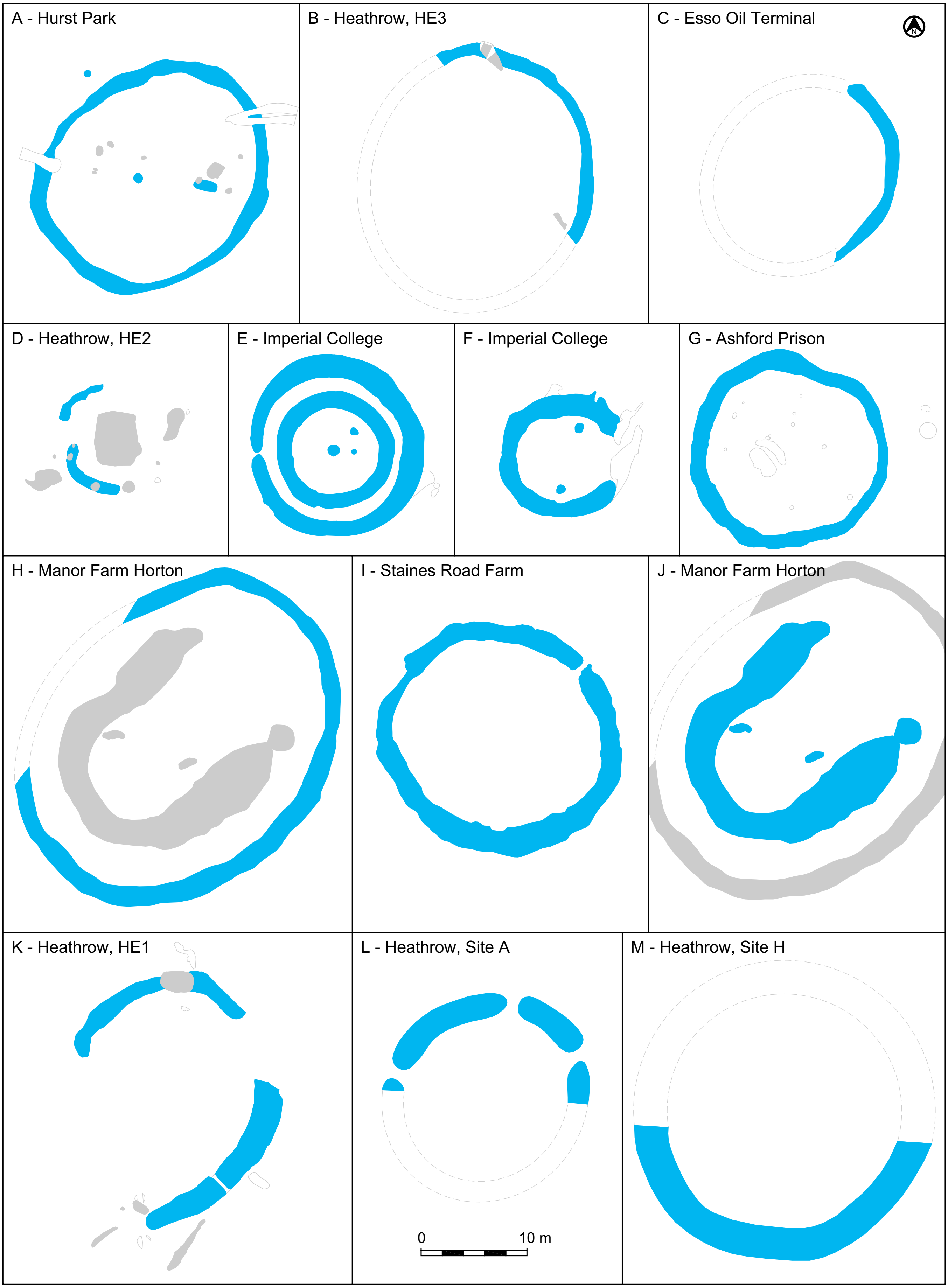


Figure 2.22: Comparison of Neolithic circular monuments in the West London area

approaching the quantity of inorganic finds from these sites (and that at Ashford Prison). We may therefore suggest that the HE1 Enclosure dates to the later 4th millennium BC.

The cursus monuments

Table 2.10 compares the main attributes of the five cursus monuments at Heathrow, and classifies them according to Loveday's (1985 and 2006) scheme. Several points are apparent from Figure 2.23 and Table 2.10:

- Despite the very large area excavated at Terminal 5, none of the cursus monuments were revealed in their entirety, leading to uncertainty over their exact classification, particularly with regards length and form of terminal.

- The stratigraphic relationships between the four monuments are uncertain, with only the relationships between the C1 and C2, and the C2 and the C4 monuments apparent, and even these are tenuous.

Ref	Site Name	Construction Date	Monument	Monument Type	Artefacts	Internal Diam.	References
A	Hurst Park East Mosley	1700 - 1500 BC ?	Ring Ditch 23	Continuous sub-circular ovoid enclosure with internal mound	1 EIA sherd and 2 LBA pot sherds from ditch. Central burial with secondary series Collarerd Urn.	21 x 18	Andrews 1996
B	Terminal 5	2400 - 1500 BC ?	HE3 Enclosure	Circular ring ditch	Collared Urn/Beaker and later pottery, animal bone fragments and occasional flint flakes.	19	This volume
C	Esso Oil Terminal West Bedfont	3000 - 2000 BC ?	Ring Ditch	Circular (?) ring ditch	Grooved Ware.	18	Farrant 1971; WA unpublished report
D	Terminal 5	3000 - 2000 BC ?	HE2 Enclosure	Irregular incomplete "horseshoe" shaped enclosure	Grooved Ware, Peterborough Ware and transverse arrowhead.	10	This volume
E	Imperial College Sports Ground	3000 BC approx. C14	Double Ring Ditch	Double ditched circular enclosure	Peterborough Ware cremations inside ring ditch.	18	Crockett 2001, fig 2; C14 dates A. Barclay
F	Imperial College Sports Ground	3000 BC approx. C14	Penannular cremation enclosure	Single ditch open circular enclosure	Peterborough Ware cremations inside ring ditch.	17 inner circuit	Crockett 2001, fig 5; C14 dates A. Barclay
G	Ashford Prison	3400 - 2500 BC ?	Ring Ditch 1	Continuous circular enclosure	Peterborough Ware pottery, worked flint.	17.5	Carew *et al* 2006
H	Manor Farm Horton	3300 - 2900 BC approx. C14	Ring Ditch outer enclosure	Continuous oval enclosure	Peterborough Ware pottery, bark containers (radiocarbon dated), worked flint, antler and animal bone.	30 x 24	Ford and Pine 2003
I	Staines Road Farm Shepperton	3600 - 3100 BC approx. C14	Ring Ditch G	Sub-circular enclosure with narrow gap in the north east	Predominantly Peterborough Ware, Plain Bowl Ware pottery, worked flint, human and animal bone (wolf/dog), and radiocarbon dates.	20	Jones 2008
J	Manor Farm Horton	3600 - 3300 BC ?	Ring Ditch inner enclosure	Irregular "horseshoe" "U" shaped enclosure	Plain Bowl Ware, worked flint, animal bone and fragments of human bone.	9	Ford and Pine 2003
K	Perry Oaks/ Terminal 5	3600 - 3300 BC ?	HE1 Enclosure	Irregular "horseshoe" shaped enclosure with internal banks	Flint, burnt flint, fragments of animal bone and no pottery.	17	Framework Archaeology 2006; this volume
L	Heathrow Runway extension 1969	Undated	Site A	Sub circular interrupted ditch enclosure	Flint flakes.	15	Canham 1978
M	Heathrow Runway extension 1970	Undated	Site H	Circular ring ditch	Flint flakes.	20	Canham 1978

Table 2.9: Small circular Neolithic and Early Bronze Age enclosures in the Heathrow area

Monument	Bank type / position	Terminal (Loveday 1985 & 2006 classification, see also Barclay et al 2003, 219)	Length (m)	Width (m) centre lines of ditches	Area (ha) enclosed	Orientation degrees from OS North	Loveday 2006 classification
C1 Stanwell	1 internal mound	Northern rounded, adjacent to Colne branch Southern unknown, probably terminated at the break of slope between the Taplow and Kemton Park terraces (Ai, ?)	minimum 3600 probably 3800	23	8.7 ?	164	Mega Cursus
C2 Cursus	Inconclusive	Northern formed by C4 Cursus? Southern formed by C1 Cursus (?)	530 if C4 is the terminal	80 - 90	4.5 ?	24	Minor Cursus (?)
C3 Cursus	2 internal banks	Northern squared Southern possibly rounded (Bii, ?)	230 (or 470 if it joins C5)	19	0.43 ? (or 0.95) ?	15	Long Enclosure or Cursiform Long Enclosure ?
C4 Cursus	2 external banks	Western rounded Eastern unknown (Aii, ?)	possibly 82 but less than 640	21	0.17 ?	110	Long Enclosure ?
C5 Cursus	Unknown cropmark only	Northern rounded Southern rounded (Ai)	231 (or 470 if it joins C3)	19	0.4 ? (or 0.95) ?	19	Long Enclosure ?

Table 2.10: Comparison of Terminal 5 cursus monuments

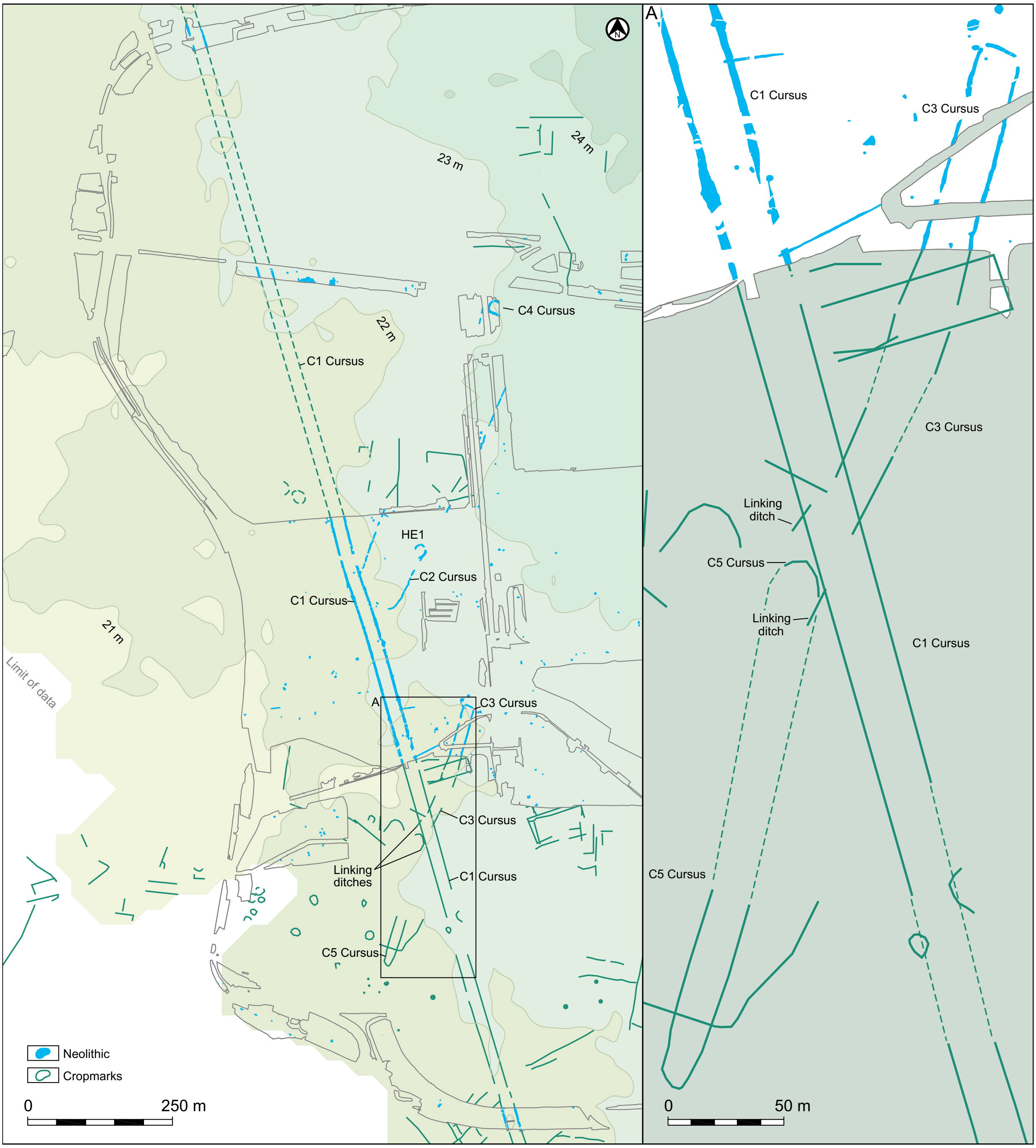


Figure 2.23: Terminal 5 cursus monuments in relation to local topography and crop marks

- The four excavated monuments probably represent four different classes of cursus.

- The bank architecture differs for each cursus.

- The C1 Stanwell is at least five times longer than either of the other monuments, although because of its width, the C2 monument encloses almost half the area of the C1 Cursus.

- The C1 and the excavated portions of the C3 and C4 cursus are all geometrically regular in their plan. That is, there is little variation in the orientation or the separation between their ditches which are close to parallel. The C2 Cursus is geometrically more irregular, with variations in the separation of the ditches.

- The separation of the ditches of the C1, C3 and C4 cursus is very similar, varying from 19 to 23 m, and are thus narrow monuments. The C2 Cursus ditches vary from 80 to 90 m apart, and it is approximately four times wider than the other monuments.

Plate 2.10: Artist's reconstruction of Neolithic monumental landscape prior to the C1 Cursus

In the absence of radiocarbon dates and only two tentative stratigraphic relationships between the monuments, it is difficult to be certain about the sequence of monument construction. We will describe how crop mark evidence can be interpreted to show that the (archaeologically unexcavated) C5 monument was later extended by being linked to the C3 Cursus, which in turn was overlain by the construction of the C1 Stanwell Cursus. In Volume 1, it was reported that the pits which formed the southern end of the northern C2 Cursus ditch cut the lower fills of the eastern C1 ditch (Framework Archaeology 2006, 72). The kink in the C1 Cursus was explained as a deviation to incorporate the location of the posthole complex described above. However, it is equally possible that the kink in the C1 Cursus was a result of the monument avoiding the southern terminal of the C2 Cursus, and that the pits were a later addition to the C2 monument to tie it into the new C1 Cursus. This would mean that the southern terminal of the C2 Cursus was originally open-ended, a not unknown, but very rare occurrence. Similarly, it is by no means certain that the ditch that the C4 Cursus overlies is part of the C2 Cursus, since evidence for the course of the latter monument at its northern extent is tenuous.

We will commence our sequence with the construction of the C3 / C5 Cursus.

The C3 and C5 Cursus

On the basis of aerial photographic evidence (see below), we consider the C3 Cursus to be the first of the four excavated monuments to be constructed (Fig. 2.23; see artist's reconstruction in Plate 2.10). The presence of the C3 Cursus was detected from aerial photographs and confirmed during excavation, although only 91 m of the NNE end of the monument was exposed. Unfortunately the remainder of the monument, together with its relationship with the C5 and C1 Stanwell Cursus, was probably destroyed during the extension of the southern runway in the late 1960s. The runway also destroyed the C5 Cursus, the evidence for which survives only as a transcribed crop mark. The crop mark evidence suggests that the C5 Cursus was originally a separate monument, but was subsequently joined onto the C3 Cursus prior to the construction of the C1 monument.

Development and stratigraphy

The aerial photographs suggest that the C3 Cursus did not have a straight alignment (Fig. 2.23). However, the excavated portion of the cursus followed a fairly straight alignment (Fig. 2.24). The two roughly parallel ditches (approximately 19 m apart from the centre line of each ditch) were on average 1.3 m wide and 0.55 m deep, with straight or concave sides and base. Some variation with respect to shape, profile, dimensions and fill sequences was detected, which was due to both truncation and the segmented nature of the ditch construction. Neither ditch was straight but both meandered and kinked slightly; in one case this appeared to respect an earlier tree hollow (or perhaps a still upstanding tree).

A possible entrance to this monument may be detected in its north-western corner, immediately beyond which lay a number of intercutting pits containing quantities of Neolithic finds (Fig. 2.24). This entrance is marked by two rounded ditch terminals with a gap of 2.2 m, and the pit cluster is situated just under 9 m in direct alignment with

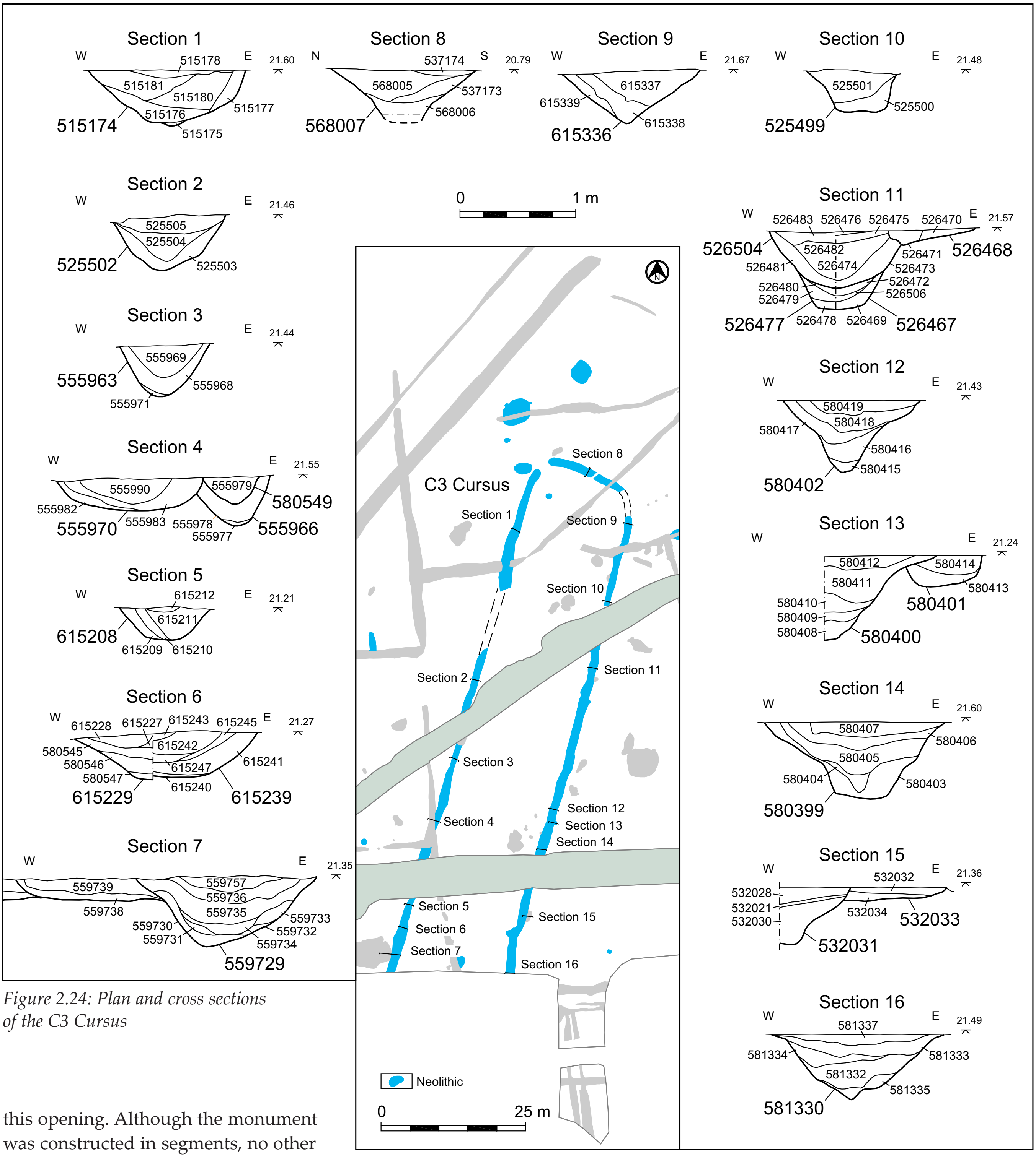


Figure 2.24: Plan and cross sections of the C3 Cursus

this opening. Although the monument was constructed in segments, no other definite access points were recognised, and all other breaks in the ditches were caused by modern truncation and intrusions.

Once outside the excavated area, the crop marks shows that the cursus starts to change alignment from SSW to south-west (Fig. 2.23). The 1943 topography shows that the 22 m contour changes here. In fact, the cursus seems to bend to follow the contour to the point where the contour, the C3 and the C1 Cursus meet. The total length of the C3 Cursus from the NNE terminal to the central bank of the C1 Cursus is approximately 205 m. The crop marks also show a rectangular enclosure running perpendicular to the C1 Cursus and cutting the C3 Cursus, but the date of this feature is unknown. It may correspond with post-medieval field boundaries shown on maps of 1748 and 1765 (see Chapter 5).

To the south-west of the C1 Stanwell Cursus, the crop marks show another separate cursus (the C5 monument) approximately 230 m long and 19 m wide. Crop marks show a possible terminal for the C5 Cursus approximately 11 metres to the south-west of the eastern C1 ditch. It would appear that the C5 monument became joined onto the C3 Cursus, since crop marks show the presence of two parallel linking ditches originating to the west and par-

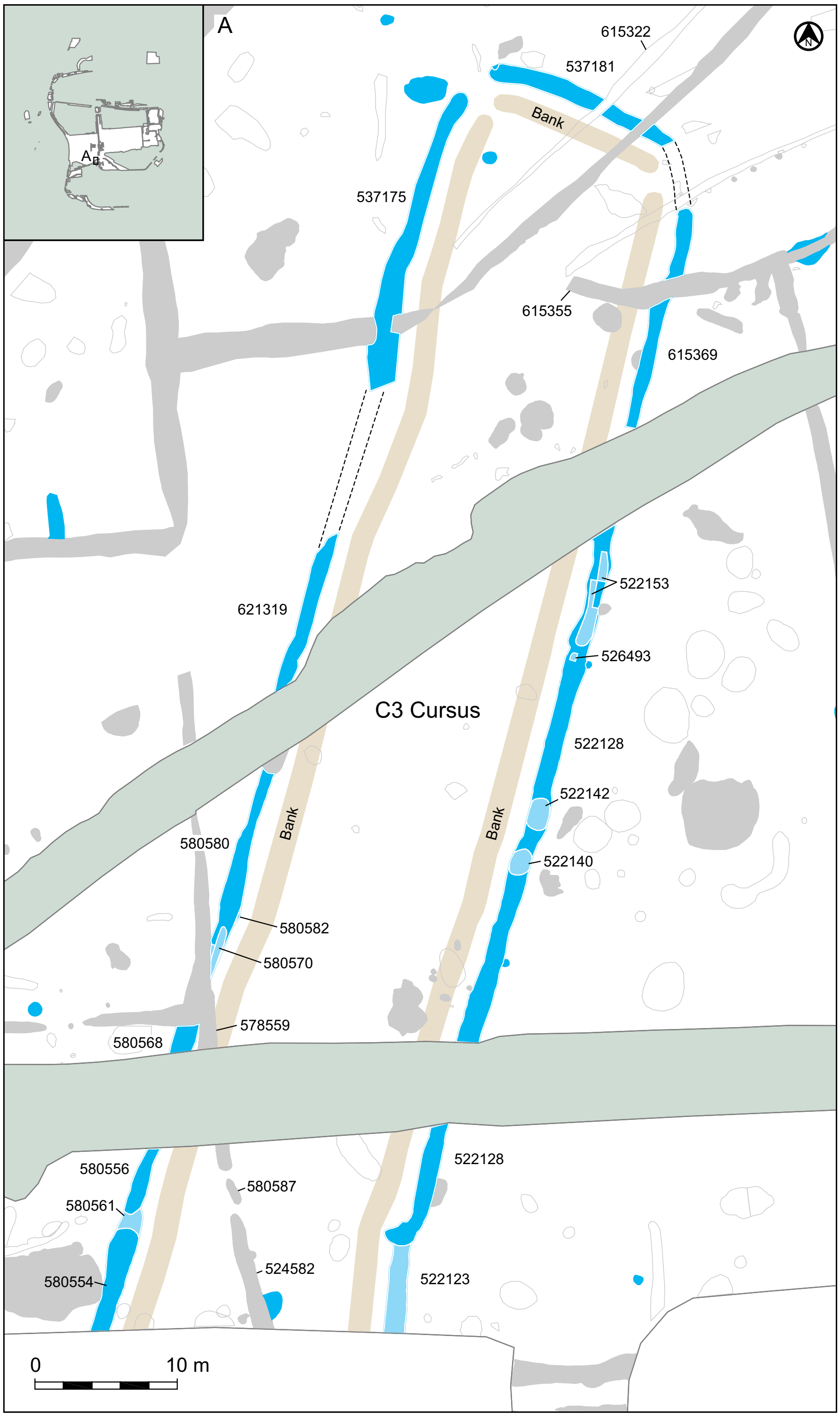


Figure 2.25: C3 Cursus ditches and position of banks

ticularly to the east of the C1 Cursus central bank. If these crop marks do form an extended monument consisting of the C3 and C5 Cursus, then the whole complex would have measured approximately 470 metres long. It is noticeable that the parallel linking ditches are not visible in the area of the C1 central bank. It is unknown whether this means that the C1 Cursus post-dates the C3 /C5 complex, or whether the C3 /C5 complex ditches were dug up to but not over the C1 bank (possibly similar to the relationship between the C1 and C2 Cursus), or whether the ditches simply did not show as crop marks in that particular area. However, on balance we favour the interpretation that C3 Cursus predated the C1 Stanwell monument.

The crop mark evidence suggests that the C3 Cursus had a complex history of development, and this is borne out by the excavated evidence. The site of the monument was cleared of woodland, as demonstrated by tree-throw 532033 which was cut by eastern cursus ditch (Fig. 2.24, Section 15). Also, in common with the C1 and C2 cursus, there is evidence for activity predating the construction of the monument in the form of pit/posthole 580401, which is cut by the eastern cursus ditch (Fig. 2.24, Section 13).

Both the western and eastern ditches show evidence in plan and in section of being dug in segments (Fig. 2.24), though whether this is the result of a gradual extension northwards and southwards of the monument, or whether they represent the subsequent re-cutting of the original ditches is uncertain. For example, the earliest feature in the western ditch is 580561, a short length of ditch or elongated pit, which when silted up, was extended to the south by 580554 and to the north by ditch 580556 (Fig. 2.25). The stratigraphy of the northern extension is obscured by the Bronze Age field ditches as they cross the cursus, but features 580568 and 580582 probably represent the northern continuation of 580556. Ditch 580556/58068/580582 measures approximately 22 m long before it in turn is cut by 580580. The upper fills of 580582 and 580580 are cut by a gully 580570, but this may be associated with the adjacent Bronze Age field boundary rather than deliberate recutting of the Neolithic cursus ditch. No further ancient extensions or recuts were detected as this ditch extended northwards as features 621319 and 537175, the divisions being due to modern intrusions.

The eastern ditch has a slightly less complex history (Fig. 2.25). In the south, ditch 522123 is cut by 522128, which runs northward, becoming 615369 after a modern intrusion. However, two pits (522140 and 522142) were cut through the middle fills of 522128, and apparently sealed by upper fills of the ditch. No finds were recovered from either of these features. Further north, two irregularities

C3 Cursus	Struck flint			Pottery					
				Unidentified		Plain Bowl Ware		Peterborough (Mortlake) Ware	
Ditch	Feature	Debitage	Tools	No. sherds	Weight (g)	No. sherds	Weight (g)	No. sherds	Weight (g)
North	537181	9	-	2	6	-	-	-	-
West	537175	8	1	12	13	6	5	-	-
	580580	39	1	5	6	-	-	2	3
	580554	10	-	-	-	-	-	-	-
Total West		**57**	**2**	**17**	**19**	**6**	**5**	**2**	**3**
East	522128	20	1	1	4	-	-	-	-
	522123	1	-	1	1	-	-	-	-
Total East		**21**	**1**	**2**	**5**	**-**	**-**	**-**	**-**
Total		**87**	**3**	**21**	**30**	**6**	**5**	**2**	**3**

Table 2.11: Lithic and pottery assemblages from the C3 Cursus

(526493 and 522153) were interpreted as the base of the original cut of the eastern ditch, which had subsequently been recut by 522128. Given the presence of an early feature such as 580561 in the western ditch, such an interpretation is entirely possible, but equally features 526493 and 522153 could simply represent a more uneven base in this part of ditch 522128, and not separate features at all. The northern terminus ditch (537181) had a rather more straightforward history, and would appear to have been constructed in a single phase.

Two scenarios can be envisaged for the development of the excavated portion of the C3 monument. Firstly the monument developed through the progressive addition of ditch segments before being finally terminated with the northern ditch 537181. If so, then some time would have elapsed between the digging of each segment, since each new segment cut through the already silted profile of the previous segment. This would also suggest that the monument was, for much of its history, a work in progress. The second interpretation, and the one favoured by the excavators on site, is that the monument was laid out in one phase, and that the fills of the ditch segments represent the final phase of recutting and / or cleaning of the original monument. This would suggest a more coherent original 'scheme' which was then maintained over a period of time.

If we consider the excavated and the crop mark evidence together, then it is possible that the C3 Cursus was a north-eastward extension of the C5 Cursus. However, there would be nothing to preclude the continued maintenance and cleaning of the ditches of the monument, whether before or after its constituent parts were linked together. When compared with causewayed enclosures, evidence for recutting and maintenance of cursus ditches is relatively rare although this has been noted at the Lesser Stonehenge monument and Holyrood North (eg Loveday 2006, 38). The recutting of causewayed enclosure ditches is often associated with the deliberate deposition of artefacts and animal remains, again in contrast to the C3 Cursus. This suggests that the maintenance of the C3 ditches was aimed at maintaining the above ground architecture of the banks(s), rather than the deposition of artefacts.

Architecture

Determining the number and position of banks constructed from the up cast of the ditches is particularly difficult for the C3 Cursus. The sections through the ditches often provide little or contradictory evidence, which is unsurprising given the complicated history of development described above. For example, section 615208 (Fig. 2.24, Section 5) through the western ditch suggests filling from the west, outside the monument, whilst section 515174 (Fig. 2.24, Section 1) suggests filling from the west, followed by the east and finally from the west again. Section 580402 (Fig. 2.24, Section 12) through the eastern ditch suggests the presence of a bank to the west, inside the monument, as does section 615336 (Fig. 2.24, Section 9). However, section 525499 (Fig. 2.24, Section 10) suggests filling from the east, outside the monument. Unlike the Stanwell C1 Cursus, the evidence from later ditches which cross the C3 monument is also far from conclusive in determining the position and number of banks. No Bronze Age ditches completely traversed the C3 Cursus since they were either interrupted by modern intrusions or the excavated area did not extend far enough. However ditch 615355 visibly narrows to the west of the eastern cursus ditch, and sections show it is slightly shallower by approximately 10 cm in the narrower segment (Fig. 2.25). To the south, the Bronze Age ditch complex (524582) becomes a shallow segmented pit 580587 before resuming as a truncated ditch segment 578559. Finally, post-medieval ditch 615322 narrows slightly after crossing the northern terminus ditch 537181, then widens slightly before narrowing appreciably just inside the western C3 ditch. This is the opposite pattern to that seen where Bronze Age ditches cut across the central bank of the C1 Cursus. Taken together, the slender evidence from the ditch profiles and plans of the later ditches crossing the C3 Cursus would suggest the presence of a low bank running parallel to and just inside each cursus ditch (Fig. 2.25). If we allow truncation of *c* 0.35 m to the ditches as recorded, this would translate into each bank being approximately 1.6 to 1.7 m wide and 0.7 to 0.8 m high. However this evidence is very slender and given the history of the development of the monument, the architecture may have changed over time and along the length of the cursus.

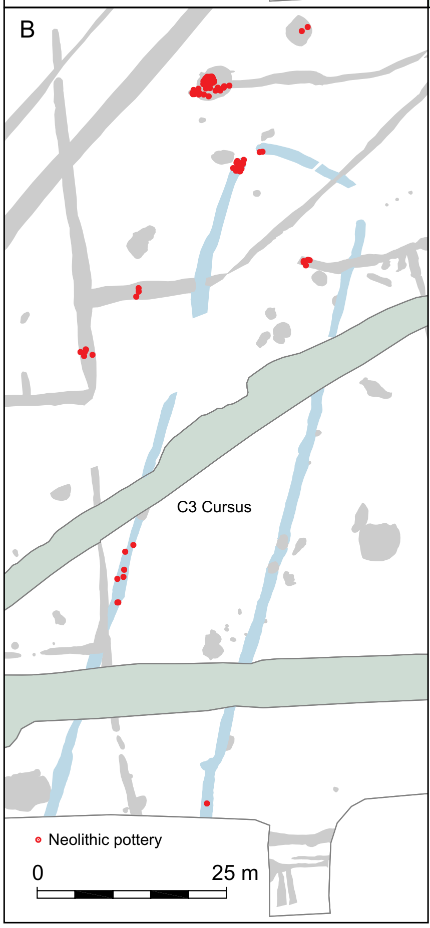


Figure 2.26: Distribution of lithic and pottery assemblages from the C3 Cursus

Chronology

Only a small number of finds were retrieved from the ditches of this monument (Fig. 2.26; Table 2.11). Stratigraphically the finds are distributed mainly within the middle and upper ditch fills, with little from the basal fills. The lithic assemblage is characterised by flakes and other debitage produced using hard hammer technique, and as such can be dated no closer than the Neolithic. Three refitting flakes were contained in feature 522123, the southern segment of the eastern ditch, showing that flint working had occurred close by. The retouched tools consisted of two awls and a retouched flake, again of a general Neolithic date.

The majority of the small pottery assemblage was unidentifiable, but six tiny sherds of Neolithic Plain Bowl Ware were located in the northern terminus of ditch 537175 adjacent to the entrance (see Fig. 2.27, Section 15). Two very small sherds of Peterborough (Mortlake) Ware were located in segment 580580 of the western ditch (see Fig. 2.27, Section 16). The very small size and poor condition of the pottery limits the value of the assemblage for dating: the material may be residual or intrusive, and is likely to derive from activity outside the monument rather than inside (see below). The sherds would indicate a date of between *c* 3600 to 3300 BC for the Plain Bowl Ware, and 3400 to 2500 BC for the Peterborough Ware. Probably the closest we can date the origins, modification and disuse of the C3 monument is, like the other Terminal 5 linear monuments, to the last half of the 4th millennium BC.

Finds distribution

Figure 2.26 and Table 2.11 show that the majority of the finds from the C3 Cursus are located in the western ditch, with concentrations at the north-western entrance and mid way along its length. However, this distribution must be seen in the context of the other Neolithic features and monuments in the vicinity of the C3 Cursus such as the C1 Stanwell Cursus, the two gullies (529516/52952 and 527233) which

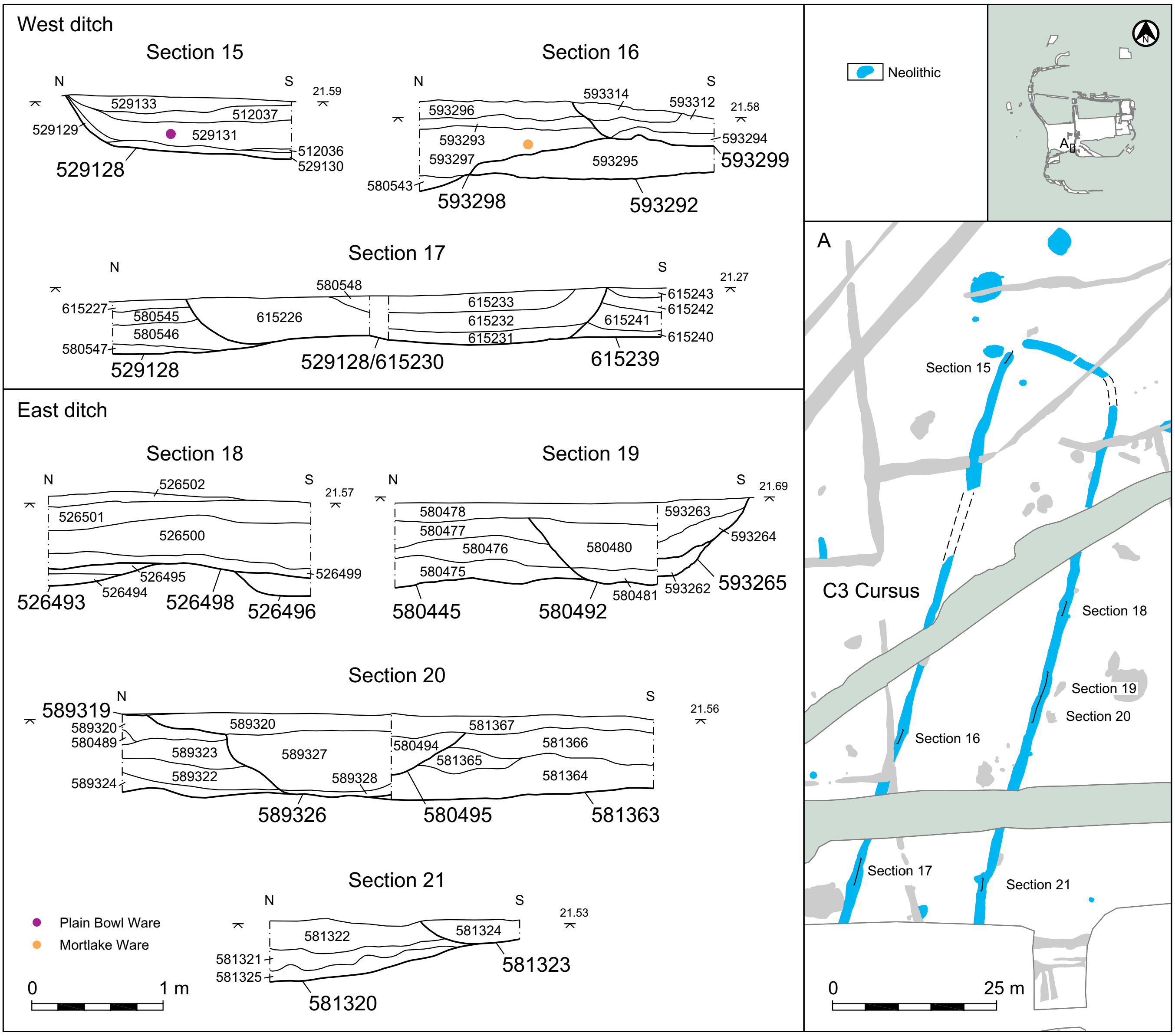


Figure 2.27: Long sections of C3 Cursus

predate the C1 Cursus and the series of intercutting pits (527117, 527135 and 527142) approximately 10 m to the north-west of the C3 entrance.

Seen in this light, the distribution of finds in the C3 Cursus ditches would seem to be the product of activity in the area defined by the C1 and C3 cursus and the two gullies and inter-cutting pits, rather than activities within the C3 Cursus itself. If our interpretation of the crop mark evidence is correct, sometime after the linking of the C3 and C5 cursus to form one large monument, the complex was cut a cross by the extraordinary C1 Stanwell mega-cursus, and it is this monument that we will turn to next.

C1 Stanwell Cursus

The Stanwell Cursus was first recognised from crop marks on aerial photographs (see Fig. 2.23 above), although initially it was interpreted as a Roman Road. Excavation of a length of the cursus to the south of Terminal 5 (O'Connell 1990) conclusively proved that the twin parallel ditches were stratigraphically earlier than a Bronze Age field system, and that the few finds contained within their fills dated to the Neolithic. O'Connell also suggested that the cursus contained a single central bank, and noted from aerial photographs the 'kink' described in Volume 1 of this series (Framework Archaeology 2006, 57), which we now know to correspond with the junction of the C1 Stanwell and C2 cursus monuments.

Observations by the Museum of London of a section across the cursus to the north of Terminal 5 at Moor Lane, Harmondsworth, were also reported in the Surrey Archaeological Unit publication of 1991 (Cotton 1990, 29–32). It has become clear during the analysis for this publication that whilst the locations provided for the cursus in these earlier publications were reasonably accurate for their day, they were undertaken prior to the wide-spread use of digital survey methods. The location of the Moor lane watching brief for example (Cotton 1990, fig. 19),

Excavation or notable point along cursus	Distance between points / areas (m)	Length of cursus exposed by excavation area (m)	Source
North western terminal at Biggley Ditch	400	0	O'Connell 1990
Moor Lane Watching Brief	809	40	Cotton 1990
Terminal 5 Areas 15 and 16	390	48	Site code PSH02, this volume
Terminal 5 Area 42a	428	17	Site code PSH02, this volume
Perry Oaks Bed B (site code WPR98) MoLAS Perry Oaks	620	444	WPR98 and POK96: Framework 2006
Terminal 5 Area 28	54	43	Site code PSH02, this volume
Park Road Stanwell Areas 1b 7 and 8	120	90	O'Connell 1990
Park Road Stanwell Areas 12 and 13	54	30	O'Connell 1990
South eastern limit of cropmark	214	0	O'Connell 1990
Hypothetical terminal at break of slope formed by the boundary between the Taplow and Kempton Park gravel terraces	0	0	This volume
Total (m)	**3089**	**712**	

Table 2.12: Stanwell C1 Cursus: distances between excavations and monument lengths

does not correspond closely with the projected alignment of the C1 Cursus as observed from digitally plotting the Terminal 5 excavations and crop mark evidence. Thus this publication relies on the excavated evidence from Terminal 5 when considering the alignment of the monument.

Excavations at Perry Oaks Sludge works by MoLAS in 1996 and Framework Archaeology in 1999 (site codes POK96 and WPR98) recorded a 244 m length (with short unexcavated lengths) of the monument, and this has been described in detail in Volume 1 (Framework Archaeology 2006, 47–60). The Terminal 5 excavations (site code PSH02) from 2002 to 2004 included Areas 45, 47, 49 and 89b which added to the section of the monument described in Volume 1. This resulted in a continuous length of 445 m of the monument being recorded in the central Terminal 5 area. In addition, two further small lengths of the cursus (Area 42a and Areas 15 and 16) were recorded to the north-west of the central area of the Terminal 5 along with a similar small length (Area 28) to the south-east.

Table 2.12 shows the distances between each excavated area of the cursus and the length of monument exposed in each area. It can be seen that out of a known length of 3089 m, 712 m (or 23%) has been exposed and investigated in varying detail. This equates to almost 19% of the total projected length of approximately 3800 m.

Location and orientation

The location and orientation has been discussed in some detail elsewhere (O'Connell 1991) and will only be summarised here. Crop marks indicate that the monument ran for at least 3.6 km from the Colne valley in the north-west to Stanwell in the south-east (Fig. 2.18). The northern terminal was apparently rounded in plan before destruction through gravel extraction and lay close to the Bigley Ditch, an arm of the Colne which originally formed part of the Middlesex county boundary. The southern terminal was destroyed beneath the housing of Stanwell, but it is likely that it lay close to the marked topographic break in slope caused by the boundary of the Taplow and Kempton Park Thames Gravel terraces. If correct, then the total length of the Stanwell Cursus would have been approximately 3.8 km (see Fig. 2.18 above). The map (see Fig. 2.23 above) shows how the cursus runs along and almost defines the 22 m contour that separates the Colne Valley floodplain from the Taplow terrace underlying Heathrow. In plan the Stanwell Cursus is remarkably straight, even accounting for minor deviations discussed above. We propose that the cursus was constructed along a pre-existing pathway of great antiquity to physically link and tie together numerous important places along the route such as the remnants of the Late Mesolithic midden and pits, the timber post complex, the possible settlement consisting of pits, posts and gullies in Area 49 and the C3 Cursus (see above). The Dorset Cursus performed a similar function by linking together the separate long barrows along its course (Barrett *et al.* 1991, 58). Within the Perry Oaks / Terminal 5 excavations, the Stanwell Cursus makes an almost imperceptible deviation (the 'kink' in Framework Archaeology 2006, fig 2.11) to accommodate the locations of the Late Mesolithic pits and the timber posthole complex. This location was subsequently further enhanced by becoming the terminus of the C2 Cursus. The ditches in the kinked section, *c* 150 m long, are also slightly shallower than those to the north and south, suggesting that this section may have been constructed separately, perhaps by a different construction team. We suggest, therefore, that the C1 Cursus was excavated in relatively short lengths by different teams, but within an overall rigid plan.

The uniformity of the cursus over *c* 3.8 km suggests that it was laid out in a landscape that was at least locally cleared. We have previously discussed pollen evidence from the pre-cursus period which suggests the landscape had undergone considerable clearance, and the various tree-throws cut by the C1 Cursus attest to this. Soil micromorphology analysis of samples form the C1 Cursus from the Perry Oaks and Terminal 5 excavations provides further insight into the clearance process:

There is evidence of clearance of woodland by the use of fire from along the length of the Stanwell Cursus (Perry Oaks to Area 49). In the Terminal 5 thin sections, *reddened (rubefied) mineral grains, rubefied soil fragments with embedded charcoal ('baked clay'), and textural pedofeatures formed from reddish clay and intercalated coarse and fine charcoal, all testify to disturbed soils and burning.*

It is interesting to note that micromorphological features indicative of clearance fires are also found in cursus ditch fills at Perry Oaks. These are textural pedofeatures that include abundant fine charred organic matter/charcoal.

Along the line of the Stanwell Cursus therefore, there are apparent soil records of soils being burned ('baked clay') and soil wash probably encouraged by the presence of ash (charcoal-rich textural pedofeatures) from burned woodland/scrub. Certainly fragments (papules) of the last are present in cursus ditch fills, but there are also features indicative of charcoal-rich clay wash into the ditch itself, implying some cursus ditch (and bank) construction almost immediately after clearance by fire, given the rapid weathering of ash in western temperate regions (generally days rather than weeks) and enhanced earthworm burrowing once toxic-levels of potassium have been reduced by this weathering; these textural pedofeatures of clearance by fire origin have not been biologically worked (Courty et al. 1989, fig 7.2).

(Mcphail, CD Section 19)

It is worth recalling that the pollen report for pit 527200, which predates the C1 Cursus, observed many micro-charcoal particles and larger pieces of charcoal – evidence of local fires *(Peglar et al., CD Section 16)*. This would seem to provide corroborating evidence for the soil micromorphology study, and strongly suggests that the already opened canopy was further cleared by burning the remaining trees and vegetation to make way for the construction of the cursus.

As discussed, the C1 Cursus was very carefully aligned to incorporate special locations. It may even have been that the course of each ditch was marked on the ground with rope for the construction teams to follow. The Dorset Cursus contained clear examples of deviation from the main course once the sighting point the construction team was aiming at (eg a long barrow) temporarily disappeared from view (Barrett *et al.* 1991, 47). With the Stanwell Cursus, even necessary deviations, such as the kink described above, were accommodated almost imperceptibly. Achievement of such uniformity would suggest that the length of time in which the whole cursus was set out was encompassed within a single, or at most two generations, since it suggests a singularity of purpose, planning and execution. The T5 excavations have revealed a complex history of back-filling and re-cutting over a section of the cursus (see below), and these re-workings may have spanned a much longer period of time. However, they appear as re-workings within the template of the original layout.

Summary of the Stanwell cursus as revealed by excavation

This section will summarise the Stanwell Cursus in each of the areas where it has been excavated, starting at the most north-westerly exposure at Moor Lane (Cotton 1990) before moving south-easterly, through Perry Oaks and Terminal 5 excavations (Framework Archaeology 2006 and this volume) and ending at the most south-easterly excavations at Park Road Stanwell (O'Connell 1990).

Moor Lane

The Moor Lane watching brief was undertaken under difficult circumstances by the Museum of London in 1982 and recorded approximately 40 m of the Stanwell C1 Cursus (Cotton 1990). The site was located approximately 400 m from the north-western terminal (O'Connell 1990, fig. 4). The ditches were 22.6 m apart, the eastern ditch 1.9 m wide and 0.6 m deep, with the western ditch narrower and shallower (1.2 m and 0.45 m respectively). Only three flint flakes were recovered from the ditches.

Areas 15 and 16

These two adjacent excavation areas mark the most north-westerly extent of the Terminal 5 investigations of the Stanwell C1 Cursus, and lie 809 m to the south-east of the 1982 watching brief at Moor Lane (Cotton 1990, fig. 19).

A 48 m length of the C1 Cursus was exposed in this area, and the two ditches of the monument were approximately 22.1 m apart. The ditches were shallow with an eroded 'U' shaped profile, and contained for the most part the usual two or three-fill sequence. Both ditches had been cut and disturbed by later archaeological and modern features.

The western ditch (588324) was approximately 0.6 m deep, with the base varying between 21.4 and 21.2 m aOD (Plate 2.11). The western ditch cut through the edge of a palaeochannel which was filled with a mottled yellowish alluvium. The full extent of the channel was not revealed due to the restricted extent of the site, but the alluvial deposits appeared to be becoming more calcareous and tufa-like towards the west (Fig. 2.28). Certainly, the medieval and later features excavated in Area 18 to the west were cut through a thick tufa deposit,

Plate 2.11: Western ditch (588324) of C1 Stanwell Cursus cutting edge of palaeochannel

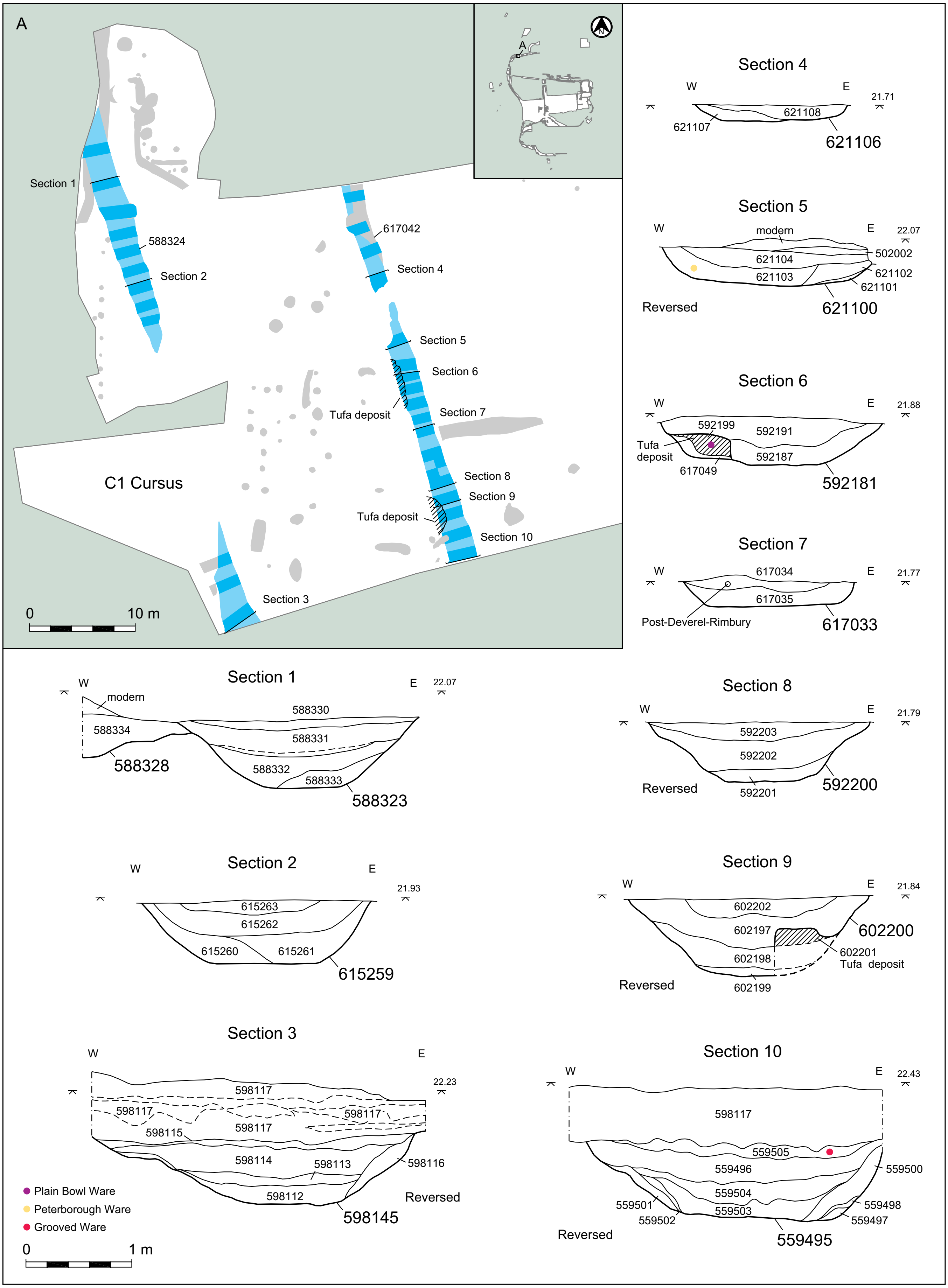


Figure 2.28: C1 Stanwell Cursus in Areas 15 and 16

Figure 2.29: Distribution of lithic and pottery assemblages from the C1 Cursus in Areas 15 and 16

Plate 2.13: Calcareous deposit in the base of the eastern C1 Cursus ditch looking northward

and this may represent the main fill of the palaeochannel, which was presumably an ancient branch of the Colne.

A single broken Mesolithic microlith and a flake were recovered from the palaeochannel, suggesting occupation nearby in the millennia preceding the construction of the C1 Cursus. By the time the cursus was constructed, it is assumed the active margin of the channel had migrated to the west. In many ways, this sequence and signature of the location is similar to the burnt flint filled Mesolithic pits adjacent to the palaeochannel and the C1 Cursus in the main Terminal 5 site (Framework Archaeology 2006, 43–4; see above).

A small quantity of intrusive medieval pottery was recovered from the western ditch, but none which was chronologically diagnostic of the Neolithic period. The flint assemblage consisted of Neolithic to Bronze Age flakes, with the occasional serrated piece and a few core preparation pieces which may date to the Mesolithic / Neolithic. Most of the lithics were recovered from the middle and upper ditch fills (Fig. 2.29).

The eastern ditch (617042) varied from 0.4 to 0.8 m deep, with the base varying between 21.04 and 21.46 m aOD (Fig. 2.28). The truncation model shows that approximately 0.5 m had been removed from the ground surface in 1943 and the surface of the excavation. This is corroborated by section 10 (Fig. 2.28) which shows that 0.5 m of truncation would have removed the topsoil, subsoil and the uppermost fills of the cursus. The eastern ditch produced sherds of pottery dating from the Neolithic to the Romano-British period (Fig. 2.29). Most of the sherds dating to the Bronze Age and later are small and located in the upper fills, and can be safely regarded as intrusive. Also contained in the upper fills were a sherd of Late Neolithic Grooved Ware and a sherd of Early Bronze Age grog tempered Beaker or Collared Urn. Of more importance for the dating of the cursus, a large sherd (42g) of Plain Bowl pottery was located within a well defined deposit of calcareous tufa situated against the western edge of the ditch near the base (Plates 2.12–3). The eastern edge of this deposit was nearly vertical, and almost abutted blue alluvial clay in the eastern part of the ditch. How the tufa deposit came to be present in the ditch caused much debate on site. The redeposited tufa presumably originated in palaeochan-

Plate 2.12: Calcareous deposit in the base of the eastern C1 Cursus ditch

nel (588310) to the west, and the excavators suggested that the white calcareous material may have been used to coat the central bank in this area, giving it a distinctive appearance more akin to chalkland monuments. It is also possible that the tufa was deliberately dumped at one or two localised places along the eastern ditch. Subsequent erosion and solution by water in the ditch and runoff from the central berm into the ditch would have produced the vertical edge to the deposit. A similar white clay lining was reported from the ring ditch at Staines Road Farm Shepperton (Jones 2008, 9–10), a monument which produced a series of dates from the broad period 3600 to 3300 BC (Jones 2008, 73). Jones (ibid., 74) has also drawn attention to the deliberate use of white clay and sediment to coat banks and ditches at the central henge at Thronborough in Yorkshire, and the mound at Longstone in Cornwall amongst others.

A single small sherd of Peterborough (Mortlake) Ware was also recovered from a secondary fill of intervention 621100 (Fig. 2.28, Section 5). Due to the unusual relationships between the fills, the excavator wondered if the fill containing the Peterborough Ware might represent a re-cut or separate feature but could find no evidence. Lithic finds were present in the ditch, with a particular concentration in intervention 559495 (Fig. 2.28, Section 10; Fig. 2.29). However, most of the struck flints (predominantly flakes and core fragments) throughout the ditch were concentrated in the middle and upper fills. These artefacts were of a general 3rd or early 2nd millennium date, although one possible Mesolithic burin from a lower fill in intervention 559495 was an exception to this pattern. In general, the lithic assemblage was produced by activity adjacent to the monument sometime after its construction, when it was an established part of the landscape and the ditches were gradually silting up.

Area 42a

Area 42a was located 390 m to the south-east of Areas 15 and 16, and 428 m north of the main Terminal 5 excavation area. All archaeological deposits immediately to the north and south of Area 42a had been destroyed by airport related activities and the Perry Oaks sludge works, leaving an 'island' of approximately 17 m of the Stanwell C1 Cursus intact. Even here, the truncation model shows that between 0.5 m and 0.75 m of deposits has been lost since 1943.

The two cursus ditches were approximately 23.5 m apart. The western ditch (524167) was *c* 2.2 m wide and 0.3 m deep, with the usual shallow eroded 'U' shaped profile (Fig. 2.30, Sections 1–2; Plate 2.14). Finds included hundreds of tiny fragments of poorly preserved unidentified animal bone weighing a total of 149 g and a flint flake.

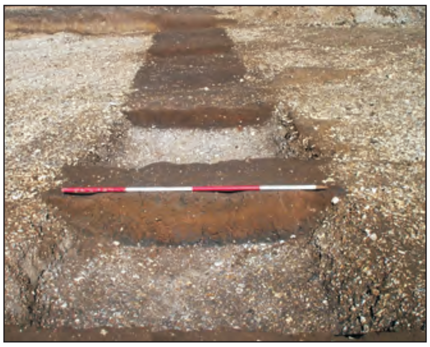


Plate 2.14: Western ditch (524167) of C1 Cursus in Area 42a

Plate 2.15: Eastern ditch (549109) of C1 Cursus in Area 42a

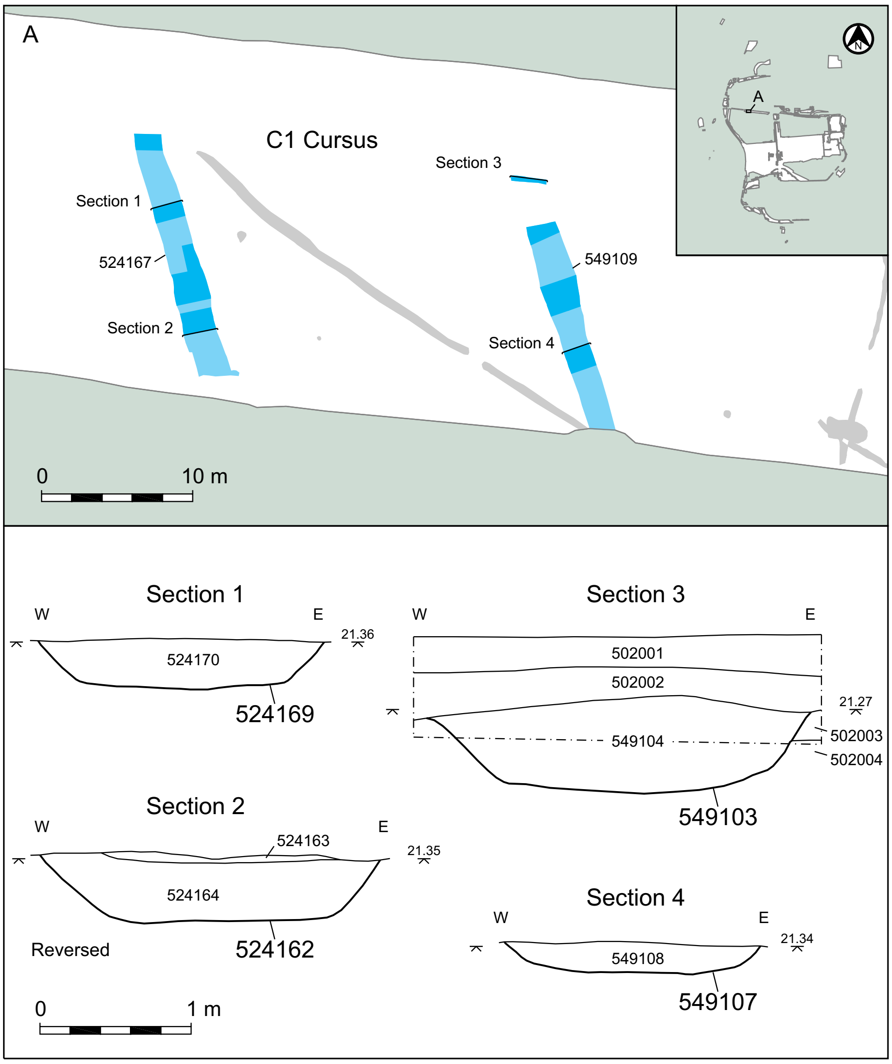


Figure 2.30: C1 Stanwell Cursus in Area 42a

The eastern ditch (549109) was *c* 2.4 m wide and 0.3 m deep, with a similar profile (Fig. 2.30, Sections 3–4; Plate 2.15). This ditch showed signs in plan that it was constructed in two conjoining segments, but sections through the length where the ditch narrowed detected no evidence of recutting. Finds consisted of a few flint flakes and some burnt flint. The fills of both ditches uniformly consisted of as single dark yellowish brickearth rich deposit, perhaps becoming darker towards the base.

A single diagonal ditch ran NW-SE between the cursus ditches, and although not securely dated, it has been assumed to date to the 2nd millennium BC. Unfortunately, this ditch did not provide relative depth data to allow us to interpret the position and height of the relict cursus central bank.

Main Terminal 5 excavations: Areas 45, WPR98 bed B, POK96, Areas 49 and 89b

The main Terminal 5 excavation area revealed a continuous length of 444 m of the C1 Cursus (Plate 2.16). As discussed above, this was excavated in three main phases (1996, 1999 and 2002–3). The 1996 and 1999 excavations have already been reported on in Volume 1 of this series (Framework Archaeology 2006), and that detail will not be repeated here, though is presented in Figures 2.31–2.

The distance between the centre lines of the ditches of the Stanwell Cursus in the central area varies from 23.3 m to 24 m (see below for further discussion). Figure 2.33 shows the variation in the profiles across the C1 Cursus in the central area, while Figure 2.34 shows flint and pot distribution in and around the cursus. The dating of the construction of the monument and how it was constructed will be discussed in further detail below. At present, it is worth noting that the 'kink' described in Volume 1 (Framework Archaeology 2006, 57) as the C1 Cursus bends around the terminal of the C2 Cursus is even more pronounced when viewed in detail. We have already described the posthole complex which

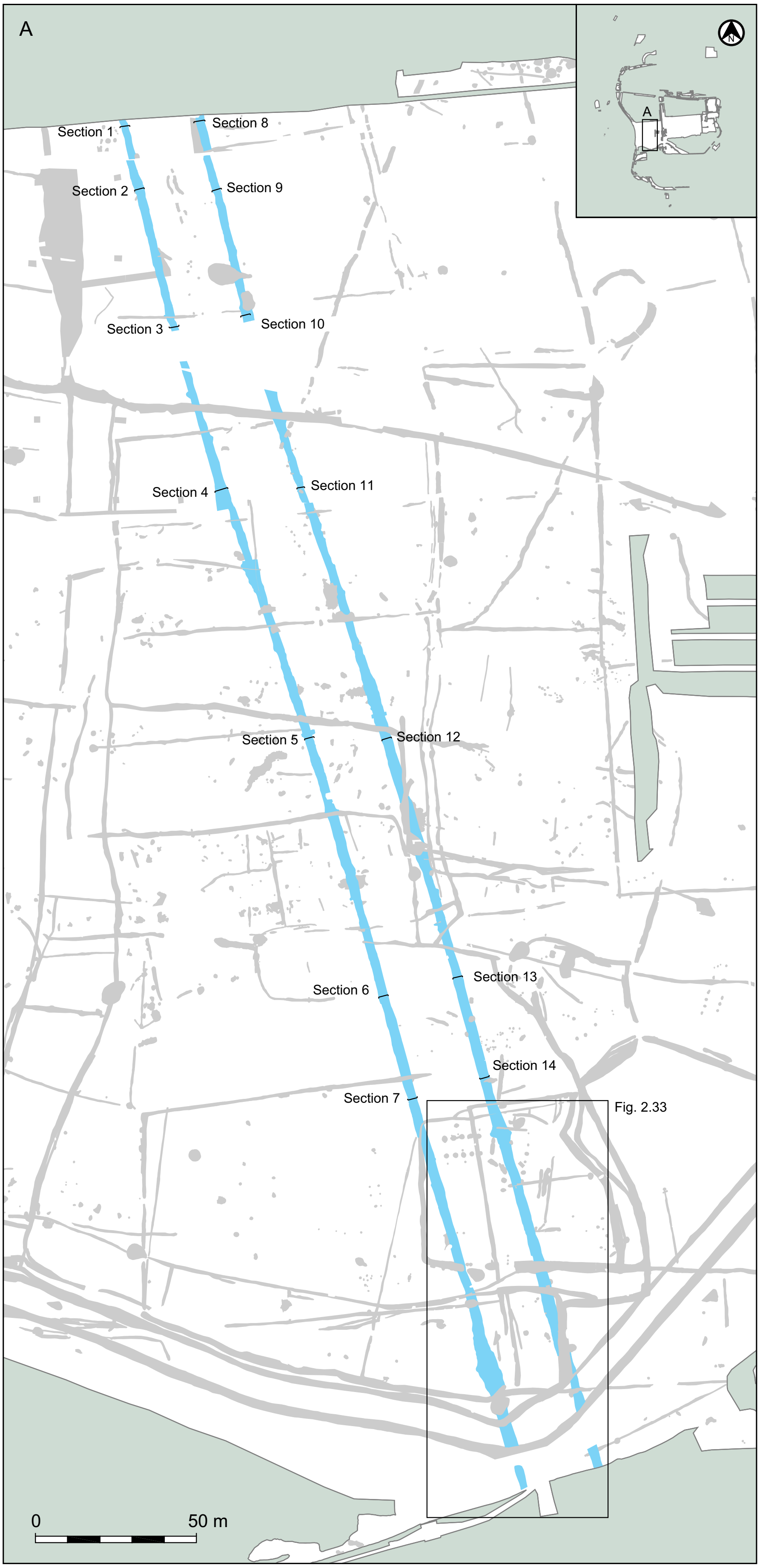


Figure 2.31: C1 Stanwell Cursus in main terminal 5 excavations

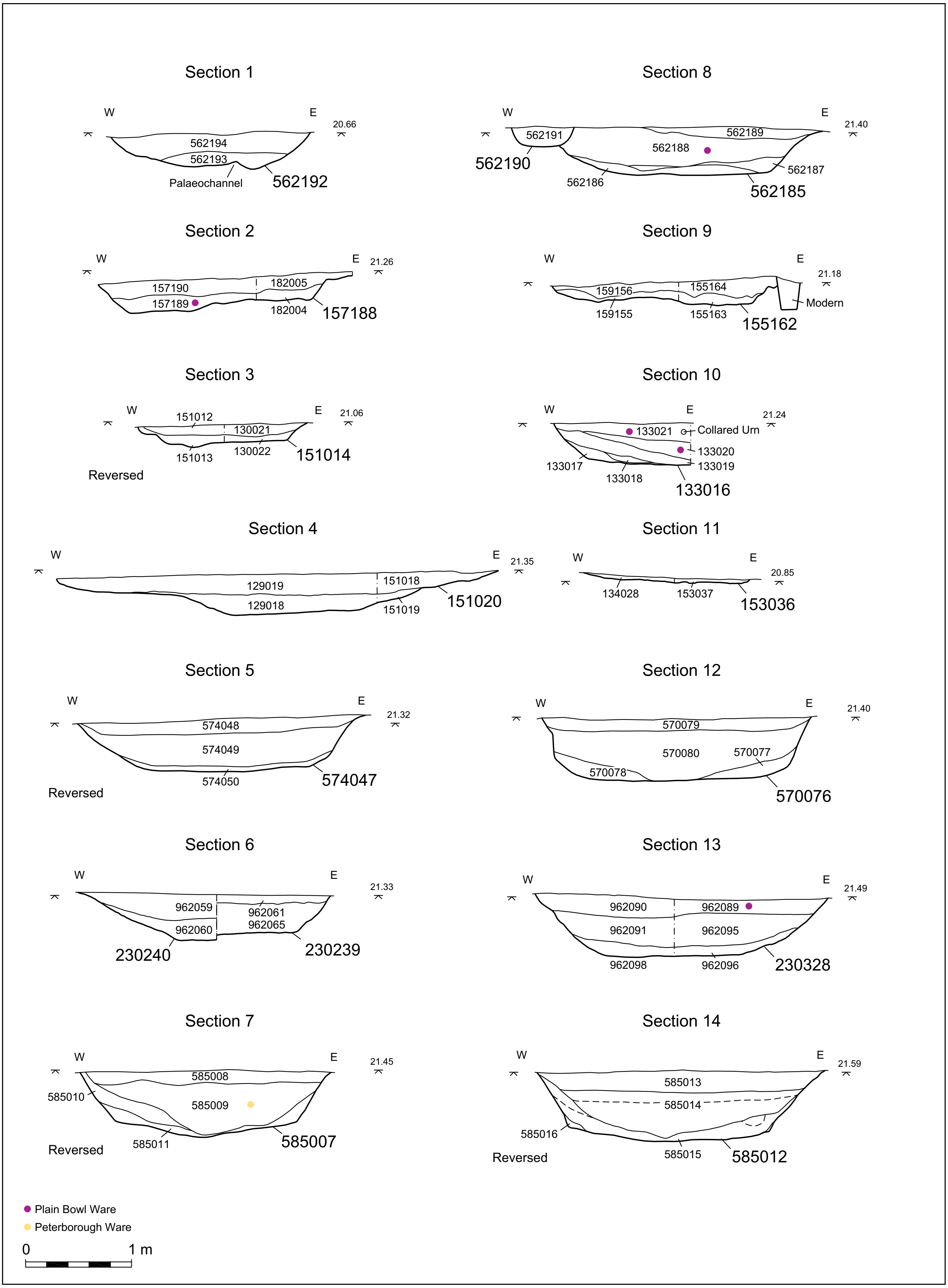
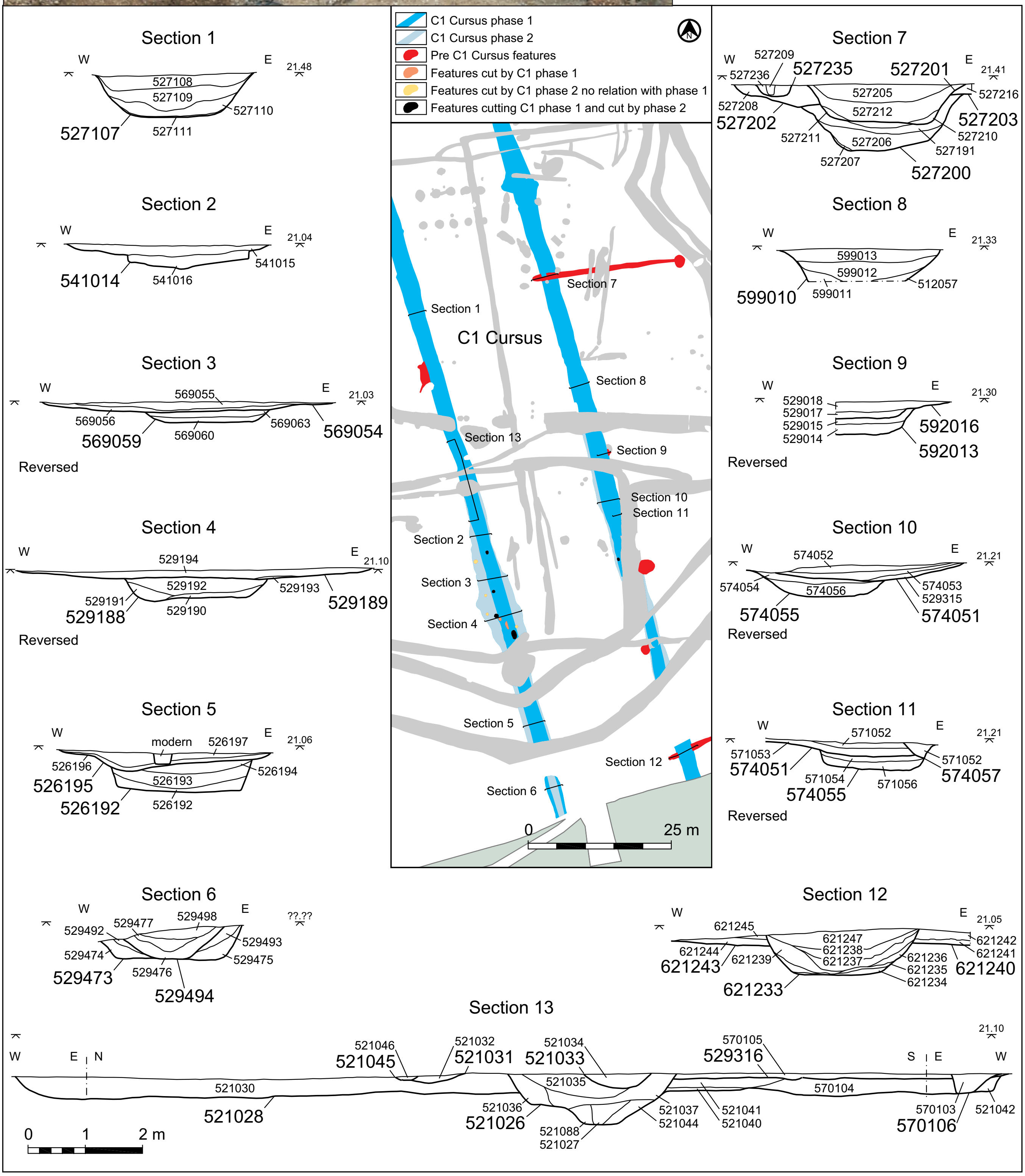


Figure 2.32: C1 Stanwell Cursus sections north of Area 49

Left
Plate 2.16: C1 Stanwell Cursus ditch under excavation

Below
Figure 2.33: C1 Stanwell Cursus and sections in Area 49



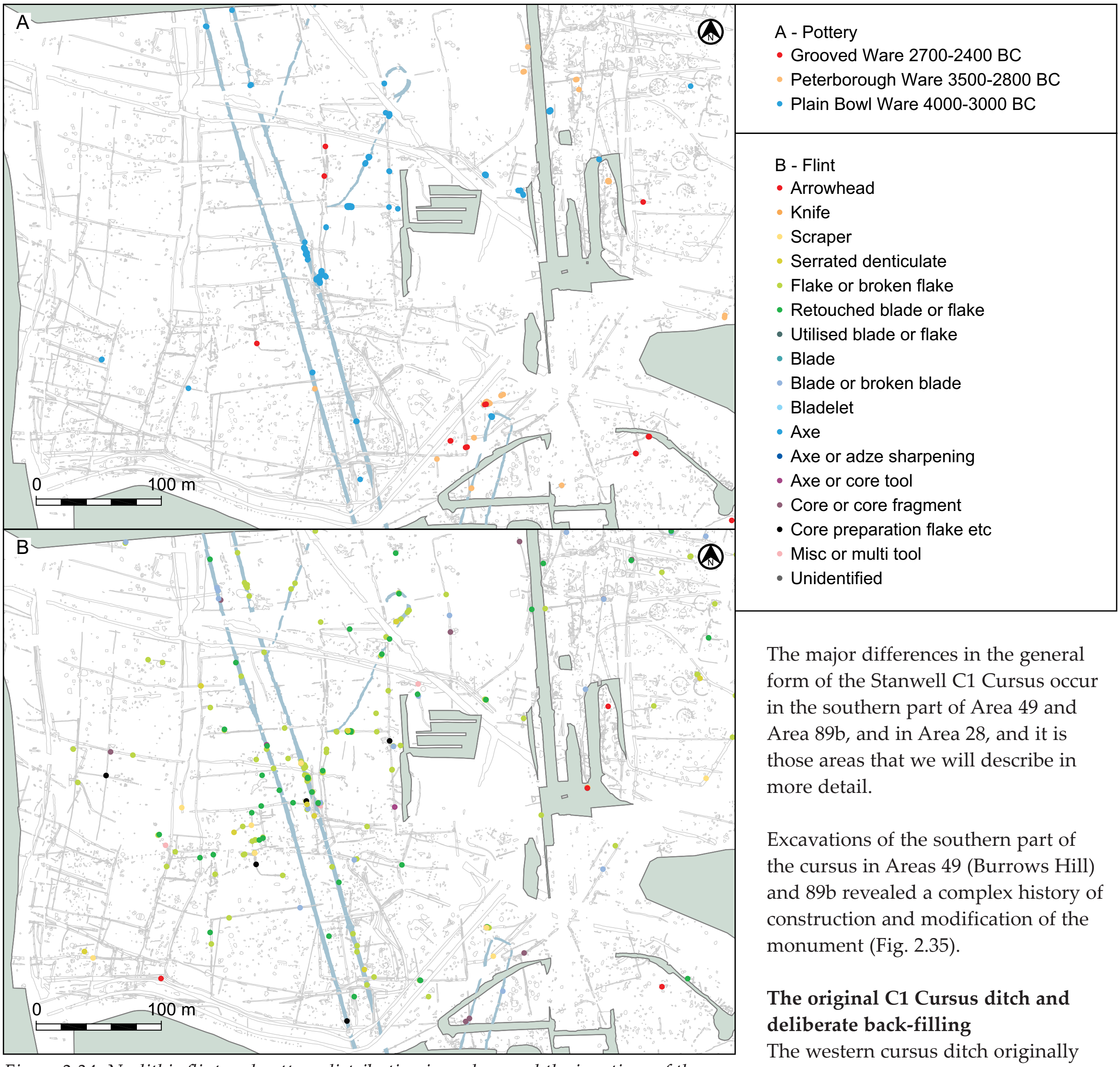


Figure 2.34: Neolithic flint and pottery distribution in and around the junctions of the C1 and C2 cursus monuments

predates the cursus in this area, and the distribution of worked flint in the fills of the C1 Cursus are also significant at this point (Fig. 2.34):

The burnt unworked flint shows a remarkably similar distribution to the struck flint (its distribution by weight is virtually identical). In both cases, a significant concentration of material is associated with the junction of the C1 and C2 cursus monuments, directly in line with the HE1 ring ditch. This location must have held a particular attraction in the Neolithic period, perhaps on account of its position at the convergence of the two cursus monuments and within sight of the HE1 ring ditch.

Various activities, which seem to have involved tool use as well the burning of flint nodules, were repeatedly performed at this location, possibly over many years. It seems likely that these tasks were, in most cases, directly related to the use of the monument. The deposition of some of the more unusual pieces (eg polished flakes, knives and arrowheads) may have been governed by certain principles bound up with the ritual function of the site. Other activities, such as flint knapping and the deposition of knapping waste, may have been more incidental to its primary use as a monument.

(Cramp and Leivers, CD Section 4)

The major differences in the general form of the Stanwell C1 Cursus occur in the southern part of Area 49 and Area 89b, and in Area 28, and it is those areas that we will describe in more detail.

Excavations of the southern part of the cursus in Areas 49 (Burrows Hill) and 89b revealed a complex history of construction and modification of the monument (Fig. 2.35).

The original C1 Cursus ditch and deliberate back-filling

The western cursus ditch originally consisted of a steep sided, 'U'-profiled cut (529311). The ditch varied from 1.25 m to 2.45 m wide and 0.2 m to 0.6 m deep. Most unusually for the C1 Cursus, this length of ditch was filled with very compact, dark stained, un-sorted gravel. This was interpreted as being deposited by deliberately back-filling the ditch, rather than natural silting. Small fragments of unidentifiable prehistoric pottery, a single worked flint, flint spalls and pieces of burnt flint were the only finds from these deposits. The ditch cut two post-holes (529196 and 529198), which have been described above. However, the upper fills of ditch 529311 were also cut by a number of postholes and a pit, which in turn were cut or sealed by the second phase of cursus ditch, 529313. In addition, another three postholes (605005, 605009 and 605007) which had no stratigraphic relationship with the earliest phase of the ditch (529311) were also cut by the second phase ditch (529313). This re-cut of the cursus was much shallower and wider and filled with a brickearth- rich deposit.

The backfilling and recutting ditch sequence did not extend further north than Middle Bronze Age pit 521026 which unfortunately destroyed the start of the two-phase sequence. The sequence extended southwards for 44 m until destroyed by the southernmost of the two post-medieval trackway ditches and modern intrusions. However, the sequence changed four metres to the south in area 89b. Here, there are two recognisable ditch sequences. The first phase (529473) is now wider and shallower, but this is cut by a steeper sided, narrower second phase (529494). The evidence for this extends for a total of six metres before disappearing beyond the excavated area.

The eastern cursus ditch contained a similar sequence to the western ditch. The original deeper ditch (529310) was backfilled and replaced by a shallower ditch (529312). Finds from the earlier phase consisted of three struck flints (including a backed knife) and some unidentified mineralised animal bone. As with the western ditch, a posthole (598027) cut the deliberate back fill of 529310 but was in turn cut by the upper ditch, 529312.

The start of the two-phase sequence is obscured in the north by the Bronze Age and medieval enclosure ditch complex, but it does not extend north of these features. The sequence then runs for 43 m southwards until it is also destroyed by a post-medieval trackway ditch. Ten metres further south, in Area 89b, the eastern ditch reverted to a single phase (621233), although the section is somewhat ambiguous in this respect.

The different history of cursus deposits recorded in Area 89b may represent the start of a separate sequence of

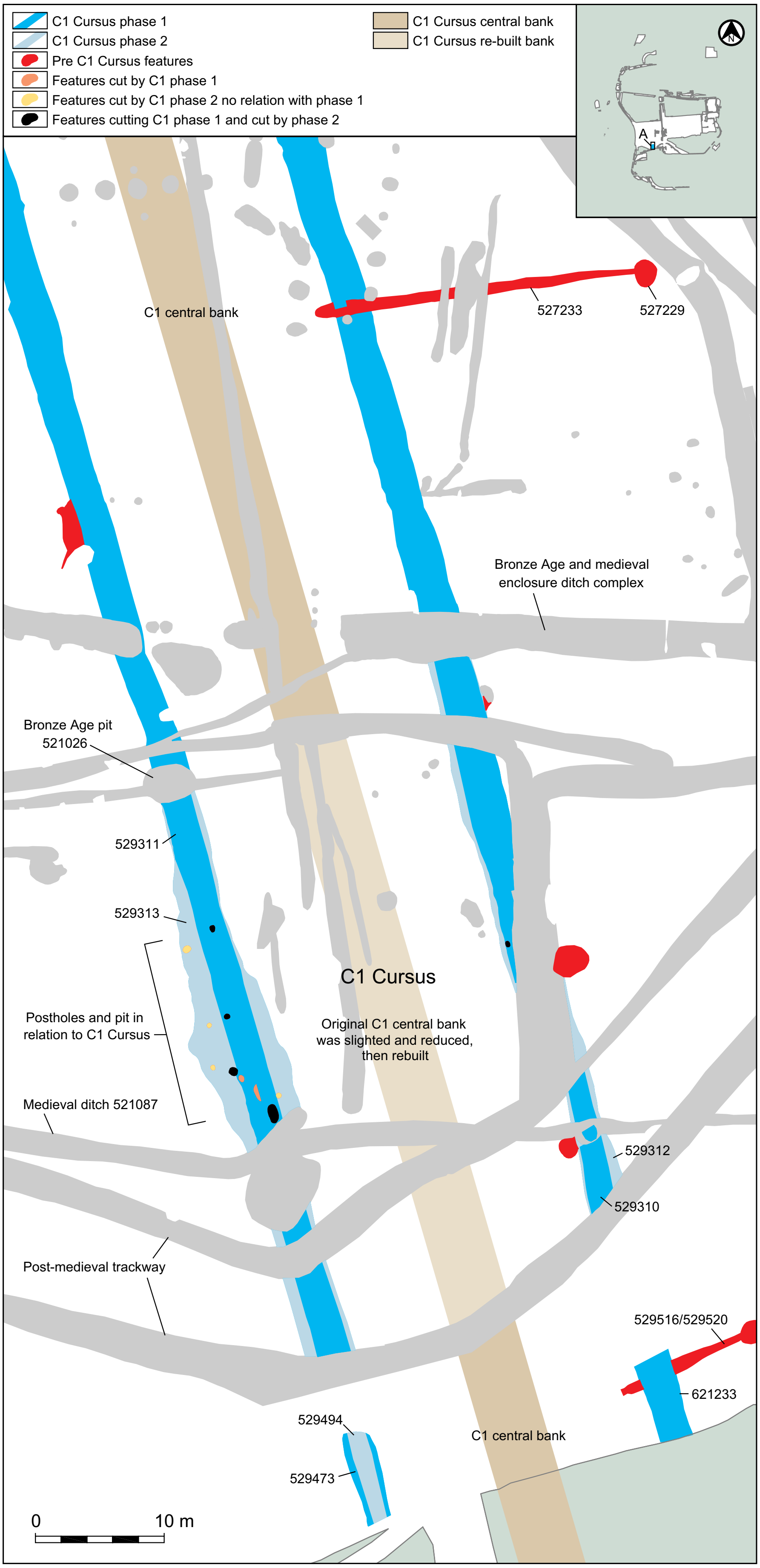


Figure 2.35: C1 Stanwell Cursus modifications in Area 49

cursus construction and modification, perhaps more influenced by the junction of the C1 and the C3 monuments further to the south-east and thus unconnected with the backfilling and recutting in Area 49.

Although it would appear that the C1 Cursus in the southern part of Area 49 was constructed in a similar fashion to elsewhere along its course, it is clear that, after an unknown period of time, but still within the currency of Plain Bowl pottery (ie between 3600 and 3300 BC), the ditches were deliberately back-filled, presumably with material from the central mound (see below for discussion of construction date for the monument). The slighting and reduction of the central mound was perhaps the major impact on the Stanwell Cursus and the focus of the intent, rather than the back-filling of the ditches.

Why this should be done is unknown, but it is highly likely to have been connected with the fact that this particular location was the scene of relatively substantial activity which predated the cursus and which has been described previously.

The presence of postholes and a small pit cutting the upper levels of the backfill in the ditches attests to continued activity at the location after the modification to the C1 monument, and reinforces the importance of the location. It seems likely that the pit and postholes were associated with activity which stemmed from the modifications to the cursus.

The second phase of cursus ditches: re-establishing the monument

The second phase ditches (529313 and 529312) are generally wider than the Phase I C1 ditches, as if to deliberately obliterate all trace of their predecessors (Fig. 2.35). They are also shallower, which suggests that less spoil was required to add to any relict mound from the original C1 monument.

Whatever the effects of the cutting of the second phase ditch, it would appear that the final form of the central cursus mound in this area was noticeably different (lower?) than that to the north and possibly the south. This would explain the arrangement of a series of the Bronze Age and medieval ditches and gullies which seem to be orientated on the northern limits of the backfilling sequence in both the western and eastern C1 ditches, and it is surely no coincidence that Bronze Age pit 521026 lies exactly at the start of the two-phase sequence in the western C1 ditch.

The features cutting into the upper levels of the backfilled first phase ditches suggest that at least some time passed before the second phase ditches were excavated, but the time span is unknown. Two barbed and tanged arrowheads (one damaged, the other pristine) and a small sherd of grog tempered pottery (possibly Beaker or Collared Urn) from the upper fill of the western and eastern Phase II ditches (529313 and 529312) suggest that the Phase II remodelling took place at the end of the 3rd millennium or early in the 2nd millennium BC. This is approximately 1000 years after the construction of the monument. Unfortunately, the presence of the barbed and tanged arrowheads cannot be used with great confidence to date this event, since the same fills also contained a sherd of Deverel-Rimbury Middle Bronze Age pottery and 6 sherds of Romano-British pottery. It has been noted that elsewhere along the cursus pottery and artefacts of all periods from the Bronze Age to the medieval period have been recovered form the upper fills of the monument. All we can be certain of is that the Phase II profile pre- dates Middle Bronze Age pit 521026, which contained large sherds of Deverel-Rimbury pottery.

Area 28: Modification and addition?

The Area 28 excavation is the furthest south-easterly point of the Terminal 5 excavations of the C1 Stanwell Cursus (Fig. 2.36). Area 28 was located 620 m south-east of the main Terminal 5 excavation area, with the intervening land occupied by runways, taxiways and Airport infrastructure. Area 28 also coincides with a trench (Area 2) excavated by the Surrey Archaeological Unit as part of the Park Road Stanwell excavations in the early 1980s (O'Connell 1990). Since then, the area has been incorporated within the Airport boundary. Area 2 of the Park Road excavations explored the intersection of the western cursus ditch (588229) and a diagonal (presumed Bronze Age) ditch (522084), and this relationship was also explored during the Terminal 5 excavations. A comparison of the two adjacent sections through the cursus ditch from the Park Road excavation (O'Connell 1990, fig. 16, section HZ) and this volume (Fig. 2.36, Section 1) show a reassuring similarity. A comparison of the sections also confirms the truncation model which shows that 0.75 m of topsoil and subsoil has been lost since 1943.

The C1 Cursus in Area 28 is unusual in several ways. Firstly, there is clear evidence for discontinuous lengths of segmented ditch, rather than the continuous ditches seen elsewhere. Secondly, the western ditch appeared to be noticeably deeper on excavation (though see below) than the eastern ditch, again a phenomena which does not occur elsewhere. Thirdly, the upper fills of the ditches contained a significant amount of Peterborough Ware pottery, which broadly dates to between 3400 BC and 2500 BC.

The exposed section of the western ditch (588229) commences 3.8 m south of the northern limit of the excavated area, leaving an entrance or causeway across the western ditch to the north. The first segment of the ditch is 25.3 m long, varies from 2.5 m to 3.3 m wide and is 0.9 to 1.2 m deep, with an eroded 'U' profile. There is a possible earlier cut recorded in one intervention although this is far from convincing. The fill sequence is generally more complex than observed further north, with more stony layers in the base of the ditch, but all are attributable to natural silting processes. Barely 0.2 m beyond the southern terminus, the line of the ditch is continued by a large sub-rectangular pit (524398) measuring 4.6 m in length by 3.16 m wide and 1.2 m deep (Fig. 2.36, Section 9). The only stratigraphic relationship between the

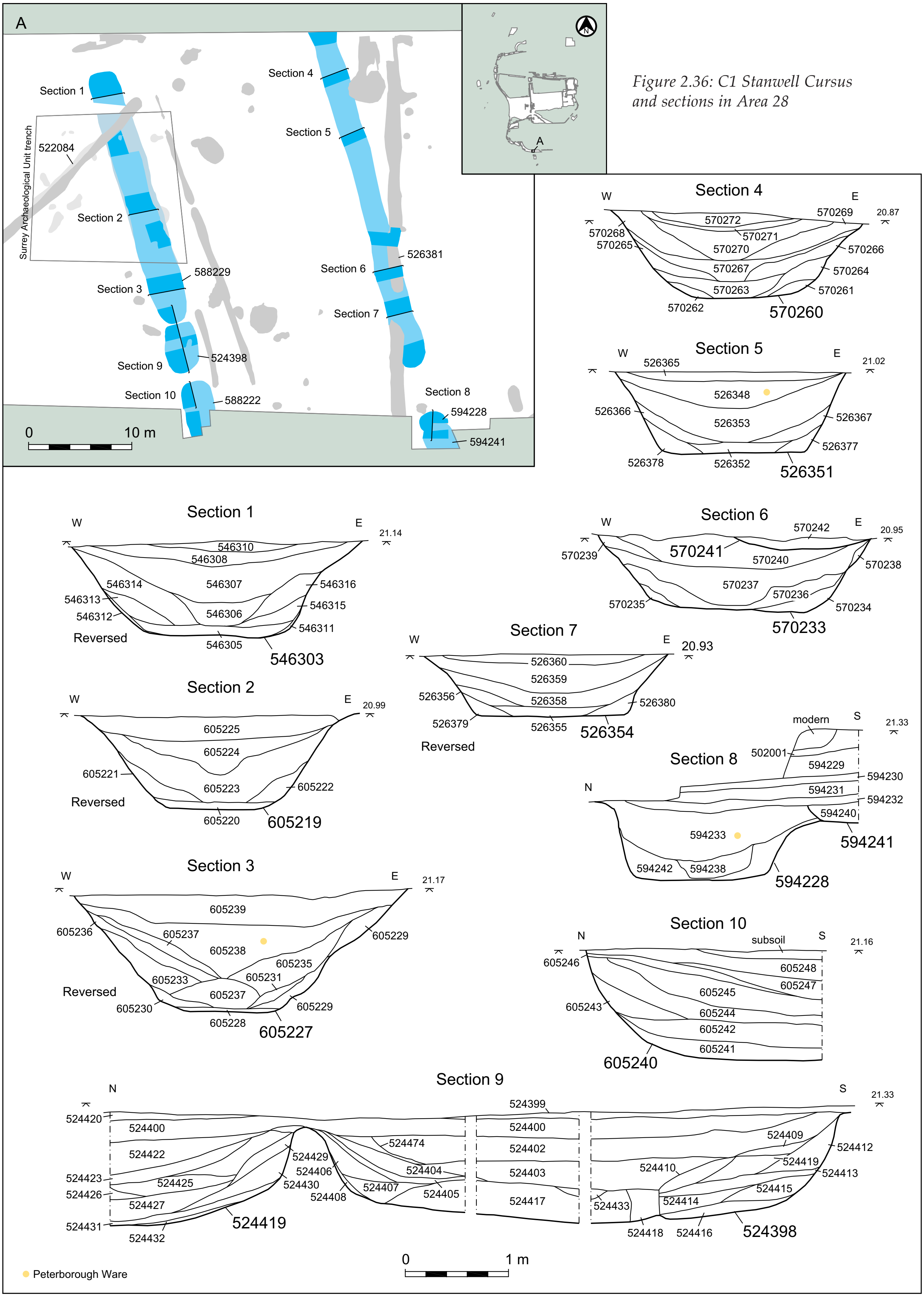


Figure 2.36: C1 Stanwell Cursus and sections in Area 28

ditch and the pit is the apparent continuity of the very uppermost fills between the two features.

Lying 1.15 m further south-east, feature 588222 appears to mark the continuation of the cursus ditch as it disappears beneath the southern limit of the area of excavation. This segment of the ditch is 3 m wide and 1.1 m deep (Fig. 2.36, Section 10).

The eastern ditch (526381) was located 21.5 m from the western ditch. It extended south-eastwards from the northern limit of the excavated area for 33.56 m before terminating. The ditch was 2–2.45 m wide and varied from 0.6 m to 0.8 m deep, with an eroded 'U' profile. The ditch fills all formed through natural silting, and there was no evidence for the presence of an adjacent bank in either the eastern or western ditches. Located 4.7 m from the terminus of ditch 526381 was a circular pit (594228; Fig. 2.36, Section 8), which was 2.44 m in diameter and 0.8 m deep.

Both western and eastern ditches seem to have been constructed by linking together elongated pits, rather than the much more elongated pits or true ditches recorded in the excavations on the main Terminal 5 site.

The finds assemblages from the cursus and associated pits are also unusual in this area. For example, pit 594228 on the line of the eastern ditch contained a relatively rich finds assemblage. The pottery consisted of 18 (25 g) undiagnostic prehistoric sherds and eight sherds (35 g) of Peterborough (Mortlake) Ware including,

… one rim, three body, two shoulder sherds in coarse flint-tempered fabric FL21, all with whipped cord maggots (the rim also has an incised line along the top and other incised impressions.

(Leivers et al., CD Section 1)

The pottery was located in the upper fills (especially 594233) of the pit. A substantial amount of flintwork was also recovered throughout the fills of pit 594228.

An assemblage of 98 struck flints and 146 pieces (1238 g) of burnt unworked flint was recovered from three deposits in pit 594228. Most of the material (71 pieces) came from the upper fill (594233) and was associated with sherds of Mortlake Ware. The flintwork is in an exceptionally fresh condition, suggesting minimal post-depositional disturbance, and is technologically consistent with the mid Neolithic date suggested by the pottery.

The assemblage is largely composed of unretouched flakes (64 pieces), most of which have been struck using hard-hammer percussion. Occasional rough platform dressing was noted. The majority of removals are trimming flakes, several of which are rather angular and irregular in form. Four single platform flake cores (weighing between 35 g and 513 g) and three partially worked nodules (between 24 g and 62 g) were recovered, suggesting the deposition of knapping waste. Retouched tools include four retouched flakes, one scraper and one carefully struck serrated blade. Several unretouched edges were also utilised.

A knapping refit was found between three flakes from deposit 594238 during the assessment; later analysis identified a few small groups of related flakes but only one additional refit between two flakes, suggesting that very small quantities of flintwork were deposited from any one core. The general impression of the assemblage is one of a combination of utilised and retouched pieces with the discarded, partial remains of several knapping events.

(Cramp and Leivers, CD Section 4)

We can thus conclude with certainty that the excavation and filling of pit 594228 was associated with Peterborough Ware, not the Plain Bowl pottery associated with the construction of the C1 Cursus. The southern edge of pit 594228 was cut by another feature, 594241. Unfortunately very little of this could be excavated as it was adjacent to the southern boundary of the site. The excavators concluded that it was a length of ditch, probably the continuation of the eastern C1 Cursus ditch, but it could have been another pit. Feature 594241 contained one sherd of Peterborough Ware and three flint flakes, one of which was originally part of a polished axe. Since Feature 594241 cut pit 594228, it is possible that these artefacts originated in the earlier feature.

Features 594228 and 594241 are significant in that they suggest that modification and possibly construction of this part of the C1 Cursus was associated with Peterborough Ware pottery, rather than Plain Bowl. As the use of Peterborough Ware has been dated elsewhere to the period 3400 to 2500 BC, and Plain Bowl to the period 3600 to 3300 BC, there is a possibility that this section of the C1 Cursus was constructed at a later date than that further north. However, note there is an overlap, and hence contemporanity of the period of use of both types of pottery at 3400 BC. A handful of Peterborough Ware sherds from the C1 Cursus ditch in Area 28 seem to support this possibility. Furthermore, Mortlake and Ebbsfleet Ware sherds were recovered from the upper silts of the cursus ditches in Surrey County Council excavations of the 1980s, approximately 75 m to the south-east of Area 28 (Cotton in O'Connell 1990, 28). However, as Cotton observed, the presence of Peterborough Ware in the upper silts only provide a *terminus ante quem* for the in-filling of the ditches in this area of the C1 Cursus. Occasional sherds of Peterborough Ware have been recovered from the C1 Cursus further north in the Terminal 5 excavations, and the greater degree of truncation within the main site may have resulted in Peterborough Ware being under represented. Cotton also noted the presence of undiagnostic sherds in fabrics which…

…are best accommodated within the local first millennium BC pottery sequence. Notwithstanding the fact that some of the sherds were recovered from positions low down in the ditch fills… (Cotton in O'Connell 1990, 28).

Given the problems in the differentiation of Neolithic Plain Bowl pottery from Late Bronze Age post-Deverel-Rimbury pottery, it highly likely that these un-diagnostic sherds are the former, not the latter. This would be in

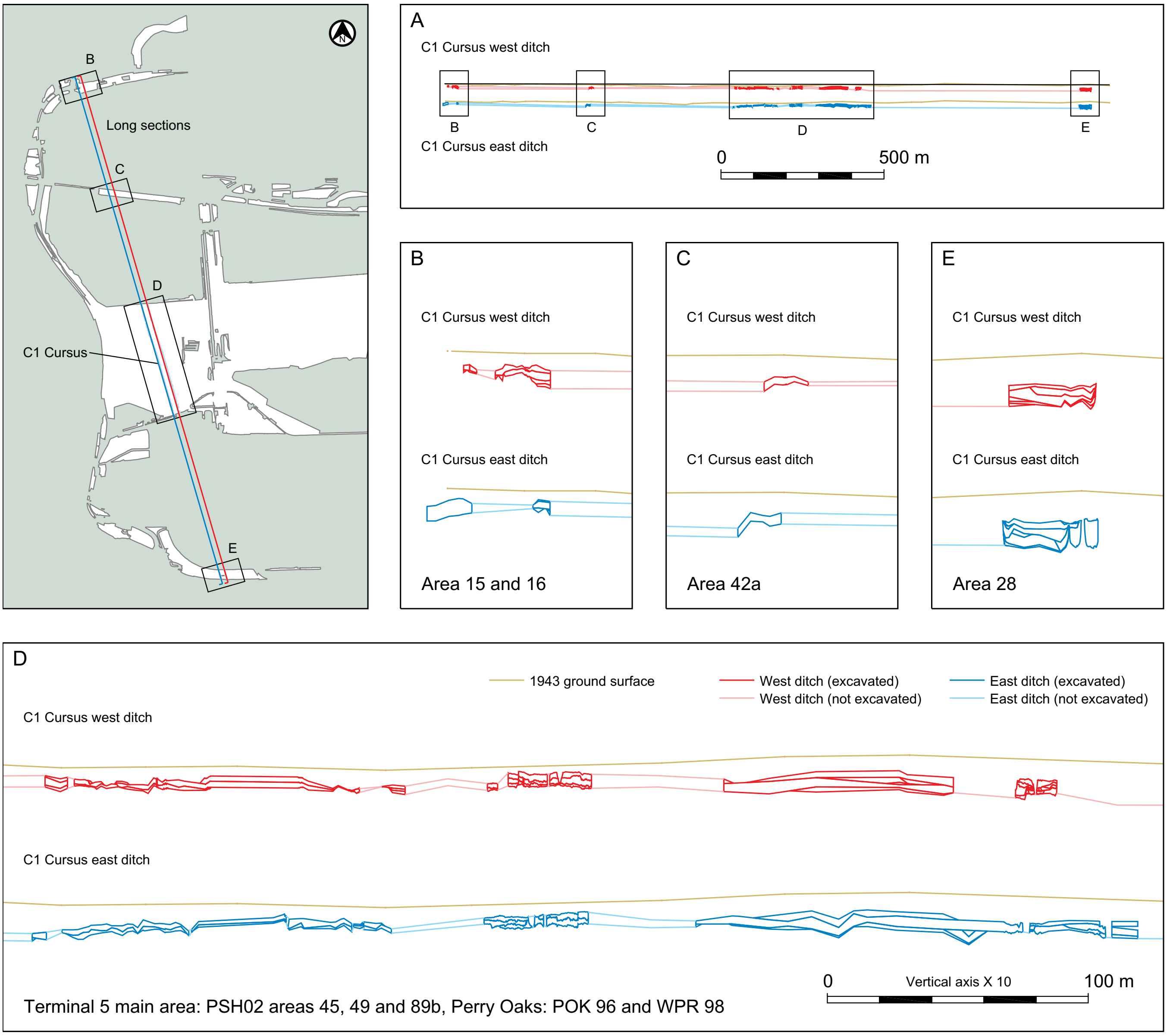


Figure 2.37: C1 Stanwell Cursus long sections and 1943 ground surface with vertical scale exaggerated by 10 times

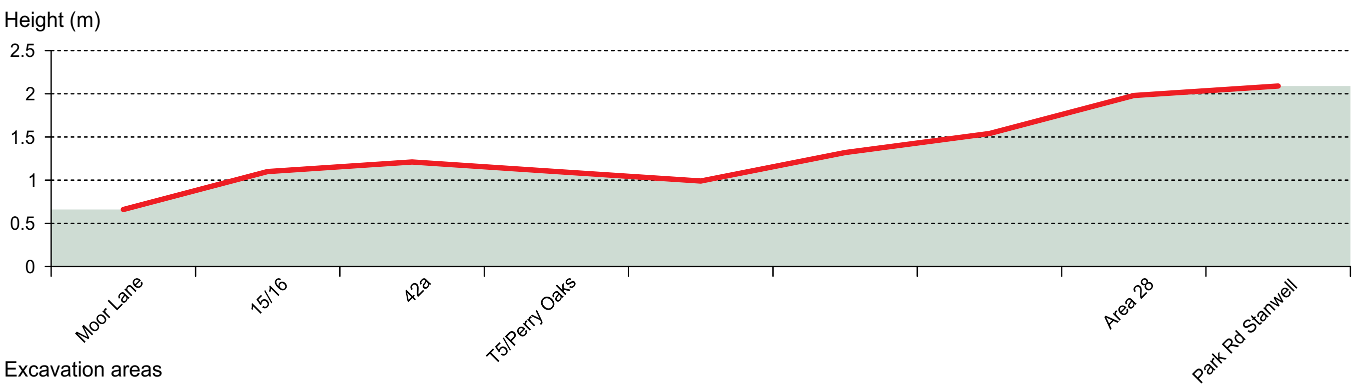


Figure 2.38: Projected Height of the C1 Stanwell Cursus bank

accordance with the recovery of Plain Bowl Ware from the C1 Cursus in the main Terminal 5 excavations further north. However, if feature 594241 does represent part of the cursus ditch, then it is stratigraphically later than pit 549228 which contained Peterborough Ware. Nonetheless, both the pit and ditch could represent a localised modification (such as blocking a causeway) to the existing cursus rather than a new southern extension.

In conclusion, the C1 Cursus sequence in Area 28 may not be out of accord with that elsewhere, namely that the monument was constructed during the use of Plain Bowl Pottery. It subsequently underwent modifications and these, together with activity associated with the middle fills of the cursus (see below), appear to have been linked with the use of Peterborough Ware pottery.

One further unusual feature of the C1 Cursus in Area 28 is the apparent discrepancy in depth between the western and eastern ditches. During excavation, it was apparent that the western ditch was significantly deeper than the shallower eastern ditch (see sections on Fig. 2.36). However, comparison of the reduced Ordnance Datum heights along the basses of both ditches reveals that the western ditch varied from being 6 cms shallower to 20 cms deeper than the eastern ditch. Although the western ditch is on average deeper, the difference is actually not as great as thought during excavation. This can be attributed to the microtopography of Area 28. A low gravel ridge runs north-south just inside the eastern edge of the western ditch. This ridge is quite pronounced but falls away rapidly so that the eastern third of the central area of the cursus is relatively lower, thus making the eastern ditch appear much shallower. The possibility that the gravel ridge represented the area protected by the original cursus bank was discussed on site, but its asymmetric position between the two cursus ditches would seem to preclude this possibility.

Park Road Stanwell

The Park Road Stanwell excavations were undertaken in several phases between 1979 and 1985 by the archaeological section of Surrey County Council (O'Connell 1990). A number of areas were examined, but with regards the Stanwell Cursus, the excavation is important in that it conclusively demonstrated that it was a Neolithic monument and not, as previously inferred from aerial photographs, a Roman road. A small trench (Area 2) detected the western cursus ditch close to the northern edge of the site, and as described above, this excavation was detected within Terminal 5 Area 28. The largest excavated area (O'Connell 1990, fig. 3: 1b, 7 and 8;) (located approximately 54 m to the south-east of Terminal 5 Area 28) revealed an approximately 90 m length of the cursus. A tree-throw was recorded as being cut by the cursus ditches, which were 21.6 m apart (O'Connell 1990, fig. 10). The ditches were between 3.3 and 3.6 m wide, and 1.05 to 1.18 m deep when measured from the stripped surface. However, when measured form the top of the existing ground surface, the ditches were up to 1.8 m deep (O'Connell 1990, fig.16, JB and JC). Abraded Peterborough Ware was recovered from the upper ditch fills, with probable Plain Bowl Ware sherds from lower in the sequences (see above). Approximately 120 m further south-east, two small trenches (Areas 12 and 13) also detected short lengths of the cursus ditches, approximately 20.8 m apart. Like Terminal 5 Area 28, there was a break (3.5 m long) in the western ditch.

What did the C1 Cursus look like?

Excavations at Perry Oaks in 1996 and 1999 confirmed that the Stanwell Cursus consisted of two parallel ditches between 20.5 and 22 m apart, the spoil from which was used to construct a single central bank (Framework Archaeology 2006, 54). The width and depth of the ditches will be explored in more detail below, but on excavation they averaged *c* 2.6 m wide and between 0.2 m and 0.5 m deep. The evidence for a central bank takes two forms. Firstly, it is clear that the Middle Bronze Age field system ditches which cross the cursus become shallower and narrower as they cross the central part of the monument. In some places they actually stop just inside the cursus ditches. Perhaps the best example is the Middle Bronze Age ditch 962363, which has a distinctive hourglass plan as it crosses the central cursus area (see Framework Archaeology 2006, fig. 2.9). Sections across these 2nd millennium BC ditches confirm that they become much shallower between the two cursus ditches, as they were dug across an already decayed central bank. The sections excavated across these ditches suggest that by the middle of the 2nd millennium BC the cursus bank was *c* 13 m wide and at least *c* 0.23 m high.

The second piece of evidence for a central cursus bank comes from the Air Ministry survey of Heathrow undertaken in 1943. Whilst the surveyors did not notice a remnant bank at the time, the digitisation and processing of these survey data for this project reveals the presence of just such a feature coincident with the cursus crop marks, running from Stanwell and terminating just to the south of Burrows Hill, immediately south of Perry Oaks. At the time of the 1943 survey, the broad remnant bank was *c* 0.2 m high and *c* 30 m wide, and it is this that led originally to the identification of the cursus as a Roman road from the aerial photographs (Framework Archaeology 2006, 49).

It was calculated in Volume 1 that when originally constructed, the central bank would have been 5 m wide at the base, 1.2 m high and 2 m wide at the top, although this would have varied from pace to place (Framework Archaeology 2006, 56). The additional data from the Terminal 5 excavations together with data from the excavations at Moor Lane and Park Road Stanwell (O'Connell 1990) suggest a clear trend towards the ditches being shallower at the north of the monument and deeper towards the south.

Figure 2.37 shows the longitudinal sections down the western and eastern

Plate 2.17: Reconstruction of the C1 Stanwell Cursus

cursus ditches and the level of the 1943 ground surface. This model was used to measure the depth from the base of the ditches to the top of the 1943 land surface, which we have assumed to equate to that in prehistory. We have also measured the depth of the ditches from their base to the ground surface where it was recorded in sections published by O'Connell (1990, fig. 16). The approximate depths of the Perry Oaks ditches from north to south have already been provided in *Volume 1* (see Framework Archaeology 2006, table 2.9), along with a corresponding indication of the height of the bank, allowing for an expansion factor of 1.1.

Figure 2.38 shows the height of the bank as extrapolated from the depth of the ditches from Moor Lane in the north to Park Road Stanwell in the south. The slight decrease in height along the 'kink' in the Perry Oaks excavations is quite apparent. Caution should be exercised with this interpretation, since the degree of truncation that may have occurred at Moor Lane is unknown (though Cotton observed no obvious signs of disturbance (O'Connell 1990, 32). Furthermore, the Perry Oaks sludge works had already disturbed the cursus prior to the 1943 survey, so the data may not be strictly comparable. However, if correct, there could be two reasons for the increasing height of the bank toward the south. Firstly, it could be that the monument moves progressively eastwards, away from the edge of the Colne floodplain as it moves south. Thus, viewed from the floodplain to the west, the central mound would have had to increase in height to remain visible. In contrast, the northern section of the monument runs onto the Colne floodplain, where the bank could be lower but still viewed from further west.

Volume 1 contained photographs of the reconstructed C1 Cursus during the excavations at Perry Oaks (Framework Archaeology 2006, 56–7). During the Terminal 5 excavations, the opportunity was again taken to produce another reconstruction of the cursus (Plate 2.17) in which the ditches are deeper and the bank higher, and gives an indication of the form of the cursus as it may have been towards its southern part in Area 49.

If the height of the bank varied from north to south, then so did the appearance. For example, we have seen that in the north, in Areas 15 and 16, the bank and the eastern ditch may have been coated and lined in white tufa-rich clay, which would have made the monument very conspicuous. In the southern part of Area 49, however, the bank was subsequently demolished and then the ditches recut, whilst in Area 28, there appears to have been localised modification associated with Peterborough Ware pottery.

The sequence of repeated re-cutting and-or extension that characterises the C3 Cursus is conspicuously absent from the C1 ditch profiles. Even the sequence described for the southern part of Area 49 is totally different to that for the C3 Cursus. Nowhere along the length of the C1 Cursus has a clear 'join' between two lengths of cursus ditch been recorded, and we are left with the impression that the original construction of the monument took place (as set out above) as a single project within a comparatively short time scale.

When was the C1 Stanwell cursus built?

Cursus monuments have traditionally proved very difficult to date accurately, due to the general paucity of artefactual material in their ditches, although it has now been concluded that they were built between 3640–3380 cal BC and 3260–2920 cal BC (Barclay and Bayliss 1999, 24). Recently, the Greater Stonehenge Cursus has been re-dated to 3630 to 3370 cal BC (Thomas *et al.* 2008, 49). However, we have already made the point that the Stanwell Cursus belongs to a class of monument with radically different architecture to traditional cursus, and therefore chronological parallels with these monuments must be viewed with caution. None of the samples of organic material from the C1 Stanwell Cursus submitted for radiocarbon determination produced a result (see above), and thus we are reliant on the relative chronology provided by pottery and flintwork from the ditch fills.

Table 2.13 quantifies the Neolithic to Early Bronze Age pottery assemblage by stratigraphic order within the C1 Cursus ditches (we can confidently discount later pottery as being intrusive). Data from the second phase of cursus ditch cutting on Area 49 has been excluded. It is apparent that in

Site code/area	Intervention	SG Number	Stratigraphy	Ditch (E or W)	Fabric Type	Ceramic Tradition	No. of Objects	Weight (g)
WPR98	133016	134033	Upper	E	GR1	EBA - Grog tempered	2	2
PSH02 / 15-16	559495	617043	Upper	E	GR2	Grooved Ware	1	23
PSH02 / 28	526351	526391	Upper	E	FL19	Peterborough - Mortlake Ware	1	7
PSH02 / 28	605240	605247	Upper	W	FL19	Peterborough - Mortlake Ware	2	13
WPR98	133016	134033	Upper	E	FL4	Plain Bowl Ware	1	2
POK96	230326	230336	Upper	E	FL4	Plain Bowl Ware	1	1
POK96	230328	230336	Upper	E	FL4	Plain Bowl Ware	2	2
POK96	230329	230336	Upper	E	FL4	Plain Bowl Ware	2	5
			Upper Total				**12**	**55**
PSH02 / 15-16	559519	617043	Middle	E	GR1	EBA - Grog tempered	1	7
PSH02 / 49	585007	529303	Middle	W	Fl20	Peterborough - Mortlake Ware	1	14
PSH02 / 28	605227	588237	Middle	W	FL21	Peterborough - Mortlake Ware	1	7
WPR98	133016	134032	Middle	E	FL4	Plain Bowl Ware	1	5
POK96	230327	230335	Middle	E	FL4	Plain Bowl Ware	4	2
POK96	230329	230335	Middle	E	FL4	Plain Bowl Ware	4	8
PSH02 / 45	562185	524236	Middle	E	FL16	Plain Bowl Ware	1	6
			Middle Total				**13**	**49**
PSH02 / 15-16	621100	621103	Lower	E	FL21	Peterborough - Mortlake Ware	1	3
WPR98	157188	128029	Lower	W	FL4	Plain Bowl Ware	2	25
POK96	229242	230334	Lower	E	FL4	Plain Bowl Ware	2	4
POK96	230333	230334	Lower	E	FL4	Plain Bowl Ware	2	7
PSH02 / 15-16	592181	617039	Lower	E	QU17	Plain Bowl Ware	1	42
			Lower Total				**8**	**81**
			Grand Total				**33**	**185**

Table 2.13: Neolithic to Early Bronze Age pottery stratified in the ditch fills of the C1 Stanwell Cursus

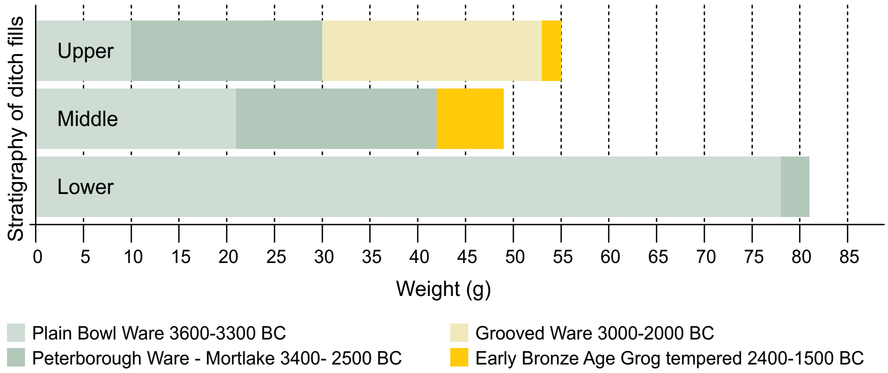


Figure 2.39: Weight of Neolithic to Early Bronze Age pottery stratified in the ditch fills of the C1 Stanwell Cursus

terms of numbers and weight, the assemblage is very small, and most was retrieved from the eastern ditch.

Figure 2.39 charts the data contained in Table 2.13. It is quite clear that Plain Bowl pottery is the dominant form in the lower fills, whilst the middle and upper fills see an increase in Peterborough Ware. The data from the Park Road Stanwell excavations has not been included due to the uncertainty over the identification of some of the assemblage (Cotton in O'Connell 1990, 28–9). However, if it is assumed that the 'other' sherds retrieved from the cursus are in fact Plain Bowl Ware, then the Park Road data does not materially alter Figure 2.39.

The data in Figure 2.39 would suggest that the cursus was constructed during the currency of Plain Bowl Ware sometime between 3600 and 3300 BC, possibly at a time when Plain Bowl and Peterborough Ware were in use, or when the latter had recently supplanted the former. The ditches appear to have accumulated silt through the 3rd millennium BC, so that by the early 2nd millennium BC, they had filled up. Several cursus appear to be associated with Peterborough Ware (eg Drayton North, Oxfordshire (Barclay *et al.* 2003), Springfield, Essex (Buckley *et al.* 2001, 128)). However, the Dorset Cursus produced sherds of Early Neolithic pottery from the basal primary fills, with larger quantities of Peterborough Ware from an adjacent 'occupation site' in the uppermost fills (Barrett *et al.* 1991, 46 and 71, fig. 2.13). This sequence is similar to that from the Stanwell C1 Cursus.

There is some corroboration of this from analysis of the flint assemblage, although the coarser chronology provided by lithics is generally less helpful:

In general, the retouched tools were mainly confined to the middle and upper fills of the ditches; very few pieces were recovered from the basal fills. As might be expected, diagnostically Neolithic pieces (eg flakes from polished implements) were found in the lower fills; typically Bronze Age pieces, such as the backed knives, barbed-and-tanged arrowheads and denticulated scrapers, tended to come from the upper fills (the two barbed-and-tanged arrowheads come from rank 2 fills of the recut [entity 2886]; the other types from fills of the original cut [entity 727]). While this may provide some evidence of the chronological sequence, other technologically early pieces (such as the Mesolithic burin and axe-thinning flake) were scattered throughout the fills of entity 727 and argue for some redeposition.

(Cramp and Leivers, CD Section 4)

With regards the sedimentary processes that led to the filling of the C1 Stanwell Cursus ditches, Bates (Framework Archaeology 2006, Volume 1, CD Section 14) makes the following observations:

- *The magnetic susceptibility determinations from the western ditch fills… perhaps indicates gradual, slow and continual accumulation of sediment.*

- *Infilling of the eastern ditch suggests that progressive infilling of the feature resulted from a winnowing out of the finer elements of the bedrock, and their subsequent deposition as ditch fills, and a decrease in gravel content up-profile. Infilling of the central section of the eastern ditch (155165) suggests differing patterns of infilling dominated here.*

- *The peaks of values for both magnetic susceptibility and organic content within the eastern ditch suggest variation in the nature of patterns of sedimentation and the possibility that a phase of stability exists within the middle part of the profile (thus implying a period of ditch fill stability and cessation of infilling – this may be reflected in the age distribution of finds from the uppermost fills being considerably later than the assumed age for the early fills).*

How much effort was required to build the C1 Stanwell cursus?

We have found little reason to alter the conclusions of the estimates expressed in Volume 1 (Framework Archaeology 2006, 57), and they are summarised thus.

We have made a case for the cursus to have been constructed as relatively short, connected lengths, possibly each having been excavated by a different team. The method used by Startin (1982; 1998) for the Abingdon causewayed enclosure and Cleaven Dyke Cursus has been followed. Startin assumed a rate of excavation of 0.35 cubic metre per person per hour. From personal experience of excavating the compacted gravel and brickearth deposits of the Perry Oaks area, a more likely rate would be *c* 0.25 cubic metre per person per hour. We can assume that for each ditch, the team consisted of one digger with antler picks and one shoveller using scapulae and baskets, who would also carry the spoil to the central bank. The palaeoenvironmental evidence suggests that trees and vegetation had been fired and cleared from the course of the cursus and assuming the course had already been set out with ropes, then two teams of two people working 10 hour days, six days a week, could complete the 150 m long 'kinked' section of the cursus in 16 to 18 weeks.

If we suppose that the C1 Cursus was built in similar 150 m long segments, then the whole 3.6 km could be built by 24 teams of two people per ditch (a total workforce of 96 using *c* 97,000 man hours) in 16–18 weeks. Of course, we have already noted how the ditches were deeper in some sections of the cursus and the bank would have been higher, but this calculation gives some idea of the effort required. It is apparent that the cursus could have been constructed by relatively few people, within a relatively short time scale. It is probable that the labour was spread over more than one year to accommodate other domestic activities, but as we have suggested, the regularity of the scheme would suggest that it would have taken a few years at most.

What did the landscape look like when the cursus had been built?

We have two pieces of evidence for the appearance of the landscape shortly after the construction of the cursus. The first is a pollen profile from pit 150011 which cuts the lower fills of the C1 Stanwell cursus, and has been described in detail in Volume 1 (Framework Archaeology 2006, 61–5). In summary,

Pit 150011 shows that the Neolithic landscape supported mixed, deciduous woodland, dominated by oak and hazel in the vicinity of the site. However, some impact was being made on the wildwood. Because of the relatively short life of the feature, the picture presented here may represent a brief period, certainly within a single generation of oak, lime, and alder trees. There appear to have been relatively small areas of grasses and herbs, and the environs of the pit had moist soils. There seems to have been some arable agriculture being carried out locally and it is possible that cereals were being grown in the woodland glades, the so-called practice of 'forest farming' (Coles 1976; Göransson 1986; Edwards 1993). Unfortunately, we cannot be sure whether pit 150011 and therefore the C1 Stanwell Cursus were located within a local clearing, or at the edge of the transition from a wooded environment (perhaps on the floodplain) to a more open landscape on the terrace… …There is little doubt then, that interpretation of data relating to woodland cover in the Neolithic period is fraught with difficulty. The patchiness of the landscape and the essentially low sampling frequency mean that complexities of taphonomy cannot be easily resolved. But, in spite of the difficulties listed here, wherever arboreal pollen levels are very low indeed, the catchment must be very open... To get low arboreal pollen values, the woodland edge would have had to have been some (unknown) distance away from a feature, or the local trees would have had to have been very heavily exploited so that flowering was suppressed. In spite of the high arboreal pollen values, the Neolithic landscape around Pit 150011 might have been more open than the pollen diagram might suggest.

The problems associated with identifying the extent of woodland clearance from palynological data alone ensure that the local environment at Perry Oaks during construction and the life of the cursus remains unclear. The monument itself is testimony to the creation of open ground, and yet Pit 150011, which cut the cursus ditch, seems to indicate densely wooded conditions. However, as outlined above, this may be because higher pollen levels are often associated with freer dispersal facilitated by an open canopy.

(Wiltshire in Framework Archaeology 2006, 63–5)

The Terminal 5 excavations have added one further piece of data from the mollusc analysis of samples from calcareous deposit 617147 in the eastern C1 Cursus ditch in Area 15.

Molluscan preservation in all samples examined was very good with 765 individuals identified in sample 18264. The samples contained mixed assemblages of freshwater and terrestrial species. It is likely that the freshwater assemblage derives from the redeposited tufa and was dominated by Valvata cristata, Valvata piscinalis and to a lesser extent Bithynia sp. and various freshwater catholic species. It is very likely this tufa formed in-channel in clean fast flowing water.

A component of the terrestrial assemblage may have been living in the vegetation covering the bank or within the ditch itself. The terrestrial assemblage was composed largely of four species, dry land open country species Pupilla muscorum, Vallonia excentrica and Vallonia costata, and the catholic species Trichia hispida, consistent with an environment of established dry, short turfed grassland. Shade-loving species were almost entirely absent apart from occasional zonitids and worn apical fragments of the robust shelled Clausiliidae that may well be residual, but perhaps related to a previously more enclosed environment at the site. Of significance is perhaps the consistent presence of Truncatellina cylindrica in the samples. This species, although rare today, was more abundant in the Neolithic and Bronze Ages following primary clearance, and is found in very dry, short calcareous grassland in sandy or stony ground (Kerney 1999, 89).

Since the molluscs from the ditch are likely to reflect very local conditions in the immediate vicinity, it is not possible to say with certainty how extensive the open area around the monument may have been. It is possible, if boundaries were maintained over a substantial period, for a wholly open-country fauna to exist within a 'corridor' providing access to the floodplain, perhaps within a more enclosed environment. One may speculate, however, similar open environments may have existed in the area from which the fauna could colonise. The construction of the monument itself may have provided a route.

There is some indication of variation within the deposit with an increase in the relative abundance of terrestrial species and a reduction in freshwater species up-profile. This may be related to a gradual process of infilling perhaps suggesting the deposit formed incrementally rather than as a single event. This is consistent with the deposit description which suggested the presence of faint bedding structures. Deposition may have occurred by the weathering and erosion of material from the bank and edges of the feature, or one may speculate, episodic activity around the monument, incorporating elements from the contemporary topsoil.

(Stafford, CD Section 18)

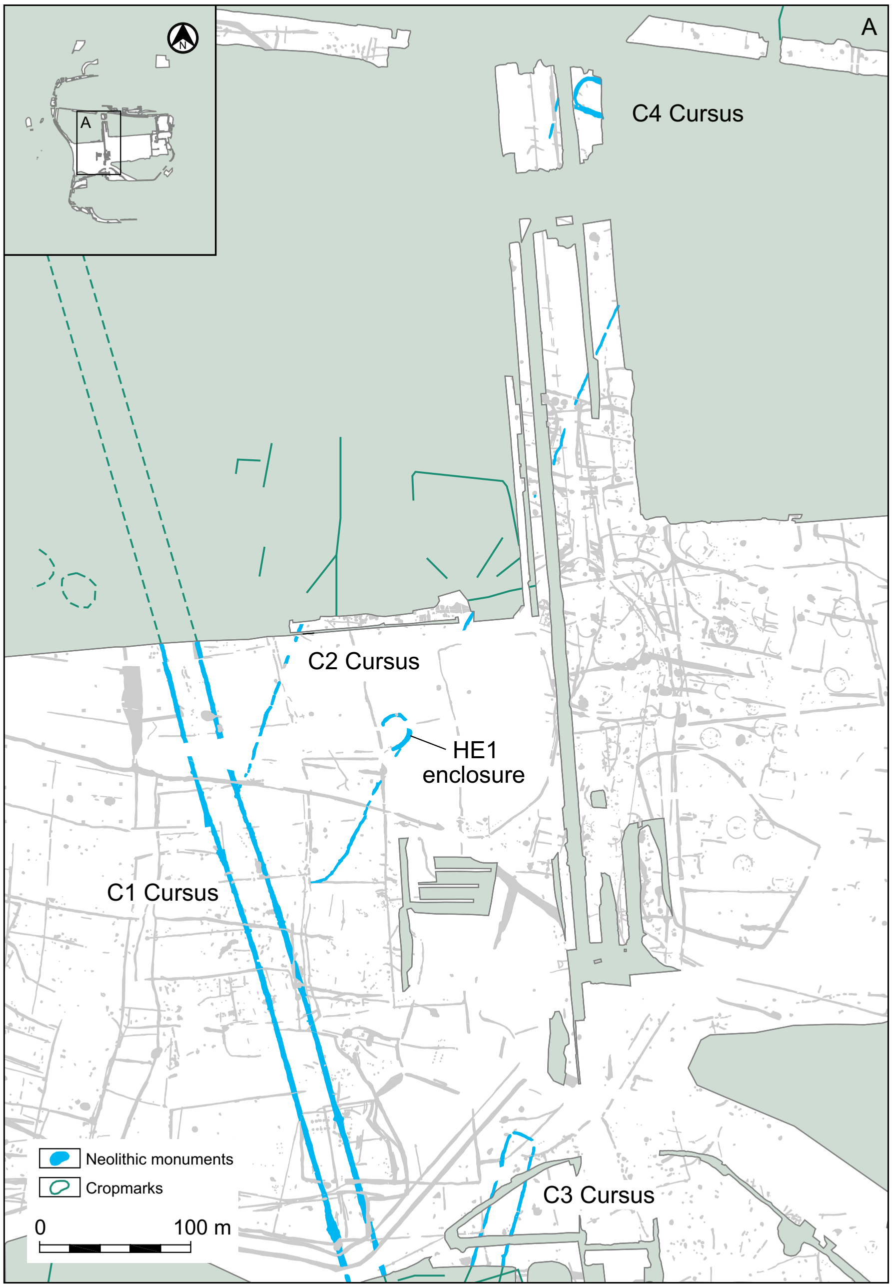


Figure 2.40: C2 Cursus in relation to crop marks

C1 Cursus summary

We have described how certain locations along the route of the C1 Cursus had been places of human activity from the Late Mesolithic to just prior to the building of the monument in second half of the 4th millennium BC, during the currency of Plain Bowl Ware pottery (for example the Late Mesolithic midden site, the posthole complex, the 4th millennium settlement site and the C3/C5 Cursus which may have predated the C1 monument). We have also shown that the course of the C1 monument appears to have been deliberately adjusted to incorporate these locations within a very narrow corridor through the landscape, a corridor that marked the boundary between the Colne floodplain and the higher terrace gravel of the Heathrow Terrace. Although the construction of the cursus overwrote those locations, it also served to unify the histories and meanings associated with them into a statement of unified planning, execution and grandeur.

We will now continue by examining the remaining two cursus monuments, before exploring in more detail some of the motivations that led to them being built and the consequences for the community of their construction.

The C2 Cursus

The southern section of the C2 Cursus was excavated in 1999 and described in Volume 1 (Framework Archaeology 2006, 69–72). The Terminal 5 excavations have added a little more evidence for dating the monument to the latter half of the 4th millennium BC and confirmed that the cursus extended further to the north-east, where there is slender evidence to suggest that the terminus was embellished by the construction of the C4 Cursus (Fig. 2.40).

Form and architecture

The course of the C2 Cursus is cut by many later archaeological features, and much has been lost due to modern destruction caused the Duke of Northumberland's and Longford Rivers (see Chapter 1, Fig. 1.1). The construction and operation of the Perry Oaks sludge works has also taken a severe toll on this monument, and it is difficult to be certain of the course, form and extent of much of the C2 Cursus.

As with the C1 and C3 cursus, there is evidence of the woodland clearance that must have preceded the construction of the C2 monument, in the form of tree-throws 650080 and 648041 (Fig. 2.42, Sections 10 and 14). In addition, there was also a single posthole (539196) which was cut by the eastern ditch of the C2 Cursus, demonstrating some form of activity at this location prior to construction of the monument (Fig. 2.41, Section 6).

The C2 Cursus is composed of two widely spaced, roughly parallel, discontinuous ditches orientated south-west to north-east. The ditches, which vary from 80 to 90 m apart, are much more widely spaced than those of the other three cursus monuments at Terminal 5. Figure 2.40 shows that the western and eastern ditches are not parallel but gradually diverging. For example, at their southern end, the ditches are 82 m apart, whilst 94 m to the north-east, near the HE1 Enclosure, they are 88 m apart. However there is some evidence that the ditches re-converge nearer their possible north-eastern terminal.

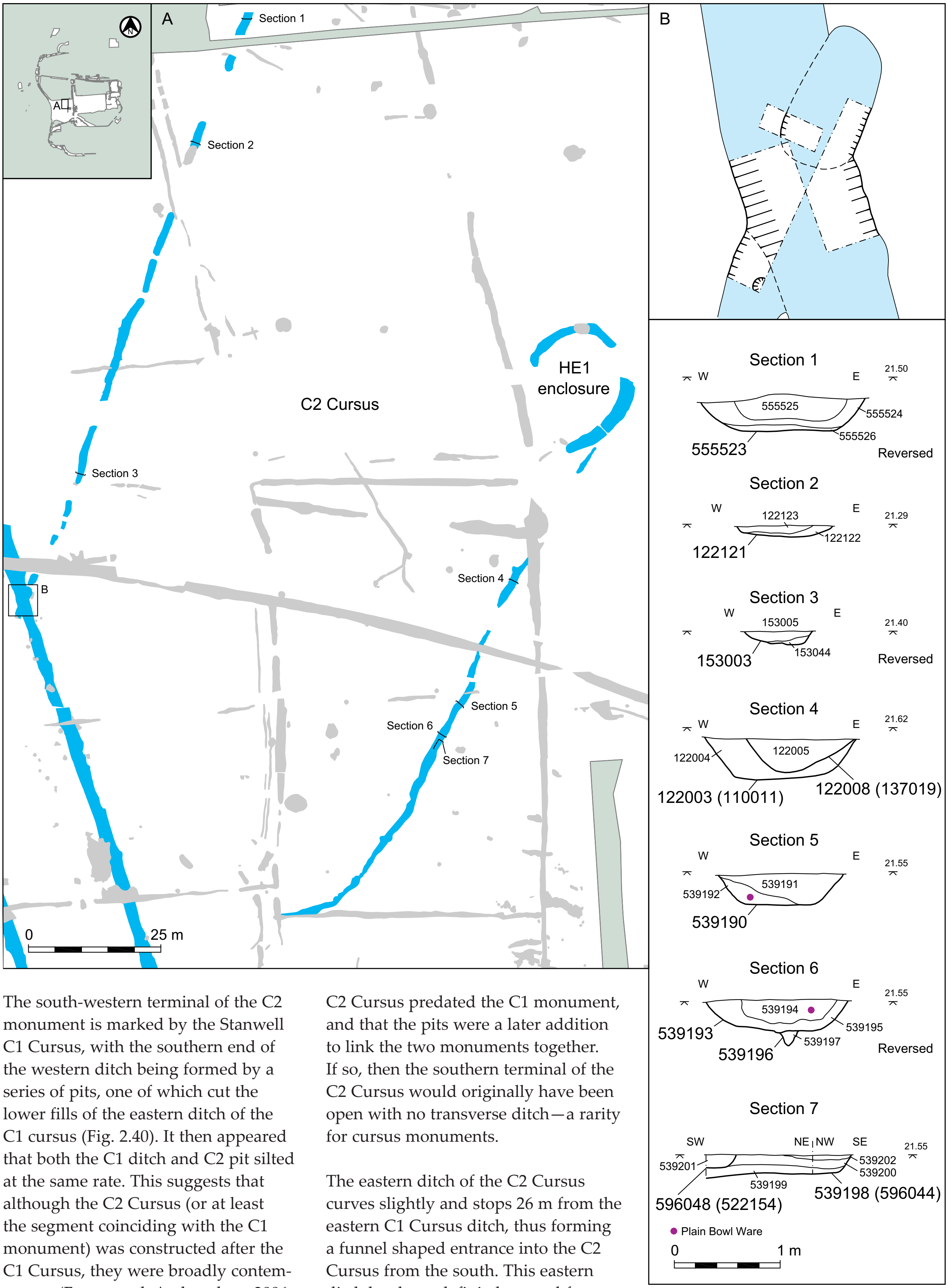


Figure 2.41: C2 Cursus south-west end

The south-western terminal of the C2 monument is marked by the Stanwell C1 Cursus, with the southern end of the western ditch being formed by a series of pits, one of which cut the lower fills of the eastern ditch of the C1 cursus (Fig. 2.40). It then appeared that both the C1 ditch and C2 pit silted at the same rate. This suggests that although the C2 Cursus (or at least the segment coinciding with the C1 monument) was constructed after the C1 Cursus, they were broadly contemporary (Framework Archaeology 2006, 71–2). However, it is possible that the C2 Cursus predated the C1 monument, and that the pits were a later addition to link the two monuments together. If so, then the southern terminal of the C2 Cursus would originally have been open with no transverse ditch—a rarity for cursus monuments.

The eastern ditch of the C2 Cursus curves slightly and stops 26 m from the eastern C1 Cursus ditch, thus forming a funnel shaped entrance into the C2 Cursus from the south. This eastern ditch has been definitely traced for a distance of 430 m to the north-east through a combination of excavation and crop marks (Fig. 2.40–2). The total length is unknown, due to destruction caused by a sludge lagoon. There was no convincing evidence for the continuation of this ditch into the excavated area (34) to the north of the lagoon, and we can thus be fairly confident that the eastern ditch of the C2 Cursus was between 430 m and 610 m in length.

The western ditch has been excavated for a total length of 122 m as it heads north-east from the C1 Cursus (Fig. 2.41). Unfortunately another sludge lagoon has destroyed a large area further north, but crop marks suggest that it did extend to the north-east, at least until it met the northern extension of Bronze Age Trackway 1 (Fig. 2.40). Unlike the eastern ditch, it is less certain that the western ditch extends beyond the lagoon and across Area 61. The most likely candidate for this ditch comprises features 673060 and 633192 (Fig. 2.43). These shallow ditch segments are on a slightly different alignment to the section of the northern ditch further to the south-west, but as Figure 2.40 shows, the C2 monument (like the C3 Cursus) is not as rigid in its orientation or constructional scheme as the C1 Cursus. A single sherd of Plain Bowl Ware was found in feature 673060, which would tend to confirm a Neolithic date for the ditch. Conversely, ditch 633192 cuts a tree-throw (633144) that contained a single unequivocal sherd of post-Deverel-Rimbury Late Bronze Age pottery, suggesting the ditch probably dates to the 1st millennium BC or later. *If* these features do represent the northern C2 Cursus ditch, then it is entirely possible that the C4 Cursus formed a slightly later elaboration of the original terminal of the C2 Cursus. The basis for this reconstruction lies in a short length of ditch (621231), which may have formed the original northern terminus of the C2 Cursus, running at

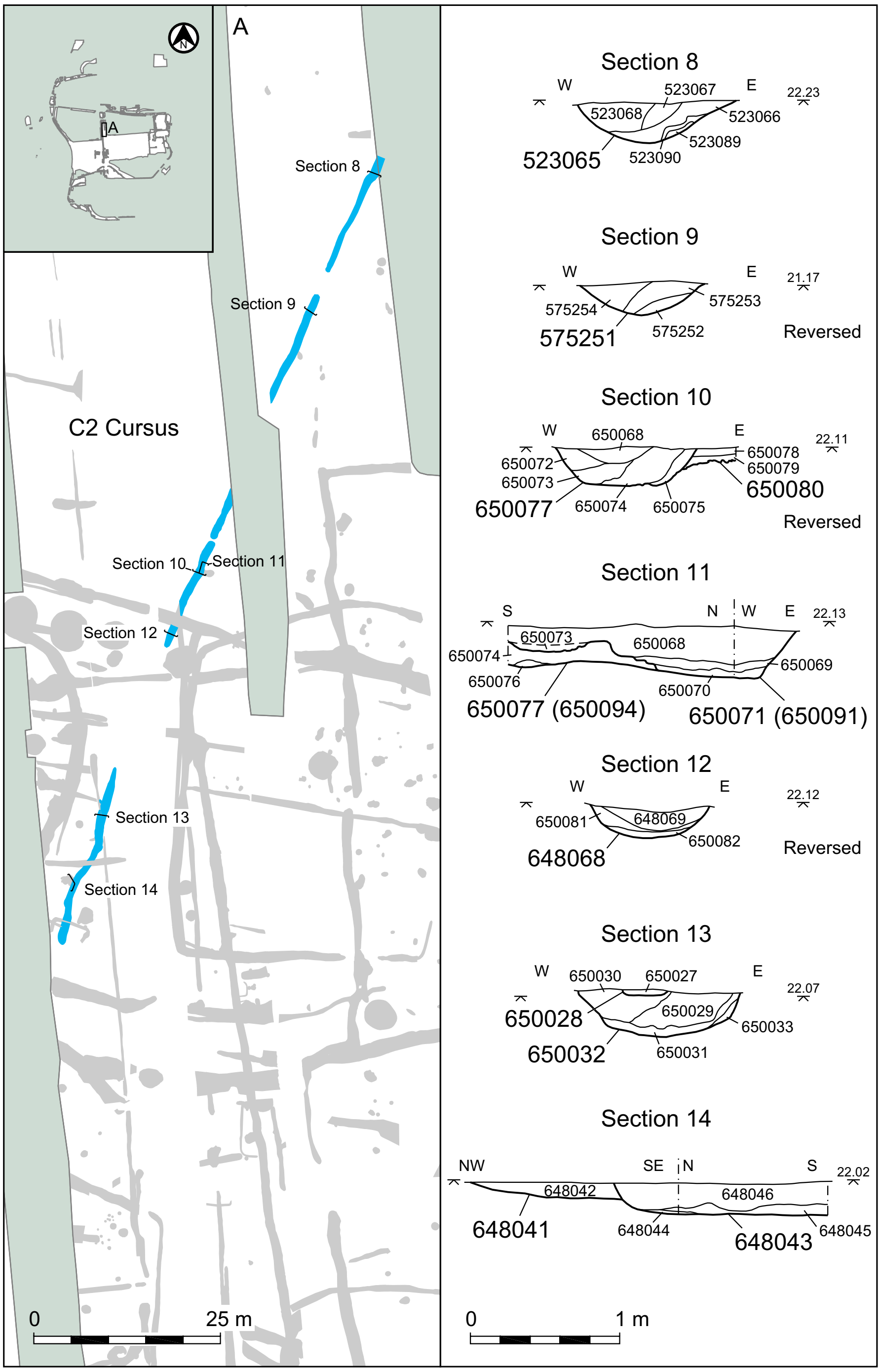
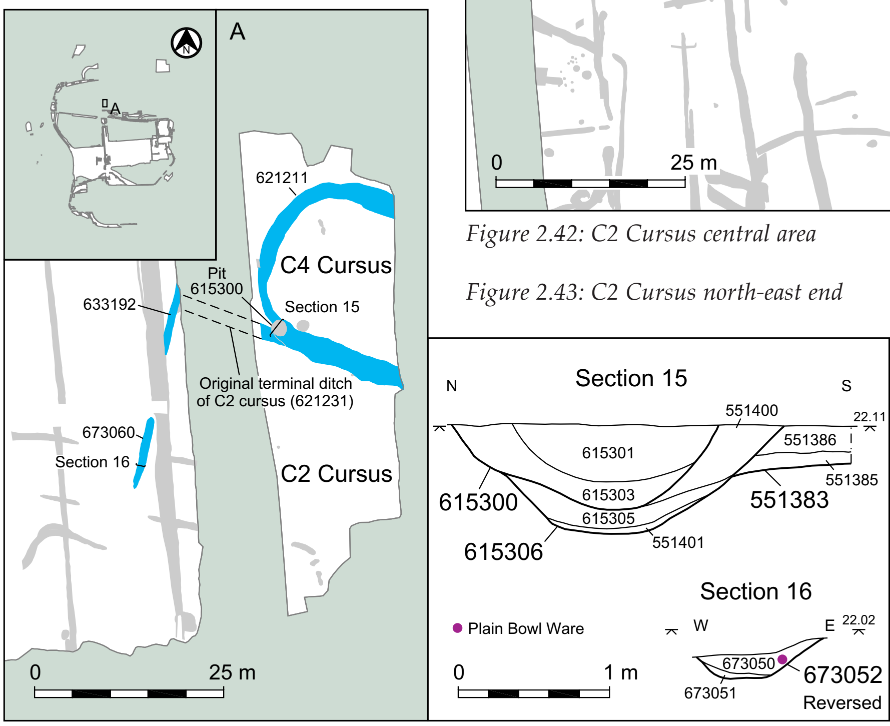


Figure 2.42: C2 Cursus central area

Figure 2.43: C2 Cursus north-east end



C2 Cursus	Struck flint			Pottery			
Ditch	Feature	Debitage	Tools	Unidentified		Plain Bowl Ware	
				No. sherds	Weight	No. sherds	Weight
West	132009	3	-	-	-	-	-
	133035	2	-	-	-	-	-
	134011	6	-	-	-	-	-
	142008	6	-	-	-	-	-
	524226	4	-	-	-	-	-
	673060	-	-	-	-	1	2
Total West		21	0	0	0	1	2
East	110011	4	1	-	-	-	-
	522154	6	-	-	-	-	-
	547241	2	-	1	3	3	4
	596044	3	-	-	-	15	18
	636048	33	1	-	-	-	-
	650065	2	-	-	-	-	-
	650091	31	-	1	3	-	-
	961741	3	1	-	-	-	-
Total East		84	3	2	6	18	22
Total		**105**	**3**	**2**	**6**	**19**	**24**

Table 2.14: Lithic and pottery assemblages from the C2 Cursus

right angles to the northern flanking ditch (673060 and 633192) (Fig. 2.43). At a slightly later date, the southern ditch (621211) of the C4 Cursus was dug along the same alignment as the original northern terminus (621231) of the C2 monument. This would have resulted in the C2 Cursus having the bank of the Stanwell C1 Cursus as its south-western terminus, and the banks of the C4 Cursus at the north-eastern terminus. Similar elaboration of the terminals of the Dorset Cursus have been noted, although in this instance the termini were fashioned to resemble long barrows (Barrett *et al.* 1991).

Having considered the extent and ground plan of the C2 Cursus we will now attempt to reconstruct the above ground architecture by considering the evidence from the ditches. The ditches are typically 1.4 m wide, but narrow in places to under 0.8 m. They are relatively shallow, typically between 0.15 to 0.3 m deep, although truncation has removed between 0.4 m and 0.8 m from the original ground surface. This truncation, combined with other disturbance from archaeological and modern features, makes difficult the detection of true gaps (and therefore the position of possible entrances) in the course of the ditches. As noted in Volume 1, the form of the C2 monument is more closely matched by traditional cursus monuments such as the Dorset Cursus. We may therefore expect the spoil from the C2 Cursus ditches to have been piled up to form two parallel internal banks. However the evidence is far from conclusive. The sections published in Volume 1 (Framework Archaeology 2006, fig. 2.19) show slight evidence for the silting of the ditches coming from inside the C2 Cursus. Conversely, for the north-eastern section of the eastern ditch at least, sections 8 and 9 (Fig. 2.42) appear to show that the silting was predominantly derived from the east, implying the location of a bank outside the monument. One section of the cursus ditch (Fig. 2.42, Section 10) also appears to show material slumping into the eastern ditch from the east implying the bank may have been outside the monument. However, this material may have originated from the disturbed upcast from the hole of a fallen tree, (represented by tree-throw 650080) which was cut by the cursus ditch. There is thus a possibility that the location of the flanking ditches may have differed along the length of the monument, perhaps changing as new segments of the monument were built. Alternatively, the variations in the asymmetric silting along the course of the ditches may simply be the result of different forms and intensity of activity outside the monument.

Ditches dating to later periods which cut across the monument do not provide the same help in determining the position of the banks as those which cross the C1 Cursus. Whatever their position, it is highly likely that that the associated banks were relatively wide, stable and low. Applying the same calculations to the C2 Cursus as we used for the C1 monument, the flanking banks could have been between 2.6 m and 3 m wide and 0.75 m to 1 m high (Framework Archaeology 2006, 69).

Sequence of construction

The plan of the surviving C2 Cursus (Figs 3.40–3) strongly suggests that it was constructed as a series of interconnecting lengths of shallow ditch. The general homogeneity of the fills made the detection of these segments difficult in section, but one or two examples from the southern end can be demonstrated. Firstly, ditch 522154 was excavated through the upper fills of ditch 596044 (Figure 2.41, Section 7), implying that this feature had silted to a considerable degree before 522154 was either added or recut and renewed the original ditch line. Secondly, a short segment of ditch (650091) was added to the end of ditch 650094 (Fig. 2.42, Section 11), either to extend the monument to the north-east, or just as plausibly, to close a small entrance. In addition, there is some evidence (Fig. 2.41, Section 4) of recutting (137019) of the southern ditch (110011), although this could be connected with a Bronze Age field boundary (110014).

When the stratigraphic evidence is considered in conjunction with the discontinuous, sinuous nature of the ditches, it would seem likely that the C2 Cursus was constructed and/or maintained in a far less planned manner than the C1 or even the C3 Cursus.

Chronology

Only a small number of finds were retrieved from the ditches of this monument (Table 2.14; Fig. 2.44). The flint assemblage broadly dates to the Neolithic, but the only retouched tools were two awls and a blade. The pottery assemblage consists of a handful of

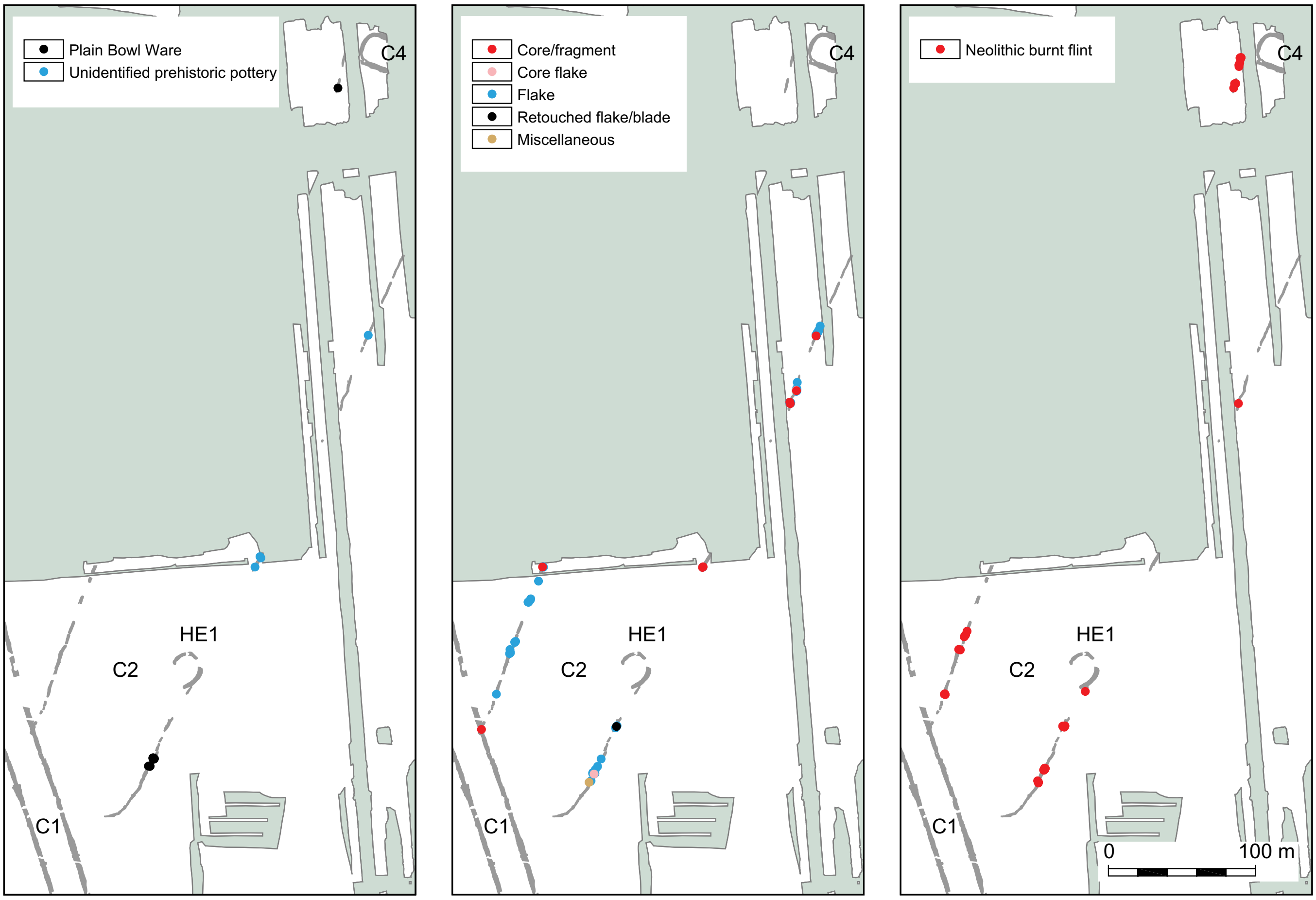


Figure 2.44: Neolithic and unidentified pottery, worked flint and burnt flint distribution within the C2 Cursus

tiny sherds, some of which are unidentifiable, whilst the rest can be classified as Neolithic Plain Bowl Ware. If these sherds are *in situ*, then they would indicate the C2 Cursus ditches were silting sometime from 3600 to 3300 BC onwards.

The small quantity of Plain Bowl Ware pottery (Table 2.14) is located near the north-eastern end of the western ditch, and near the south-eastern end of the eastern ditch. However, the small quantities involved make it difficult to determine if this is a significant distribution. The struck and burnt flint is more evenly distributed along both cursus ditches, and we are left with the impression that the finds assemblage from the ditches were probably generated by activities taking place in the landscape around the cursus rather than inside the monument.

As we have noted earlier, the form of the C2 Cursus is unlike the three other monuments excavated at Terminal 5 in that it is wider and more irregular in plan and execution, perhaps suggesting that it was used by different (larger?) groups of people in slightly different ways to the other cursus.

We will now describe the C4 Cursus that appears to form the northern terminal of the C2 monument

The C4 Cursus

The majority of this monument was destroyed by the construction of a large sludge lagoon in 1980, which makes it difficult to classify and date. Whilst it is likely that the monument was rectangular in plan, it could also have been oval or sub-rectangular, and was a point of much debate to the excavators. The monument was orientated at right angles to the course of the C2 Cursus, near the northern extremity of the narrow strip formerly occupied by the Duke of Northumberland's and Longford Rivers (Fig. 2.45 and also Chapter 1, Fig. 1.1).

The surviving remains form the north-western terminus of a rectangular enclosure, approximately 21 m wide and surviving for a length of approximately 19 m (Fig. 2.46; Plate 2.18). If, as has been previously suggested, the C4 monument formed an elaboration of the north-eastern terminus of the C2 monument, then we can predict that it originally extended for another 62 m to the south-east before meeting the eastern ditch of the C2 monument (Plate 2.19). There are certainly no traces of a parallel sided enclosure on the same alignment in the far eastern part of the Terminal 5 excavations, 640 m away.

Although the whole length of the ditch has been given a single feature number (621211), the plan of the C4 monument suggests that the northern and southern ditches were dug as separate features, and the western end ditch was added as a separate feature, although longitudinal sections through the ditches revealed no evidence to support this.

Plate 2.18: Photographs of section through the C4 Cursus ditch (top Section 2, mid Section 3, bottom Section 6)

The northern and southern ditches range from 2.8 to 3 m wide, whilst the western ditch is on average 2 m wide, but narrows to 1 m in the south-west corner. This narrowing could represent the blocking of an entrance, but again no stratigraphic evidence was present for this. The depth of the ditches ranged from 0.47 m to 0.63 m (with an average of 0.58 m). Interventions placed through the narrower western sections of the ditch demonstrated that the ditch was as deep if not deeper along this section of the monument.

The profile of the ditch was generally consistent throughout its extent, with steep sloping sides and a flat base and no evidence of recutting. Primary silting deposits were identified throughout the length of the monument, sealed by slow silting fills, confirming a lack of maintenance after construction. A large influx of material was then detected in the majority of interventions, probably derived from erosion and collapse of the adjacent bank. It is clear from the sections that

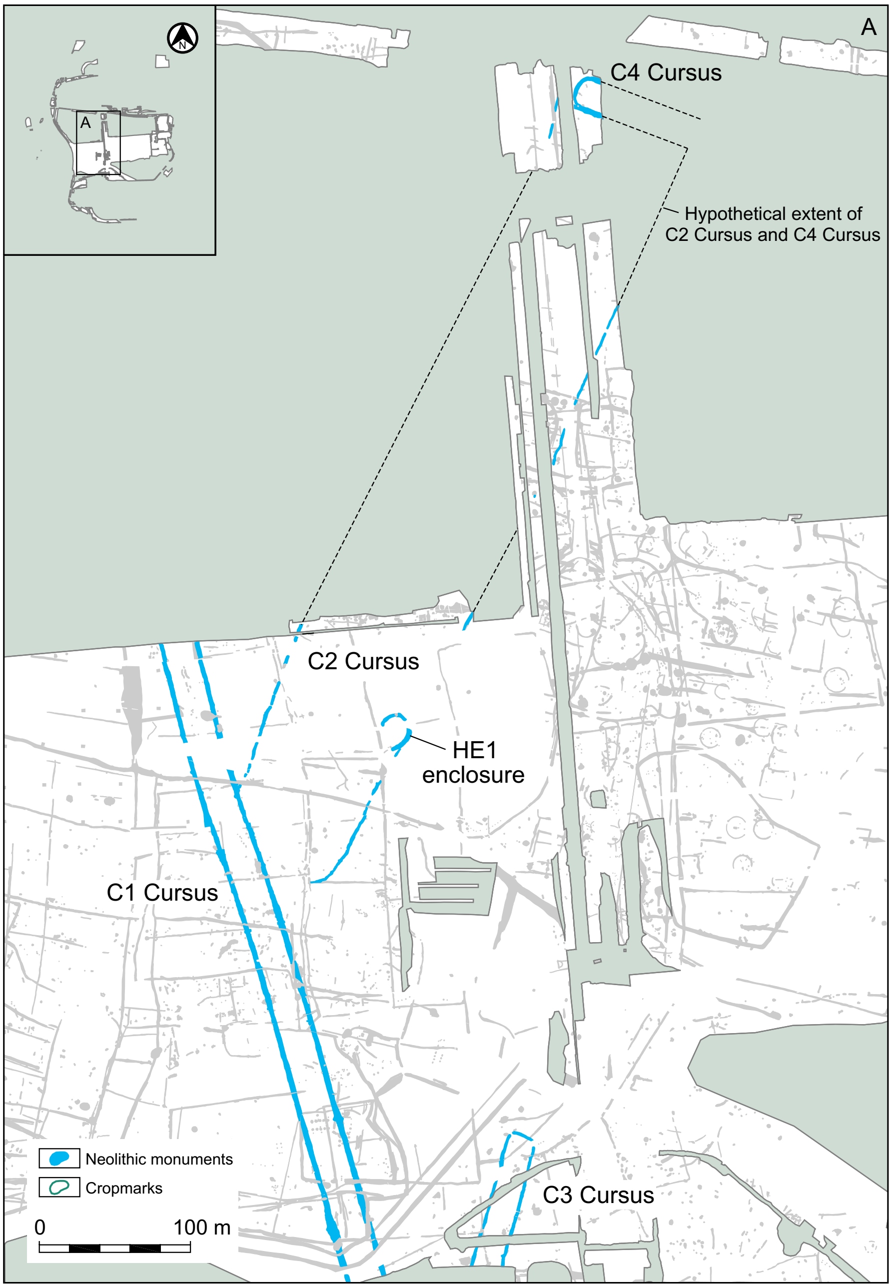


Figure 2.45: C4 Cursus location and relationship with C1 and C2 cursus monuments

Plate 2.19: Junction of the C2 and C4 Cursus

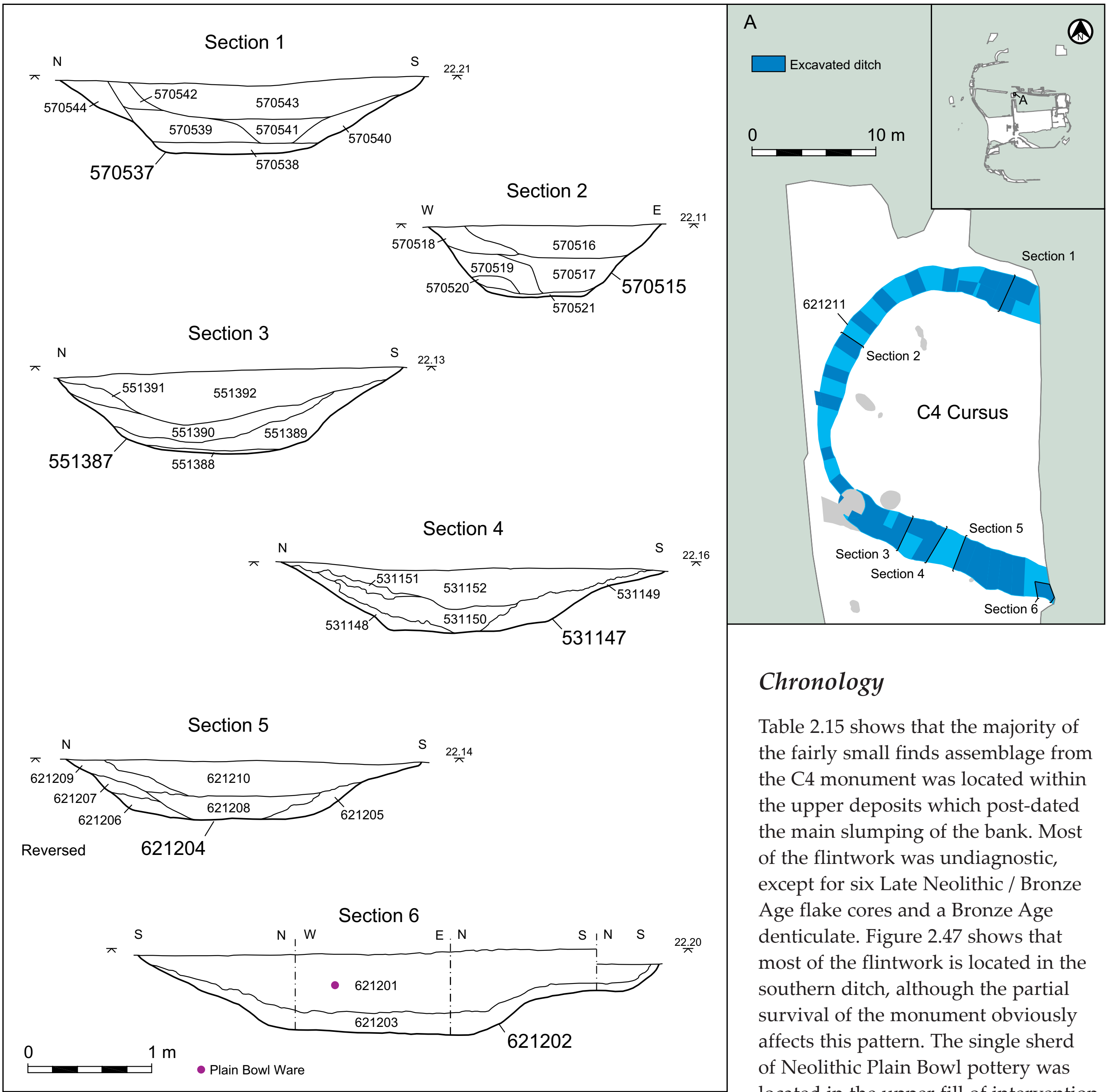


Figure 2.46: C4 Cursus, extent of excavation and sections through ditches

the bank was located externally to the northern and western ditches. However, the evidence is less clear for the southern ditch, where sections 3–6 (Fig. 2.46) show a much more even inflow of material from both inside and outside of the monument. If our contention that the C4 monument is a later addition to the terminus (represented by ditch 551385) of the C2 Cursus is correct, then there would already have been an extant bank along this southern side. It is possible that the new C4 bank may have been constructed along the southern side of the extant and stable C2 bank, which slowed subsequent influx of material into the C4 ditch.

Chronology

Table 2.15 shows that the majority of the fairly small finds assemblage from the C4 monument was located within the upper deposits which post-dated the main slumping of the bank. Most of the flintwork was undiagnostic, except for six Late Neolithic / Bronze Age flake cores and a Bronze Age denticulate. Figure 2.47 shows that most of the flintwork is located in the southern ditch, although the partial survival of the monument obviously affects this pattern. The single sherd of Neolithic Plain Bowl pottery was located in the upper fill of intervention 621202 in the far south-eastern excavated segment of the monument, although here there was no clear evidence of bank collapse (see above).

Table 2.15: Flint, pottery and bone from the C4 Cursus ditches

C4 Cursus - Feature 621211	Struck Flint		Burnt Flint		Plain Bowl Ware		Antler and Bone	
	Debitage	Tools	No.	Weight	No. sherds	Weight	No.	Weight
Deposits post-dating bank collapse	62	2	1	1	1	8	52	7
Primary silts and all deposits predating bank collapse	5	1	-	-	-	-	6	55
Total	**67**	**3**	**1**	**1**	**1**	**8**	**58**	**62**

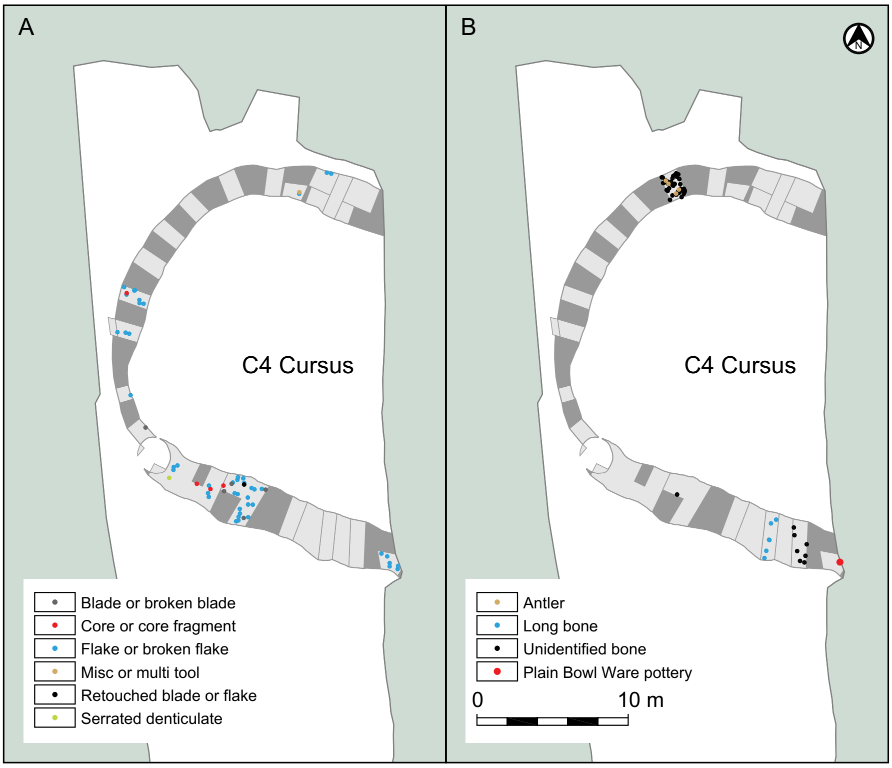


Figure 2.47: Distribution of worked flint, pottery and animal bone in the C4 Cursus

The animal bone was:

> *…very badly preserved. What could be ascertained was that some antler fragments were present but it was not possible to say whether they were from a pick, had been worked or were from a hunted animal rather than gathered shed antler. Other bones were unidentified.*
>
> *(Knight and Grimm, CD Section 13)*

These remains were all from deposits post-dating the bank collapse. The bone from the primary silts consisted of a cattle sized long bone. None of the bone contained sufficient collagen to produce a radiocarbon date: indeed some was so fragile that it did not survive excavation. Figure 2.47 shows that the distribution of flint and animal bone in the upper silts tends to be mutually exclusive. This suggests that that the activity that took place in and around the monument after the collapse of the bank had a spatial structure, and that the material has not become incorporated randomly. To take this observation further, it would seem that although the original architecture of the monument was now in ruins, it still acted as a focus for structured human actions.

In summary, the finds assemblage provides little in the way of dating evidence for the construction of the C4 monument. The paucity of finds in the lower fills is in keeping with the other Neolithic monuments from Terminal 5 and elsewhere at Heathrow (Canham 1978, 6–7). The finds assemblages from the deposits post-dating the ditch collapse clearly indicate human activity in and around the monument after it had fallen into decay. Judging from the flint, this could probably be sometime during the 3rd millennium BC, although the single sherd of Plain Bowl pottery suggests a date in the late 4th millennium BC.

Architecture

The truncation model shows that between 0.75 and 1 m of topsoil and subsoil has been removed form the area of the C4 monument since 1943. If we take the average width of the northern and southern ditches to be 3 m, an average depth of 0.6 m for the northern ditch and 0.5 m for the southern ditch and a 'V' shaped profile, we can estimate a cross-sectional area of the ditches as excavated to be approximately 0.8 to 0.9 sq m. If we double this area to allow for truncation, and multiply by an expansion factor of 1.1, we can predict that the banks would have had a cross-sectional area of between 1.7 and 2 sq m. Allowing for a maximum slope angle of 40 degrees, this would suggest that the northern bank would be 3 m wide at the base and 1.33 m high, with

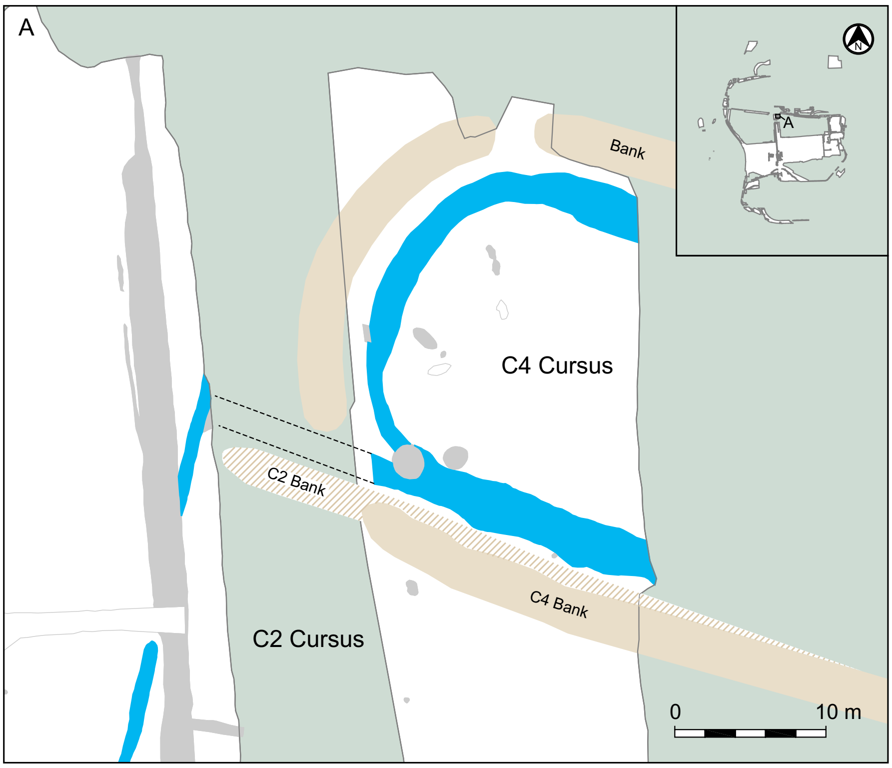


Figure 2.48: Architecture of the C4 Cursus

the southern bank possibly slightly lower at 1.13 m high (Fig. 2.48). The western ditch, being narrower, would have produced a bank 2.5 m wide at the base and approximately 1 m high. This suggests that the northern and southern banks were the main concern of the people who built the monument, and accords with the premise that the C4 monument served to embellish the terminus of the C2 Cursus. We have already shown that there is good evidence of a sudden collapse of the bank material into the ditches, suggesting some form of revetment. Whether the banks were fully or partially revetted is impossible to deduce, and the following suggestions are just two amongst many alternatives. A fully turf revetted bank 1 m wide could reach a height of 2 m, but would be inherently unstable. A bank partially turf revetted to 1 m high and 1.5 m wide could support a further dumped bank 0.66 m high on top. Whatever the configuration, the adoption of a turf revetment would seem to indicate that the objective was to construct banks which were higher than simple dumping would allow.

A similar juxtaposition of linear enclosures was excavated at in the Upper Thames at North Stoke, Oxfordshire (Case 1982). Here, two narrow, parallel ditches set 9 m apart and approximately 230 m long were interpreted as a bank barrow (ibid., 69). This monument clearly forms part of the continuum of long enclosures, bank barrows and cursus (Loveday 2006, 92–8, 204), and produced a radiocarbon date which places its construction in the period 3600 to 3300 BC (Case 1982, 64; Bayliss *et al.* in Barclay *et al.*, 2003, 184). At the southern end of the North Stoke bank barrow was a second linear enclosure which was orientated at right angles to the bank barrow / cursiform monument. The southern enclosure was interpreted as a long mortuary enclosure (Case 1982, 69) a class of monument which has since been reinterpreted as 'Long enclosures' and part of the cursus continuum (Loveday 2006, 58–59).

The southern enclosure ditches were approximately 12 m apart and were broader and shallower than that of the bank barrow. Like the C4 Cursus, only a short portion of the southern enclosure survived, so its exact length is unknown. In common with the C4 Cursus, there was evidence of external banks, although there was also evidence for the presence of more substantial internal banks as well. Also in common with the C4 cursus, the ditches appear to have been filled with bank material, although they had undergone subsequent re-cutting (Case 1982, 68). Although there were no direct stratigraphic relationships, the southern enclosure was interpreted as preceding the North Stoke bank barrow (Case 1982, 69; Loveday 2009, 59), whereas we have come to the opposite (although tenuous) conclusion with the relationship between the C2 and C4 monuments.

The rationale and consequences of the construction of the cursus complex

We have previously argued that the Late Mesolithic landscape of mixed deciduous woodland (dominated by Oak, Elm, lime and hazel) on the Heathrow Terrace and the alder carr woodland and reed dominated wetlands on the Colne floodplain were criss-crossed with pathways linking clearings which, although of economic importance in terms of subsistence, were principally social areas facilitating human interaction. We have shown two examples of such locations, with the post / stakehole structure at Bedfont Court and the pit complex filled with burnt flint on the edge of the terrace. The latter location is a particularly important example, since the act of cooking would have led to both a breaking of the ground with pits, but also the raising of a middden of refuse, leaving a physical marker of human gathering and interaction within a clearing in the landscape. Other locations and clearings would have been the scene of different activities, the only traces which are left to us being lithic artefacts residing in much later ditches and pits. It is most important to remember that the importance of this activity lies not in the deposition of the material, but in the discourse, negotiations, retelling of oral history and reaffirmation of what it means to be human, and to be related to other people and other families. We could therefore argue that locations such as the burnt pit / midden were one of the earliest monuments, since it embodied the physical remains of a process of human interaction at a particular location, and thus provided a focus for repeated meetings and social discourse around fires and earth ovens, leading to enlargement of the midden.

It is within this landscape of physical manifestation of social networks that the first adoption of agriculture occurred around the turn of the 5th and 4th millennia BC. A recent review of radiocarbon dates for the adoption of agriculture in Britain (Brown 2007) has concluded that on the basis of charred cereal remains, crop cultivation in Britain and Ireland occurred no earlier than *c* 3950 cal BC, and that this date is in agreement with the earliest dates from megalithic chambered tombs and domestic structures in Britain and Ireland. Only a small number of radiocarbon dates on cereals fall between 4000/3950 and 3800 cal BC, with the majority occurring from 3800–3000 cal BC. This suggests a transitional period of *c* 150–200 years between 4000/3950 and 3800 cal BC before a Neolithic lifestyle became a more established feature in Britain. Thus the transition from Mesolithic to Neolithic was relatively rapid, rather than gradual (Brown, 2007, 1050). The Neolithic 'house' structure recently excavated by Wessex Archaeology at Horton, approximately 3.5 km to the WSW of Terminal 5 on the Colne floodplain has produced a radiocarbon date of *c* 3940–3780 cal BC (A. Barclay pers. comm.), thus dating this rectangular structure to the 'transitional' period discussed by Brown. A similar rectangular 'domestic' structure associated with plain undecorated pottery was excavated in the early 1990s at Cranford Lane, approximately 4 km to the ENE of Terminal 5 in the Crane valley (MoLAS unpublished report), and thus by analogy probably dates to the same period.

Furthermore, modelling (a small number of) radiocarbon dates from the Thames estuary suggests that diagnostic Neolithic material had appeared by 3935 cal BC at the latest, and preceded causewayed enclosures by 95–410 years (Bayliss *et al.* 2008, 35). Furthermore comparisons with dates from the south-west peninsula of England suggest that the Neolithic did not appear everywhere across Britain at the same time, and that a transitional period of several centuries persisted.

It is only after this period of transition that causewayed enclosures were constructed, from the 38th and 37th centuries BC (Bayliss *et al.* 2008), roughly coincident with the elm decline and the increasing cultivation of cereals. The reasons for the construction of causewayed enclosures lie outside the scope of this volume, but many theories have been put forward to explain their construction and use (Oswald *et al.* 2001). These have included feasting, exchange and manufacturing, seasonal gatherings, settlement, funerary ritual and defence (ibid., 123–131). We mention some of those theories here, since the Terminal 5 cursus complex was located near a series of causewayed enclosures, including Yeoveney Lodge Staines (Robertson-Mackay 1987) and possibly Mayfield Farm, East Bedfont. A recent theory sees causewayed enclosures as an idealised 'Folk Memory' of the form of early enclosed settlements on the European mainland, such as that at Darion, Belgium (Oswald *et al.* 2001, 122). The frequent recutting of the ditches and special deposits of artefact placed within them has often been commented on. The enclosure ditches would have formed a focus for people to come together, and the creation and re-creation of the ditches may have helped to confirm links between groups and individuals, thus establishing a place of lasting significance (Bradley 1998; Oswald *et al.* 2001, 122).

It is possible that some of the smaller circular monuments we will discuss later, such as the inner enclosure at Horton (Ford and Pine 2003), were contemporary with the causewayed enclosures. It is sometimes easy to forget that the first half of the 4th millennium must have been a time of enormous social, economic and technological upheaval. Within the space of four hundred years, a social and economic order based on human interaction at clearings and other places in the forest and supported by procuring wild flora and fauna that had lasted for over 5000 years had been dislocated. Agriculture had been pioneered (possibly by groups from the continent), ceramic technology and a new lithic repertoire introduced, and a combination of anthropogenic action and disease had opened up the forest clearings allowing for land to be cultivated and grazed by domesticated animals, transforming an ancient wilderness. It is hardly surprising that we see a society that appears to be seeking ways to come to terms with these changes, at first through the construction of tombs, then through the construction of large and small scale communal monuments, all the while developing meanings in patterns of artefact design, use and deposition.

It is against this background that we see the construction of the cursus monuments of the latter half of the 4th millennium BC. Although probably slightly later in date than the Staines Causewayed Enclosure, the similar relative positions of Plain Bowl and Peterborough Ware pottery in the ditch fills of the enclosure and the C1 Stanwell Cursus suggest very little chronological separation in the use of these monuments.

Why cursus were built has been a puzzle for many years. Their general emptiness of structures and finds has long hindered their dating and interpretation. However more recent work (Barrett *et al.* 1991; Tilley 1994; Barclay and Maxwell 1998; Barclay and Harding 1999; Barclay *et al.* 2003; Loveday 2006) has refocused attention on cursus, and has started to provide ways of thinking about these monuments which move beyond merely functional interpretations. Barclay and Maxwell (1998, 114) list these various interpretations as:

1. Structures for formal processions or for orchestrated journeys of experience (cf Tilley 1994);

2. Structures linking pre-existing monuments or significant places (cf Barrett *et al.* 1991);

3. Structures demarcating an alignment on a place, object or astronomical event, rather than linking anything;

4. Symbolic or physical barriers between areas of different significance (eg wild and domestic land), which may involve symbolic control of access between the two (cf Hodder 1990);

5. Symbolic 'project': the physical expression of a social or ideological need;

6. A *temenos*: an area of land marked off and devoted to the gods and which becomes a cult centre (Loveday 2006).

As Loveday (2006, 126) has observed, none of these interpretations are mutually exclusive and indeed problems arise when only one or two of these interpretations are applied to cursus monuments.

Almost all of these interpretations could apply to the Terminal 5 cursus complex, given the different architectural forms, sizes and orientations of the monuments.

If we start by considering what were possibly the earliest monuments, the C5 / C3 Cursus, their alignment suggests an origin (with the C5 Cursus) on the Colne floodplain, with the orientation pointing the way onto the Heathrow Plateau. This appears to have been extended by the addition of the C3 Cursus which, as we have seen, terminated on the terrace edge itself, close to the location of the Area 49 settlement. We have no firm evidence for the C3 Cursus linking important places together, other than extending the line of the C5 monument and terminating close to a possible settlement. However, the orientation of these monuments does suggest the formalisation of a route out of the Colne floodplain. As we have discussed, the Colne and Thames floodplains were the location of causewayed enclosures that probably predated the Terminal 5 cursus complex, the rich settlement evidence at Runnymede and the Horton 'house' that dates to the earliest 'pioneering' phase of the adoption of agriculture. It is entirely possible that agriculture and the 'Neolithic concept' was pioneered locally at the beginning of the 4th millennium on the less densely wooded Colne and Thames floodplains before spreading onto the increasingly cleared Heathrow Terrace. If so then the C3/C5 Cursus monuments could signify an architectural formalisation of the process, which allowed movement into and agricultural exploitation of new landscapes to be enshrined in ceremony. It is perhaps significant that the C3 Cursus is the only monument that provided clear evidence for several phases of ditch recutting or extension in short segments. In this respect the ditches share similarities with causewayed enclosure ditches (though not in terms of finds assemblages), and does suggest an episodic extension or maintenance of the monument as part of an on-going process or idea.

If our interpretation of the crop mark evidence is correct, then the construction of the C1 Stanwell Cursus followed next. The impact of the C1 Cursus, a long, low mound or 'causeway', bisecting and radically altering the landscape, cannot be understated (see artist's reconstruction in Plate 2.20). The C1 Stanwell Cursus was constructed by a society that was already well used to undertaking monumental projects, but the cursus marks the appearance of a form of monument radically different to the causewayed enclosures, and which altered the landscape on a grand scale. The C1 Cursus was without local precedent and it reflects the desires and motivation of the people who built it.

Before examining this, it is worth considering in a little more detail the effects on the landscape of the monument. As we will discuss below, it linked together a string of locations along the boundary of the Colne floodplain and the Heathrow Terrace, but it also acted as a physical and psychological demarcation of these two different landscapes. This would appear to be at odds with our suggestion of the C3/C5 monuments as formalising routes onto the terrace from the floodplain. However, the backfilling of the C1 Cursus ditches to the north of the C3 Cursus suggests that this was rapidly re-thought and modified to allow access onto the terrace. Before moving onto considering the architecture of the C1 monument and our interpretation of the society that constructed it, it is worth considering further effects of the monument on the landscape.

Firstly, the causewayed enclosures that probably pre-dated the cursus complex enclosed relatively small areas at specific points in the landscape. For example, the Yeoveney Lodge monument enclosed approximately 2.4 ha (Robertson-Mackay 1987, 23), whilst the Mayfield Farm, East Bedfont crop mark (if it is indeed a causewayed enclosure) encompasses approximately 2.8 ha. In contrast, the C2 Cursus encloses approximately 4.5 ha, whilst the C1 monument covers approximately 8.7 ha. Not only do the two major Terminal 5 cursus monuments enclose larger areas than the causewayed enclosures, due to their linear nature they 'sample' a much greater cross-section of the landscape. Finally, the C1 Stanwell Cursus creates a western boundary to the Heathrow Plateau. If we accept the southern boundary as the break of slope between the Taplow and Kempton Park terraces, the eastern boundary as the River Crane and the northern boundary as the junction of the Taplow and Lynch Hill terraces, then the area thus defined covers approximately 32 sq km. The eastern boundary (River Crane) has seen little fieldwork, but there are a string of small Neolithic monuments located south of the northern boundary (Crockett 2001). Crop marks along the southern boundary include the Mayfield Farm enclosure and a string of ring ditches, which as we will see, could date to the 4th or 3rd millennia. The important point is that the C1 Cursus seems to have initiated or at least formalised the concept of the entire landscape as a monument, within which activities and smaller monuments could be constructed.

Turning to the social implications of the actual C1 monument, it is impossible, due to profound changes to the landscape, to attempt to construct the sort of perceptual narrative for the Stanwell Cursus that Tilley (1994, 173–200) produced for the Dorset Cursus. We acknowledge that people move through the landscape for purposes other than ceremonial or ritual; that people would have inhabited the landscape and utilised the natural resources for subsistence. Nonetheless, prior to the construction of the C1 Cursus, people moving from place to place along the floodplain margins did so along a path that was only formalised and maintained by human memory and agreement. Each place visited may have been consecrated with a ceremony that may or may not have included the deposition of artefacts, but the important element of ceremony would have been the ritual, the display and the words exchanged between the participants and onlookers.

What was the importance of these locations and why were they revisited? We of course cannot answer this, but it is our view that one of the important subtexts of the ceremonies and processions was the concern with access to the resources of the landscape. Throughout the Mesolithic this concern may have been settled in many different ways, and had to take into account mobile and seasonal resources of animals as they moved through the landscape. Indeed it is possible that the burnt flint pit cluster and possible midden described above may have acted as a meeting place and context for settling these concerns in the 7th to 6th millennia BC. We have discussed how the adoption of agriculture may have taken place several centuries after 4000 BC, and wild resources continued to play a major part in the subsistence economy. As we have shown previously, with the exception of 'type fossils' such as microliths and leaf-shaped arrowheads, it is hard to distinguish chronologically the lithic assemblage for this period, and this suggests relatively minor changes in the subsistence economy.

However, after 3800 BC the cumulative impact of agriculture and pastoralism,

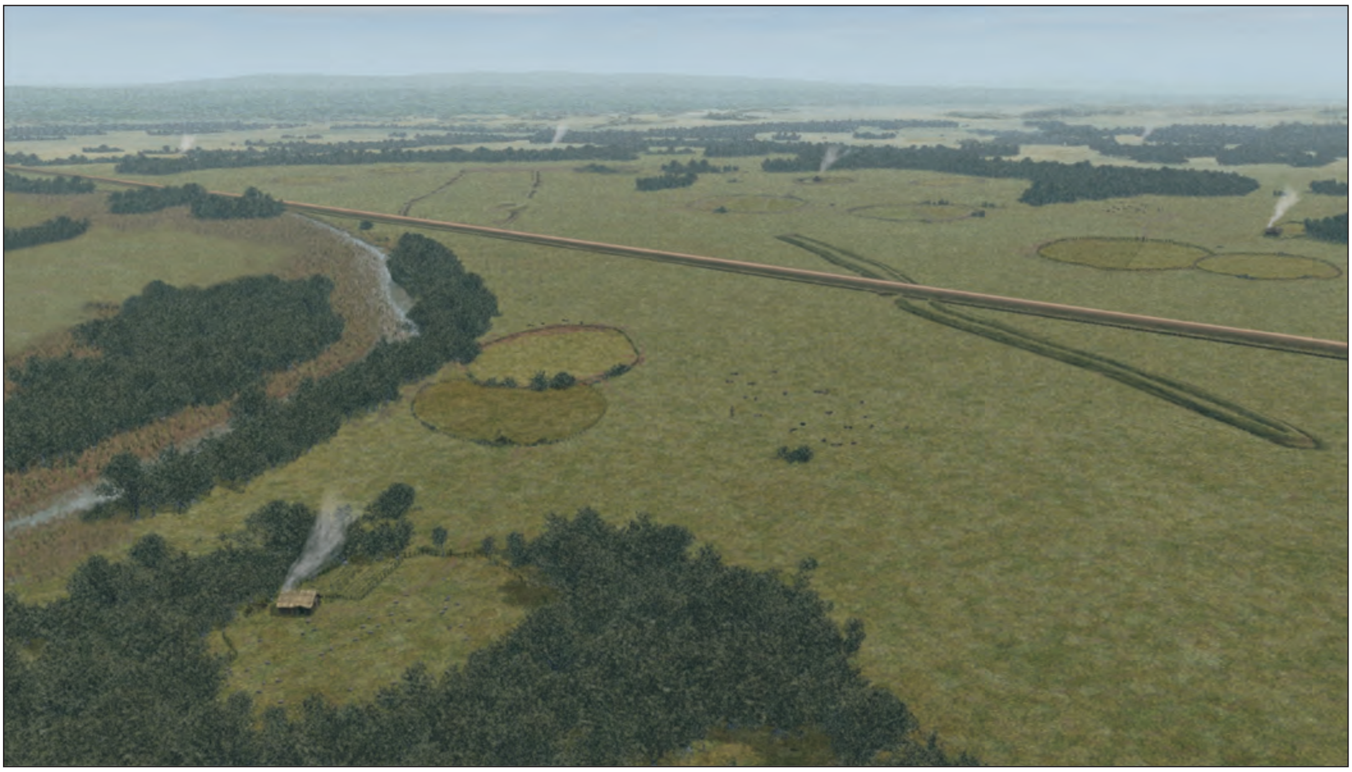


Plate 2.20: Artist's reconstruction of Neolithic monumental landscape

coupled with new technologies and new expressions of old practices in the form of the first monuments, meant the world was being transformed. Individual kin-groups now had to resolve questions and conflicts regarding access to land and resources. How was it decided where a group would plant this year's crops? Who grazed their animals on a certain stretch of the floodplain? Who placed this year's settlement in the old woodland clearing, or burnt some fallen trees to create a new field? We suggest that the ceremonies undertaken at certain locations in the landscape helped to facilitate these decisions. In the centuries immediately prior to the construction of the cursus monuments, these ceremonies and gatherings probably focused on locations such as the timber posthole complexes and causewayed enclosures. If these monuments had been abandoned prior to the construction of the cursus, then the differences in architecture and the disparity in the finds assemblages in terms of variety and abundance suggest a major change in the way societies organised themselves and the landscape. The relatively rich finds assemblages from causewayed enclosures suggest that the resources of the landscape (and the people that procured them) were being gathered to the monuments. We have described above how in contrast, the C1 Cursus took the concept of the monument out into the landscape and turned the landscape into a monument.

Returning to the more mundane locations such as the timber complexes, perhaps each was of importance to separate kin-groups. As the generations passed, the ceremonies changed and developed. Some locations were forgotten, others increased in importance, new ones emerged and others were embellished architecturally, for example, the timber post alignment. If so, then the string of locations which grew up along the boundary of the Colne floodplain and the Heathrow Terrace to the east show that this zone was of crucial importance, since it marked the boundary between the water resources of the floodplain and the dryer, higher terrace to the east. It is perhaps not surprising then that the places and ceremonies began to be linked together by ceremonial processions.

We do not know how many people took part in these processions and ceremonies or how they were arranged or led. Without formal demarcation, the processions and ceremonies could have been viewed by all. The important point is that the kin-groups or communities associated with individual locations were now linked together by processional pathway and ceremony. Through this process the separate groups started to form into a larger, more cohesive community. Whereas before disputes and negotiations over land and resources occurred *between* separate kin-groups and were resolved through ceremony at distinct locations, now negotiations were contained *within* a wider community, whose important ceremonies and locations were linked by procession.

The creation of a *community* at this time is pivotal. It could be said that, without a community, the opportunities for forest clearance and agricultural expansion represented by the 'elm decline' could not have been exploited, and causewayed enclosures and cursus could not have been built. We view the construction of the C1 Cursus in particular as a physical manifestation, formalisation and celebration of the emergence of a community. We have shown how the cursus was built in sections, each by a small team of people, and we can see how each section was built by a team drawn from the individual kin-groups, and each group probably built a length of cursus associated with their own ceremonial location. The result was a monument that physically tied together all the groups through shared labour in a common enterprise to build a communal monument, which bound together the histories of the individual groups as invested in special locations.

Although the architecture of the mound served to restrict the numbers of people who could process along its length at any one time, most of the community would probably have been engaged more in observing the ceremonies than in taking part. The architecture of the Stanwell Cursus now served to emphasise the processional ceremonies along the top of the bank in a way that was impossible with an informal pathway at ground level. Although the leaders of the processions might have been differentiated from the rest of the community, the community remained an essentially open one. The participants were now on very obvious display against the horizon and visible for all to see (Framework Archaeology 2006, plate 2.6 and this volume Plate 2.17). Thus the architecture of the C1 Cursus did not mask the activities that went on inside to the exclusion of those outside, unlike those with a pair of flanking ditches such as the Dorset Cursus. The C1 Cursus was the product and celebration of an essentially open community.

The cursus acted as a unifying device for the community, and there is some evidence that the special places now cut or buried by the monument retained their importance, and may even have been involved in the ceremonies associated with the processions. Two examples serve to demonstrate this. The first is the occurrence of fragments of cow skull in the middle fills of both cursus ditches adjacent to the Mesolithic burnt flint pit complex (Fig. 2.49). Burnt flint clusters also occur in these locations. We consider the flint to be of Mesolithic date, and this may also be true of the skull fragments. However it is conceivable that they represent the residues of ceremonies enacted at the location following the construction of the cursus. In the absence of radiocarbon dates this is impossible to determine. If the animal bone is contemporary with the middle fills of the cursus, then this would explain the presence of a posthole cutting the basal fills of the western ditch from this level, and another posthole in the eastern ditch, which had unclear stratigraphic relationships. Put simply, the posts may have been driven into the basal fills of the ditch to serve as markers signifying the location of the pit complex and midden once the cursus had buried these sites. The burnt flint and animal bone may then be seen as the remnants of ceremonies undertaken once the procession had stopped at this location.

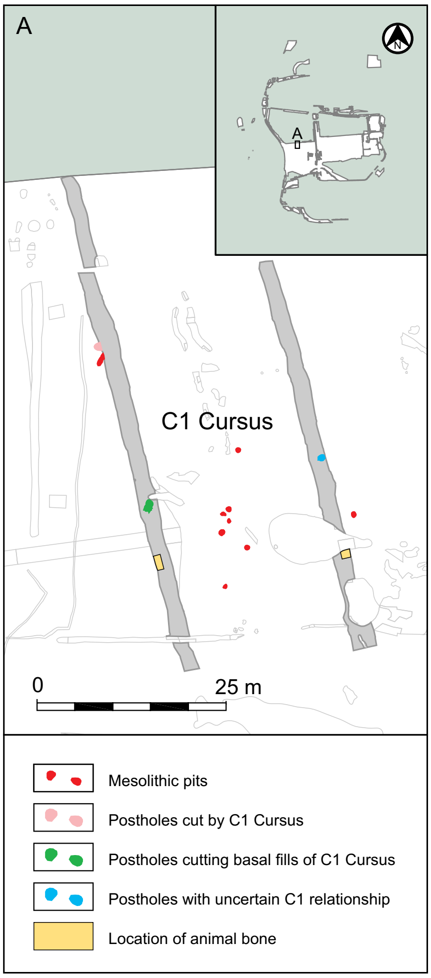


Figure 2.49: Relationship between animal bone, Mesolithic pits and postholes in the C1 Stanwell Cursus

This association of burnt flint and postholes sealed by the middle fills of the cursus is repeated further south at the location of the earlier timber post alignment (Fig. 2.50). Again, one or possibly more postholes were driven through the basal fills of the cursus from the middle fills. These fills also contained relatively large amounts of struck and burnt flint and show that the C1 Cursus remained a focus of activity throughout the remaining depositional sequence. Furthermore, we have demonstrated that with the adoption of Peterborough Ware pottery, the C1 monument underwent modification in Area 28.

This C1 monument's precision in layout and adherence to a specific template also allowed for the incorporation of earlier locations, and the continuation of ceremonies at these locations. Its construction was a product of the community and tied together the disparate histories of the constituent kin-groups. However the C1 Cursus also reflected the transformation in society and the landscape. A smaller group of people would now actively take part in the processions along the top of the bank. Ceremonies, the sub-texts of which were concerned with land and resources, would be led and mediated by that smaller leadership group. Nonetheless, the wider community was not isolated: the C1 Cursus facilitated their involvement and allowed all to see the ceremonies and processions.

We have suggested that the C2 Cursus was constructed shortly after the C1 monument. The architecture of the C2 monument was radically different from that of the Stanwell Cursus, for it served a different purpose. The C2 Cursus linked the location of the timber posthole complex and possibly the HE1 Enclosure which may have already existed at this time. Most importantly, the wide spaced ditches of the C2 Cursus allowed the community to take part in the procession between these locations, even if they were physically excluded from the ceremonies that took place within small enclosures such as the HE1 monument. Once more, the C2 Cursus echoes the theme established by the C3 / C5 monuments in that it suggest a route from the edge to interior of the Heathrow Terrace. The final stage of the Terminal 5 cursus complex saw the elaboration of the

Figure 2.50: Relationship of postholes, burnt/struck flint and other artefacts with the C1 Stanwell Cursus

northern terminal of the C2 Cursus by the construction of the C4 monument.

We can see how the Terminal 5 cursus complex could have fulfilled all of the possible functions suggested for cursus monuments listed above, but we have focused on the role of these monuments in establishing and maintaining the cohesion between the family groups that formed the wider community. Before moving on to examine how the community adapted to the world of monuments they had created, and how the landscape developed in the 3rd millennium BC, we will briefly consider how the Terminal 5 cursus complex compares with other cursus monuments and complexes in Britain.

The cursus monuments of Britain have undergone considerable research over the last 10–15 years. The Dorset Cursus has been studied both in the field and from a phenomenological viewpoint (Barrett *et al.* 1991; Tilley 1994), while the 'long mound' cursus of Cleaven Dyke in Scotland has been excavated and surveyed (Barclay and Maxwell 1998). The proceedings of a seminar on cursus monuments has been published (Barclay and Harding 1999) and the cursus monuments of the Upper Thames Valley have been described in some detail (Barclay *et al.* 2003), while a recent overview of cursus monuments has also been published (Loveday 2006). In view of this wealth of published data and synthesis, this section will focus on comparisons with the Cleaven Dyke and Scorton 'long mound' monuments, the Rudston complex and the Upper Thames cursus complex (Fig. 2.51).

The Cleaven Dyke in Tayside, Scotland, is a remarkably preserved monument, approximately 2000 m long, with ditches between 38 and 50 m apart (Barclay and Maxwell 1998). Dating evidence is circumstantial, but probably lies in the late 5th to mid/late 4th millennium BC. The monument has a central bank, varying between 7 m and 15 m across, and up to 1.7 m high. The central bank was constructed as a series of linked mounds from north-west to south-east. The north-western terminal was formed by a Neolithic oval mound and a long barrow. The use of the C1 mound by the C2 Cursus as a terminal is reminiscent of this arrangement.

The Scorton cursus in North Yorkshire (Topping 1982) is *c* 2000 m long and the banks are placed *c* 32 m apart. Like the Cleaven Dyke and Stanwell C1 Cursus, a single central bank was also present, though very eroded and dispersed (Loveday 2006, 97).

Perhaps the closest analogy to the Terminal 5 Cursus complex is at Rudston, East Yorkshire, where there is an unrivalled (with the exception of Terminal 5) concentration of cursus monuments (Fig. 2.51). The approximate dimensions of the four cursus are as follows (from Loveday 2006, 203):

- Cursus A: 2700 m long and 58 m wide;
- Cursus B: 1550 m long and 65–80 m wide;
- Cursus C: 1480 m long and 50–60 m wide;
- Cursus D: 4000 m long and 50–90 m wide.

The scale of these monuments far exceeds most of those at Terminal 5 in terms of length and width (see Table 2.10 above for comparisons), with only the C1 Stanwell monument comparing closely in length to Cursus D at Rudston.

The relative order of construction of these monuments sees Cursus A being constructed first, followed by C and finally D. The lack of a stratigraphic relationship with Cursus B means its place in the sequence is unknown but it could, on morphological grounds, post-date Cursus C (Chapman 2005, 162). As with Terminal 5, the longest monuments (Cursus D and the Stanwell C1) are preceded by earlier cursus. GIS analysis of the Rudston complex suggests that with the earlier monuments, somatic experience generated through movement along the interior of the monuments was of importance, but that this lessened with the later cursus which were more in harmony with the natural landscape (Chapman 2005). At Rudston several long barrows are located near the cursus, but the dates of the great barrows of Willy Howe and Southside mount are uncertain. At the centre of the complex is the 7.7 m tall Rudston Monolith, considered to be broadly contemporary with the cursus (Manby 1988). The Maidens Grave Henge, close to Cursus D, post-dates the complex (Chapman 2005, 160). Thus, unlike the Terminal 5 complex, the Rudston Cursus are preceded in the earlier 4th millennium BC by long barrows and followed in the later 3rd millennium BC by a henge. This general monument sequence is also apparent in the Upper Thames.

The concentration of cursus monuments in the Upper Thames Valley is remarkable, with ten certain or probable monuments (Barclay *et al.* 2003, figure 10.1, table 10.2). Of these, the North Stoke monument is pertinent, as it is 240 m long and 20 m wide, and possessed a central bank. Its orientation is the opposite of the C1 Stanwell Cursus, but apart from this and the much shorter length, their basic form is similar. A comparison of the Terminal 5 complex with the Upper

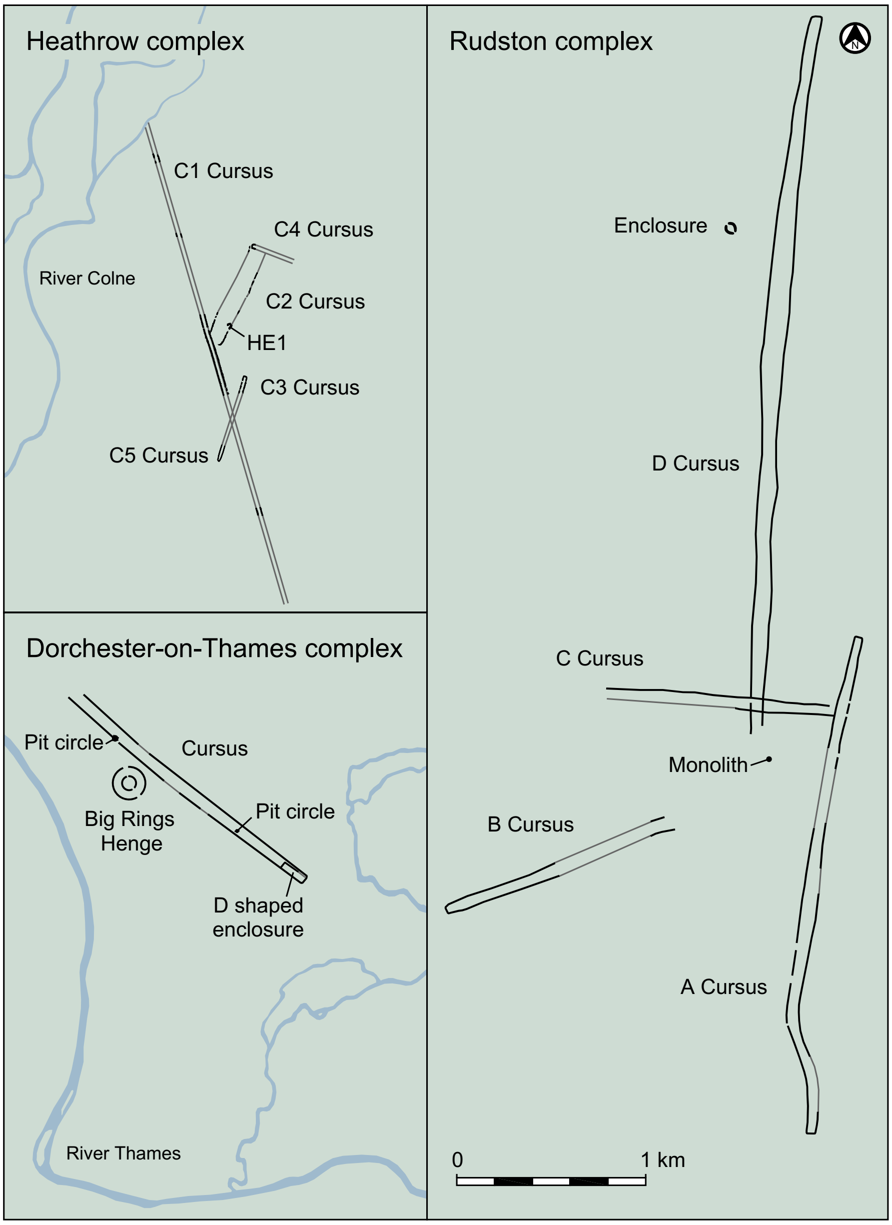


Figure 2.51: Neolithic monuments at Rudston, East Yorkshire (after Loveday 2006 and Chapman 2005) and Dorchester-on-Thames

Thames monuments reveals some similarities and contrasts.

- The Upper Thames cursus monuments are concentrated near the confluences of the Thames and its tributaries; the Terminal 5 complex is located near the confluence of the Colne and the Thames.

- The Upper Thames causewayed enclosures and cursus monuments have a mutually exclusive distribution (Barclay *et al.* 2003, 224); the Terminal 5 cursus complex is located close to a string of Thames-side causewayed enclosures and one probable enclosure at East Bedfont.

- The Upper Thames cursus monuments are associated with long and oval Barrows; long and oval Barrows are rare or unknown in the Middle Thames, but the Terminal 5 complex was preceded by a timber post complex.

- One Upper Thames cursus (Dorchester-on-Thames) is associated with a major henge monument (Big Rings) and most are associated with Bronze Age barrows; major henges are rare or unknown in the Middle Thames, and no certain Bronze Age barrows are associated with the Terminal 5 complex (apart from possibly the HE3 enclosure; see below).

It would therefore appear, from the perspective of monument types, that Rudston and the Upper Thames and Terminal 5 complexes had two different monumental sequences through the 4th and 3rd millennia BC. This would suggest that the communities of the Upper Thames and Rudston, prior to *c* 3600 BC, adopted different monumental strategies to those of Heathrow to aid in the shaping of their society. However, from *c* 3600 to 3100 BC, the people of Rudston, the Upper Thames and Heathrow all chose the national phenomena of cursus construction to enhance the cohesion of their communities. In contrast, from 3000 to 1600 BC, the communities once again adopted different monumental traditions.

Adapting to transformation: the late 4th and the 3rd millennia BC

The period following the construction of the major monuments from 3300 BC to the emergence of the first field boundaries between 2000 BC and 1700 BC is not well represented at Terminal 5. For instance, Peterborough Ware was only recovered from a limited number of pits, tree-throws and the higher fills of earlier monuments, and Grooved Ware was mainly recovered from a few pits. As we have seen, our lithic chronology is not sufficiently refined to allow us to use those artefacts to examine this period in detail.

It is worth discussing the meagre data from Terminal 5 at the outset, before moving on to outline some of the trends that may have taken place in the community of the 3rd millennium BC. We will do this by analogy with the material in West London and nationally.

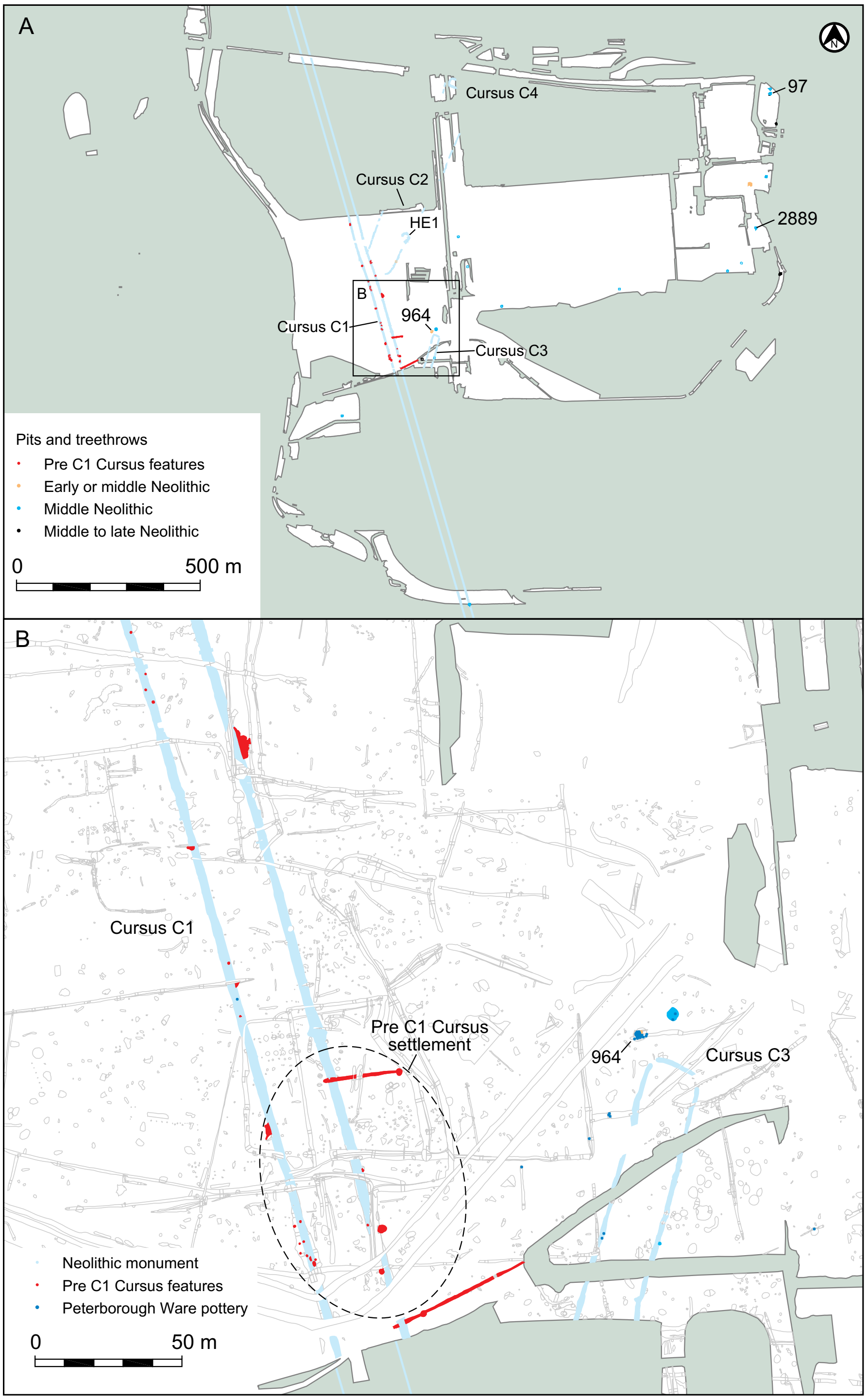


Figure 2.52: Distribution of Early or Middle, Middle and Middle or Late Neolithic pits and tree-throws (c 3400 to 2000 BC)

Peterborough Ware

Figure 2.13 above shows the general distribution of Peterborough Ware pottery across the Terminal 5 site. The absence of this pottery from the Perry Oaks excavations has been discussed previously, and this section will look at the context of deposition of this pottery where recovered at Terminal 5.

We have already seen how Peterborough Ware pottery was recovered from the middle and upper fills of the C1 Stanwell Cursus, and was also present in very small quantities in the C3 Cursus, while the dominant context of deposition of Peterbrough Ware at Terminal 5 is pits. It was also recovered form the upper fills of the Yeoveney Lodge Causewayed enclosure (Robertson-Mckay, 1987, 16). This pattern of secondary deposition in earlier monuments and in contemporary pits has been noted previously by others (eg Thomas 1991, 90–2; 1999, 109–11 and Cotton with Johnson 2004, 145).

Figure 2.52 shows the distribution of pits and tree-throws dating to the period from *c* 3400 to 2000 BC. If we

Plate 2.21: View of excavated pit complex 964 from the NE

examine the pits containing Peterborough Ware at Terminal 5, we can see that they occur either as individual isolated features, or as clusters of inter-cutting pits. The latter category is represented by three main clusters: (964, 97 and 2889; Fig. 2.52).

Entity 964 consists of a very complex sequence of inter-cutting pits (527117, 527135, 527142 and 527124) located 8 m to the north-west of the north-western 'entrance' into the C3 Cursus (Fig. 2.53; Plate 2.21). A large (approximately 5 m diameter) sub-oval depression was excavated first (527117). A series of inter-cutting pits (527135, 527142 and 527124 in ascending stratigraphic order) was then excavated through the shallow depression 527117. The lower fills of these three pits contained Plain Bowl pottery and flintwork, as well as fragments of saddle quern. The whole complex was then sealed by a series of fills that contained large quantities of Peterborough Ware pottery (Plate 2.22). Regarding the querns:

…traditions in saddle quern usage and choice of materials for making them tended to be very conservative, in contrast to the ever changing styles of pottery, flintwork and other artefacts, and these finds from Terminal 5 are very similar to Early Neolithic ones from the Eton Rowing Lake and adjacent sites (Roe, in prep (a)). Here too sarsen quern fragments tended to be burnt. Grinding surfaces prepared by pecking were typical, but some were also worn smooth. A suggested source for this sarsen was Chobham Common, but formerly sarsen blocks must have been more plentiful in the area generally (Dewey and Bromehead 1915, 58).

(Roe, CD Section 7)

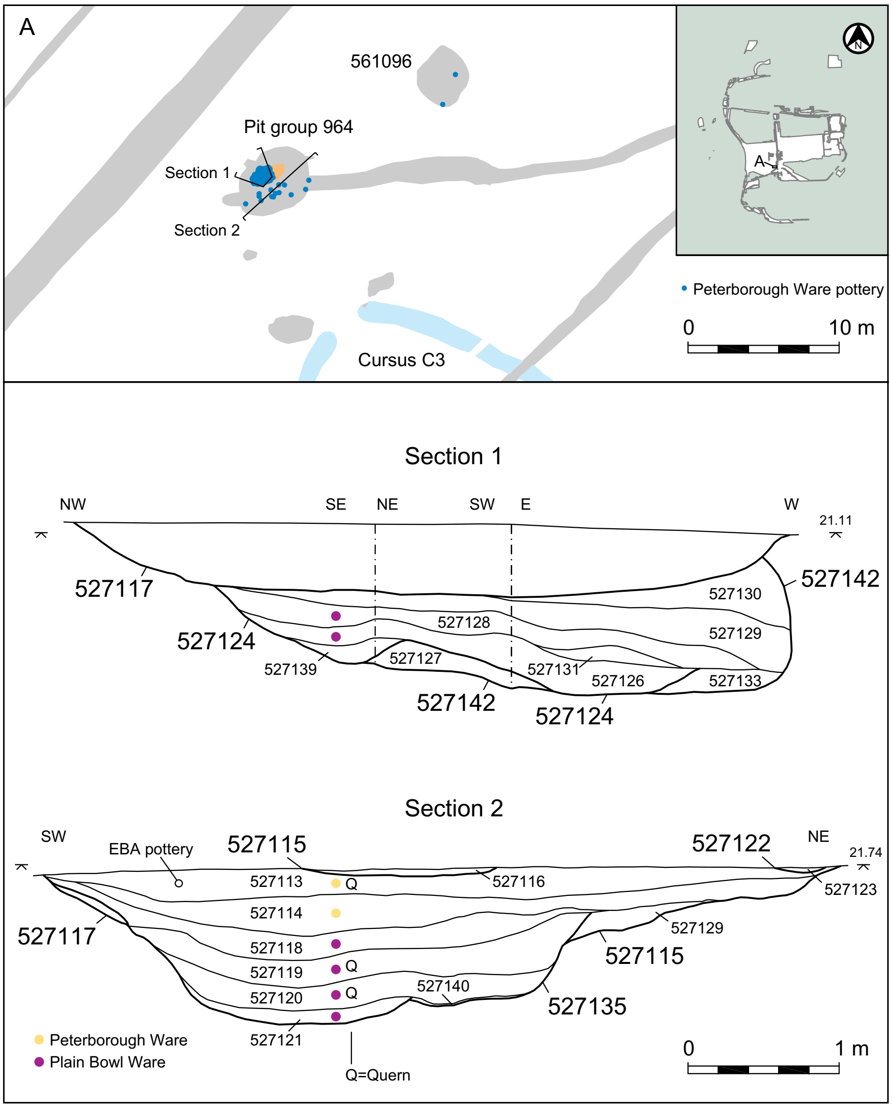


Figure 2.53: Pit group 964

The pottery from this pit sequence probably represents a series of depositional events, with the earlier Plain Bowl Ware possibly overlapping in use with Peterborough Ware from the upper layers. This Peterborough Ware consisted of:

…fragments of four vessels. One (in FL20) was represented by a single sherd with fingernail impressions on the oxidised exterior, while a second necked sherd in the same fabric had a smoothed exterior decorated with rows of impressions below the neck possibly made with the end of a bird bone. The other two vessels were present in much larger quantities: 69 sherds of a vessel in FL21 included some with fingernail impressions, and one with a row of twisted cord either side of a blank 'panel'. The three rim sherds from this vessel were 'T'-sectioned and flat topped, with the top, outer and inner surfaces all decorated with fingernail impressions. On the inner surface these were between raised ridges. The fourth vessel was represented by 138 sherds in FL22. Some sherds were plain, while others had fingernail decoration. The rim was an elaborate 'T'-shape, with fingernail and stick or bird bone impressions.

(Leivers et al., CD Section 1)

Plate 2.22: Peterborough Ware sherds in-situ within pit complex 964

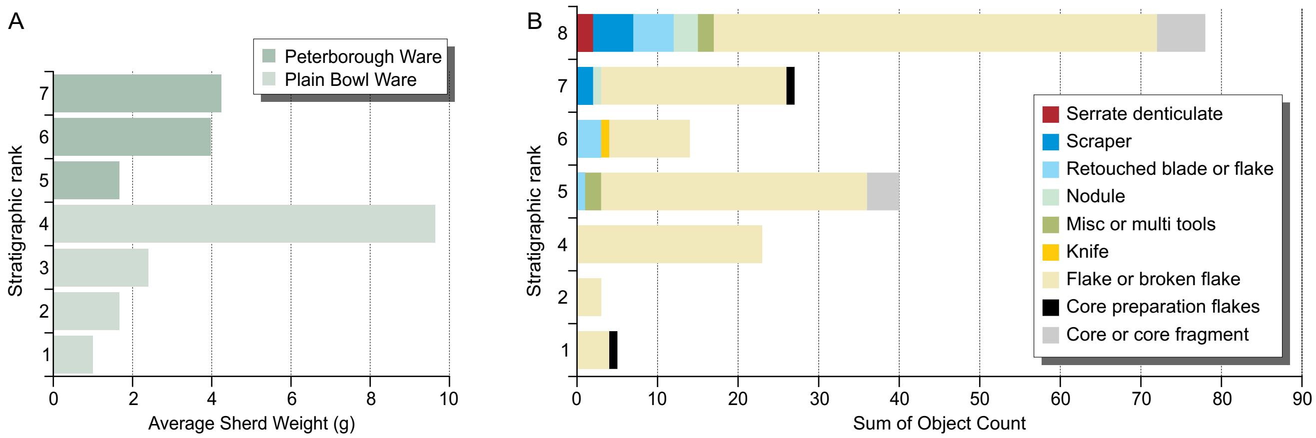


Figure 2.54: A : Average sherd weight by stratigraphic rank of deposit within pit complex 964 B: Composition of lithic assemblage by stratigraphic rank of deposit within pit complex 964

The flintwork, Plain Bowl pottery and quernstone fragments from the lower fills of the intercutting pits all suggest a domestic origin for this material which is probably linked to the possible domestic settlement pre-dating the C1 Cursus in Area 49. Although domestic in origin, it may be that the deposition of this material in the pits was associated with ceremonies enacted at the C3 Cursus, which as we have seen, is a mere 8 m away. The concentration of pottery and flint in the north-western part of the C3 Cursus has already been commented on, and suggests that activity associated with the pit complex and the cursus was broadly, if not exactly contemporary.

Table 2.16 quantifies the pottery assemblage by the stratigraphic rank of the deposits within pit complex 964. It is clear that much greater quantities of Peterborough Ware were being deposited than Plain Bowl Ware. Figure 2.54(A) shows the average sherd weight for Peterborough and Plain Bowl Ware (derived from Table 2.16) by stratigraphic rank of deposit (lowest at the bottom). This shows a more complex picture. The lowest deposits (ranks 1–3) contain, on average, small sherds of Plain Bowl Ware, consistent with their origin as domestic refuse. The large increase in average sherd size in rank 4 suggests a far more selective and deliberate depositional process. One explanation for this is that it coincides with the construction of the C1 Stanwell Cursus, which obliterates the location of the settlement. The deposition of this material may therefore be a closing act to symbolise the abandonment of the settlement and the incorporation of its location into the C1 Cursus. It could also serve to mark the construction of the C3 Cursus, or at least this northern extension of the monument.

Following this event, the re-cut pit complex became the receptacle for Peterborough Ware, initially in very small quantities, but by ranks six and seven in much larger quantities. The average sherd size of Peterborough Ware is larger than the Plain Bowl Ware of ranks 1–3, hinting at greater selection and deliberate deposition of the material. This is confirmed by the limited number of vessels that were deposited. This shows that this location continued to be of importance, and was reinforced by selective deposition of material. The overall stratigraphic pattern of deposition of pottery in this pit complex is similar to that of monuments (eg see Fig. 2.39 above). Perhaps we can think of the origin of this pit complex in terms of the use of domestic settlement material to reinforce a claim to land. This use was ended with the construction of the cursus monument(s), but the adoption of Peterborough Ware saw the location reverting to being the scene of deposition, this time of more purposeful deposition of particular pottery associated with or produced for specific ceremonies enacted within a monumental landscape, rather than collections of domestic rubbish. Figure 2.54(B) shows that the flint assemblage associated with Plain Bowl deposition consists entirely of debitage (waste blades and flake and core preparation pierces). The flint assemblage

	EBA Beaker or Collared Urn		E Neo Plain Bowl Ware		M Neo Peterborough Ware - Mortlake			
SG rank	Weight (g)	No. of Objects	Weight (g)	No. of Objects	Weight (g)	No. of Objects	*Total Weight (g)*	*Total No. of Objects*
8	14	2	-	-	708	167	*722*	*169*
7	-	-	-	-	167	42	*167*	*42*
6	-	-	-	-	10	6	*10*	*6*
5	-	-	299	31	-	-	*29*	*31*
4	-	-	24	10	-	-	*24*	*10*
2	-	-	5	3	-	-	*5*	*3*
1	-	-	1	1	-	-	*1*	*1*
Total	**14**	**2**	**329**	**45**	**885**	**215**	***1228***	***262***

Table 2.16: Weight and count of pottery by stratigraphic rank from pit complex 964

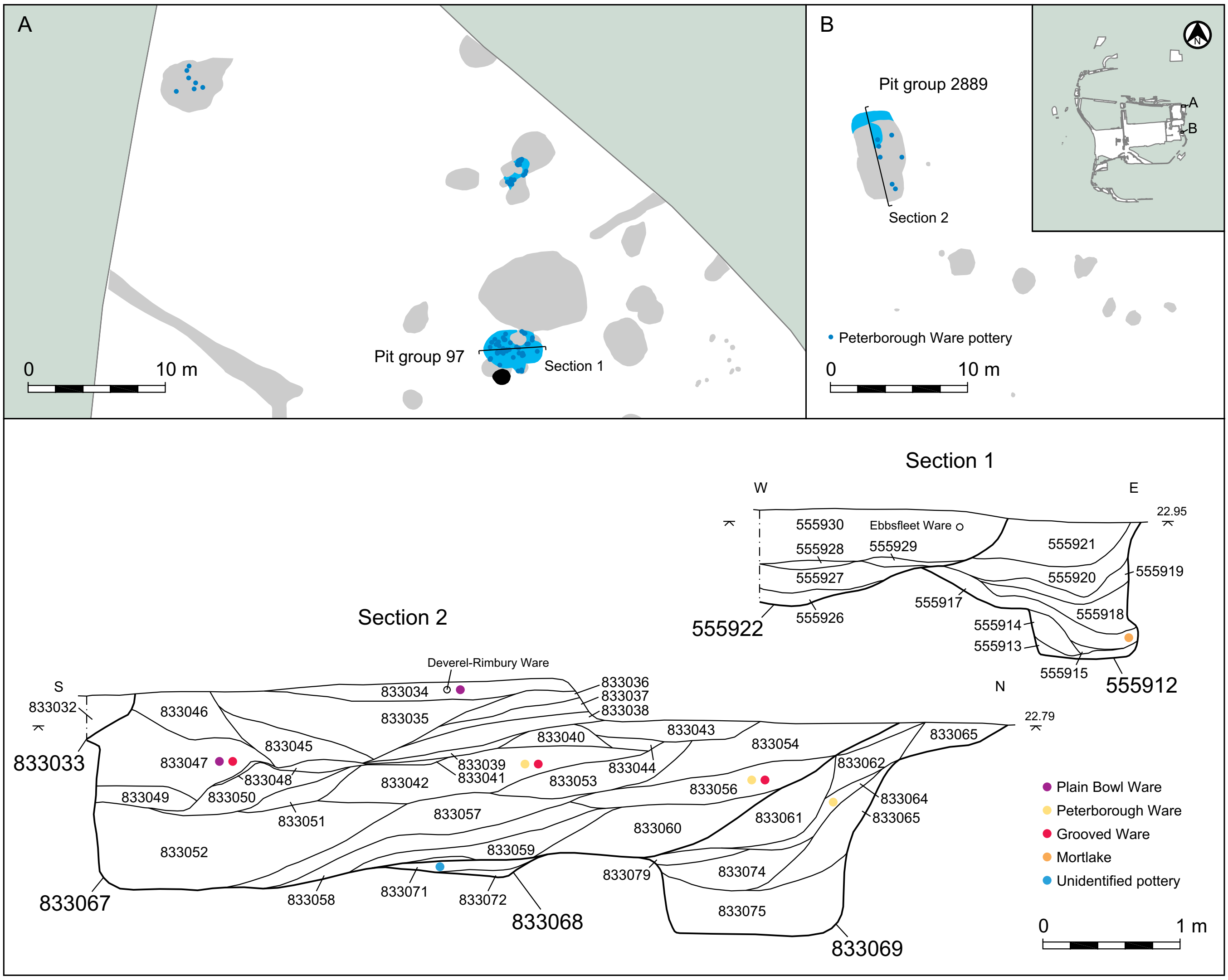


Figure 2.55: Pit groups 97 and 2889

associated with Peterborough Ware is more varied, and contains scrapers, awls and other retouched tools. We would argue that this represents selection of certain elements of the lithic tool kit for inclusion in ceremonies and ultimately deposition in the pit complex.

We believe this exemplifies a change in the pattern of deposition between that of Plain Bowl Ware and Peterborough Ware, and that this trajectory continued through the 3rd millennium and is developed further with the adoption of Grooved Ware.

Whilst there are several other pits and tree-throws which appear to be contemporary with the deposition of Peterborough Ware between *c* 3400 and 2500 BC, only two further examples will be discussed in any detail.

Entity 2889 is located at the far eastern side of the site in Area 99 (Fig. 2.55) and consists of three features, 833067, 833068 and 833069, with 833069 cutting the other two. Pit 833068 contained a few scraps of unidentifiable pottery (but which could be Plain Bowl Ware) and a few flint flakes. Pit 833069 contained 1 sherd of Ebbsfleet style Peterborough Ware. Both 833068 and 833069 were cut (and almost totally removed) by a large (approximately 6.5 m long and 0.75 m deep) pit or 'waterhole' (833067). This feature contained a complex sequence of fills, and had obviously undergone a long period of silting. The fills contained flint flakes, cores and scrapers, Plain Bowl Ware and Mortlake style Peterborough Ware, but also Late Neolithic Grooved Ware and even Deverel-Rimbury and post-Deverel-Rimbury Bronze Age pottery. The date for this feature is thus open to question, but it could conceivably belong to the late 2nd millennium BC, since the Peterborough Ware and Plain Bowl Ware probably derives from the earlier pits, and the Bronze Age pottery was from the very highest fill and probably intrusive. It would appear that here we have a location where deposition of Plain Bowl Ware in a pit was probably quickly followed by the digging of another pit to accept Ebbsfleet Ware, and then both were truncated by a large feature containing Grooved Ware. Unfortunately the number of sherds and weights for the Plain Bowl, Peterborough and Grooved Ware assemblages from this complex were not large enough to provide meaningful comparisons.

Another complex of intercutting pits (97) was located 370 m to the NNE of Entity 2889 (Fig. 2.55).

Pit 555922 contained 40 sherds of an Ebbsfleet-type bowl, heavily encrusted with residues. With the exception of a very small number of featureless sherds, this Ebbsfleet vessel is the only instance of fabric FL23, suggesting that—while no doubt contemporary with the other Peterborough Ware styles—Ebbsfleet-type vessels do form a distinct sub-set of Peterborough ceramics. The vessel was represented by 32 body, five rim and three shoulder sherds, with fingernail impressions on the body (the sherds are abraded and many obscured with a heavy deposit, but some at least have all-over decoration), above the shoulder in the neck and on top of rim.

(Leivers et al., CD Section 1)

A total of 878 g of Peterborough Ware was recovered from pit 555922 with an average sherd weight of 21.4 g. This is far in excess of the average sherd weight in Figure 2.54, and strongly suggests that the pottery was not a dump of domestic refuse.

Grooved Ware

As we have already discussed, there is a potential chronological overlap in the use of Grooved Ware and Peterborough Ware between 3200 BC and 2500 BC, and this uncertainty is compounded by the scarcity of reliable radiocarbon dates for either style of pottery from the Middle Thames Valley. It is worth noting that at Terminal 5, apart from the few sherds

Feature	Interpretation	No. Sherds	Weight (g)
127022	Pit	5	5
216121	Pit	41	134
517191	Pit	8	20
528117	Ring Ditch	7	25
531011	Pit	97	158
561104	Pit	2	84
580310	Pit	14	226
685019	Pit	4	13
695027	Pit	84	373
695058	Pit	10	28
708007	Pit	115	680
820018	Tree-throw	4	10
827269	Pit	4	27
833067	Waterhole	9	17
836009	Pit	96	275

Table 2.17: Late Neolithic features containing Grooved Ware pottery

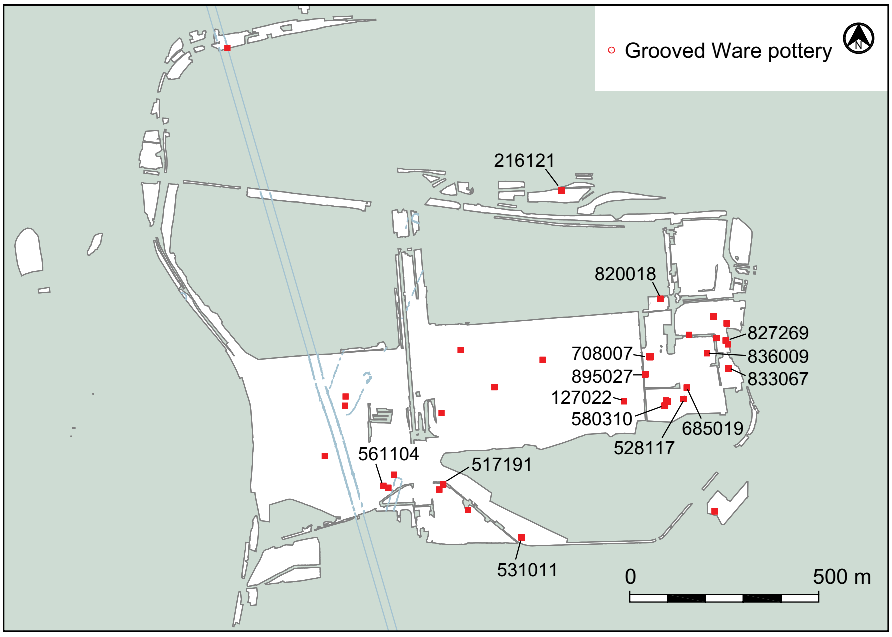


Figure 2.56: Distribution of Grooved Ware pottery

of Grooved Ware and Peterborough Ware recovered from the HE2 Enclosure and the possible intercutting pit sequence on Area 99 (2889; see above), the two types of pottery are not generally found associated. This contrasts with the relationship with Plain Bowl and Peterborough Ware pottery, where the latter is often a later addition to either the upper fills of an earlier monument or pit sequence (for example the C1 Cursus and pit complex 964). This may suggest a clearer chronological separation between the use of Grooved Ware and Peterborough Ware than between the latter and Plain Bowl pottery at Terminal 5. For the purposes of this volume, and in the absence of reliable radiocarbon dates, we will treat the use of Grooved Ware as chronologically later than Peterborough Ware.

Every and Mepham identified the Perry Oaks Grooved Ware as a significant addition to the rather scanty ceramic record for the Late Neolithic in the West London area (2006, 7). At the time of the first stage of analysis, all of the identifiable vessels belonged to the Durrington Walls type, and the addition of a Clacton tub and—especially—a possible Durrington Walls/Woodlands hybrid increases the importance of this material still further. Previous finds in the area (including 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 1996); an unspecified quantity of material from a feature at Sipson Lane, Harmondsworth (Longworth and Cleal 1999, 185); two sherds from a ring ditch at West Bedfont (ibid.) and fragments of a burnt vessel from Lower Mill Farm, Stanwell (Jones and Ayres 2004)) belong to the Durrington Walls, Clacton and Woodlands types.

Unlike the Peterborough Wares, the Grooved Ware sub-styles tend to merge into one another, so an instance such as the vessel in pit 580310 is not atypical. Although the sub-styles show no real regional or chronological cohesion, the different sorts of vessel were often used in different ways. Woodlands-style pots are predominantly found in pits, as at Heathrow. Durrington Walls-style vessels are found in a variety of contexts, including ring ditches and the large Wessex henges, but also in isolated pits. Given this, in spite of its scarcity in the region, Grooved Ware seems to have been fulfilling the same roles as in areas where it was in more common use.

In this light, the Heathrow material could be regarded as typical deliberate deposits within isolated features. On the other hand, the fair to heavy abrasion on some sherd groups could be indicative of

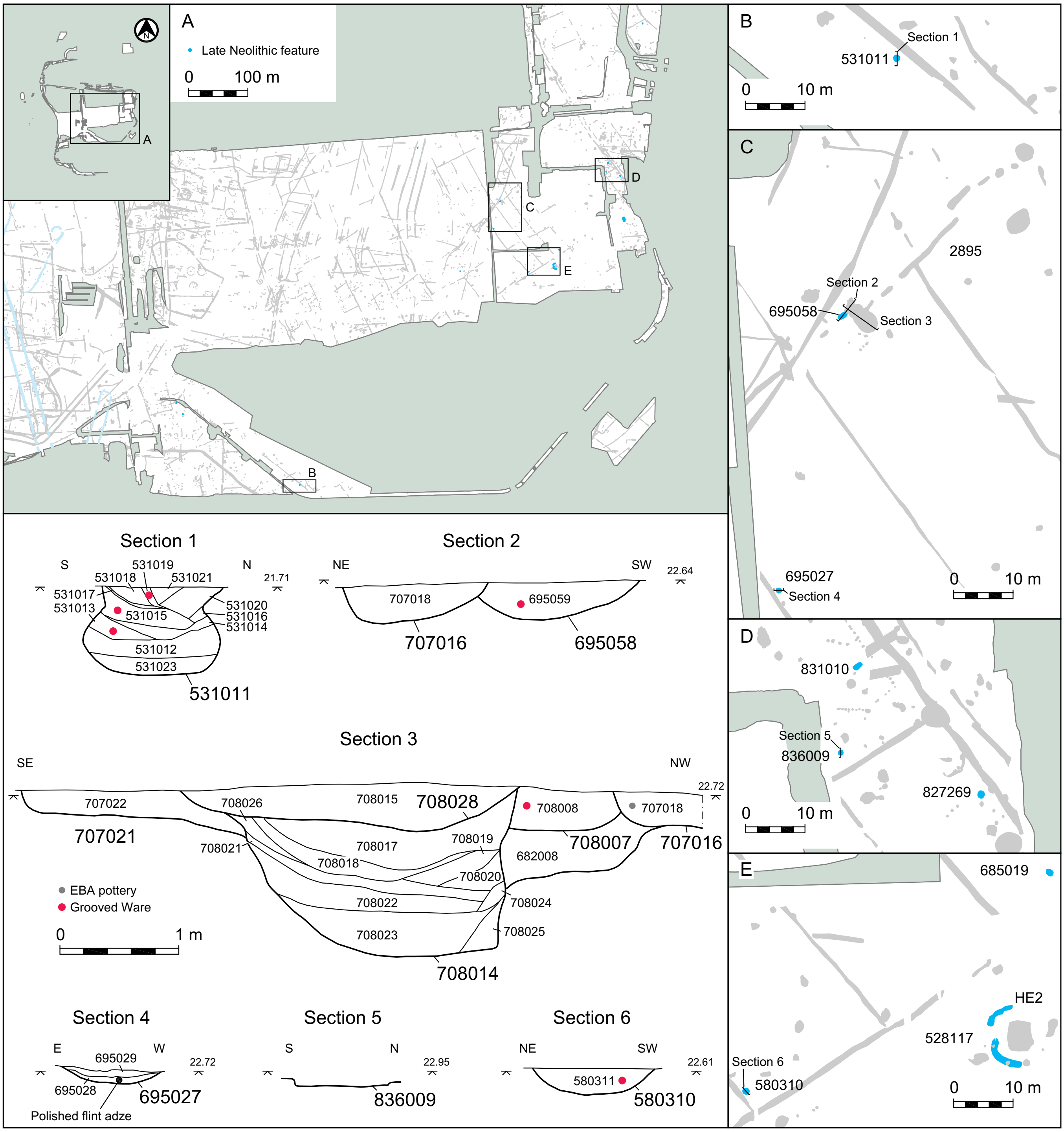


Figure 2.57: Features associated with Grooved Ware pottery

pre-depositional use or post-depositional movement, with the more fragmented vessels perhaps entering the pits as a result of erosion of the surrounding topsoil.

(Leivers et al., CD Section 1)

Figure 2.56 shows the distribution of Grooved Ware pottery, and it is evident that when compared with the distribution of features which can be dated confidently as being contemporary with the use of this pottery, much of the material resides in later contexts.

Table 2.17 shows the limited number of features depicted in Figure 2.56. Apart from the HE2 ring ditch, it is clear that most of the features associated with Grooved Ware are pits, a very common phenomenon with this type of pottery (eg Garwood 1999, Illus. 15.4). We will firstly describe some of the pits, before examining the HE2 Enclosure.

Grooved Ware pits

Two of the pits containing Grooved Ware (216121 and 127022) have been discussed in detail in volume 1 (Framework Archaeology 2006, 82–3, fig. 2.26). We will now describe briefly a number of others from Terminal 5 (see Figs 2.56–7).

Plate 2.23: Pit 836009

Pit 836009

Pit 836009 survived as a very shallow depression (Fig. 2.57, section 5; Plate 2.23), probably representing the base of an originally deeper feature. It contained 96 sherds (275 g) placed against the western edge of the feature. The sherds formed 65% of the rim of a vessel 280 mm in diameter. This vessel most probably belongs to the Clacton type. An oblique arrowhead and a retouched blade/flake were also retrieved from this pit.

Pit 580310

Pit 580310 (Fig. 2.57, section 6) *contained large rim sherds from a pair of vessels in a variant of GR2, the form and decoration of which indicate the Woodlands sub-style. Both have sinuous raised cordons with slash-marks. At points along these cordons on one vessel (in one instance at the convergence of two cordons) are larger impressions apparently made with a finger end – these may replicate the more elaborate applied 'stops' at the convergence of cordons on more typical Woodlands vessels. The atypical feature of these sherds is the presence of two lines of twisted cord impressions below the rim of one, suggesting a Woodlands/Durrington Walls hybrid.*

(Leivers et al., CD Section 1)

Pit 531011

…97 sherds from three vessels in GR5 were recovered from pit 531011… All were burnt and extremely friable. Another size-able group came from pit 216009/216118 (41 sherds: 134 g)… Diagnostic sherds include part of the rim with horizontal grooved decoration below. This appears to be a relatively thin-walled, bucket-shaped vessel, with a simple rounded rim. Form and decoration are sufficient to assign this vessel to the Durrington Walls sub-style.

The majority of the identifiable vessels belong to this same sub-style (Wainwright and Longworth 1971, 240–2). Here, the characteristic traits are whipped and twisted cord; internally-bevelled and concave rims, often with incised decoration below; vertical plain cordons and external incised or grooved decoration. Much of the material derives from a series of closed vessels, although very few profiles can be reconstructed. In addition to those already described, a further 10 sherds with grooved decoration from other contexts (pits 127022, 141228, 170007; ditches 146205 and 961747) are also probably of the same sub-style, although too small to make a definitive identification. The remaining sherds are plain and undiagnostic.

(Leivers et al., CD Section 1)

Plate 2.24: Pottery in pit 531011

531011 contained 213 struck flints in 11 deposits… Burnt unworked flint came from ten deposits… The flintwork is almost certainly contemporary with the Grooved Ware pottery with which it was found. The assemblage is in a very fresh, uncorticated condition and is composed mainly of unre-touched flakes (121 pieces), some of which approach bladelike dimensions. Most of the flakes are rather small; cores and larger elements of waste are virtually absent, although the presence of 69 chips suggests that some knapping activity was performed nearby. The percussion mode seems to have been mixed with a slightly greater repre-sentation of hard-hammer use; platform edge abrasion was occasionally employed.

A few utilised edges were noted along with a range of retouched tools, including five retouched flakes, one end scraper and three piercers, including one example made on a blade. Context 531017 contained a retouched tool with a piercing point at the proximal end and some truncated scraper-style retouch along the distal end. Two multi-platform flake cores were also recovered, along with one core on a flake. A group of 20 flakes have been heavily burnt to a similar degree, perhaps in the same event; all are calcined grey-white.

Most of the flakes seem to derive from five or six individual cores, but each core is rep-resented by a very small selection of flakes and only one knapping refit was found. A single flake of bullhead flint is also present, which could not be related to any other piece within the assemblage and appears to be an isolated example. The assemblage seems to represent an accumulation of utilised flakes and tools from a range of different activities. Many of these pieces seem to have been struck from the same core, which might indicate a relatively short interval between production, use and discard. Other pieces, such as the bullhead flake, are single occurrences and may have been in wider circulation before deposition.

(Cramp and Leivers, CD Section 4)

Pit 708007

Pit 708007 (in Pit Group 821; Fig. 2.57, section 3; Plate 2.25) contained a pair of vessels in its single fill, in GR5 (76 sherds) and GR2 (48 sherds) (see below).

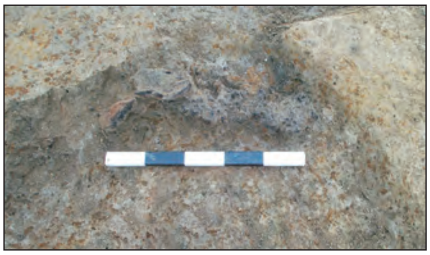


Plate 2.25: Pit 708007

This [worked flint] assemblage of 35 pieces [from pit 708007] is in exceptionally fresh condition. The debitage consists entirely of secondary and tertiary flakes, but the assemblage is dominated by tools, including some deliberately broken pieces: a notched scraper and two additional retouched flakes that appear to have been deliberately snapped. Another probable flake from a scraper on a non-flake blank was also recovered (again, snapped)— alternatively this piece may be an inversely *retouched scraper on a preparatory flake with thermal dorsal surface. In total, eight scrapers were recovered.*

Other tools included three piercers, a serrated flake and a pair of backed knives. This assemblage is unusual for the very high proportion of use-wear and, particularly, retouch. The ceramic associations are Grooved Ware, and this assemblage bears comparison with that from Grooved Ware pit 827269, especially in terms of the pair of knives.

(Cramp and Leivers, CD Section 4)

Pit 695027

Pit 695027 (Fig. 2.57, section 4; Plate 2.26) contained eight small sherds from two vessels in its lower fill, one in GR2 (61 sherds) and one in GR5 (19 sherds). It is possible that the sherds in pits 695027 and 780007 derive from the same pair of vessels; those in 695027 are in markedly better condition than those in 708007, which was cut by Early Bronze Age feature 707016. Eleven pieces of struck flint came from this pit, including a complete polished flint axe.

Plate 2.26: Pit 695027

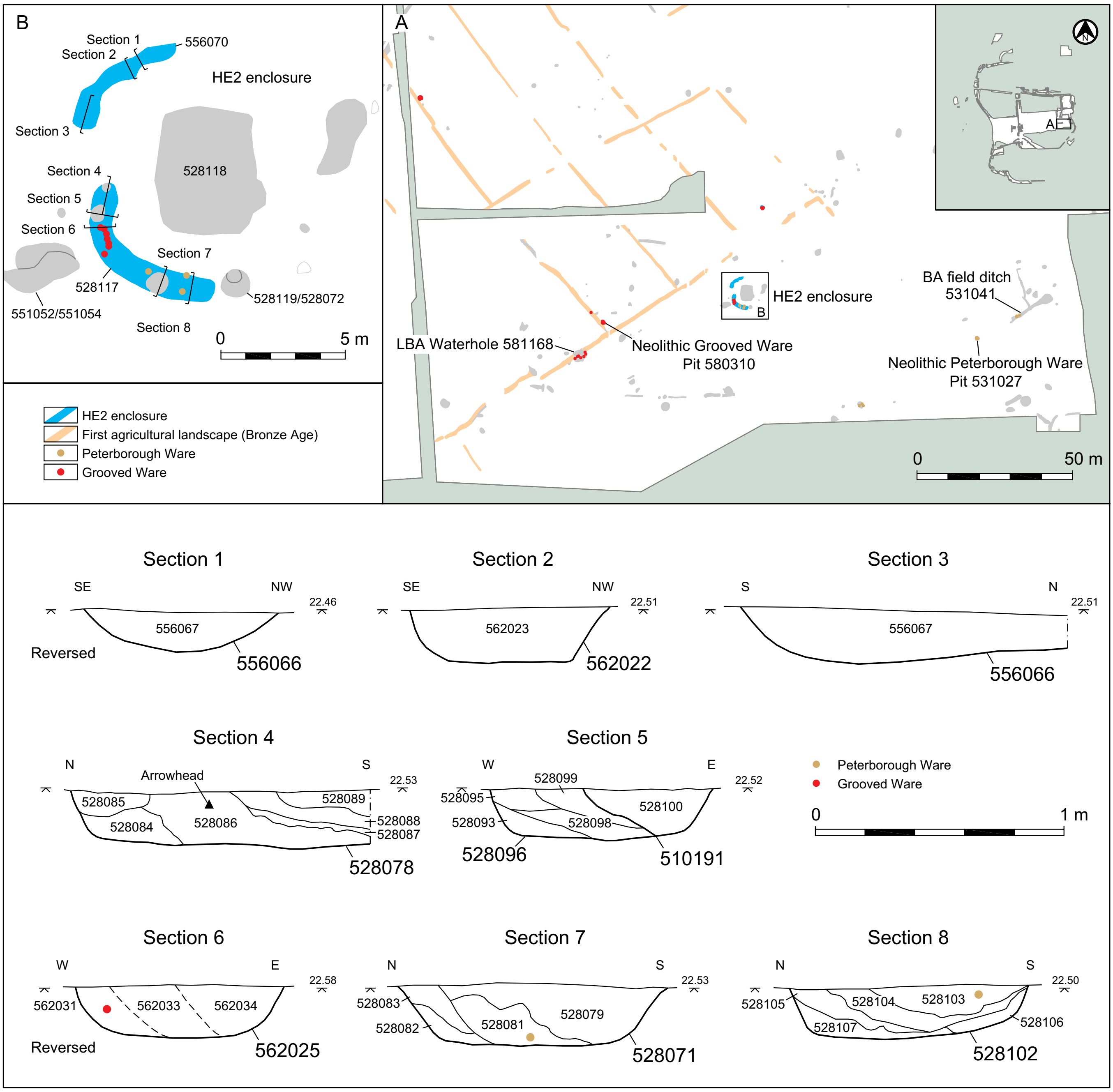


Figure 2.58: HE2 Enclosure: excavated sections and pottery distributions

Plate 2.27: Horse Shoe Enclosure 2 (HE2)

The HE2 Enclosure

Horseshoe Enclosure 2 (HE2) was situated in Area 77 towards the south-eastern extremity of the main Terminal 5 excavation area (Fig. 2.58; Plate 2.27). Before describing the monument it is important to realise that it is likely that truncation associated with the Sludge Works probably destroyed any shallow features which may have formed the eastern part of the circumference of this enclosure. Truncation also rendered the surviving features difficult to excavate and interpret due to their shallow nature. Nonetheless, it is clear that the HE2 monument is approximately half the diameter of the HE1 enclosure, and is probably later than it.

Form and stratigraphy

The monument survives as two short, curving lengths of ditch (528117 and 556070). If these are projected to the east, then they would form an enclosure approximately 10 m in diameter. However, the surviving monument is completely open on the eastern side, and to the west there is a gap of 2.28 m between the ditches, which probably formed an original entrance (Fig. 2.58).

The southern ditch (528117) is 7.3 m long, 1 m wide and 0.2–0.3 m deep with a steep sided 'U' shaped profile. The northern ditch (556070) is 5.4 m long, between 0.6 and 1 m wide and 0.2 m deep, with a more rounded 'U' shaped profile. The southern ditch contains a distinctive series of gravel rich deposits, indicating the slumping of an internal bank or mound into the ditch (Plate 2.28). In contrast, the northern ditch contains a single fill, mostly composed of silty brick-earth.

Plate 2.28: Gravel tip in terminus of southern ditch of HE2 Enclosure

Several other features in the immediate vicinity may, with varying degrees of certainty, have been connected with the HE2 monument, whilst others proved to be natural features. For example, 528118 was revealed to be a large natural deposit of brickearth in the 'centre' of the HE2 enclosure. Two intercutting features (551052 and 551054) to the west of the monument were interpreted as pits but their form was very irregular, while features 528119 and 528072 were interpreted as a natural hollow (528119) cut by a pit (528072). There is insufficient evidence to link any of these features with the HE2 Enclosure.

What did the monument look like?

The effects of truncation, and in particular the uncertainty concerning the possibility of a continuation of the ditch circuit in the east makes reconstructing the original architecture of the monument very difficult. There is clear evidence of a slumping of gravel from the northern side of the southern ditch (528117), though whether this derived from a bank or mound is unclear. The central patch of brickearth (528118) surviving in a slight hollow in the gravel could indicate either a bank or mound. In the case of the former, the denuded gravel area between the brickearth deposit and the northern and southern ditches may represent the positions of the internal banks. In the case of the latter, the mound may have acted to preserve the brickearth deposit from later truncation.

The absence of similar decayed bank deposits from the northern ditch (556070) suggests either that this is not contemporary with the southern ditch, that the bank or mound was closer to the southern ditch, or that the bank or mound was deliberately demolished and pushed into the southern ditch. Unfortunately none of these possibilities can be determined with certainty. In the light of this uncertainty, we will not speculate further on the size of any internal structure.

When was the monument built?

The dating evidence for the construction of the HE2 monument is very tenuous and contradictory. The northern ditch contained seven largely undiagnostic flakes and spalls, while the southern ditch is more complicated, and the interpretations expressed here are based on the original excavation records.

Plate 2.29: Grooved Ware in southern ditch of HE2 Enclosure

The main chronological indicators are three sherds of Peterborough Ware and seven sherds of Grooved Ware pottery (Plate 2.29). The Peterborough Ware pottery was located in interventions 528102 and 528071. In the latter intervention, a single sherd of Peterborough Ware was retrieved from deposit 528128 (context 528081; Fig. 2.58 Section 7) which represents the slumping into the ditch of the internal bank/mound discussed above. In intervention 528102, two sherds of Peterborough Ware were retrieved from deposit 510195 (context 528103; Fig. 2.58 Section 8) which represents the more gradual silting of the ditch following the slumping of the internal bank/mound. In contrast, the seven sherds of Grooved Ware in intervention 562025 are all from deposit 562031 (Fig. 2.58 Section 6), the initial silting of the ditch sides, prior to the slumping of the bank (represented by deposit 562033). Although the bank slumping deposit is not as clear in this intervention, and the excavator made the point that the exact context of the pottery was difficult to define, the geo-referenced photographs of a Grooved Ware sherd seem to confirm it originated in the upper part of context 562031.

If this interpretation of the stratigraphy and pottery sequence is correct, then it would imply an inverse stratigraphy, with Grooved Ware dating to the period 3000 to 2000 BC stratified beneath Peterborough Ware, dating to the period 3400 to 2500 BC. Whilst the chronological overlap of the two types of Pottery may explain this, there is another explanation. This requires that the HE2 monument was constructed in the 3rd millennium BC, and was associated with the use of Grooved Ware pottery. The Peterborough Ware pottery becomes incorporated in the fills once the monument starts to decay and the ditch fills in as it is already present in the landscape, either as debris from occupation or ritual activity. The Peterborough Ware can therefore be viewed as earlier pottery residing in a later context. The only other diagnostic artefact was a chisel arrowhead from a stony in-wash fill (context 528086; Fig. 2.58 Section 4) in the northern terminal of the ditch. Unfortunately this type of arrowhead is associated with both Peterborough Ware and Grooved Ware pottery.

Figure 2.58 also shows the distribution of Peterborough Ware and Grooved Ware in the area around the HE2 Enclosure, and it can be seen that there is a relatively significant quantity of both pottery types from features in the area. Some reside in later features such as the 2nd millennium field ditches, but others lay in pits and possible tree-throws which can reasonably be treated as contemporary with the pottery. For example, approximately 53 m to the SSW of the HE2 monument, there are a handful of Grooved Ware sherds in Late Bronze Age waterhole 581168. These probably originated from activity associated with the excavation in the 3rd millennium BC of a small pit (580310) located approximately 10 m to the north-east, which contained Grooved Ware. Similarly, the few sherds of Peterborough Ware in the Bronze Age field ditch 531041 located 85 m to the ESE of the HE2 Enclosure are probably derived from activity in the late 4th or early 3rd millennium BC that was associated with the deposition of Peterborough Ware sherds in pit 531027.

In summary, the monument can be interpreted as being constructed sometime in the 3rd millennium BC and was associated with the use of Grooved Ware pottery. The bank collapse probably occurred fairly rapidly after construction, leaving a more stable form of the monument. The collapse and stabilisation deposits of the monument included Peterborough Ware relating to a (probably chronologically) separate phase of activity in the vicinity of the monument.

Evidence for the wider landscape in the 3rd millennium BC

In the West London area, Peterborough Ware was deposited in three main contexts. Firstly, isolated or small clusters of pits, often with lithic material and charcoal. Secondly, from the upper fills of causewayed enclosures (eg Yeoveney Lodge Staines; Robertson-Mckay 1987) and the Stanwell Cursus (O'Connell 1990). Thirdly, Peterborough Ware is often associated with the modification of earlier Neolithic small circular monuments. Examples include Manor Farm Horton (Preston 2003) and Staines Road, Shepperton (Bird *et al.* 1990).

Taken together, the three main contextual occurrences of Peterborough Ware give the impression of a time when people inhabited a landscape defined by ancient places and relatively new monuments and practices. The existing large monuments continued in use in some way, even if they were in advanced decay, whilst others were modified and / or enlarged. For example, the Peterborough Ware pottery in the middle and upper fills of the C1 Stanwell Cursus suggests the

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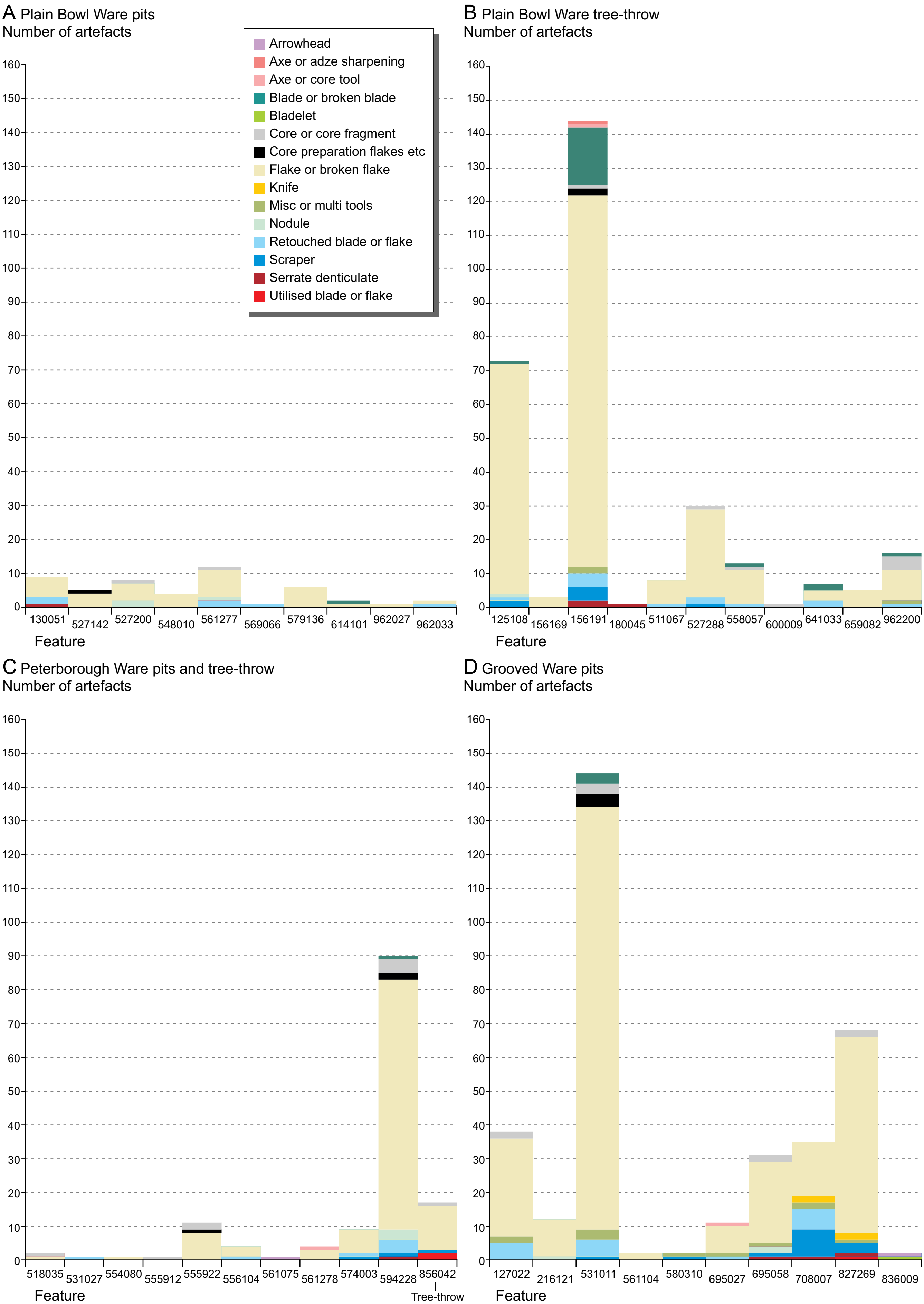
Figure 2.59: Lithic assemblage composition from Plain Bowl tree-throws and pits, and Peterborough Ware and Grooved Ware pits


A Plain Bowl Ware pits
Number of artefacts
Arrowhead
Axe or adze sharpening
Axe or core tool
Blade or broken blade
Bladelet
Core or core fragment
Core preparation flakes etc
Flake or broken flake
Knife
Misc or multi tools
Nodule
Retouched blade or flake
Scraper
Serrate denticulate
Utilised blade or flake
130051 527142 527200 548010 561277 569066 579136 614101 962027 962033
Feature
B Plain Bowl Ware tree-throw
Number of artefacts
125108 156169 156191 180045 511067 527288 558057 600009 641033 659082 962200
Feature
C Peterborough Ware pits and tree-throw
Number of artefacts
518035 531027 554080 555912 555922 556104 561075 561278 574003 594228 856042
Tree-throw
Feature
D Grooved Ware pits
Number of artefacts
127022 216121 531011 561104 580310 695027 695058 708007 827269 836009
Feature

Date Span	Feature Type	Total Assemblage		Retouched Tool Assemblage	
		Quantity	Composition	Quantity	Composition
3000 - 2000 BC	Grooved Ware pits	Larger quantity of material, with few exceptions of less than 10 pieces.	Varied composition, whole reduction sequence represented.	Comparatively large quantity.	Varied composition, with scrapers and retouched blades/flakes most prevalent. Miscellaneous tools also well represented. Most pits have more than one category.
3400 - 2500 BC	Peterborough Ware pits and 1 tree-throw	Very low quantities with a few exceptions.	Varied composition, 11 object categories represented. Whole core reduction sequence represented.	Very low quantities with one exception.	More varied composition, with 5 object categories. Scrapers and retouched blades/flakes most prevalent. Most pits have only one object category.
c. 4000 - 3300 BC	Early Neolithic Pits (Plain Bowl Ware)	Very low quantities with no exceptions.	Composition restricted, only 7 object categories represented. Debitage dominated assemblages.	Very low quantities.	Very restricted composition, only 1 serrated, and the remainder consists of retouched blade/flakes. Most pits have only one object category.
c. 4000 - 3300 BC	Early Neolithic tree-throws (Plain Bowl Ware)	Low quantities with some clear exceptions.	Composition quite varied, 12 object categories represented. Whole core reduction and tool production sequence represented. Even small assemblages show variety.	Low quantities with one exception.	Fairly varied composition, with 7 object categories. Scrapers and retouched blades/flakes most prevalent. Half the tree-throws have only one object category.

Table 2.18: Comparison of lithic assemblages and retouched tool assemblages from Plain Bowl tree-throws and pits, and Peterborough Ware and Grooved Ware pits

monument was still being used in some form, and may even have been associated with the activity that produced the postholes that cut the lower fills of the ditches at some locations. The excavation of the pit (524398) containing Peterborough Ware, and the possible additional length of western ditch on Area 28, also suggests some localised modification and addition to the monument. Elsewhere in this part of the Middle Thames we have mentioned the ring ditch at Staines Road Farm, Shepperton which was associated with Peterborough Ware and seems to have been used for burial. Even closer to Terminal 5, the inner ditch of the Horton monument was encircled with an outer enclosure, again associated with Peterborough Ware. To the north-east of Terminal 5, two ring ditches (one a double ditched monument) each contained a cremation at the centre which dated to *c* 3000 BC (Crockett 2001; A. Barclay pers. comm.). These dates fall firmly within the currency of Peterborough Ware.

It would appear then that older communal monuments, such as the causewayed enclosure at Staines and the Terminal 5 cursus complex, remained a part of the everyday life of the community. New, small circular monuments (or in the case of Horton, additions to earlier types) appear to have included funerary practices amongst other ceremonies that may have been performed at these locations. Thus the monuments, old and new, continued to provide the locations and architectural setting for the ceremonial 'glue' that held the community together.

If we are to try to understand this trend beyond ascribing it to ritual practices, we should consider how people moved around a landscape divided by monuments and tradition—how they decided where people would live, graze animals, gain access to water and plant crops. By whatever process, these issues had to be resolved and settled, perhaps every year or season. We have already suggested that the cursus and small circular monuments constructed between 3600 and 3300 BC played a vital role in this process of negotiation. These meetings may have become cloaked by rituals involving worship and even disposal of the dead, but the subtext remained the fundamentals of ordering life.

It would therefore appear that the Peterborough Ware Phase of the Neolithic (c 3400–2500 BC) in West London, was a time when the community that built the major monuments of the latter part of the 4th millennium were content to live their lives within the physical and social framework they provided, with appropriate modifications and addition to monuments. If the overtly ritual aspects of life, as expressed through monuments, showed continuity or gradual evolution, then how people behaved in the wider landscape showed a more pronounced change during the period 3400 to 2500 BC, and one which would accelerate during the currency of Grooved Ware pottery. This change concerned a shift from deposition of pottery and flintwork in tree-throws and pits to almost exclusive pit deposition. We have interpreted these pits as the by product of ceremonies that linked families to places, land and resources

The digging of pits and the deposition of material within them can be thought of as part of the ceremonial 'chain'. Monuments provided the setting to facilitate agreement over access to resources in the landscape through ceremonies involving the living and the dead. The pits were the locations of other ceremonies which cemented the settling of the claims to resources and land negotiated by family groups

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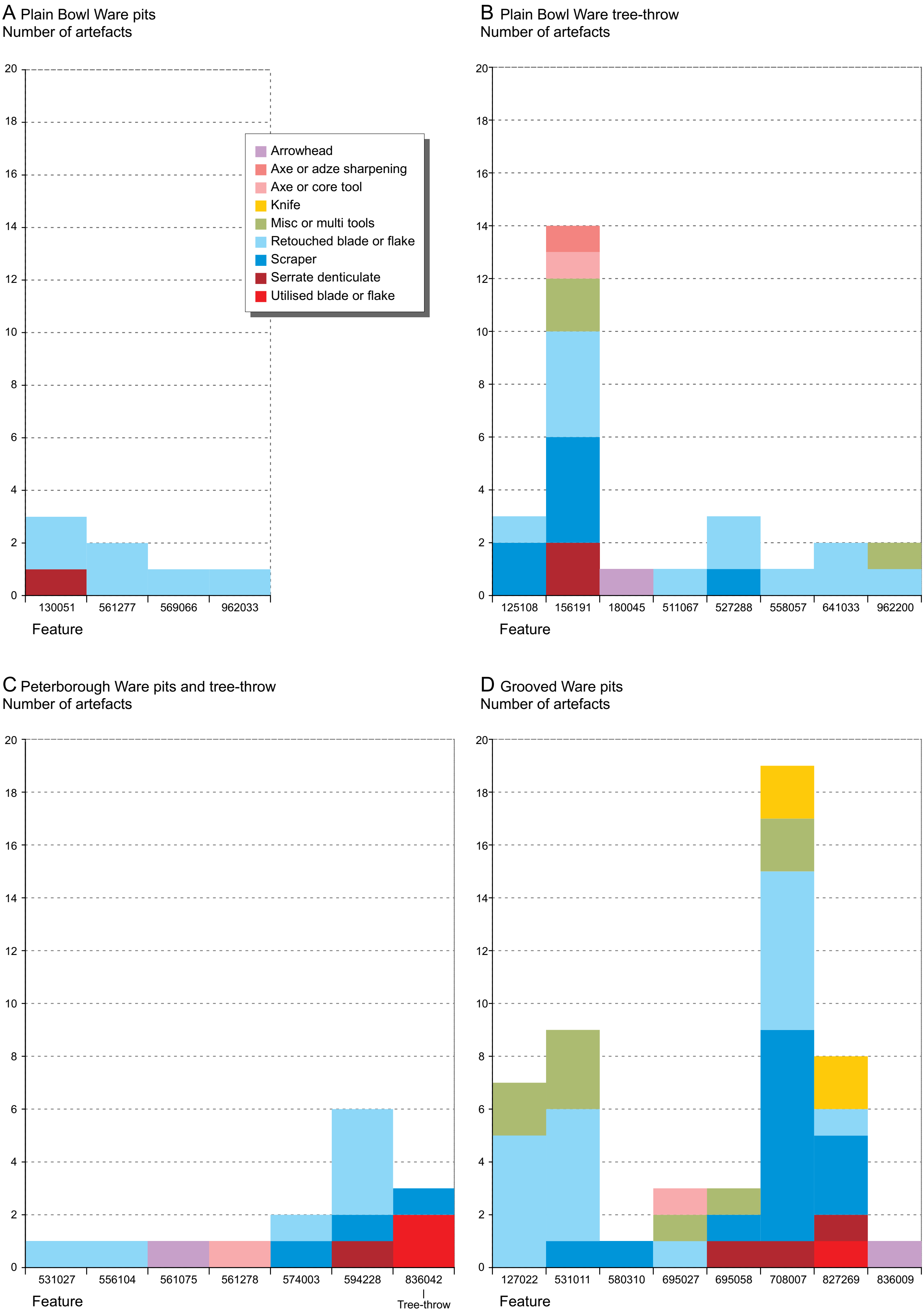
Figure 2.60: Retouched tool assemblage composition from Plain Bowl tree-throws and pits, and Peterborough Ware and Grooved Ware pits


A Plain Bowl Ware pits
Number of artefacts
Arrowhead
Axe or adze sharpening
Axe or core tool
Knife
Misc or multi tools
Retouched blade or flake
Scraper
Serrate denticulate
Utilised blade or flake
130051
561277
569066
962033
Feature
B Plain Bowl Ware tree-throw
Number of artefacts
125108
156191
180045
511067
527288
558057
641033
962200
Feature
C Peterborough Ware pits and tree-throw
Number of artefacts
531027
556104
561075
561278
574003
594228
836042
Tree-throw
Feature
D Grooved Ware pits
Number of artefacts
127022
531011
580310
695027
695058
708007
827269
836009
Feature

within the monumental context. The pits (to accept the ceramic, lithic and ecofactual residues of autumnal rituals) would have been dug in areas that had been or were to be used for cultivation or pasture. These ceremonies, away from monuments and in the wider landscape, resulted in a physical act that linked the participants with that particular part of the landscape.

This pattern is repeated across the West London area, where excavations by the Museum of London and others, for example at Imperial College Sports Ground (Crockett 2001) and Heathrow Airport (Grimes 1961) in the latter quarter of the 20th century recorded isolated or small clusters of pits containing Peterborough Ware, often with lithic material and charcoal.

Evans *et al.* (1999) have drawn attention to the patterns of artefact deposition in tree-throws across southern Britain in the 4th millennium BC, and suggested that many were the deliberate receptacles for midden material. Allen *et al.* (2004) have drawn similar conclusions from their excavations at Dorney, near the Thames, 8 miles (13 km) away from Terminal 5. They support the findings of Evans *et al.* that middening occurred after the trees had fallen, and possibly after significant clearance in the early Neolithic (Allen *et al.* 2004, 91). Furthermore, they go on to suggest that the deposition of early Neolithic material within tree-throws can be seen as a continuation of a Mesolithic tradition (ibid., 92). The lithic and ceramic assemblage from tree-throw 156191 was discussed in Volume 1 (Framework Archaeology 2006, 67, table 2.10) and was suggested as representing just such a midden deposit from a settlement of the 4th millennium BC, probably dating to between 3600 and 3300 BC.

Allen *et al.* (2004) have contrasted this pattern with that of pits dated by radiocarbon to the period 3350–2900 BC containing Peterborough Ware. They have suggested that these pits saw the deliberate deposition of selected pottery and flint assemblages rather than the general midden deposits of the early Neolithic, which were placed in tree-throws. Presumably the shift to the digging of pits as receptacles for increasingly elaborate artefactual residues from ceremonies was influenced by an increasingly cleared landscape.

A comparison of the lithic assemblages from tree-throws and pits associated with Plain Bowl Neolithic pottery (*c* 3600–3300 BC), with similar features associated with Peterborough Ware (3400–2500 BC) and Grooved Ware (3000–2000 BC) at Terminal 5 supports this evolutionary trend.

Figures 2.59 and 2.60 compare the total lithic assemblages and the retouched tool assemblages from Plain Bowl tree-throws and pits, and Peterborough Ware and Grooved Ware pits. Table 2.18 summarises the quantitative and compositional patterns shown in these figures. These data would suggest an evolutionary line including increasingly elaborate artefact assemblages from Plain Bowl tree-throws through Peterborough Ware pits to Grooved Ware pits. Plain Bowl pits are shown to have a completely different lithic 'signature'. It has long been known that Grooved Ware pits exhibit wide variation in their artefact assemblages. Some contain considerable quantities of large pot sherds, others contain many examples of restricted artefact types such as scrapers or arrowheads, whilst others contain large amounts of carbonised hazelnuts and seeds of wild fruit, although the majority contain varying combinations of all these traits (eg Cotton *et al.* 1986, 36; Barclay 1999, 14; Jones and Ayers 2004; Williams 2004, 166). It is clear that deposition in pits reflected a wide range of ceremonies and meanings.

The other major context of deposition of Grooved Ware pottery are the large henge monuments such as in the Upper Thames Valley (Barclay 1999) and of course Wessex (eg review of evidence in Garwood 1999 and Grooved Ware gazetteer by Longworth and Cleal 1999). The absence of henges from the middle and lower Thames Valley was clearly demonstrated by Burl in 1969, a situation that has changed little since (eg Harding and Lee 1987; Holgate 1988, map 40; Holgate 1996, 19; Lewis 2000; Cotton 2004, 73). The amount of archaeological survey and excavation that has occurred in the Middle and Lower Thames since 1990 would surely have detected large henges if they were present, and one can only deduce that such monuments were either extremely rare or absent from this region.

It has been suggested that in the middle and lower Thames valley, small ring ditches and enclosures (such as the HE2 Enclosure) fulfilled the function of the large henge monuments of the Upper Thames (Lewis 2000, 73). Unfortunately the association of Grooved Ware with these ring ditches is sparse and far from certain. We have seen how the few sherds of Grooved Ware in the HE2 Enclosure are also accompanied by Peterborough Ware. A small ring ditch excavated by the Museum of London in 1989 at Mayfield Farm East Bedfont, produced no pottery at all (MoLAS forthcoming), and neither did the ring ditches excavated by Canham during the extension of the northern runway at Heathrow in 1969 (Canham 1978). In contrast a ring ditch excavated at the Esso West London Oil Terminal, just to the south of Heathrow and close to the Mayfield Farm site, produced six sherds of Grooved Ware and a few flint flakes (Farrant 1971, Wessex Archaeology 1997, Longworth and Cleal 1999, 185).

If some of these small circular monuments can be associated with Grooved Ware, and can be attributed to the 3rd millennium BC, then they would appear to be the continuation of a tradition stretching back to 3600 BC, which was associated with Plain Bowl pottery and then Peterborough Ware. If so, we can then postulate that these small ring ditches fulfilled the same function in society as their predecessors, ie as a location for performing ceremonies that held the community together and allocated land and resources.

We cannot know the details of these negotiations, rituals and ceremonies, and in this context negotiation is taken to cover a wide range of possibilities. It may have taken place in the context of peaceful discussions with ritual feasting or negotiation by force through trials of strength or combat. The deliberate digging of pits and the deposition of pottery and flint may be part of the process of negotiation itself, or it may be an outcome of that process. In other words, once agreement had been reached over access to a particular resource or part of the landscape under the guise of a ceremony undertaken at one of the monuments, a small ritual may have been undertaken at the part of the landscape under contention. This may have ended with a ceremony laying claim to the land at issue, involving burying some of the ceramic and lithic material used in the ceremony, or derived from the respective settlements of the people involved. Allen *et al.* (2004, 92) have noted that the material deposited in Grooved Ware pits was carefully selected, not merely a sample of occupation debris. It is not surprising therefore that some pits containing Grooved Ware in the West London area also contained wild autumnal fruits such as sloes, crab apple and hazelnuts. These suggest that representatives of the produce of the wild, non-domesticated landscape also formed part of the ceremonies, and were deposited in acts of affirmation which were the final link in a chain of events which commenced with ceremonies undertaken at the monuments.

There is another intriguing aspect to the frequent occurrence of wild fruits and nuts in Peterborough Ware and Grooved Ware pits. We have previously described recent research on radiocarbon dates from charred cereal grains with reference to the appearance of agriculture in the very early 4th millennium BC (Brown 2007). This research also highlighted the very small number of sites with cereal remains dating to the 3rd milllnnium BC (Brown 2007, 1048), with most dates concentrating within the period 3800 to 3000 BC (Brown ibid., 1050). It has been suggested that low intensity woodland-clearing cultivation of relatively pest and disease resistant crops in optimum soil and climatic conditions in the 4th millennium BC may have resulted in initially high yields (Dark and Gent 2001). Changes to this balance during the 3rd millennium BC may have led to the apparent decline in cereal production as represented by radiocarbon dates (Brown 2007, 1050)

If we can explain the pattern of small ring ditches and pits of the 3rd millennium as continuations of a social mechanism that was established in the late 4th millennium BC, how do we explain the absence of large henge monuments in West London and the middle / lower Thames in general?

If we look at the Upper Thames, the region contains a rich concentration of causewayed enclosures, barrows, cursus monuments and henges (Loveday 1999, figure 5.3, based on Holgate 1988). Comparisons with the middle and lower Thames valleys are difficult due to the impact of the urban development of London and its satellites, but nonetheless comparisons can be made.

If we look at barrows, in the Upper Thames at Drayton, a long barrow is located approximately 1 km to the west of the cursus, and an oval barrow 250 m to the east (Barclay 2003, 8–9). Oval barrows also occur at Benson, Drayton St Leonard and Stadhampton (ibid., 222–3). In contrast in the Middle Thames Valley and the Heathrow area in particular, long and oval barrows are rare or absent.

Turning to cursus monuments, in the Upper Thames they are concentrated between Drayton and Benson in Oxfordshire (Loveday 1999, 54) and the great Dorchester-on-Thames monumental complex of cursus and henge monuments has no adjacent causewayed enclosure (ibid., 49). Barclay (2003, 223–4) extends this analogy to the whole Thames Valley and observes that causewayed enclosures and cursus monuments have mutually exclusive distributions. However, the southern end of the Stanwell Cursus is only 3.4 km from the Yeoveney Lodge causewayed enclosure, and 2.6 km from the possible causewayed enclosure at Mayfield Farm East Bedfont. Thus both could be reached after a 30 to 45 minute walk from the southern terminal of the Stanwell Cursus. If the Mayfield Farm crop mark is indeed a causewayed enclosure, then the Terminal 5 Cursus complex is located approximately equidistant between this and the Yeoveney Lodge monument. Unlike the Upper Thames, at Heathrow we have a landscape which communities had (if current modelling of radiocarbon dates is correct (Bayliss *et al.* 2008)) already constructed causewayed enclosures before embarking on the cursus complex, but had not felt compelled to build long or oval barrows either before or during the currency of the cursus monuments. The Neolithic communities of the Upper Thames went on to build at least ten cursus or related monuments (Barclay 2003, 225–32) which can be divided into major and minor (longer or shorter than 800 m) monuments (Loveday 1985). The major cursus monuments tend to be correlated with the River Thames and the minor ones with the tributaries of the Thames (Barclay 2003, 241). In contrast the inhabitants of the Heathrow landscape constructed three minor and one mega cursus in one single complex.

If we look at the subsequent development of the upper and lower Thames cursus complexes during the 3rd millennium BC we can see further differences. In the Upper Thames, the Dorchester-on-Thames cursus was embellished with numerous circular monuments during the 3rd millennium (eg Loveday 1999, table 5.1), and many of these were transformed and rebuilt (see Fig. 2.51 above). Many of these later monuments acted as cremation cemeteries for late Neolithic, pre-beaker burials (Loveday 2006, 147). The largest of the 3rd millennium circular monuments was the 200 m diameter double ditched Big Rings Henge which was located adjacent to the southern cursus ditch and produced beaker pottery from primary positions in the inner ditch (Whittle *et al.* 1992, 184). In contrast, very few circular monuments appear to have been constructed during the 3rd millennium at the sites of the other Upper Thames cursus (Barclay 2003, 242). Barclay concludes that the Dorchester complex assumed the role of a regional centre of equal importance to the Wessex complexes such as Stonehenge and Avebury. Loveday (2006, 148) suggests that the Dorchester complex became, during the 3rd millennium BC, a hugely important inter-regional cult sanctuary.

We might expect that the Heathrow area, having one of the largest concentrations of cursus in the country and including one of the longest and rarest type (the C1 Stanwell monument) would also evolve through the 3rd millennium with the addition of ring ditches and henges associated with Grooved Ware, and finally embracing the Beaker 'package' and associated rich burials. We have shown that this was not the case; that large henges are absent, and that small ring ditches, though present, are scattered and not concentrated on the cursus monuments. Grooved Ware deposition is predominantly in pits, and we have suggested that in the Heathrow area, and probably the Middle Thames in general, the preoccupation in the 3rd millennium was not with the sacred importance of any cult centres, but with utilising ritual and ceremony to hold communities together and apportion land and resources. This difference continued into the late 3rd and early 2nd millennia, when Beaker pottery, artefacts and practices were adopted in the Upper Thames, but are again notable by their rarity in the Middle Thames. One is left with the inescapable feeling that although the Upper and Middle Thames are part of the same river valley system, they belong to different worlds in 4th and 3rd millennia BC. The society of the Upper Thames had far more in common with that of Wessex in terms of monuments and artefact types, whilst the society of the Middle Thames was far more selective of the types of monuments and artefacts that were adopted. In short, this superficial comparison between the Upper and Middle Thames Valleys shows that the nature of the Neolithic society in both areas was different. This led to different ceremonial practices and monumental and depositional solutions to the problems of social cohesion and function and allocation of resources in the two regions.

As we will see in our final section of this chapter, these practices were to change during the period 2000–1700 BC, as people, kin-groups and the community came to terms with new conditions in society, and adapted the mechanisms of the 3rd millennium BC to a point where the manner in which land was apportioned was completely transformed.

The social origins of the landscape transformation of the 2nd millennium BC

The period between the Late Neolithic (*c* 2000 BC) and Middle Bronze Age (*c* 1600 BC) saw a major transformation of the Heathrow landscape to one principally concerned with agricultural production enclosed by boundaries marked by ditches, banks and hedges. Within the enclosed areas lay fields, waterholes and permanent settlements accessed by trackways that gradually developed along the lines of the boundaries. This was a marked shift from the character of the Neolithic landscape, which was defined by highly visible major monuments set within open tracts of land that preserve more subtle traces of human activity.

The change to a pattern of enclosed field systems and settlements implies an ethos of claiming ownership of land by individuals or communities, although this may not have been either sudden or dramatic, either in landscape or in ideological terms. In addition, the pattern of enclosure was not chronologically or morphologically consistent across the Heathrow area. It may have been either a relatively swift or a gradual and cumulative process, reflecting emerging and shifting relationships between individuals, communities and settlements, negotiated with reference to a consciousness and memory of the landscape they inhabited.

Chronology

Our first concern in trying to understand this revolution in landscape use is to consider chronology. Once again, we have no radiocarbon dates relevant to the Early Bronze Age. Therefore, ceramic evidence continues to play a large part in understanding the chronology of the 2nd millennium BC.

Firstly, we must consider the chronological overlap between Grooved Ware pottery of the 3rd millennium BC and Beaker pottery which spans the late 3rd and early 2nd millennium BC. Both Grooved Ware and Beaker utilised grog-tempered fabrics, and we have already discussed the pattern of Grooved Ware deposition. The Terminal 5 excavations produced very small quantities of Beaker pottery, and in fact there is very little in the way of Beaker pottery in the Heathrow area generally, although south of the Thames it is more common. Furthermore, if Garwood (1999, 161) is correct, then there may have been relatively little chronological overlap in the use of Grooved Ware and Beaker pottery. In ceramic terms Heathrow has a greater representation of Collared Urns, which, although still not common, are a clear element of activity of this date. Subsequently, during the Middle Bronze Age and into the Late Bronze Age there was a return to an almost universal flint-tempered tradition, and body sherds can sometimes be only broadly dated as Middle/Late Bronze Age. The Deverel-Rimbury ceramic tradition embraced a relatively conservative repertoire of forms—essentially thick-walled bucket and barrel shaped urns in coarse fabrics and smaller globular urns—generally containing better sorted and finer temper.

Lithic material can be broadly dated to the Late Neolithic/Early Bronze Age, a somewhat crude chronological range, apart from individual diagnostic artefact types such as arrowheads. Lithics in the latter part of the 2nd millennium BC become increasingly crude and flake-based, and so serve as only broad chronological indicators. Occasionally other artefacts such as the amber spacer bead (see below) can provide a finer chronological control, but as with most of the lithic material, such objects usually reside in later, not contemporary features. Furthermore, no environmental evidence that could be reliably dated to the late 3rd / early 2nd millennia BC was obtained.

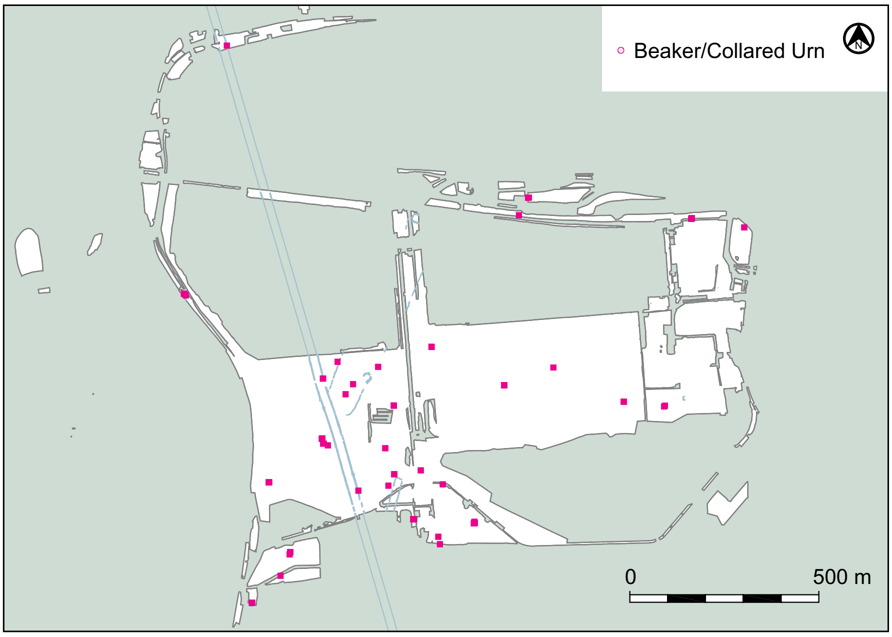


Figure 2.61: Distribution of Early Bronze Age Beaker and Collared Urn pottery

Social changes

We have argued in the previous section that by the end of the 3rd millennium BC small groups of people negotiated, through ceremonies at monuments, access to and use of areas of landscape for settlement and agriculture. Tenure of land, probably on a seasonal basis, was then confirmed by the enactment of ceremonies, which included the deposition of Grooved Ware ceramics and associated lithics. Wild fruits and nuts also accompanied the process of deposition, suggesting that the ceremony occurred in autumn. We have argued that the monumental architecture and absence of large henge monuments suggests that society remained organised around smaller communities, possibly at the kin or clan level.

Our next firm chronological horizon is defined by a raft of radiocarbon dates associated with Deverel-Rimbury pottery. The dates span the period 1600 to 1100 cal. BC and were obtained on material derived from pits and waterholes associated with fields and settlements contemporary with the full *floruit* of the Middle Bronze Age 'complex' (see Chapter 3).

The period of transformation thus coincides with the Early Bronze Age and corresponds, in terms of Needham's chronology (1996), with his Periods 3 (2050–1700 BC) and 4 (1700–1500 BC). These periods in West London, however, are better defined by the rarity or absence of diagnostic artefacts and monuments rather than their presence. There are no individual burials, barrows or large henge monuments unequivocally associated with Beaker pottery. Collared Urns, by comparison, are more abundant but still scarce. As Needham (ibid., 131) has pointed out, nationally there is a large degree of overlap in the chronology of late Beaker and the Early and Middle Bronze Age Collared Urns (Burgess 1986). For West London and the Middle Thames in general, we are therefore unable to resolve the relationship between Collared Urns and Beaker pottery, in contrast to Burgess' treatment of the link between Collared Urns and food vessels in northern Britain (ibid., 348–9).

The chronology of the Early Bronze Age lithic repertoire, represented particularly by barbed-and-tanged arrowheads, is, as already mentioned, insufficiently precise to allow us to understand changes within the period 2000 to 1600 BC. It is also difficult to determine the association of the lithics generally with Beaker and Collared Urn ceramics.

Distribution of Early Bronze Age artefacts (2400 to 1600 BC)

Figures 2.61 and 2.62 show the distribution of pottery, lithics and an amber bead that can be dated to the Late Neolithic or Early Bronze Age with any degree of certainty.

...only 156 sherds [of Early Bronze age pottery] weighing 846 g were identified (predominantly on the grounds of fabric alone). All sherds are grog-tempered, and have been assigned to two fabric types (GR1 and GR9). While the fabrics are visually very similar to the Grooved Ware fabric GR2, sherds in GR1 and GR9 are invariably oxidised, at least externally, and the few recognisable sherds are characteristic of Early Bronze Age ceramic traditions. Diagnostic sherds include rim and collar fragments from Collared Urns, and rims and comb-impressed body sherds from Beakers. The remaining sherds are all plain body sherds; some are tentatively identified as Beaker or Collared Urn where they are visually identical to diagnostic sherds.

Sherds are widely scattered across the site, usually in very small quantities [Fig. 2.61]. Condition overall is poor: with the exception of the material from pit 707016 sherds are very small and abraded with a mean sherd weight of only 2.99 g and only one context producing more than 30 g of pottery.

The diagnostic Beaker sherds came from a primary ditch fill (ditch recut 105009), and from a ring ditch (possibly a round barrow) 544182 [HE3 enclosure]. Collared Urn was recovered from the same ring ditch, and also from ditch 511058, tree-throw 570144, in Middle Bronze Age waterhole 544085, and in Neolithic pit 527124.

In all these contexts sherds can be regarded as residual finds, with the exception of the single sherd from the upper fill of the Stanwell Cursus ditch, eight sherds from ditch 511188, ten from 588271 and six from ditch 594103 (although these may be derived from pit 555632 which is cut by 594103). The Beaker and Collared Urn sherds (six sherds; 12 g) from ring ditch 544182 are highly abraded and unlikely to be in situ, although the occurrence here of these otherwise-rare ceramic types in association with at least one contemporary lith-

Plate 2.30: Barbed and tanged arrowhead SF 14004

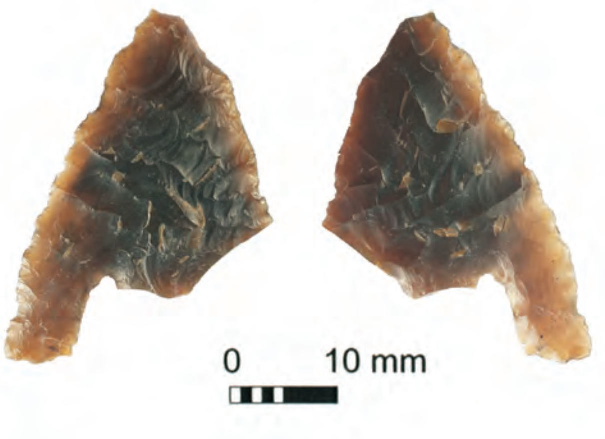


Plate 2.31: Barbed and tanged arrowhead SF 12037

ic tool does seem to point to contemporary activity in the vicinity, which may have been associated with this putative barrow.

On TEC05 the situation is rather different. Only one context contained Early Bronze Age ceramics (pit 707016), but the group consisted of 51 sherds weighing 509 g, all from a single large Collared Urn. This group appears to have been in situ, and probably represents discard of a broken vessel.

Little can be made of such a small assemblage, which (with the exception of TEC05) would appear to be largely residual. The dearth of data from this period is consistent with the wider pattern in West London, where Early Bronze Age ceramics are noticeably absent, although a collection of Beaker and Collared Urn sherds was found at Runnymede (Needham 2000, 71–2 and fig. 3.5) and a miniature Collared Urn was recovered from a funerary context at Imperial College Sports Ground, Harlington (Wessex Archaeology 2000).

(Leivers et al., CD Section 1)

Lithic material is similarly sparse (Fig. 2.62). Small assemblage size, residuality and chronologically imprecise technological evolution all combine to restrict the range and usefulness of lithics of definite Early Bronze Age date (see Plates 2.30 to 2.32). Figure 2.62 shows those lithics and amber that can with some confidence be dated to the period 2400 to 1500 BC. Of particular note are the barbed-and-tanged arrowheads which seem to cluster near the C1 Stanwell Cursus (Plates 2.30 and 2.31). In fact, two arrowheads were contained within the later re-cut of the cursus ditches in Area 49, and it is a possibility that the monument was re-modelled during this period (see above).

While the Early Bronze Age period is amply represented by residual diagnostic [worked flint] pieces, the paucity of coherent in situ assemblages dating to this time is striking; the pottery assemblage from Heathrow seems to register a similar hiatus, as do lithic assemblages from other sites in the locality (for instance RMC land, Harlington: Leivers 2006), although at others (especially Mayfield Farm, East Bedfont) large assemblages of Early Bronze Age flint work have been recovered during fieldwalking (Lewis 2000b) and at Kingsmead Quarry, Horton, relatively large quantities of diagnostic tools (especially arrowheads) indicate a very definite Early Bronze Age presence (Leivers 2005).

(Cramp and Leivers, CD Section 4)

Plate 2.32: Flint knife SF 14045

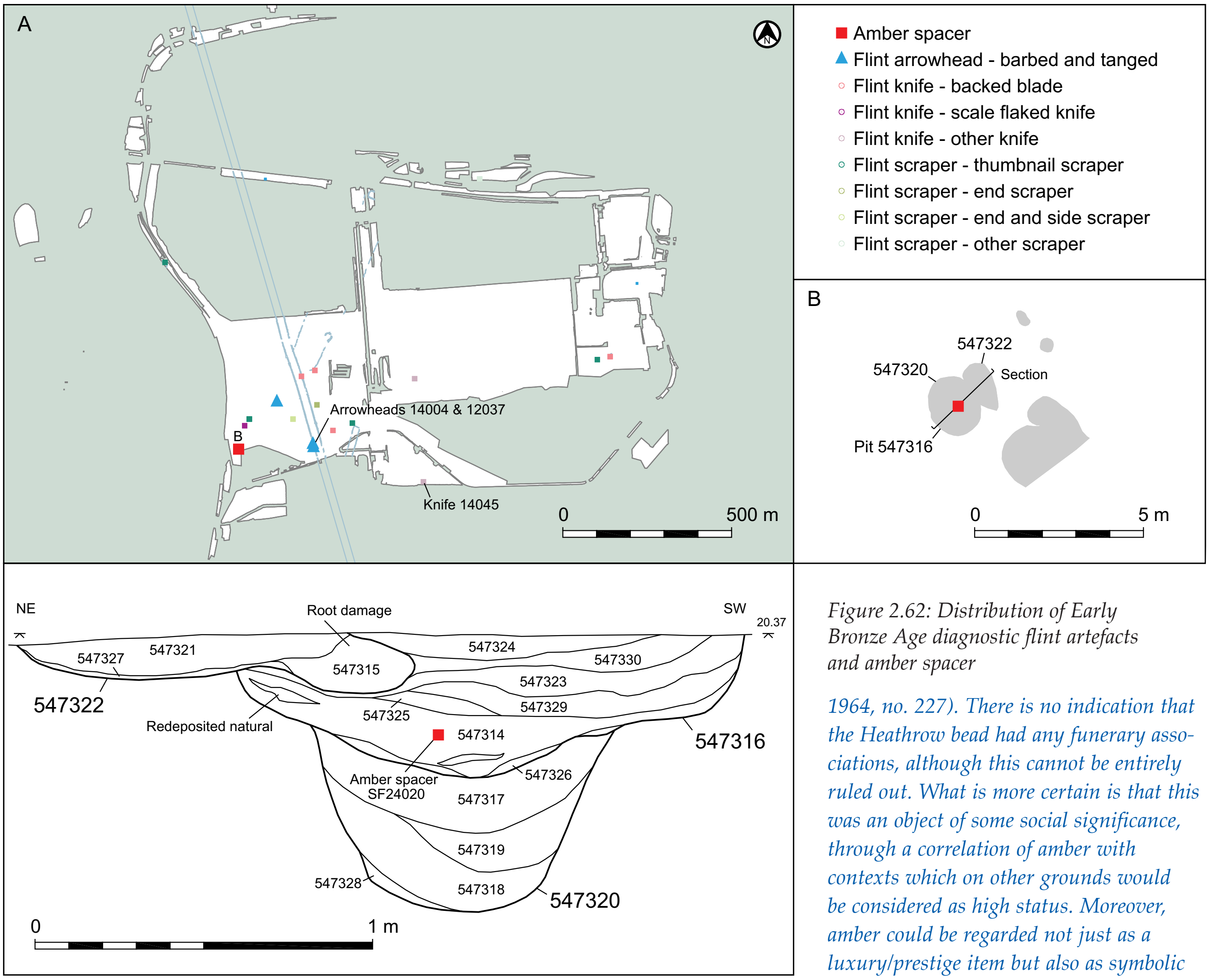


Figure 2.62: Distribution of Early Bronze Age diagnostic flint artefacts and amber spacer

The single amber bead or spacer was located in a lower fill of pit 547316, which cut an earlier pit, 547320 (Fig. 2.62; Plate 2.33). No other datable finds were retrieved from either feature, making it difficult to date them accurately.

The single amber bead came from pit 547316. This is an incomplete example of a flat, rectangular spacer bead with four V-perforations, a fairly typical Early Bronze Age type. The potential date range for amber spacer beads is wide—perhaps a millennium overall—although this is at least partly due to a lack of precision in the radiocarbon determinations (Beck and Shennan 1991, 75). It is suggested that the spacer beads at least may have had an initial primary phase of circulation while some pieces remained in circulation for a considerable time after this (ibid., 76).

Amber finds of this date have not previously been documented in the London area (ibid., fig. 6.1), and the closest parallels for this object appear to lie in the rich 'Wessex' Early Bronze Age burials of Wiltshire such as Upton Lovell (Annable and Simpson 1964, no. 227). There is no indication that the Heathrow bead had any funerary associations, although this cannot be entirely ruled out. What is more certain is that this was an object of some social significance, through a correlation of amber with contexts which on other grounds would be considered as high status. Moreover, amber could be regarded not just as a luxury/prestige item but also as symbolic of something more esoteric, even mystical, by virtue of its distant source and unusual properties. Amber, as well as jet, have been attributed magical powers and used as amulets in more recent times; in the Bronze Age such ornaments could have been part of some kind of 'supernatural power dressing' as much as status symbols in the real world (Sheridan 2003).

(Mepham, CD Section 10)

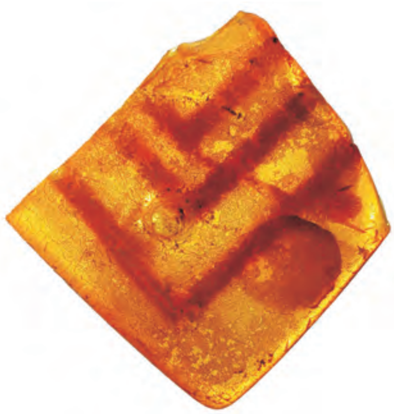


Plate 2.33: Amber bead or spacer SF 24020

We will return to the distribution of other Early Bronze Age material in the wider landscape later, but first we will consider the archaeological features of this date at Terminal 5.

Only two features could be dated with confidence to the Early Bronze Age, and these were pits 588271 and 707016. The dating of the HE3 ring ditch in Area 23 is less certain, and will examine this monument first.

The HE3 Enclosure

The HE3 Enclosure was situated at the western edge of the Terminal 5 excavations, in Area 23 (Fig. 2.63; Plate 2.34). No trace of the monument was encountered in the evaluation trenches in Bedfont Court, 70 m to the south-west, so it is likely that it was another small circular ring ditch type enclosure. Only the north-eastern third of the ring ditch was exposed, and this had clearly undergone extensive modern truncation (just over 0.75 m had been lost from the 1943 ground surface). The ditch (584081) had also been disturbed in places by modern drains as well as by machinery tracking across the excavation before the animal bone could be lifted from the fills.

The monument was probably approximately 21 m (19 m internal) in diameter, with a ditch varying from approximately 1 m to 1.4 m wide and 0.1 to 0.3 m deep, though of course these would have originally been substantially deeper (Fig. 2.63; Plate 2.35). The ditch cut through a posthole (551342) which was itself undated, but demonstrates activity prior to the construction of the monument.

None of the ditch sections gave any indication of the location of a central or external bank or mound. Where discernable, the fills consisted of a yellowish silty primary fill derived from the sides of the ditch as it cut through the underlying natural alluvium. Overlying this was a much darker brown/grey clay secondary fill which contained almost all of the finds from the monument.

The finds assemblage consisted of flint flakes and spalls; only a partially complete Late Neolithic transverse arrowhead from the upper fills of intervention 551346 could be considered chronologically diagnostic. Fragments of animal bone were recovered in an extremely poor state of preservation. Pottery consisted for the most part of undiagnostic prehistoric sherds, although there was a total of six sherds with a combined weight of 12 g of grog-tempered pottery from the upper fills of three interventions (584047,

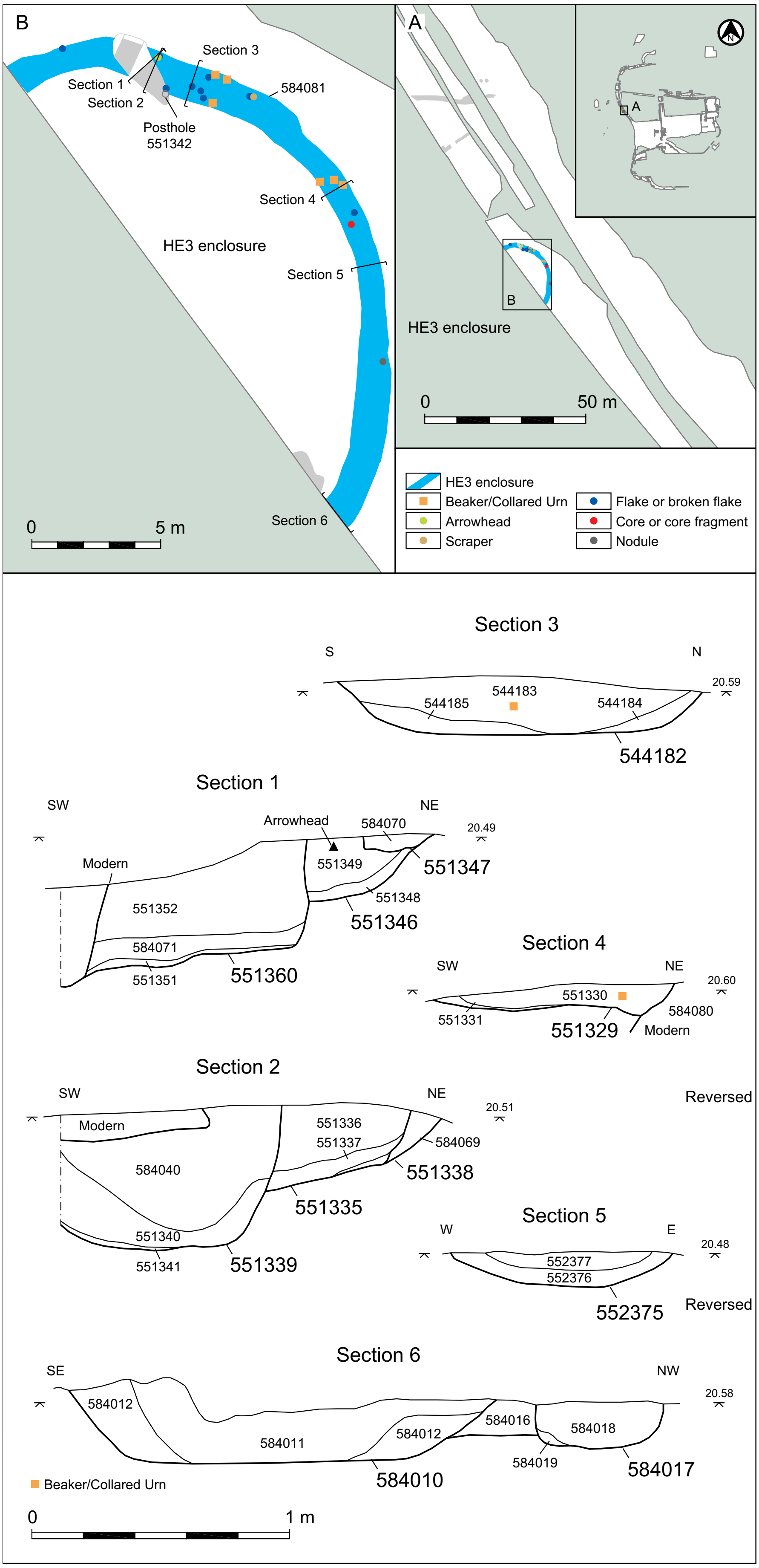


Figure 2.63: HE3 enclosure: excavated sections and pottery and flint distributions

Plate 2.34: HE3 enclosure under excavation

551329 and 544182). These have been interpreted as being fragments of Beaker or Collared Urn, dating from sometime between 2400 to 1500 BC. Unfortunately, the usual problems of dating monuments at Heathrow also pertain to the HE3 Enclosure. Some of the pottery (eg a Romano-British sherd) is obviously intrusive, and the tiny fragments of Beaker / Collared Urn could also be an unreliable date indicator. However, in the absence of any definite Plain Bowl or Peterborough Ware, it is probably safe to assume that taken as a whole, the finds assemblage dates the use of the monument to the latter half of the 3rd millennium BC at the earliest. Compared with the other circular monuments at Terminal 5, the diameter of the HE3 and HE1 enclosures are quite similar at 21 m, but HE3 appears to be a more regular circle as opposed to a horseshoe. Both HE1 and HE3 are larger and more complete than the HE2 Enclosure, which like the HE3 monument, probably also dates to the 3rd millennium BC.

Plate 2.35: Section 3 through HE3 Enclosure

Wider landscape changes in the early 2nd Millennium

The uncertainty over the dating of the HE3 Enclosure reflects the general situation in the Middle Thames area. Ceremonial monuments unequivocally dated to the Early Bronze Age are very rare. In West London as a whole, many small circular crop marks which could be attributed to the Early Bronze Age, have, on excavation, proved either undatable (eg Heathrow Site A; Canham 1978) or to date to the 4th and 3rd millennia BC (eg the Perry Oaks HE1 Enclosure; Ashford Prison ring ditch (Carew *et al*. 2006); see Fig. 2.22

and Table 2.9). A more certain Early Bronze Age monument is a barrow with a Collared Urn cremation located adjacent to the Thames on the Surrey bank at Hurst Park (Andrews 1996).

Early Bronze Age round barrows are usually associated with individualised burial rites and personalised artefacts, despite the occurrence of successions of later inserted burials. Barrows and Beakers tend to denote individuality and high status. The paucity of evidence of this type from across the large area excavated at Terminal 5 suggests that this tradition was virtually absent in the vicinity of Heathrow. Clearly people were still present in the landscape as the distribution of pottery and flintwork in Figures 2.61 and 2.62 illustrate, and they were probably living in a broadly similar fashion to the late 3rd millennium BC. The reasons for the extreme scarcity of Beaker ceramics, burial traditions and monuments are unclear, although it is possible that Beaker ritual and funerary activity were re-located to a focus on the floodplains of the Thames and its tributaries, as suggested by wider distributional patterns (Brown and Cotton 2000, 85). For example in central London, Beaker pottery has been recovered in small quantities near the Thames from sites in Southwark and Westminster (Sidell *et al.* 2002, 31). Perhaps the most impressive find in this respect is the complete bowl attributed to the Beaker tradition, placed in a small pit at Hopton Street in Southwark (Ridgeway 1999). Could there be a real shift in occupation away from the higher terrace gravels such as Heathrow, towards the floodplain? Leiver speculates that,

…a linear barrow cemetery on the southern edge of the Heathrow terrace between Stanwell and West Bedfont points to further activity in the area. If Cotton, Mills and Clegg are correct in their reading of the distribution of round barrows along the Colne Valley as on the margins of settled land (1986, 41) then this may go some way to explaining the absence of in situ lithic assemblages of this date from the Heathrow T5 excavations on the plateau.

(Cramp and Lever CD, Section 4)

In other words, the string of barrows along the southern edge of the Heathrow Terrace, along with the HE3 ring ditch on the Colne floodplain, may mark a retreat from the plateau. However, we have seen that circular crop marks may date from anywhere from the 4th millennium to the end of the 2nd (with most seemingly earlier within this range), so the date of the the Stanwell 'barrow cemetery' needs to be proved by excavation. In addition, the presence of the airport has destroyed any hope of understanding the complex landscape history of the central area of the Heathrow Terrace, so our view will always be coloured by our understanding of the margins. Conversely, the perceived tendency for Early Bronze Age material to be more prevalent on the Thames floodplain may be an artefact of better preserved, deeply stratified deposits in that environment. Despite the problems of differential preservation we do believe there is evidence for an association between use of Beakers and the Lower Thames terraces, with further evidence provided by excavations along the Eton Rowing Course (Allen *et al.* 2004). Here, situated on the floodplain adjacent to the Thames there were numerous scatters of domestic debris including lithics, hearths and Beaker and Collared urn pottery. In contrast, only a single pit was recorded on the gravel terraces (ibid., 98).

Whatever the spatial distribution of occupation in the Early Bronze Age, we have argued previously that Late Neolithic society in West London was not one of powerful individuals and leaders who emerged from the ceremonies associated with the large monuments of the day such as henges, which are present in the Upper Thames and Wessex. Instead we have suggested that the Heathrow society adopted and used Grooved Ware within an existing tradition of monument use and pit deposition, and thus did not feel compelled to construct large henges. We can hypothesise that a similar situation pertained at the end of the 3rd and the start of the 2nd millennia BC. The Beaker 'package' was adopted only in part, for example lithics, and did not find a hold in society because the society was not structured in a way that required it. Hence there are no large Beaker henges or deposits of Beaker material in monuments associate with Grooved Ware. Instead society in the Heathrow area during the last half of the 3rd millennium BC was centred on small kin or extended kin-groups, whose mechanism of land access and usage remained fundamentally unchanged: ceremonies at small circular monuments (such as perhaps the HE3 Enclosure) leading to pit deposits. Nonetheless, the nature of the pit deposits and their frequency on the Heathrow Terrace undoubtedly changed, particularly by the time Collared Urns were in use (2000–1500 BC). The centuries-old mechanism was breaking down or transforming. Society sought new ways of dealing with the problems of land access and tenure, although why this occurred we do not know. It could have been due to population growth or any number of other interrelated or unrelated factors. Nonetheless, we can see from the depositional contexts of Collared Urns an attempt to accommodate new monumental and burial traditions with old traditions of ceremonies resulting in deposition of material in pits. The following two examples from the Heathrow Terrace illustrate this point.

Firstly at Holloway Lane, 2.7 km to the north-east of Terminal 5 (see Fig. 2.1), was an aurochs which had been killed by six Conygar Hill type barbed-and-tanged arrowheads, then butchered and buried in a large pit (Cotton *et al.* 2006). The arrowheads are usually associated with food vessels and Collared Urns, and occasionally Beaker (Green 1980, 130; table VI). No ceramics were recovered from this pit, but the act of deposition clearly has echoes of the Grooved Ware pits of the late 3rd millennium BC. In fact, the pit containing the aurochs was excavated through a small pit containing Grooved Ware and other Grooved Ware pits were close by (Cotton *et al.* 2006). This juxtaposition is surely no coincidence, given the relative scarceness of Grooved Ware pits in the vastness of the Heathrow landscape. Cotton has speculated that the aurochs

Figure 2.64: Possible early 2nd millennium BC boundaries

burial may be the culmination of the Neolithic 'structured deposition' tradition (Cotton *et al.* 2006, 163), although if it is the culmination, then it also heralds changes. The aurochs was a wild animal of some rarity by the early 2nd millennium BC, and its deposition is an extreme manifestation of the wild fruits and nuts predominantly associated with Grooved Ware depositional practices. By the same token, the large pit that contained the aurochs presages the large waterholes that were dug from 1600 BC onwards to serve the Middle Bronze Age field system (Cotton *et al.* 2006, 162).

At Imperial College Sports Ground, two Collared Urns were associated with cremated remains buried in a pit. Two radiocarbon dates from these cremations span the range 1920–1750 BC and 1880–1670 BC (A. Barclay pers. comm.). At Hurst Park, Surrey, the barrow enclosing a Collared Urn cremation burial also enclosed a shallow oval 'scoop' or tree-throw containing Grooved Ware. Located 30 m to the west of the barrow was a large rectangular feature containing six sherds of Peterborough Ware (Andrews 1996).

Returning to Terminal 5, 137 m northwest of the HE2 Enclosure, pit group 821 consisted of two pits containing Grooved Ware (708007 and 695058) and an undated pit (707021) cut by another pit (707016) containing relatively large quantities (51 sherds, 509 g) of Collared Urn (see Fig. 2.57 above). These sherds were all from a single large Collared Urn. This group appears to have been *in situ*, and probably represents discard of a broken vessel. There were a few flint flakes but no traces of cremated bone. The Early Bronze Age pit (707016) was in turn cut by several Middle Bronze Age waterholes and a fragment of ditch.

Here the juxtaposition of the Grooved Ware pits and the pit containing Collared Urn is similar to the relationship between the pits at Holloway lane, even if the contents of the Early Bronze Age pits (aurochs and pot) are vastly different. Throughout this chapter we have shown the importance of places and locations to people through time, how places that were important became subsumed within the C1 Cursus for example. It would appear in West London at least that circumstantial evidence, such as the juxtaposition of these pits, points to a close chronological relationship between Grooved Ware and Collared Urn use, and that certain places retained their importance from the late 3rd millennium into the early 2nd.

These examples can all be read as an attempt to continue the tradition of ceremonies culminating in the deposition of material employed in the ritual. It may well be, however, that these attempts at continuing the tradition of negotiated land access eventually proved insufficient and that social agreements following ceremonies of deposition gave way to more formal agreements manifested in more blatantly physical demonstrations of the negotiation process. Perhaps the barrows and cremation burials provide the first indication of a concern with treating certain individuals differently and erecting monuments around them. It would be logical to suggest that this provided the more formal mechanism for asserting land tenure which people adopted in the early 2nd millennium BC. However, even in these cases (such as the Hurst Park burial) we see a clear link with the practices of the 3rd millennium BC, which we have argued were concerned with ceremonies relating to affirmation of land access and resources. The practice of cremation and the construction of barrows at these locations could represent a change in the methods of laying claim to land and resources. In this context, it is possible that the HE3 Enclosure at Terminal 5 represents a truncated barrow, since it is similar in form to that at Hurst Park. Instead of the deposition of ceramics, lithics and wild plant and animal produce following ceremonies, human bodies were cremated, buried with Collared Urns and the places marked with monuments. The monuments were clear physical markers of territory and the association of individuals of defined ancestries with that land.

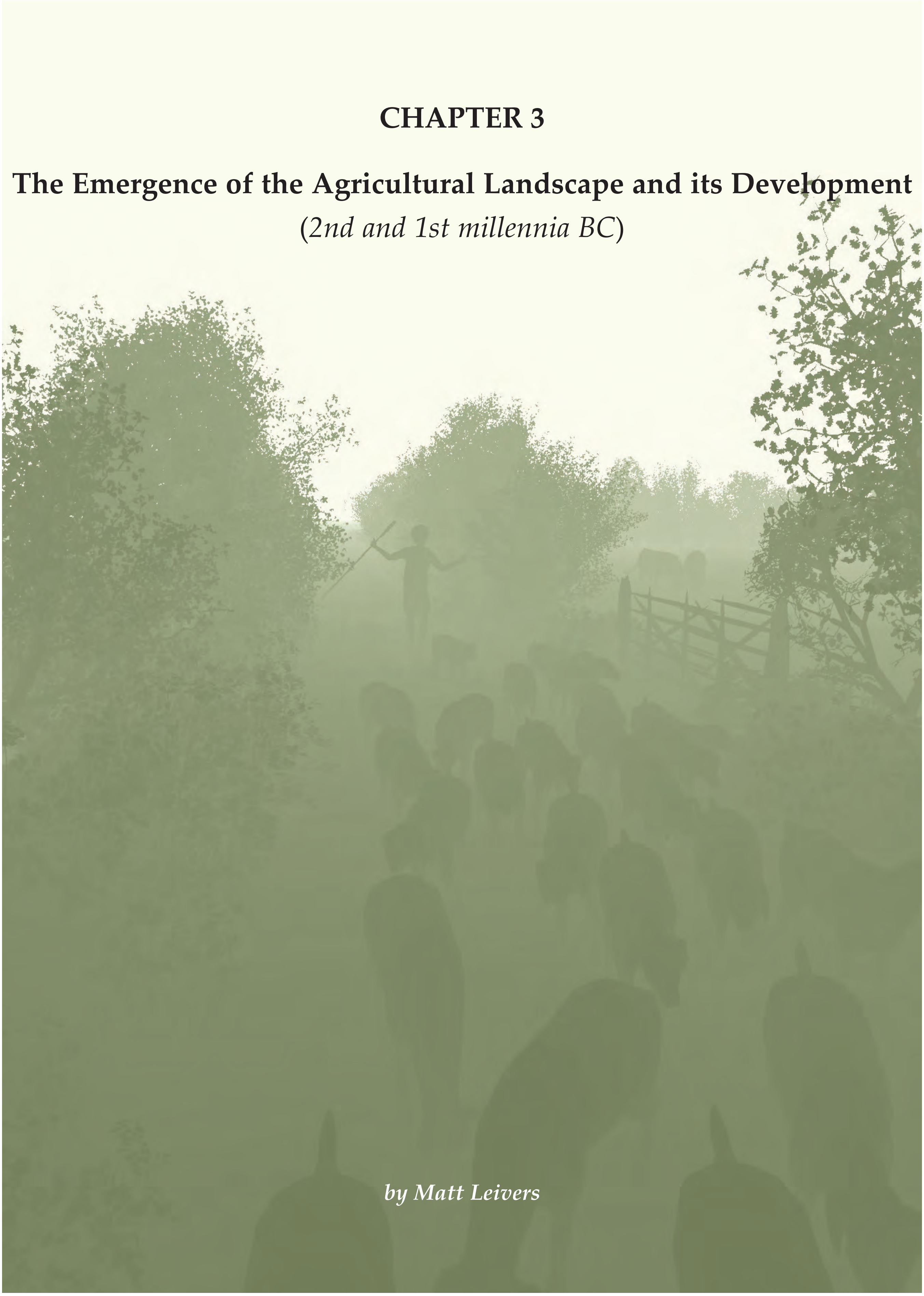
Once again we have no refined chronological outline for this process, and do not know how long these practices continued. Put crudely however, the Hurst Park Collared Urn fits in the Late Series of Burgess' classification, which in turn accords with Needham's Period 4, 1700–1500 BC (Needham 1996, 132). These would appear to be crucial centuries, since evidence from Terminal 5 indicates that the first division of the landscape by formal field boundaries took place during this period or even earlier. Most importantly, Needham (1996, 132) has suggested that Deverel-Rimbury pottery probably originated in his Period 4, which accords with the appearance of land division and the first proper settlements (see Chapter 3).

If we accept that the adoption of cremation burial, sometimes accompanied by barrows and Collared Urns, was an attempt at formalising claims to land and resources, then it would appear that after an unknown period even this approach was not sufficient to achieve a long lasting agreement over access to resources. The strategy of excavating a series of banked and ditched boundaries across the landscape was thus a logical progression in a series of progressively more overt attempts at claiming land tenure. The Early Bronze Age and Grooved Ware pits at Terminal 5 also hint at the start of this process. To the south-west of the Pit Group 821 (see above; Fig. 2.64 A) a sinuous irregular ditch extends for approximately 123 m in several truncated lengths. At one or two locations it is cut by the NW-SE aligned ditches of the Middle–Late Bronze Age field system. To the north-east of pit group 821, the alignment of the ditch is continued for a further 36 m by a series of short lengths of ditch, elongated pits and tree-throws (entity 2895). At one location this alignment is also cut by the field system ditch. A clearer example of the development of the Middle Bronze Age field system from the landscape of the early 2nd millennium can be seen in Area 54a (Fig. 2.64 B). Three tree-throws (552281, 552285 and 552289) were cut by a middle Bronze Age field boundary ditch 552309 along the same alignment. Just to the north and on the same alignment as the tree-throws and the late ditch, was pit 588271, which contained 10 sherds of grog tempered Beaker or Collared Urn pottery and a handful of flint flakes. We are not suggesting these two separate instances of earlier features being elaborated or replaced by boundaries represent the start of the 2nd millennium field system; merely that they provide examples of how the earliest field boundaries could have developed as a series of irregular features originating at locations of historic importance in terms of land appropriation.

It would thus appear that the unified community which built the Neolithic monumental landscape of 3600 to 3300 BC had itself undergone transformation during the 3rd millennium BC. We have suggested that after many years of the community living contentedly within the monumental and social architecture they had constructed in the latter half of the 4th millennium BC, the second half of the 3rd and early 2nd millennia BC saw an increasing trend towards more overt ceremonial and physical affirmation of claims to land and resources. It would thus appear that the unity of the community was breaking down, and these mechanisms may have developed as an increasingly desperate attempt to maintain orderly access to resources, and therefore to retain community cohesiveness. Indeed, if we accept the physical division of the landscape by the first field boundaries as being a logical progression of this process, then it would appear that the community of kin-groups had finally broken down.

It could be argued that the act of landscape division was itself an expression of the importance of the individual and the small group, an imperative which elsewhere in the country was expressed by the adoption of high status monuments and artefacts such as barrow burials, rich grave goods, metalwork, Beaker and other forms of ceramics. However, in the Heathrow area there may have been a more egalitarian backdrop to the apparently personalised activity of splitting off plots of land from a previously communal landscape.

In the following chapter we will examine how the landscape was divided and how it developed through the latter half of the 2nd millennium BC. We will show how the individual landholdings reflected the individual kin-groups, and how these locked together to form a field system which was the product of the overarching community.



CHAPTER 3

The Emergence of the Agricultural Landscape and its Development

(*2nd and 1st millennia BC*)

by Matt Leivers

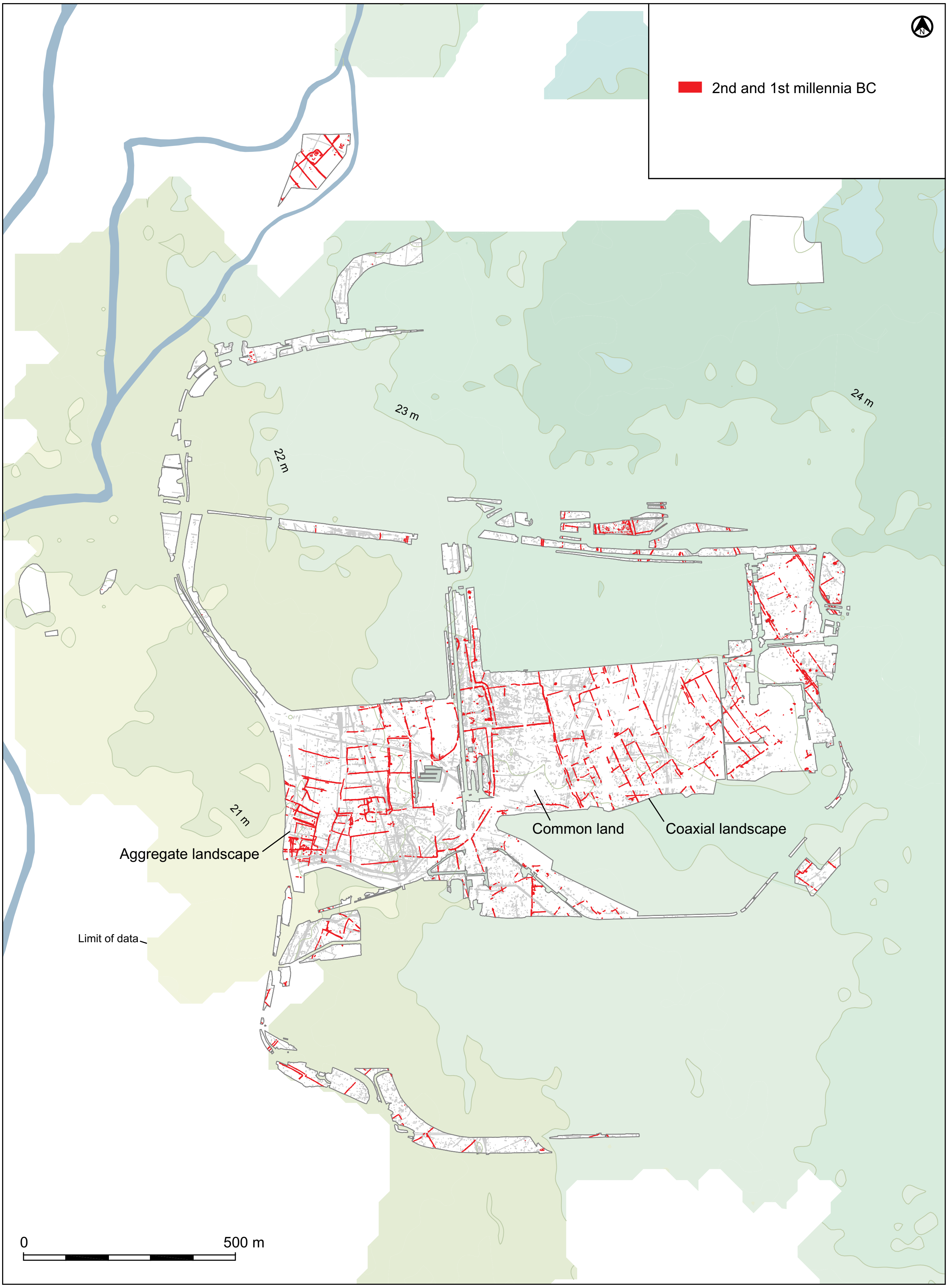


Figure 3.1: Bronze Age landscape at Terminal 5

Introduction

At some point after the end of the 3rd millennium BC, the ways in which the social organisation of the landscape was made manifest underwent a very marked change. Previous analyses of the Heathrow evidence typified this change as 'from one dominated by the monuments and practices of the preceding two millennia to a landscape of fields, hedgerows, settlements and trackways' (Framework Archaeology 2006, 95), and while this remains an accurate broad-brush summation of the transformed landscape, the detail of these changes can now be much more fully understood, thanks to the increased proportion of the resulting field systems and settlements that have been excavated.

The available evidence now comprises portions of at least seven (but perhaps as many as nine) settlements of varying sizes, each set within its own system of fields and enclosures (such groupings of a settlement within its system of fields and enclosures form the basic analytical units of this chapter, and are referred to as *Farmsteads*; see Fig. 3.9 and Table 3.3 below), connected by double ditched trackways flanked by embanked hedgerows. Pits, wells, fences and other more ephemeral features are scattered throughout the landscape, as are ramped waterholes which provided sources of water for herds of cattle.

The trackways and farmsteads have undergone varying degrees of recent truncation. In general, the eastern farmsteads and trackways have been subject to most destruction but others (especially parts of Farmstead 3) have also undergone severe truncation. This variability in survival has affected analysis, with, for example, very few of the field or trackway ditches retaining any stratigraphic relationships. This has proved a major obstacle in understanding the history of the field systems' development. Even from an incomplete plan, however, it is clear that the fields within each landholding maintained a general coherence in size, shape and orientation, although these properties can differ markedly between each farmstead. On the western side of the excavations—in what will be referred to as the aggregate landscape (Fig. 3.1)—fields tend to be either square (in proximity to settlements), to have no apparent dominant orientation (towards the southern edge of the excavated area), or to be aligned broadly east-west (running down into the valley of the Colne), even though the dominant alignment of the trackways is north-south. On the eastern side of the excavations—in what will be referred to as the coaxial landscape—the pattern is very much more regular, with the long axis of the fields following the dominant trend of the trackways from south-east to north-west, swinging more generally northwards towards the northern edge of the excavated area. Whether this difference is due to topography, chronology, social organisation, or some mixture of factors will be explored throughout this chapter. Between the boundaries of the two identified landscapes is a three hectare plot of land which seems to have belonged to neither, but to have been accessible from both—this has been termed Common land (discussed below).

Earlier accounts of the changes taking place throughout the 2nd millennium, both at the local (Framework Archaeology 2006; Yates 1999), and regional (Yates 2001; 2007) levels, have accepted the assumption that the changes in landscape organisation visible at the beginning of the Middle Bronze Age reflected a shift in social organisation from egalitarian, communal and cooperative to divided and competitive. Such suggestions rely on the notion that access to resources became increasingly pressured throughout the early 2nd millennium, to the point at which the existing social systems could no longer be made to mediate between conflicting claims and a new system was consequently required to solve the resulting conflicts. However, the creation of a pattern of field systems and settlements need not imply such a disjunctive or revolutionary change, and could instead indicate the continuation of successful social practices. While it may be that some elements of Enclosure in the 18th and 19th century AD English sense may apply (the replacement of open fields by smaller plots for instance) a uniformitarian understanding of the entire process may not be appropriate, particularly in terms of literal readings of the relationships between social organisation and its physical representation. There is little indication of—for instance—the privatisation of common ground. Indeed, it can be suggested that pains were taken to avoid the partitioning of the landscape into privately-held units to the exclusion of the common.

What is beyond doubt is that the ways in which people chose to construct physically their environments altered dramatically. Why those choices were made and what the results of those choices might have been are the basic questions this chapter attempts to address.

Chronological framework

As previously, the chronology outlined by Needham (1996) provides the basic framework for the period under discussion in this chapter (Fig. 3.2), within which finer resolution can sometimes be provided by radiocarbon dates, supported by ceramic and metalwork assemblages.

A series of 67 radiocarbon determinations was obtained, the majority from waterholes, which fall within Needham's periods 4, 5, 6 and 7 and in the succeeding Early Iron Age (Figs 3.3 and 3.5). In addition, one early determination was returned from a feature apparently belonging to the 2nd millennium field system.

The inception of the agricultural landscape

At some time around the middle of the 2nd millennium BC the Heathrow Terrace began to be divided into a series of interlocking and interconnected farmsteads (see Fig. 3.7 below). The best preserved of these suggest a basic unit consisting of an enclosed settlement with a single north-south trackway leading into a system of smaller and larger fields and enclosures. Within the fields and settlements, wells, waterholes and other features recur.

The picture revealed by excavation is necessarily of this farmed landscape in its abandoned form, once it had been lived in and altered for centuries: a developed system representing the culmination of the activity of generations of inhabitants of the Heathrow Terrace. Identifying earlier states of the farmed landscape is not easy, but there are a number of clues to suggest how it began and how it altered.

Period 3: pre-1700 cal BC

The single radiocarbon determination associated with the 2nd millennium field systems (SUERC-11569: 3520±35 BP, 1940–1740 BC) comes from waterhole 510047, which contained Deverel-Rimbury ceramics throughout its fills (above, below and within the dated deposit). The result can most certainly be discounted as accurately dating its context: it was obtained from a measurement made on humic acid from a bulk organic sample, and it is unclear if the date is on reworked earlier material (eg eroded from an existing land surface at the side of the feature).

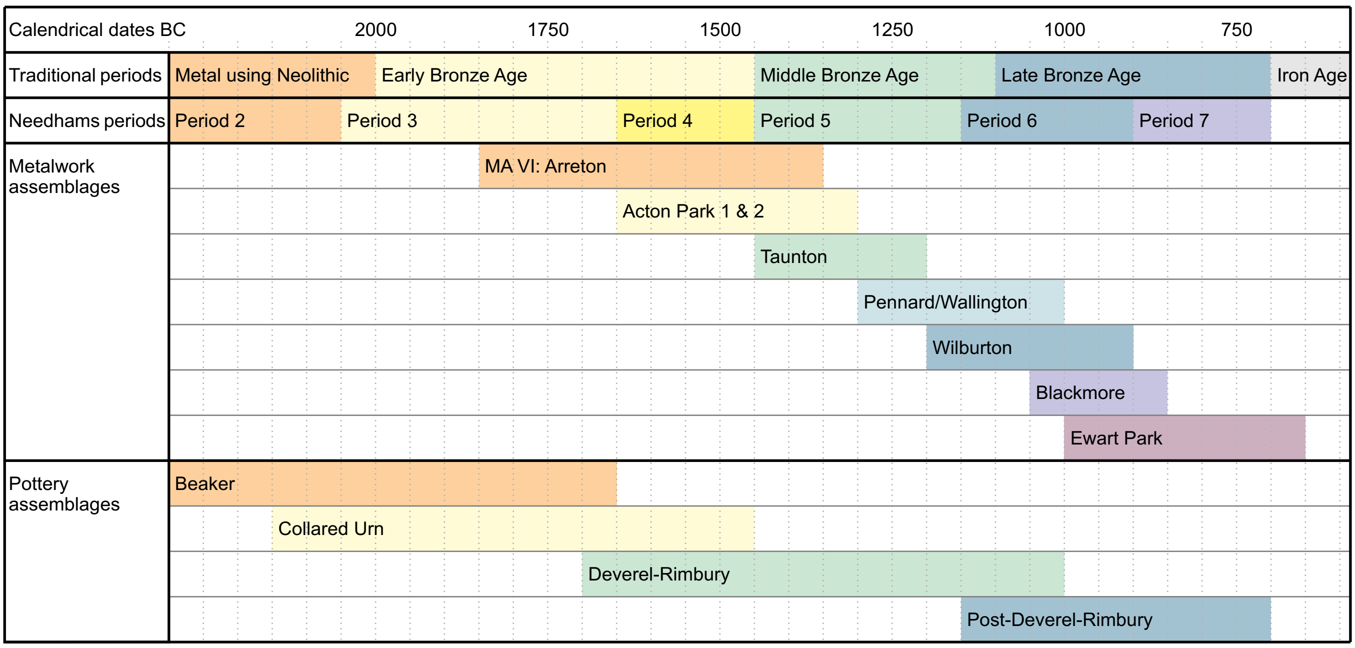
There is then no reliable absolute evidence dating the beginning of the agricultural landscape to earlier than 1700 BC. Given this lack of dateable material and the general low-density scatter of diagnostic late 3rd and early 2nd millennium artefacts (primarily Beaker and Collared Urn ceramics, but including a limited number of lithics and fauna), it is very difficult to identify the beginnings of this new agricultural system. The only indications of an early 2nd millennium date for its inception are circumstantial, and come from palaeoenvironmental material preserved in later features belonging to the developed field systems, primarily waterholes.

These waterholes were set in a landscape defined by a series of ditches and embanked hedgerows of considerable antiquity, perhaps as much as 500 years old. This conclusion is based on the pollen spectra within the waterholes, which contained strong indicators of ancient woodland (Wiltshire in Framework Archaeology 2006, CD Section 11).

Given the impossibility that the hedges could have been formed from ancient woodland through assarting, the presence of these indicators in the pollen spectra was taken to mean that the hedges were themselves ancient. In a number of instances the occurrence of a relatively large number of woody taxa with characteristically poor pollen production and dispersal (especially maple, hawthorn, elder, purging buckthorn) does suggest the proximity of certain features (mainly waterholes) to an old woodland-edge environment, but there is no means of assessing whether these ancient woodland indicators derive from well-established hedgerows, from long-lived stands of trees, or indeed whether they were confined to any one microhabitat. Another possibility is that the hedges, although themselves not ancient, derived from ancient woodland not through assarting, but from selection. Francis Pryor has suggested that winter hardwood cuttings may have been taken from local woodland and planted to form hedges, in very much the same way as the post-medieval enclosure divisions of the English landscape (Pryor 1999, 87). Although this is entirely speculative, in the absence of *any* supporting stratigraphic or material evidence for anything other than a rather fleeting and transitory Early Bronze Age presence on the Heathrow Terrace, it does provide a plausible alternative for the rich species diversity present in the pollen record.

Consequently, it is perhaps now unwise to insist too strongly on the 'ancient hedgerow' argument and to return the inception of the agricultural landscape to the second quarter of the 2nd millennium BC.

Figure 3.2: Chronological framework



Period 4: 1700–1500 cal BC

Five determinations (Fig. 3.3) lie slightly earlier than the majority from dated Middle Bronze Age contexts, and as such are worth considering individually.

Wk-10031 (3260±57 BP; 1690–1420 cal BC) dated *Quercus* sp. sapwood chips interpreted as woodworking debris within the shaft of well 156031 in the fields of Farmstead 3 (for descriptions and locations of the various farmsteads see below and Fig. 3.7). This woodworking was considered to be an *in situ* manufacture of a timber revetment to strengthen collapsing wattle well-shaft lining. However, this determination cannot date the activity, since a second determination on another *Quercus* sp. sapwood chip in this context gave 1400–1230 cal BC (Wk-10028: 2942±59 BP). Additionally, wooden objects (a *Pomoideae* sp. ard spike and a *Quercus* sp. handle of a socketed axe) from deposits earlier than the well shaft gave 1440–1290 cal BC and 1460–1300 cal BC respectively (NZA14905: 3019±65 BP and NZA14904: 3103±65 BP). The early date of Wk10031 is therefore considered a *terminus post quem* for an event dated more accurately by Wk10028 (see below).

Wk-21695 (3270±33 BP; 1630–1450 cal BC) dated *Prunus* roundwood charcoal from a pit (142010) not observed during excavation, but which was identified during post-excavation analysis on the basis of a very dense concentration of burnt flint and other finds. The putative feature cut the uppermost fill of the Neolithic HE1 Enclosure. All of the associated ceramics are likely to be post-Deverel-Rimbury (28 sherds weighing only 28 g; three are large enough to date with certainty), while the lithics include diagnostic Mesolithic, Neolithic and Bronze Age types. The uncertainties regarding the feature's extent and the chronological mixing of its contents mean that the charcoal is not certainly associated with any of it. At best, it provides a *terminus post quem* for the Late Bronze Age ceramics.

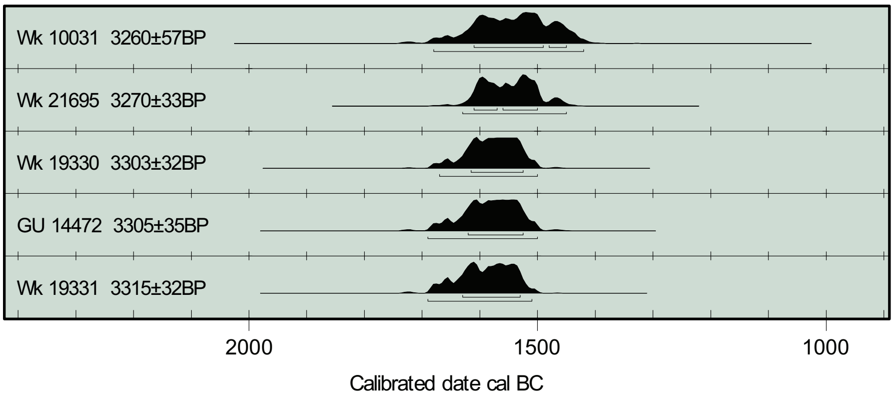


Figure 3.3: Radiocarbon dates predating 1500 cal BC

Wk-19330 (3303±32 BP; 1670–1500 cal BC) dated a charred grain of indeterminate *Triticum* sp. from a fill of waterhole 693006 in Farmstead 8. Only two such grains were recovered, in poor condition, from amongst an apparently dumped lens of oak charcoal. If the charcoal and seeds are contemporary then the determination seems to indicate some process resulting in burnt grain in this period, and provides a reliable date for this feature. Alternatively, the seeds may be an accidental inclusion, and the date a *terminus post quem*.

SUERC-11570 (3305±35 BP; 1690–1500 cal BC) dated humic acid from sediments in well/pit 557027 in Farmstead 2. That the true date of this feature lies at the younger end of the distribution is suggested by the presence in the deposit immediately below of a large assemblage of animal bones, one of which gave a determination of 1510–1390 (Wk 19326: 3176±33 BP).

Wk-19331 (3315±32 BP; 1690–1510 cal BC) dated *Rosa* sp. (rose hip) seeds from the lowest fill of pit 646068 in the outer 'D'-shaped enclosure of Farmstead 3. Although the date has a low index of agreement when modelled as contemporary with its context *(Healey, CD Section 20)* and is possibly a *terminus post quem* as a result, the frequency of rose hips and seeds in this deposit (along with blackberry, hawthorn and elderberry seeds, and a sloe stone amongst a larger assemblage of woody taxa, woodland herbs, nitrophilous and grassland taxa) suggests that the date of the seed may in fact be that of the feature.

What then do these dates suggest of activity on the Heathrow Terrace during the second quarter of the 2nd millennium? Given that there are very few reliable dates, a degree of caution is necessary in making any strong claims for the establishment of the agricultural landscape in this period. Both Wk-10031 and Wk-21695 could belong in Needham's Period 5 (1500–1150 cal BC) depending on where along the distributions their true dates lie, but regardless the activity they indicate is somewhat ambiguous. The occurrence of Wk-21695, Wk-10031 and Wk-19931 (which is highly unlikely to lie later than 1500 cal BC at its upper extremity) in Farmstead 3 does suggest that the establishment of the Farmstead may lie in this period. As we will see, the majority of the earliest possible dates in Period 5 are also from Farmstead 3. On balance then, given that the majority of these dates derive from deposits in waterholes and pits, which are likely to be slightly later than the establishment of the field systems, it seems probable that at least Farmsteads 3 and 8 were laid out in the period 1700–1600 cal BC.

In the case of Farmstead 3 (the large 'D'-shaped enclosure in the western central portion of the excavations, the settlement within the inner enclosure, and associated field systems), there is a good claim to primacy. Not only does this farmstead contain some of the earliest dated features (a well located in the corner of a field and a waterhole within the settlement area), but it is also qualitatively different to the other settlements in terms of its morphology. It appears to be at the heart of the

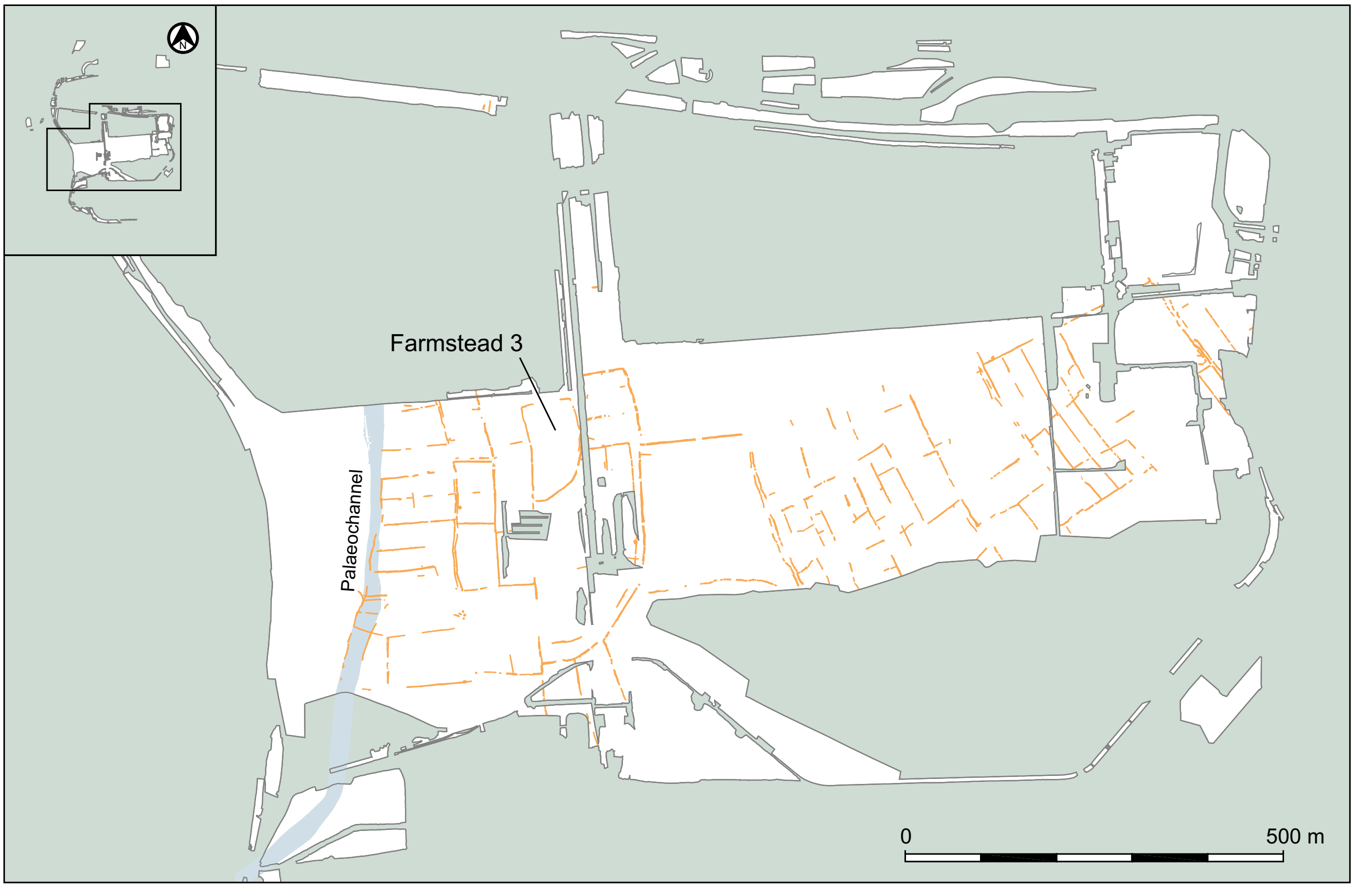


Figure 3.4: The earliest visible form of the Bronze Age agricultural landscape

aggregate landscape; it can be suggested to be earlier than some of the later elements of that landscape (perhaps earlier than Farmstead 2; likely to pre-date the northern part of Trackway 2, which turns around the outer 'D'-shaped enclosure's north-eastern corner, suggesting that the enclosure was already in existence when Trackway 2 was formalised); and it remained as a focus for depositional practice and other activity longer than any other farmstead (for at least 800 years). The evidence for an early establishment for Farmstead 8 is far more equivocal, relying on a single radiocarbon date.

Building the system – the development of farmsteads

Studies of 2nd and 1st millennium BC field systems elsewhere in southern Britain have identified two main forms of physical landscape organisation. Aggregate systems of fields are added together on a piecemeal basis (Bradley 1978, 268–9) and have no necessary dominant axis (Yates 2007, 15). Coaxial systems however have a prevailing orientation and appear to be laid out in a single operation (Fleming 1988).

At Heathrow, both of these types are present: on the western side, in Farmsteads 1, 2, 3, 5 and 12 (see Fig. 3.8), there is an aggregate arrangement: the fields are generally rectilinear but without a shared dominant axis, and blocks are clearly added piecemeal rather than in adherence to a pattern. However, on the eastern side the system is coaxial. David Thomas Yates typifies such systems as

> *…marked out by unswerving linear boundaries seldom allowing variation for topographical obstructions. They take no account of existing land division, nor do they normally take account of established monuments in their path… Integrated droveways, marked by paired ditches or other divisions, may be incorporated to ensure controlled movement…*
>
> *(Yates 2007, 15)*

This is a description which applies very precisely to the eastern portion of the excavated Heathrow landscape. Richard Bradley notes that coaxial and aggregate systems can represent stages in settlement expansion (1978, 269), and if this were the case at Heathrow, the question then becomes which is earlier, the aggregate or coaxial system?

Internal chronology of the early field systems

As discussed above, although there are no determinations from field boundaries, the available radiocarbon evidence can be read to suggest a chronological primacy for Farmstead 3, with an equivalently early date for some form of activity in Farmstead 8. The feature in this farmstead containing the early material lies at its southern end (see below). This is revealing since—as will be seen once the coaxial farmsteads are considered—these were not laid out wholesale, as Fleming (1988) suggested such systems tend to be. While there is no apparent chronological sequence from west to east across the Heathrow Terrace, we will suggest that the coaxial systems developed from south to north in a series of three expansions. It may then be the case that the southern ends of the coaxial farmsteads are contemporary with Farmstead 3.

Period 5 and 6 developments in the aggregate farmsteads are likely to have involved some reduction of the original extent of Farmstead 3 (discussed further below), but it is possible to hypothesise that in its earliest visible form the agricultural landscape—dating to Period 4—appeared as in Figure 3.4.

The most important feature to note about this arrangement is that the sole location of settlement is in the 'D'-shaped enclosure of Farmstead 3. This reconstruction suggests a single, relatively large, centralised dwelling place, set within extensive field systems which—as we shall see—became increasingly fragmented throughout the 2nd millennium.

The social context of landscape division

The creation of the first land boundaries in the second quarter of the 2nd millennium BC marks a very visible change in the archaeology of Heathrow, from an open landscape containing a few earthworks and pits but no signs of any permanent or even semi-permanent settlement, to one that was densely organised and occupied. We may then pose the following question: what factors led to this very radical change in the material expression of social organisation? Does the establishment of a 'divided' landscape equate with an increasingly divided society, with the community fragmenting into smaller constituent groups? This is most often assumed to be the case, but we need to ask why the division of land would equal the division of society. Indeed, at the outset this does not appear to have been the case, although it is quite possible to read the evidence in this way at a slightly later point in the landscape's history. In addition, one would perhaps expect to see other forms of evidence for resource stress, increased competition or the fragmentation of society alongside the establishment of field systems.

From an alternative perspective, it is possible to interpret the construction of field systems on the scale of those at Heathrow as a massive communal effort requiring the input and co-operation of people on a scale far in excess of that involved in the building of the major ceremonial earthworks of the Neolithic period. Andrew Fleming argues along these lines in his discussion of contemporary field systems on Dartmoor, suggesting that individual farms were not 'small-scale unit[s] of heritable private property', but rather elements of

'neighbourhood groups'…possibly based on extended families, living in particular districts within field systems and themselves owing greater loyalties to the larger 'communities' which may have been the sovereign land-holding bodies.

(Fleming 1988, 120)

The position taken at the outset here then is that the establishment of field systems need not necessarily equate with *either* societal fragmentation *or* cohesiveness: it is as easy to envisage an agrarian golden age as suggested by the palaeobotanical evidence as it is a series of bickering kin groups packed cheek-by-jowl across the Heathrow Terrace, which the division of the fields into farmsteads can be taken to imply.

Instead, the establishment of these field systems can more usefully be read as one element of a series of material changes which make the Middle Bronze Age more than an abstract chronological division. The adoption of a suite of new materials—Deverel-Rimbury and associated ceramics, new and more widespread forms of metalwork, field systems, permanent settlements and an altered economic base with the adoption of large-scale agriculture for the very first time in southern England—mark a radically different material culture for the period after perhaps 1700 cal BC. These changes would undoubtedly and inevitably have led to social pressures (which, it should be remembered, can be positive as well as negative), and these would have been played out in turn against the backdrop of the dynamic material world which gave rise to them and to which they gave rise.

These considerations still leave unaddressed the question of why divide the landscape at all. What impetus can there have been for such a mammoth undertaking? The Bronze Age agricultural landscape around Terminal 5 potentially encompasses upwards of 4000 hectares (on the basis of archaeological investigations on the Heathrow Terrace east of the Colne which have encountered 2nd and 1st millennium field systems, discussed in more detail towards the end of this chapter), and although it is unlikely that all these formed part of a single 'system' or were exactly contemporary, the vast scale of the undertaking in creating such an expanse of enclosed land cannot be overestimated.

Ostensibly, the field systems appeared from out of nowhere. There are no convincing contenders for Early Bronze Age precursors anywhere within the Terminal 5 excavations, and although it could be argued that continued cleaning of ditches would remove evidence of earlier phases of use, the same cannot be true of other sorts of negative feature. Where then are the other types of evidence that would be expected to accompany an earlier phase of enclosed mixed farming? They are simply not there, and this is the strongest suggestion we have that the Middle Bronze Age field systems were entirely new.

Still, why build them? One possible answer is that, while the fields themselves were new, the processes of which they were a part were not. Francis Pryor has argued that 'animals only have to be kept in fields when their population… reaches a point where the available grazing needs to be managed with greater control' (1999, 82) and this may be one clue to the apparently sudden emergence of a new economic system. Earlier, less intensive periods of stock rearing may have involved smaller flocks wandering more-or-less freely through woodland clearings or largely open ground.

These questions might be addressed through studying the ways in which the landscape changed throughout the 2nd millennium BC. By seeking to understand these physical developments, we can attempt to interpret the social dynamics to which they gave rise and that drove them.

Period 5: 1500–1150 cal BC

The majority of the available radiocarbon determinations lie in this period (Fig. 3.5). There is no indication of separate phases of activity corresponding to Needham's division between periods 5 and 6 at 1150 cal BC, although far fewer dates centre on 1300–1200 cal BC than fall either side of it, perhaps indicating that two main phases of occupation did occur, separated by a short period of retrenchement after 1300 cal BC. This period (1300–1200 cal BC) corresponds approximately with the date of the only Bronze Age metalwork found during the Terminal 5 excavations (see below).

In terms of their physical distribution, a broad pattern exists in the locations of the radiocarbon samples. No dates relate to features of the coaxial system prior to the determination (Wk-18459; 3215±31 BP; 1530–1420 cal BC) on a wooden stake driven into the base of freshly-dug waterhole 510047 at the southern end of Farmstead 8, and a pair from Farmstead 6 (Wk-10033; 3097±74 BP; 1510–1190 cal BC (93%) and 1180–1130 cal BC (2%) and Wk-10034; 3091±57 BP; 1500–1210 cal BC). The 21 determinations lying between Wk-18459 and Wk-10033 all relate to features of the aggregate landscape, in Farmsteads 1, 2, 3 and 5.

The earliest determinations for Farmsteads 4, 10 11 lie post-retrenchement (Farmstead 4: Wk-18456; 2871±29 BP; 1190–1170 (2%) and 1160–980 (93%) cal BC; Farmstead 10: OxA-18031; 2906±30 BP; 1260–1240 cal BC (5%) and 1220–1040 cal BC (90%); Farmstead 11: Wk-18463; 2989±28 BP; 1300–1110 cal BC).

The available radiocarbon dates are somewhat equivocal, but there is a broad indication that elements of the western aggregate system predate elements of the eastern coaxial system.

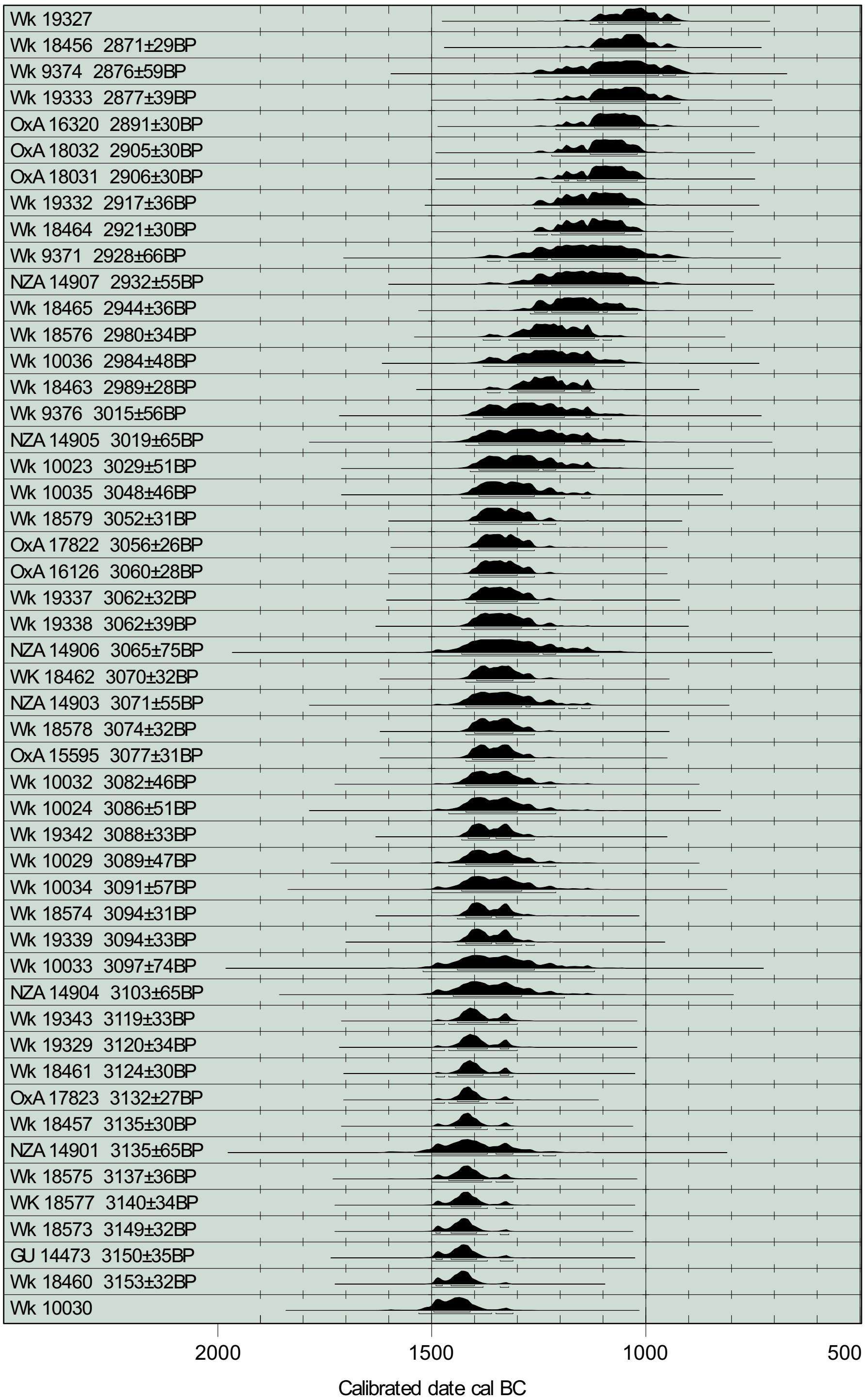


Figure 3.5: Radiocarbon dates 1500–950 cal BC

Elements of the modelled chronology, and possible ranges of occupancy for the better-dated farmsteads, are shown in Table 3.1.

On the basis of these dates it is not unreasonable to suggest that settlement within the aggregate system predated settlement within the coaxial. The scheme adopted here is that—at some point around 1400 cal BC—the large landholding of Farmstead 3 was subdivided, with Farmstead 2 established in its former south-western corner. Farmstead 1 may have been established at this time, and it seems likely that at least the initial phase of expansion of the coaxial farmsteads was broadly contemporary.

Determining the order of establishment of the individual settlements is difficult, because the majority of the radiocarbon determinations derive

	1700	1600	1500	1400	1300	1200	1100	1000	900	800	700	600	500
Farmstead 3	1700	**1600**						910					
Farmstead 8	1700	**1600**						920					
Farmstead 6		**1600**	1520					940					
Farmstead 7		**1600**	1500			1100							
Farmstead 5		**1600?**	1530	1380									
Farmstead 1			1520	**1400**	1250								
Farmstead 2			1510	**1400**	1260								
Farmstead 4				**1400**			1130						410
Farmstead 11					**1320**				800				
Farmstead 10						**1220**	1000						
Preferred date of establishment in **blue**													

Table 3.1: Proposed date ranges for farmsteads

from materials preserved within waterholes which are not directly associated with the settlements themselves. If the proposed model of an initial, centralised phase is correct, then dated waterholes lying within—for instance—Farmstead 2 may in fact belong to earlier activity within Farmstead 3. This problem can only be usefully addressed once the evidence of the individual settlements has been considered.

Bronze Age Metalwork

A spiral finger ring and two spearheads were the only copper alloy objects recovered dating to the 2nd millennium BC (Fig. 3.6). All provide some evidence that contributes to an understanding of the chronology of land enclosure during this period. The objects are typologically assigned to the Taunton phases of the Middle Bronze Age (*c* 1300–1200 cal BC).

The ring is formed from a stout, coiled rod of oval section with smoothly rounded ends (Fig. 3.6, 3). Objects of this type are normally regarded as personal ornaments on the basis of continental parallels, but they may have served other functions. The diameter of the ring is more consistent with an interpretation as a thumb rather than a finger ring, although a toe ring is also a possibility. The ring was recovered from the central part of an upper fill (125004) within a well (157243) which cut an earlier waterhole (see Fig. 3.13).

One spearhead is a Taunton phase Middle Bronze Age type, cast with a hollow socket and side loops (Fig. 3.6, 1). The chronology of this type has been discussed at length (eg Ehrenburg 1977, 7–9; Rowlands 1976, Ch. II 3), while associated radiocarbon dates have been assessed by Needham *et al.* (1997). A radiocarbon date from wood (ash) preserved in the haft of the spearhead confirmed the Bronze Age date (NZA14907; 2932±55 BP) of 1310–1000 cal BC. Although Needham *et al.* (ibid.,

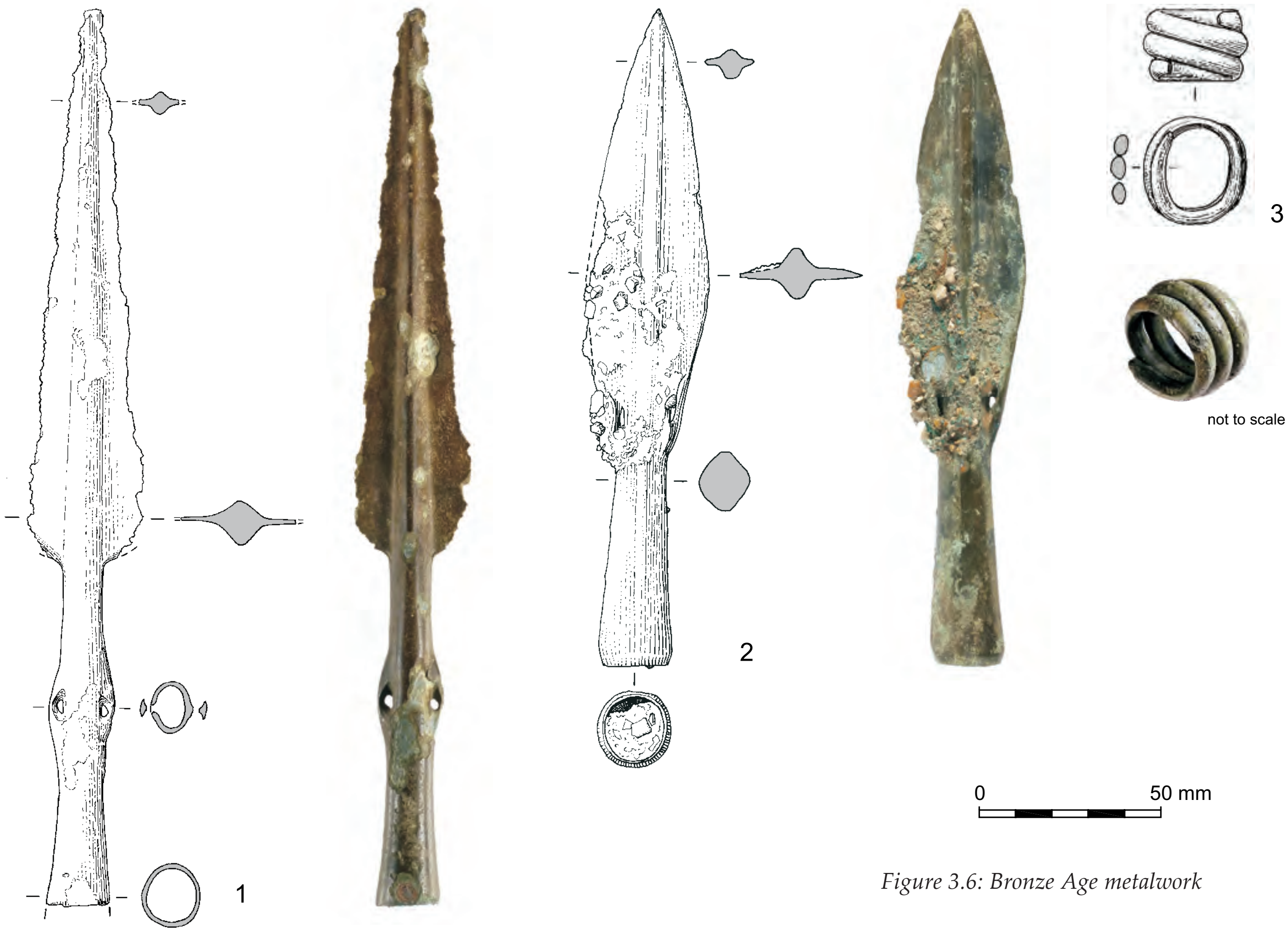


Figure 3.6: Bronze Age metalwork

85) admit to some imprecision in the dating of metalwork of the Taunton phase, as a result of the re-use and long functional life of spearheads, a date between 1450 and 1250 cal BC would seem appropriate.

The spearhead was located within a shallow recut (feature 149099) of a Bronze Age field ditch (111069) in Farmstead 6. If the spearhead had been deposited in the recut sometime between 1310 and 1000 cal BC, the construction of the original ditch and associated field bank could have preceded this event by several centuries.

The second basal-looped spearhead (Fig. 3.6, 2), recovered from the fill of a waterhole 641097 (see Fig. 3.10), also belongs to the Taunton phase of Middle Bronze Age metalwork. A radiocarbon date of 1450–1370 cal BC (Wk-19329; 3120±34 BP) came from the basal fill of the feature.

What did the landscape look like during the latter half of the 2nd millennium BC?

The 2nd millennium BC agricultural landscape was established on a terrain largely cleared of woodland. Clearance had occurred since the Neolithic period, but we should not imagine the Heathrow Terrace as prairie-like: there were certainly trees in the landscape, with alder carr and willow growing along the western edge in the damp low-lying palaeochannels of the Colne and with isolated trees or small stands of birch, pine, lime and elm dotted quite widely. Although the removal of many trees is attested by the hollows left by their roots, many were left growing in hedgerows and even within the lines of trackways, which sometimes zig-zagged around them.

Following its inception, the pattern of agricultural settlement was lived in, added to and altered over perhaps a thousand years, and resulted in a patchwork of fields, lanes, and hedgerows with periodically larger and smaller settlements set within them. These settlements varied in form and age, and are on the whole difficult to reconstruct, having suffered from extensive truncation which has destroyed building plans and layouts. However, most seem to have taken the form of a square or sub-square ditched enclosure set amongst the fields and containing a small number of buildings. Each may represent a single farm with dwelling and outbuildings. The most obvious exception to this pattern is Farmstead 4, which seems to have been a considerably larger (and probably higher status) enclosure.

Plate 3.1: Artist's interpretation of cereal harvesting in the Bronze Age Farmsteads at Terminal 5

There is little doubt that people were engaged in mixed farming, with cereal crops grown and presumably quite large herds of livestock maintained. The ditches (and associated banks) of the field boundaries, as well as functioning as land divisions, could also provide drainage for the brickearth-derived soils overlying the Thames gravels. Although these banks could have become colonised by vegetation and eventually by shrubs and even trees, it seems more likely that they were deliberately planted with hedge-forming species. In themselves, the ditches and banks were probably too slight to form effective barriers to livestock, and the hedgerows would have constituted much more substantial controls. In addition, the hedgerows would have been most productive in terms of food and other resources.

The palynological evidence suggests that the shrubs in the hedgerows were allowed to grow tall enough to produce flowers rather than being maintained by regular severe cutting (as is characteristic of the modern British landscape). The base of the hedgebank would have provided a haven for many herbs, grasses and flowering plants, and been home to small mammals, birds, invertebrates and reptiles. In short, the hedgerows will have provided a rich, diverse habitat for plants and animals, any or all of which could have played a part in the daily lives of the inhabitants of Heathrow.

The hedges and banks marked out a pattern of fields and enclosures. These enclosures, pastures and hedges seem to have provided pens and grazing primarily for herds of cattle, but also for flocks of sheep. All could have grazed, browsed and foraged from the hedgerows and woodland edges. Other fields would have been given over to arable agriculture: crop plants include emmer and spelt wheat, barley, and flax, alongside numerous foraged species, especially fruits (see artist's reconstruction in Plate 3.1). The hedges and woodland edges were rich in berries and nuts, and there is ample evidence for the availability of bramble, hazel, sloe, and elder. Red and Roe deer are attested, as is wild boar. The wider landscape would also have provided a broad range of materials including wood, fibre, fodder, medicines, and dye plants.

The environmental evidence from Terminal 5 presents a picture of the modern concept of a rural idyll. Hedges full of spring flowering shrubs, of honeysuckle in summer, and the rich autumn colour from berries and foliage, which must have been exceedingly attractive. Verdant pastures offered herb-rich grassland, with buttercups, daisies, flowering grasses, and milkwort. Even the trampled areas under herds and flocks and around the settlements supported diverse herb-rich ground and pretty grassy edges. Some of the waterholes must have been very attractive with meadowsweet, loosestrife, watermint, crowfoot, pondweed and iris.

It would be mistaken to think of the Middle Bronze Age at Heathrow as a manifestation of a pastoral golden age, however. Livestock, crops and people were—as ever—susceptible to disease, injury and mischance, and there are suggestions that at some point shortly before 1200 cal BC the Heathrow settlements went through a period of considerable turmoil. Features lying in the period 1300–1200 cal BC tend to be associated with a dearth of agricultural remains, occurrences of wild plant resources of marginal value, and a general impression of economic impoverishment. It is possible that some climatic change or widespread outbreak of disease struck: other settlements of this period in the south of England ceased to exist at about this time (Brown and Leivers 2008), and it is intriguing that at Heathrow, the only pieces of deposited metalwork occur at this period (see above).

Movement

One implication of the creation of a series of field systems is the imposition on the land of a network of physical boundaries constraining movement. Clearly, if one intention behind the laying-out of fields was containing and controlling groups of animals then these constraints would not have been accidental, but the effect they would have had on human movement may have been as far-reaching.

We should not imagine that the establishment of the field systems involved a change from a landscape through which people could move at random, as their whims directed, to one through which people could only move in rigidly defined ways. The landscape prior to the creation of the farmsteads would have contained conceptual and physical boundaries (some natural, some built, some metaphysical) resulting from a history of inhabitation over millennia. Some of these boundaries may very well have been incorporated into the geography of the field systems, both at the point of their creation and when later subdivisions became desirable.

Figure 3.7 shows the Heathrow Terrace divided into a series of farmsteads separated for the most part by double-ditched trackways. The most immediately noticeable feature of these trackways is that they almost exclusively allow for movement between the northern and southern parts of the landscape but not between the east and west. There is no immediately apparent reason for this arrangement: the topography does not dictate it, and indeed similar field systems elsewhere in southern England might lead one to expect the dominant alignment to be at ninety degrees, with the trackways at right angles to the Colne and leading down to it, as indeed some of the fields on the very western edge of the excavated areas seem to do.

It is this relationship to major natural water sources (or, rather, the apparent lack of any such relationship) that highlights one of the unanswered questions concerning the establishment of the field systems: namely, what factors influenced their builders to align them roughly north-south? Possible answers to this question do not seem to lie within the Terminal 5 excavations (hints from further afield are considered later), but the consequences of the decision to align the trackways parallel to the Colne are everywhere to be seen: nowhere is this more true than in the case of the wells and waterholes which pepper the Heathrow Terrace.

The trackways and their development

The stratigraphic relationships between trackway ditches and field boundaries identified in *Volume 1: Perry Oaks* (Framework Archaeology 2006) are now complemented by a greater number from across the excavations and the picture is now more complex than proposed initially. It is not possible to argue any longer that the trackways all began as field boundaries which were later elaborated, or that they necessarily predate the east-west field boundaries: although several trackway ditches are cut by field boundaries, there is no straightforward or universal chronological relationship between them. Instead, it seems that the farmed landscape resulted from a dynamic process of creation, maintenance and

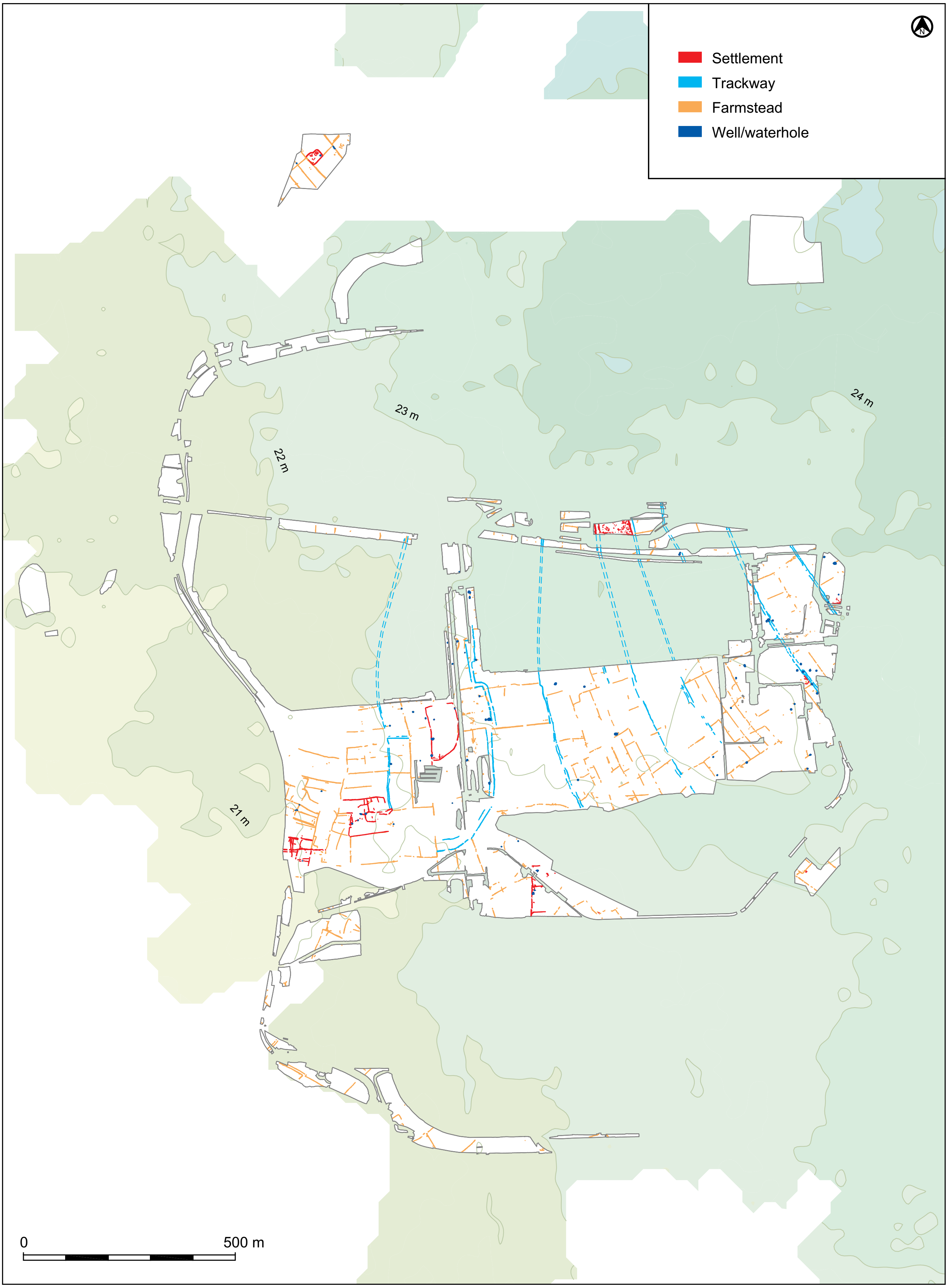


Figure 3.7: The Bronze Age landscape showing settlements, trackways, wells/waterholes and farmsteads

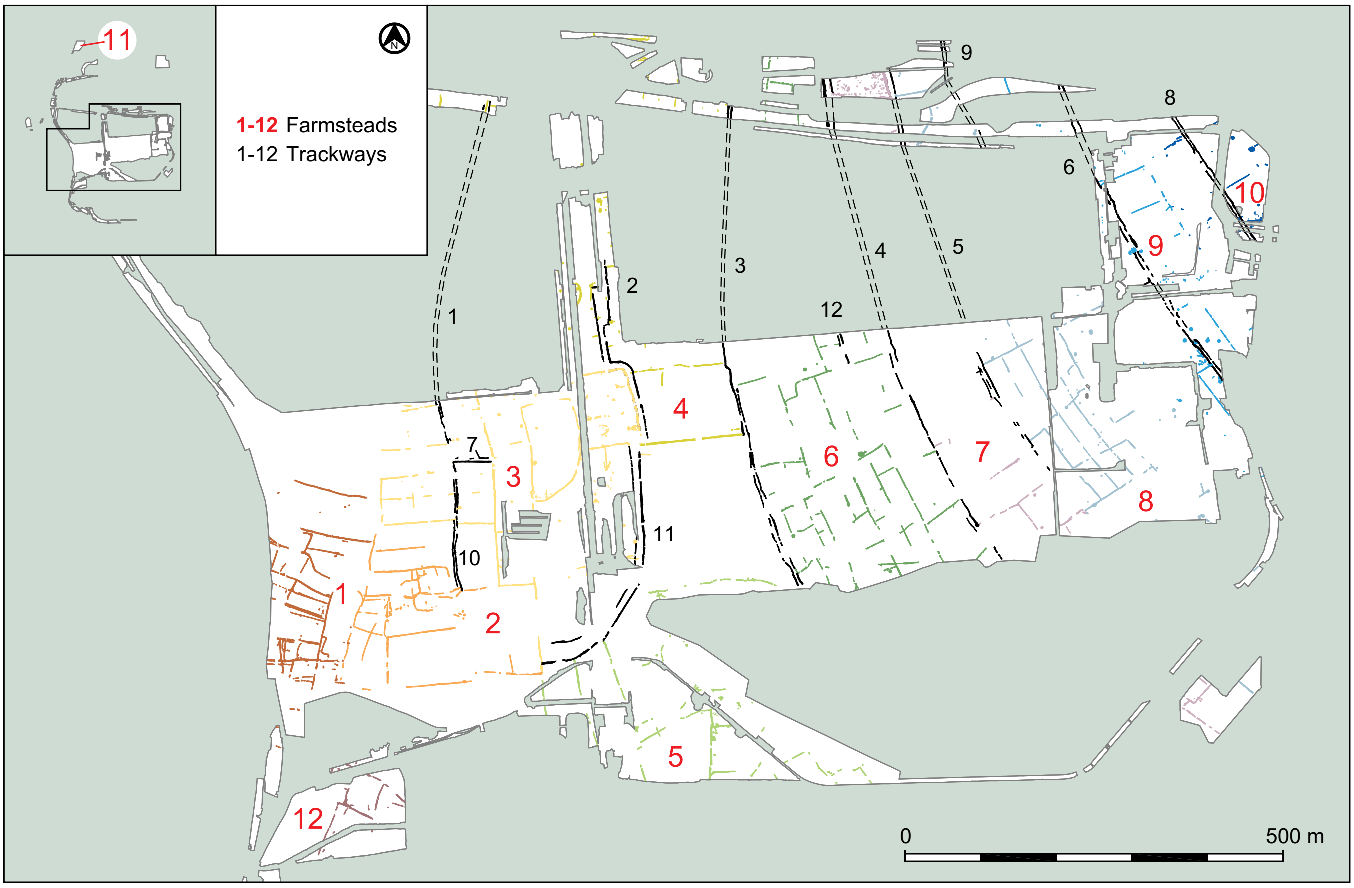


Figure 3.8: Bronze Age trackways and farmsteads

alteration of trackways, boundaries, entrances and fields, which were added to and altered throughout the 2nd millennium.

Ten major north-south routes (Trackways 1–6, 8–11) and one shorter east-west track (Trackway 7) have been identified (Fig. 3.8), seven of which were first discussed in *Volume 1: Perry Oaks*. However, subsequent excavation and analysis has revealed that not all of these trackways were single routes along the entirety of their lengths throughout all of their existence, and that—especially in the western aggregate landscape—'stops' occurred at varying points effectively blocking movement up and down the tracks. Obviously this is of considerable significance in terms of the chronology of the landscape and how different parts of it articulated: as far as this publication is concerned it has necessitated some changes in nomenclature, as in Table 3.2.

In addition to these eleven major trackways, there are a number of other short sections of double ditch which may represent further routes (including Trackway 12). These are all too fragmentary to add to any understanding of the arrangement of the landscape, and all of them conform to the alignments of the eleven major examples. The only notable exception to this consists of a number of small lengths of double ditch at the south-western corner of the excavations in Farmstead 12 (Fig. 3.8). These are aligned roughly NW-SE, entirely at odds with the other examples, but at right angles to the major axial trackways running through the fields identified at Stanwell (O'Connell 1990). These are discussed in more detail below.

Although broadly similar in their morphology, there are a number of features of trackway construction which warrant discussion. Foremost amongst these is the division between segmented and continuous construction. This is not a distinction *between* trackways, but *along* trackways. Especially in the farmsteads of the

Volume 1 name	Entity	Volume 2 name	Entity
Trackway 1	524	Trackways 1 and 10	524 and 2829
Trackway 2	740	Trackways 2 and 11	740 and 2831
Trackway 3	739	Trackway 3	739
Trackway 4	2828	Trackway 4	2828
Trackway 5	53	Trackway 5	53
Trackway 6	397	Trackway 6	397
Trackway 7	742	Trackway 7	742
		Trackway 8	320
		Trackway 9	2848
		Trackway 10	2829
		Trackway 11	2831
		Trackway 12	2852

Table 3.2: Trackway concordance

Plate 3.2: *Artist's representation of Bronze Age settlement construction within the landscape*

coaxial landscape, a repeated division can be seen between the southern ends of the trackways (which tend to consist of short, sometimes intersecting or overlapping segments) and the northern portions (which tend to consist of much longer, uninterrupted ditches).

Among the possible explanations for this phenomenon, two seem to be the most probable. Firstly, the difference may be one of chronology: in Trackway 3 particularly there are strong indications that the segmented (southern) section is earlier than the more continuous (northern) part, and this may well be true for other trackways as well. However, the evidence of Trackways 4 and 5 suggest that these differences may also be to do with *proximity to settlement*, with ditches becoming more continuous and substantial towards settlement enclosures. Both suggestions are probably true. What is interesting is that—if the proposed chronological significance is correct—the relationship between segmented and cohesive appears to be an inverse one between trackways on the one hand, and the social milieux within which they were created. The earlier, segmented, sections of trackway were constructed at a time when the agricultural landscape was a single unit, lived in and farmed by a single (larger) group of people inhabiting Farmstead 3. The later, continuous, sections of trackway were constructed when the landscape was parcelled up and divided into a number of smaller farmsteads.

Is this fact at all significant? It is possible to read the relationship between trackways and settlements in a number of ways which suggest that the relationship was not simply coincidental, and that trackway construction was in fact used as a means of expressing either an underlying truth (or at least perceived truth) about the nature of society, or as a physical manifestation of an ideological convenience. The segmented trackways could work in much the same way as—for instance—Early Neolithic causewayed enclosure ditches, where conceptually separate (ie gendered; differently initiated; totemic; family) but politically united (ie clan) groups expressed both their unity and separateness architecturally (a number of smaller units forming a whole). In this example, the later continuous trackway sections—constructed at time when society was fragmenting into a series of smaller units—would emphasise cohesiveness, completeness and singularity.

This rather unsophisticated reading of the evidence is of course only one possible explanation of the change in trackway construction. The reality may be far more complex, or utterly prosaic. However, the repetition of this pattern does suggest that it (if not the explanation of it) is real, as does its occurrence in both the coaxial and aggregate portions of the landscape.

In the western fields, the situation is somewhat different, since only Trackways 1 and 10 show the distinction, and here the Trackway 1 ditches consist of numerous short and longer segments, whereas Trackway 10 is marked by very long continuous ditches. It is possible to argue (although by no means certain) that Trackway 1 is earlier than Trackway 10, and it is also the case that Trackway 10 is closer to a settlement than Trackway 1, so here as well the same guiding principles may be at work.

Activity and Settlement within the landscape

Size of trackway ditches may be one indication for the presence of settlements, which can otherwise be very difficult to identify with any certainty. The term *settlement* in this chapter is defined as a place of human occupation, incorporating domestic buildings (see Plate 3.2 for artist's representation of Bronze Age settlement within the landscape). Unfortunately, structural evidence for buildings is almost entirely lacking, so with very few exceptions settlements have to be identified on the basis of coincidence of poor structural traces, unusual boundary ditch arrangements, concentrations of material, and predicted locations within the postulated system of fields and trackways. As outlined at the start of this chapter, a *settlement* has been defined as one element within a *Farmstead*, which also includes its associated system of fields, trackways and enclosures.

	Size (m)	Entity	Farmstead
Settlement 1	72 x ?	778	7
Settlement 2	80 x 80	720	2
Settlement 3	?	558	8
Settlement 4	128 x 66	998	3
Settlement 5	-	10	4
Settlement 6	-	2832	n/a
Settlement 7	50 x 50	722	1
Settlement 8	25 x ?	61	10
Settlement 9	?	5	5
Settlement 10	30 x 26	2833	11

Table 3.3: Settlement size and entity number

Six possible Middle and Late Bronze Age settlements were identified in *Volume 1: Perry Oaks*. Of these, Settlement 6 was suggested on the basis of field system patterning and finds distributions. This settlement has now been discounted, as wider excavation has demonstrated that neither of these suggested characteristics is unusual, but a further four settlement locations have been identified, bringing the total to nine (1–5 and 7–10; Fig. 3.9; Table 3.3). The settlements will now be discussed within the context of their associated Farmsteads, as part of the wider agricultural landscape.

Settlement genesis

In most instances there is very little to indicate any pre-existing influence on the location of the emergent Middle Bronze Age settlements: with the exception of Settlements 1 and 4, none coincide with concentrations of earlier material which could suggest continuation or re-occupation of earlier settlement sites. Settlement 1 (in the north of Farmstead 7) is situated immediately south of the interrupted ring-ditches excavated in 1969 (Canham 1978), in an area containing Grooved Ware pits (see Chapter 2). While the presence of these pits does hint at an earlier human presence in this area, the ring-ditches need not pre-date the Middle Bronze Age settlements by very much, if at all. At Stansted Airport, a similar ring ditch was broadly contemporary with enclosed Middle Bronze Age settlement (Brown and Leivers 2008).

The case of Settlement 4 (in Farmstead 3) is somewhat different, as it is located within a large double-ditched enclosure, the location of which clearly has very close relationships with a pair of Neolithic earthworks: the HE1 Enclosure (which marks the entrance to the outer of the two 'D'-shaped enclosures), and the C2 Cursus (see below). Farmstead 3 can be argued to be earlier than at least some elements of the Middle Bronze Age landscape, suggesting that Settlement 4 in its 'D'-shaped enclosure was the earliest part of the Middle Bronze Age system, established first and drawing on existing landscape elements to 'legitimise' its newness. This is discussed further below.

Farmsteads

The relationships between the individual settlements and trackways and the presumed farmsteads within which they were situated are not always obvious. The series of seven landholdings proposed in *Volume 1: Perry Oaks* (Framework Archaeology 2006) can now be seen to over-simplify a situation in which the Heathrow Terrace was not simply divided by trackways into a series of strips running north-south, but rather into a series of irregular blocks on the west (the aggregate landscape) and a more regular system to the east (the coaxial landscape). North and south of these blocks, further field systems on different alignments suggest even more complexity, but these are for the most part too fragmentary to reconstruct with any certainty. The arrangement of the landscape was clearly dynamic; maintained, altered and extended, with at least one major revision or redesign (when Farmstead 3 was divided, and the coaxial landscape extended, sometime after 1400 cal BC), apparently for more than a millennium. It has proved very difficult to untangle the chronology of both the farmsteads and the settlements located within them. Nonetheless, several different strands of evidence (primarily stratigraphy, morphology, possibilities for access, material remains and proximity) have been used to suggest how the field systems, settlements and trackways may have been divided, and how the different blocks may have articulated.

The resulting farmsteads are discussed below. The basic divisions of the landscape are shown in Fig. 3.9.

The Aggregate Landscape

The aggregate landscape consists of Farmsteads 1, 2, 3, 4 and perhaps 5, 11 and 12 (the difficulties of assigning the latter three are discussed below).

Farmstead 3

There are a number of reasons to suppose that Farmstead 3 (the large 'D'-shaped enclosure in the western central portion of the excavations, the settlement within the inner enclosure, and associated field systems) has a good claim to primacy, as outlined above (Fig. 3.10). In addition to the already-

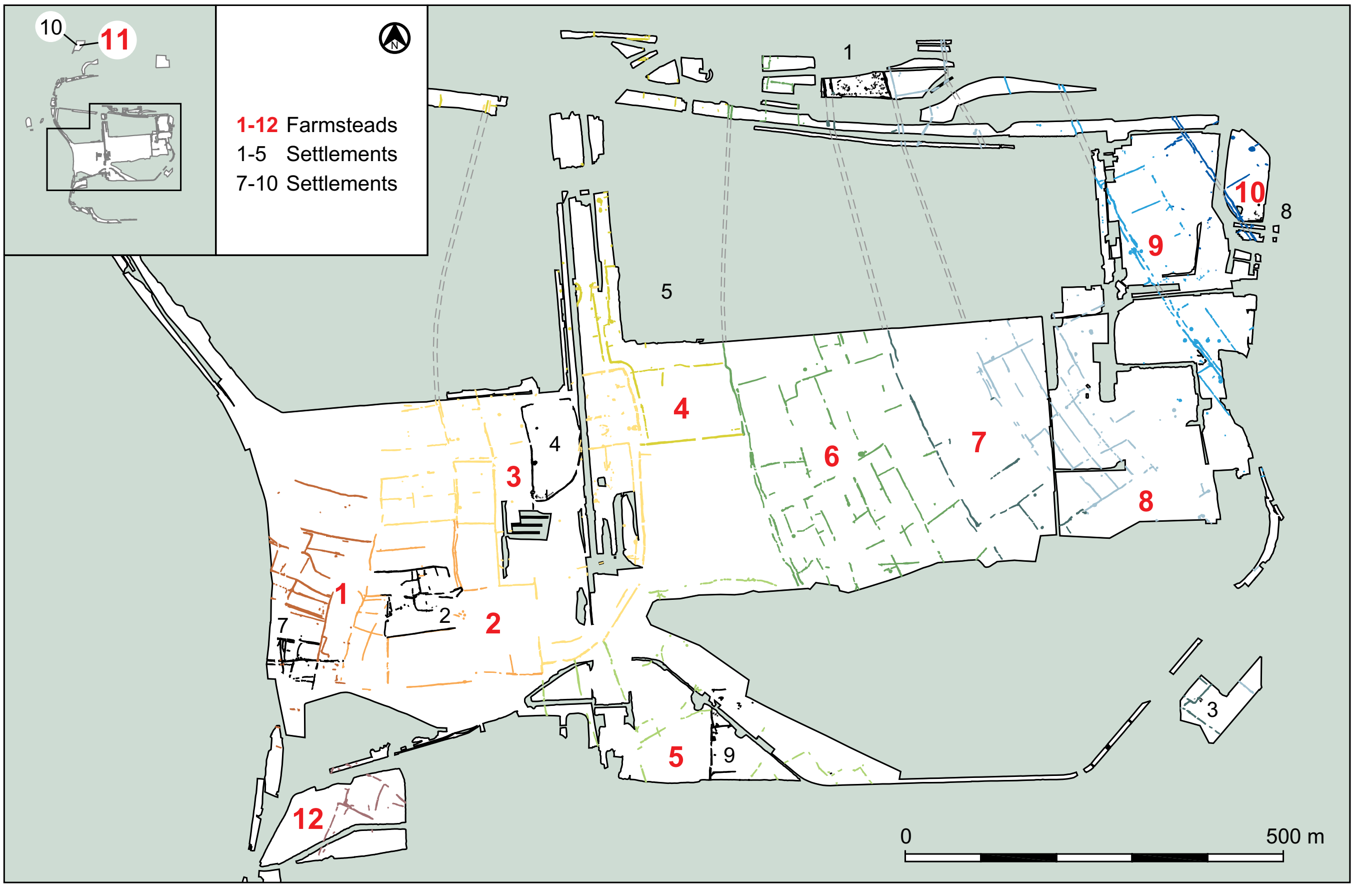


Figure 3.9: Bronze Age settlements and farmsteads

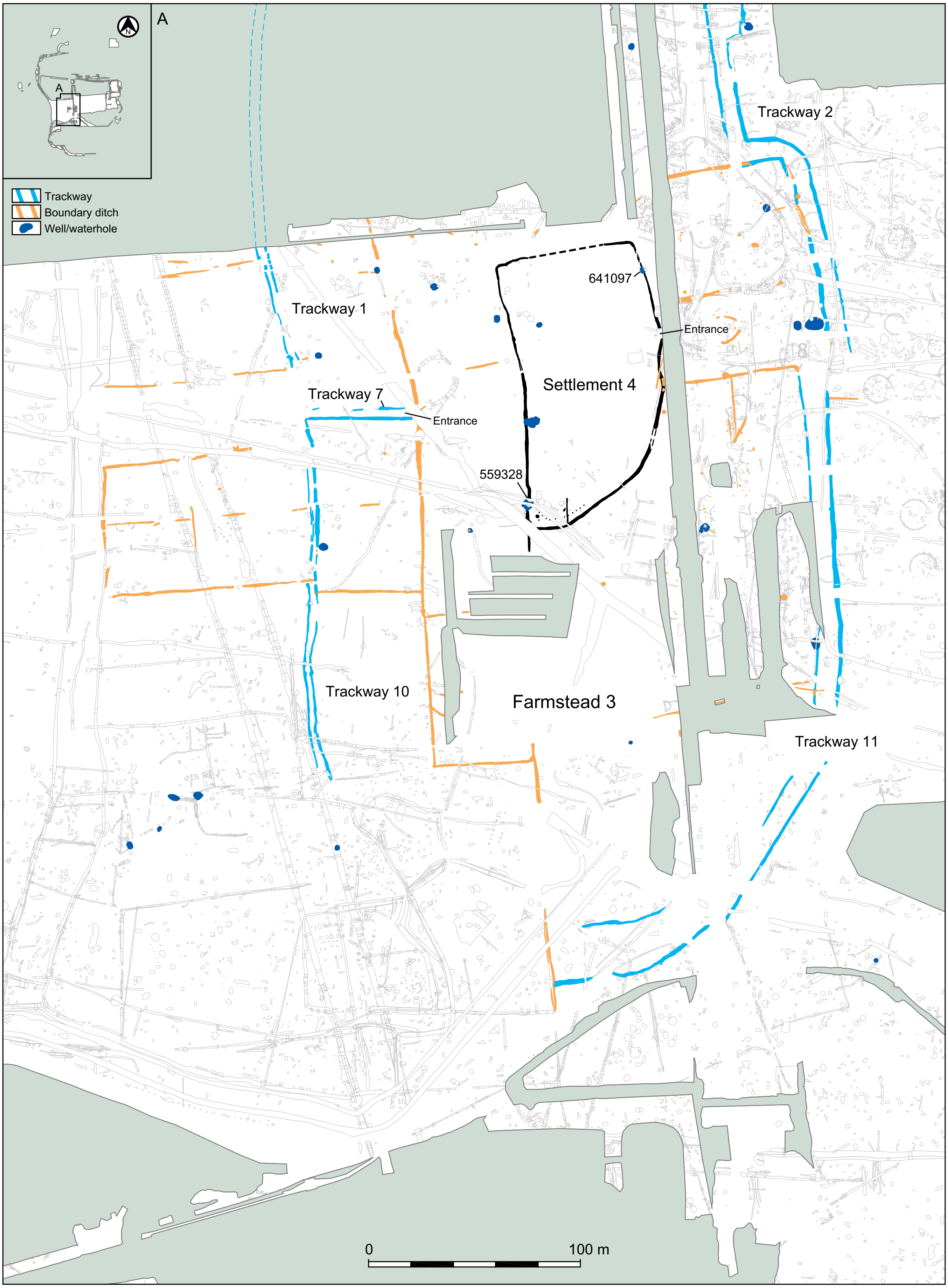


Figure 3.10: Farmstead 3 and Settlement 4

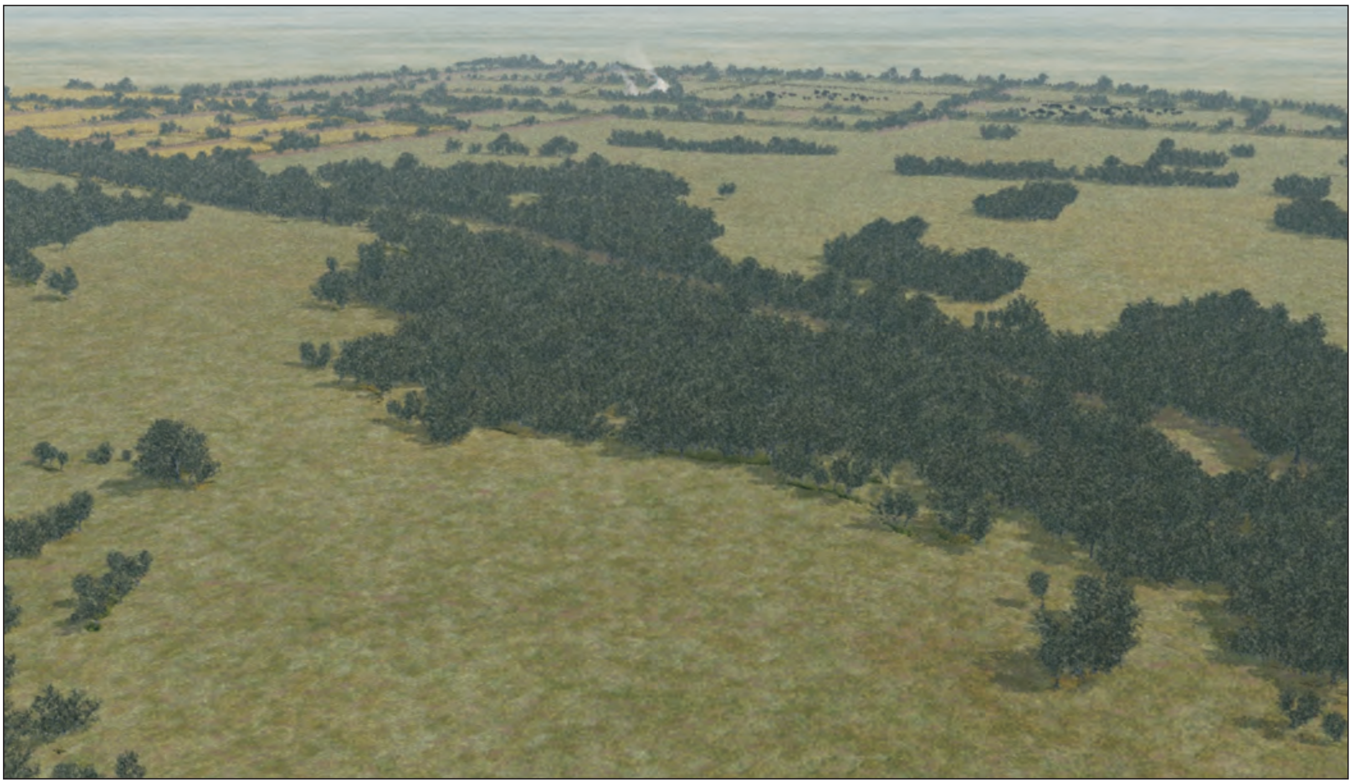


Plate 3.3: Artist's reconstruction of Farmstead 3, Phase 1

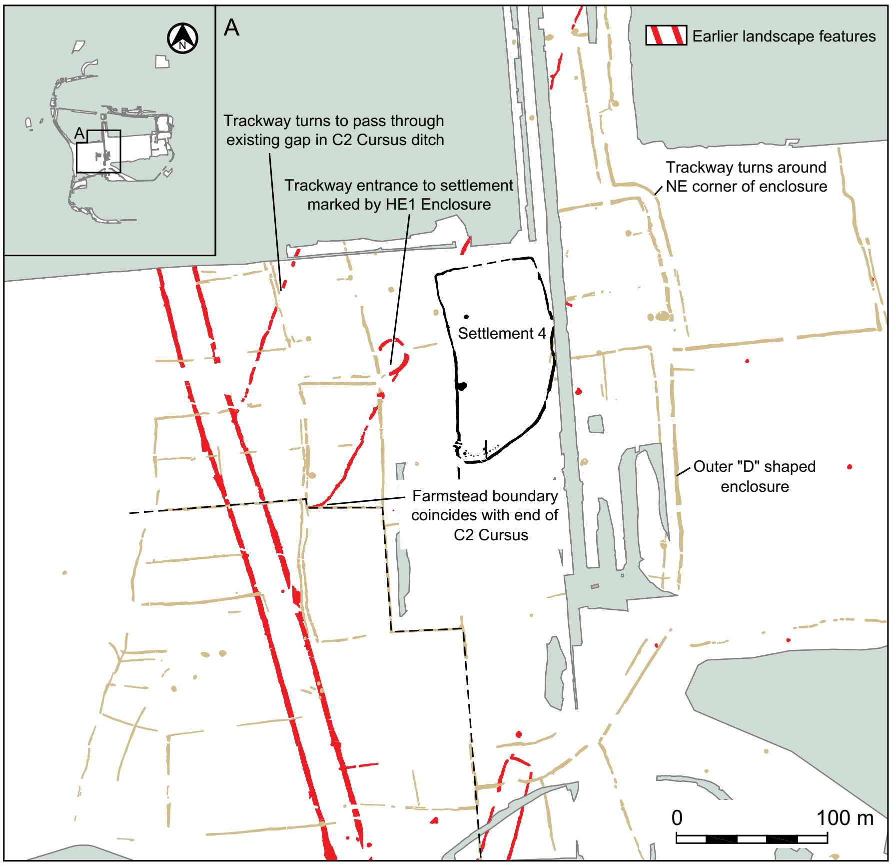


Figure 3.11: Farmstead 3's relations to the earlier landscape

stated reasons (and perhaps most convincingly) it is the only farmstead to have any convincing relationship with the pre-agricultural landscape. The ways in which parts of the farmstead reference and are enhanced by Neolithic earthworks, which are either ignored or slighted everywhere else that they occur in the 2nd millennium BC landscape, might be indications of chronological and social primacy for Farmstead 3, and are worth examining in some detail (Fig. 3.11; (see also artist's reconstruction in Plate 3.3).

Towards the northern end of Trackway 1, the line of both flanking ditches curves to pass very neatly through an existing gap in the north-western side of the C2 Cursus. This suggests that—rather than developing out of an axial field boundary—Trackway 1 was always a trackway, and also that the C2 Cursus survived into the Middle and Late Bronze Age in substantial enough form (as either bank or ditch or both) for a thoroughfare to need to pass through it, rather than just go over it. Rather than the line of the trackway being maintained south of the gap in the C2 Cursus, the ditches swing back south to coincide with the southern terminal of the south-eastern cursus ditch, at a point at which Trackway 1 is blocked. This bend in Trackway 1 is paralleled exactly by the lines of both the axial field boundary to the east, and by the western boundary of the Inner 'D'-shaped enclosure, suggesting that these two features were offset from (and therefore post-date) Trackway 1. The primacy of Trackway 1 seems incontrovertible given its physical relationships with points on the C2 Cursus, but it remains unclear just how much older than the field system and enclosures of Farmstead 3 it is.

Two possibilities arise: either the trackway, field boundaries and enclosure are all parts of a single process of laying-out, with the trackway laid down first with reference to the C2 Cursus; or Trackway 1 (or at least the route it came to mark) was of some antiquity when Farmstead 3 was laid out, and was used as a base-line for the later features. Although the first possibility is perhaps the most likely, the presence of small amounts of Early Neolithic Plain Bowl, Late Neolithic Grooved Ware and Early Bronze Age Beaker or Collared Urn ceramics in the trackway ditches is suggestive of a longer history, and the very close relationships between Trackway 1 and both the C1 and C2 Cursus should not be ignored.

The second set of relationships between Farmstead 3 and the pre-agricultural landscape involve Trackway 7, which runs eastwards from Trackway 1 to a gap in the axial field boundary adjacent to the HE1 Enclosure and what seems likely to be the entrance to/exit from the outer 'D'-shaped enclosure. A radiocarbon date from pit 142010 cut into the top of the HE1 ditch suggests that the enclosure was still in use in some way in the 2nd millennium, and its location at one of the entrances to the large 'D'-shaped enclosure suggests that it was probably a structure of some importance.

It is therefore possible that Farmstead 3 had a chronological primacy within the agricultural landscape. Unlike some of the other farmsteads, which appear to have evidence of episodic activity (perhaps of the establishment of relatively short-lived settlements within field systems already more than a century old), Farmstead 3 appears to remain occupied and in use for an unbroken span of at the least 400 years, but perhaps as much as 800 (Fig. 3.12).

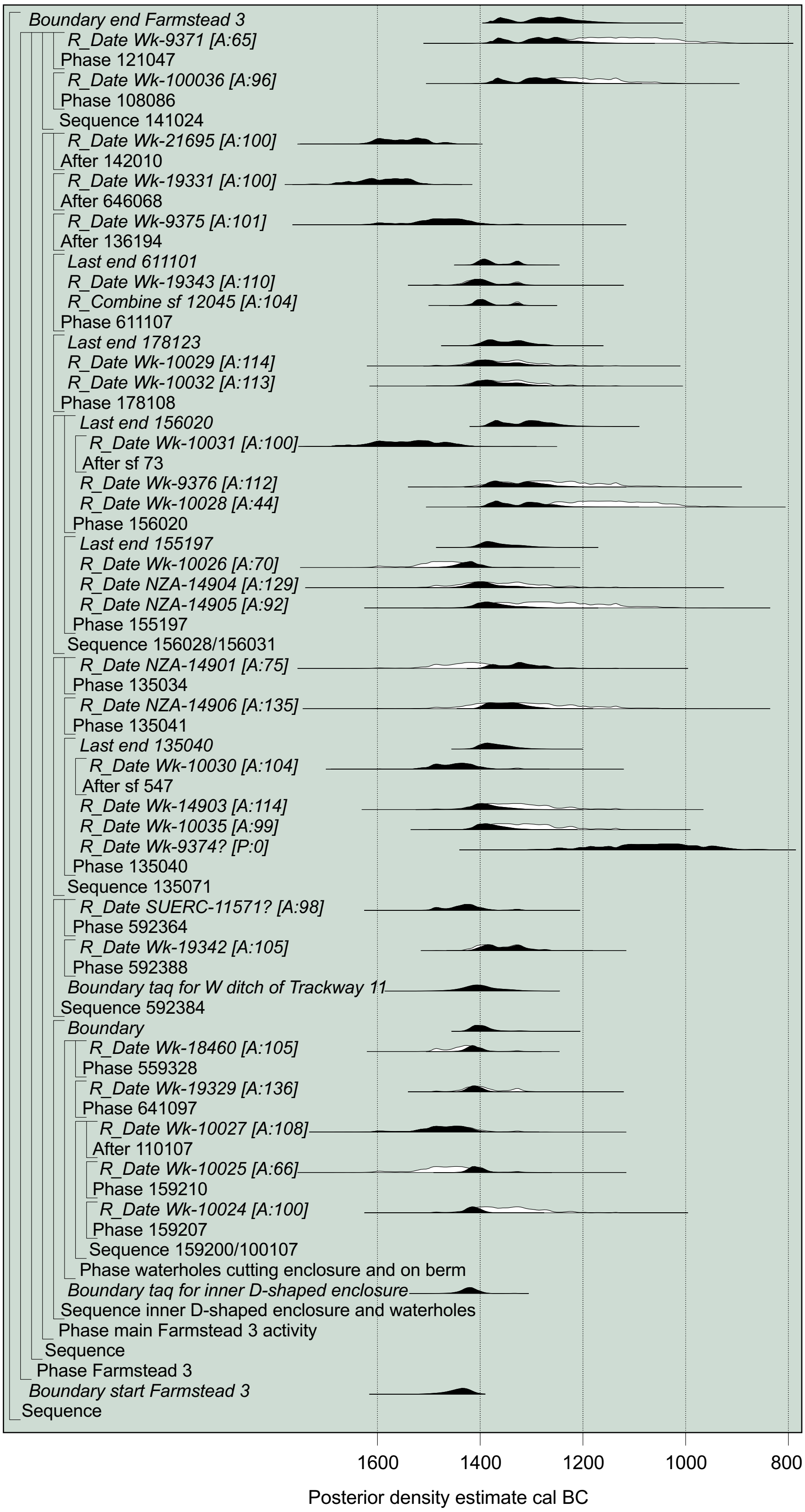


Figure 3.12: Radiocarbon dates for Farmstead 3

Settlement 4

The core of Farmstead 3 appears to have been Settlement 4 (Fig. 3.10), which was defined by the inner D-shaped enclosure. Severe truncation in this part of the site (see Chapter 1, Fig. 1.5 – truncation model) has removed a great deal of the evidence for the form of this settlement, but what survives suggests a ditched, embanked enclosure of approximately three-quarters of a hectare marked at least in places by a timber palisade and with a single entrance on the east side. As with the majority of structural features of the enclosure, all detail of the entrance has been lost to truncation, and all that can be said is that the boundary ditches turn outwards slightly and terminate leaving a gap of approximately 3.8 m.

The palisade survives only at the southern end of the enclosure, where it consists of an approximately 24 m long run of eleven postholes set on average 2.1 m apart. The form and extent of this structure are consequently very difficult to reconstruct, but the most likely possibility is that the palisade replaced an earlier earthen bank inside the enclosure ditch. The ditch itself is scarcely better preserved than the palisade, but there are some indications of an internal bank, and perhaps of further posts set within the ditch.

This arrangement has certain similarities with other Bronze Age enclosures such as Rams Hill, where the timbered rampart was a replacement for (or rather refurbishment of) an earlier, earthen bank (Bradley and Ellison 1975; Needham and Ambers 1994). Although the Heathrow enclosure is considerably earlier than Rams Hill, the same general sequence may be visible: some portions of the silted enclosure ditch were certainly recut, and its effectiveness as a boundary by 1400 cal BC must have been considerably reduced, given the number of wells and waterholes which were cut through its line around that time (below).

It is then possible to envisage an initial enclosure defined by a bank inside a ditch, replaced by a timber palisade once the ditch had at least partially silted. The creation of the enclosure is essentially undated; only the ditch can be confidently assigned to this first phase, and the internal bank postulated from fill patterns. There are almost no features surviving within the enclosed area, and of these few none can be confidently claimed as early. Only intersecting pits/wells 146043/146039 lay in the interior, but contained neither artefactual or palaeoenvironmental material. The ditch is likely to have been silted and the bank at least partially denuded before the last half of the 15th century BC since wells and waterholes were cut through the line of both primarily between 1440 and 1370 cal BC (see below).

All of the reliably dated examples of such features in Settlement 4 date to the second phase, assumed to be the point at which the boundary was renewed by the construction of the palisade. Although wells and waterholes are the only surviving features, they provide a suite of artefactual and palaeoenvironmental evidence which allow the reconstruction of conditions around the enclosure. In short, the area was dominated by grassland, with cereal crops grown further away. Each of the features seems to have been situated adjacent to an established hedgerow, so it seems highly likely that this grew atop the bank of the original enclosure. In this case, it may be that the palisade was not continuous, but only stood at places where the bank had been more than usually denuded, or where greater stability, security or imposing appearance was desired.

The following features can be associated with Settlement 4:

- Well 559328: this feature was located at the southern end of the palisade enclosure, and cut the north-south aligned ditch (Fig. 3.10). Its profile and fills indicate a well rather than a stock watering hole. A radiocarbon determination from organic material in a lower fill of the well-shaft dated to 1450–1380 cal BC (Wk-18460; 3153±32 BP). Domestic activity is suggested by a cylindrical loomweight fragment. Ceramics from the lower fills were entirely of Deverel-Rimbury type, while higher fills contained Deverel-Rimbury, post-Deverel-Rimbury and one intrusive crumb of Romano-British pottery (the feature had been much disturbed in its central portion by a modern wall).

- Waterhole 641097 was similarly located cutting the enclosure ditch, this time towards the north-east corner of the circuit (Fig. 3.10). The basal fill dated to 1450–1370 cal BC (Wk-19329; 3120±34 BP), indicating contemporaneity with well 559328. The most notable feature of this waterhole was the spearhead from fill 641043 (Fig. 3.6.2).

Palaeoenvironmental evidence from this pair of features (559328 and 641097) is relatively uniform, with woody hedgerow taxa and preserved leaves, thorns and twigs. Species included field maple, willow, sloe, blackberry, hawthorn, elderberry, rosa sp., alder, buckthorn and dogwood. Grassland taxa, hedgerow/wayside herbs and weeds of disturbed places were common. Both had only very scarce true aquatic plants, although for 641097 several sedge, rush and spike-rush remains indicated damp margins. Unlike most other similar features, 641097 contained abundant stinging nettles and other nitrophilous taxa, suggesting that livestock had access to the feature.

- Well and waterhole group 159200, 110107, 157243 and 125034 (Fig. 3.13). These four features intercut on the western perimeter of the enclosure. The earliest of the three (well 159200) lay inside the ditch on what would probably have been the berm between it and its bank. The lack of any material in the well indicative of collapse of bank material suggests that the bank was denuded by the time the well was dug. When dug, the well was lined with a cylindrical wattle work. Elements of this structure gave a radiocarbon determination of 1450–1370 cal BC (Wk-10024; 3086±51 BP). After the collapse of the wattle lining the feature was remodelled as a waterhole, with a timber post revetment inserted to enable ramped access to the water from the eastern side. This revetment gave an identical date range of 1450–1370 cal BC (Wk-10025; 3187±54 BP).

Artefactual evidence from 159200 was limited to a single withy tie and large portions of a Deverel-Rimbury jar. The feature seems to have been backfilled relatively quickly, and then cut through by a series of other features. Pit 125034 was small and contained nothing beyond a handful of pot sherds and animal bones. Both it and 159200 were then cut by well 157243.

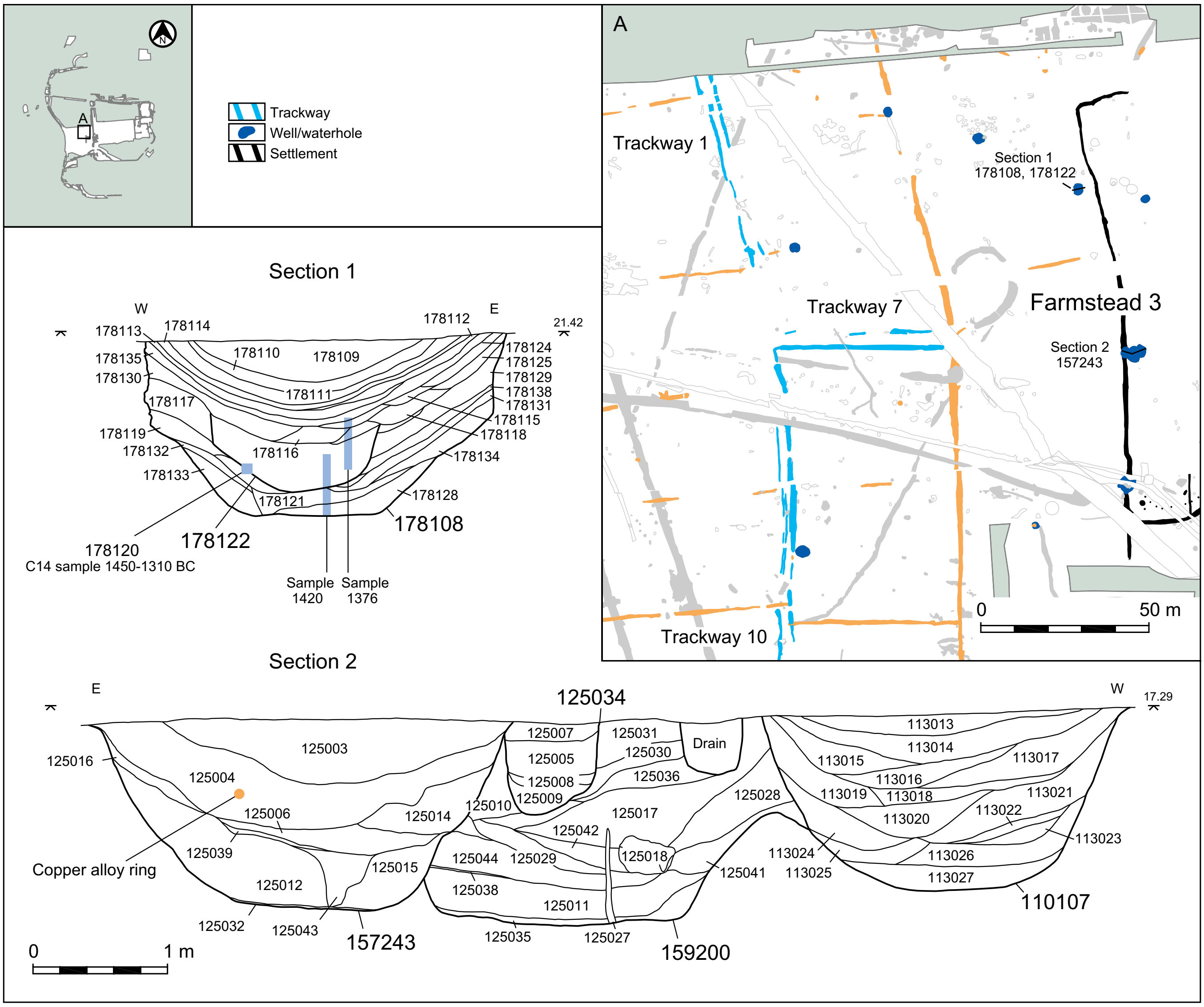


Figure 3.13: Wells and waterholes associated with Settlement 4

Palaeoenvironmental evidence for well 157243 demonstrates some change in conditions throughout the life of the feature. Pollen from the lowest levels indicates that the area supported wet, acidic soils with *Sphagnum* moss, sedges and bog plants growing in the very soggy, waterlogged ground at the edges of the feature.

Oak, alder, birch, lime, elm, and ash were growing in the catchment (some possibly as components of a hedge) but elder, maple, hazel, purging buckthorn, ivy, willow, Prunus type (sloe), and other members of the Rosaceae, seem to have dominated the woody plants in the immediate locality. Apart from hazel, most of these are insect - pollinated and produce very small amounts of poorly dispersed pollen so they are likely to have been growing very close the feature. Cannabis type was also recorded but it is likely that this represents male hops scrambling through a hedgerow.

Cereals were being grown in the vicinity but probably in areas situated a little distance away; the abundance of ruderals such as members of the goosefoot family (Chenopodiaceae), nettle, and knotweed suggest that there were open, bare soils available locally.

The herbaceous flora was dominated by dandelion-like plants, plantains, ragwort/daisy, goosefoot, hogweed/fool's parsley, mugwort, nettle, Potentilla type (tormentil/silverweed), and bracken. Grass pollen did not exceed 20% and this suggests that grazing pressures were fairly high. There is little doubt that the area was dominated by pasture and open, trampled soils. However, many of the herbs could have been growing under the protection of a hedge or ditch.

The local landscape seems to have changed very little throughout the rest of the life of the feature. Higher levels were characterised by a drop in maple (ultimately to extinction) and oak and a by marked rise in rosaceous pollen (probably bramble and/or hawthorn), and nettle and a temporary increase in elder. Elder grows and matures very quickly indeed, and its expansion might have been due to the removal of other woody taxa locally. The low percentages for grass pollen and the relatively low record for cereal type pollen indicates that the area was being subjected to fairly high grazing intensity. The relatively high values for Stachys type (eg hedge woundwort), nettle, plantain, dandelion-like plants, campion, mugwort and ragwort/daisy might suggest that these were protected from grazing either by their lack of palatability, or by growing in protection of the ditch. Others such as

Potentilla type (silverweed/tormentil), Lotus type (bird's foot trefoil), and goosefoot could probably cope with trampling and were growing in less protected areas of the local grassland.

The hedge seems to have continued to grow but the area seems to have been somewhat neglected towards the end of the life of the feature. The increase in grasses and ruderals, and the low record for cereals, suggests that there was less agricultural pressure on the land around this feature during the later period of sediment accumulation. The decline of some of elder and the increase in 'wasteland' ruderals seems to have been gradual.

(Peglar et al., CD Section 16)

The upper portions of the environmental sequence are contemporary with the deposition in this feature of a copper alloy ring (Fig. 3.6, 3). As reported above, the ring is formed from a stout, coiled rod of oval section with smoothly rounded ends, and is probably a personal ornament.

Two interpretations for the deposition of the ring can be suggested. It may have been redeposited from the earlier waterhole (radiocarbon dated to 1450–1370 cal BC), or else it could have been deposited as a curated, significant votive object.

Well 159200 was also cut by well 110107, which also cut the silted ditch of the enclosure. Very little artefactual of palaeoenvironmental material was recovered, but a single tangentially faced *Quercus* board gave a radiocarbon determination of 1610–1310 cal BC (Wk-10027; 3184±55 BP). This date should be treated with some caution however, since it does not derive from round- or sapwood and could consequently be inaccurate by several centuries.

The outer 'D'-shaped enclosure

The enclosure defining Settlement 4 was set off-centre within a second enclosed area which mimicked its shape but which was considerably larger, taking in 6.35 hectares (Fig. 3.10). The boundaries of this enclosure were defined by ditches, the southern and eastern portions of which also formed the eastern edge of Trackway 11. The western side of this trackway seems to have widened out at its southern end to form a feature which may have served as a stock funnel. Breaks only appear in the outer trackway ditch in the area of the field system of Farmstead 5 (see below), although it is not entirely clear whether these are an effect of truncation, or whether communication into these fields was intended from Trackway 11.

The northern portion of the outer D-shaped enclosure on the eastern side came to serve as the western boundary of Trackway 2 (Fig. 3.10). Samples from the lowest fills of the enclosure ditch towards the north-east corner were dominated by…

…fragments of wood and twigs, with abundant stinging nettle (Urtica dioica) and blackberry seeds (Rubus sect. Glandulosus). Both rose/blackberry-type thorns and sloe/hawthorn-type thorns were frequent, and sloe stones, immature hawthorn fruits (Crataegus monogyna) and rose (Rosa sp.) seeds were recorded. Because of the abundance of these remains, it would appear that a thorn hedge had been growing along the ditch, or very close to it. Since, in addition to stinging nettle seeds, other indicators of nutrient-rich soils were frequent, eg common chickweed (Stellaria media), black nightshade (Solanum nigrum), greater burdock (Arctium lappa) and upright hedge-parsley (Torilis japonica), it is likely that the ditch and thorn hedge had been used as a stock-proof barrier. Very few wet/damp ground taxa were recorded (only a few sedge nutlets and rush (Juncus sp.) seeds), so the ditch was probably fairly dry at the time of silting, but damp enough for organic material to have become preserved. The surrounding vegetation was probably grassland, as a few buttercup (Ranunculus repens/acris/bulbosus), plantain (Plantago major) and thistle (Cirsium/Carduus sp.) seeds were present. Thistles often become abundant in well-grazed pastures. No charred plant remains indicative of manuring or the proximity of domestic activities were recovered from this sample.

(Carruthers, CD Section 14)

A naturally deposited sediment within a re-cut (615051) of the northern portion of this ditch contained a suite of environmental evidence very similar to that from the lowest fills.

Activity within the outer enclosure

No direct structural evidence was identified, and the only indications of any were provided by insect assemblages from well or pit 178108 and its recut, 178122, *c* 3.6 m west of Settlement 4 (Fig. 3.13). Samples from fills low in the sequences of both produced evidence of woodworm beetles. The species (*Anobium punctatum* and *Lyctus linearis*) are rare under natural conditions because their habitat of dry dead wood is uncommon, but they thrive in timber structures, suggesting the presence of buildings in the vicinity. What this structure may have been is uncertain, but it is at least possible that it was the palisade of Settlement 4 which may have stood no more than 10 m to the east. A radiocarbon date of 1410–1270 cal BC (Wk-10029; 3089±47 BP) was obtained on *Salix* sp. roundwood, placing this fill firmly in the third quarter of the 2nd millennium. Other insect remains from this feature gave some indication of nettle-covered disturbed ground, but nothing that would indicate high concentrations of organic refuse associated with any settlement (see Framework Archaeology 2006, 126, Robinson CD Section 12 for further details).

The pollen record for this feature can be read to indicate something of the two phases of construction of the adjacent settlement enclosure. In the first phase (that of the enclosure ditch and bank), the feature was overhung by a hedgerow which included elder bushes:

It must be noted that throughout much of the history of the feature, the immediate vicinity must have been dominated by Sambucus nigra (elder). It is so overwhelmingly over-represented that it has had to be removed from the pollen sum so that the relative importance of other taxa could be evaluated. Elder is insect-pollinated and produces relatively little pollen and, its over-representation indicates that the plant's branches overhung the feature directly. The close correlation between the abundances

Plate 3.4: Artist's reconstruction of deposition within Bronze Age waterhole

for fungal remains and elder also suggests that the fruits were falling directly into the well. There would have been high concentrations of carbohydrates being incorporated into the sediment and these would have provided an excellent substrate for microfungal growth and sporulation.

Whereas there appears to be a positive correlation between fungal remains and elder pollen abundance, there seems to be a negative one with microscopic charcoal. This implies that the elder bush(es) were being checked by fire in some way, and the observed relationship might be a function of management of the area around the pit.

The low levels for grass pollen and relatively low levels of ruderals and pasture herbs might indicate fairly high grazing pressure in the environs of the feature. However, cereals were well represented throughout and these indicate the importance of arable farming in this area of the site. Cannabis type (hop/hemp) pollen was also found.

Oak, alder, and ash were growing in the catchment along with hazel, pine, lime, and elm. However, they were either being very intensively managed, were growing some distance away, or were present as few individuals. Maple and rosaceous pollen was relatively abundant and, indeed, hazel, ash, elm, and lime could all have been growing in a nearby hedgerow. For them to be able to flower, however, their management must have been fairly lax. The presence of Hedera (ivy) indicates that it was growing well above the ground and might have been exploiting the taller woody plants in a hedge.

In summary, the feature was set in an open, agricultural landscape, very close to a mixed hedge, and overhung by the branches of elder bushes. The base of the hedgerow probably supported a fairly rich mixture of herbs and ferns; the ground around the feature was a little soggy, and there were probably compacted, trampled, and broken soils nearby. Cereal fields were situated in the vicinity.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

Following this phase of activity, changes in the local landscape seem to have involved the repeated removal or at least reduction in the overhanging hedge, punctuated by episodes of regrowth, and (although undated) it is at least possible that this activity was associated with the remodelling of the enclosure and the construction of the palisade.

There appears to have been more intensive activity in the vicinity of the feature. Mentha-type diminished and there was a very marked decline in elder which was correlated with a decline in fungal spores and a marked increase in microscopic charcoal. Maple, ash, and oak also declined while there were slight increases in other woody plants, and birch and Prunus type (eg sloe) were recorded for the first time. Grasses and ribwort plantain increased

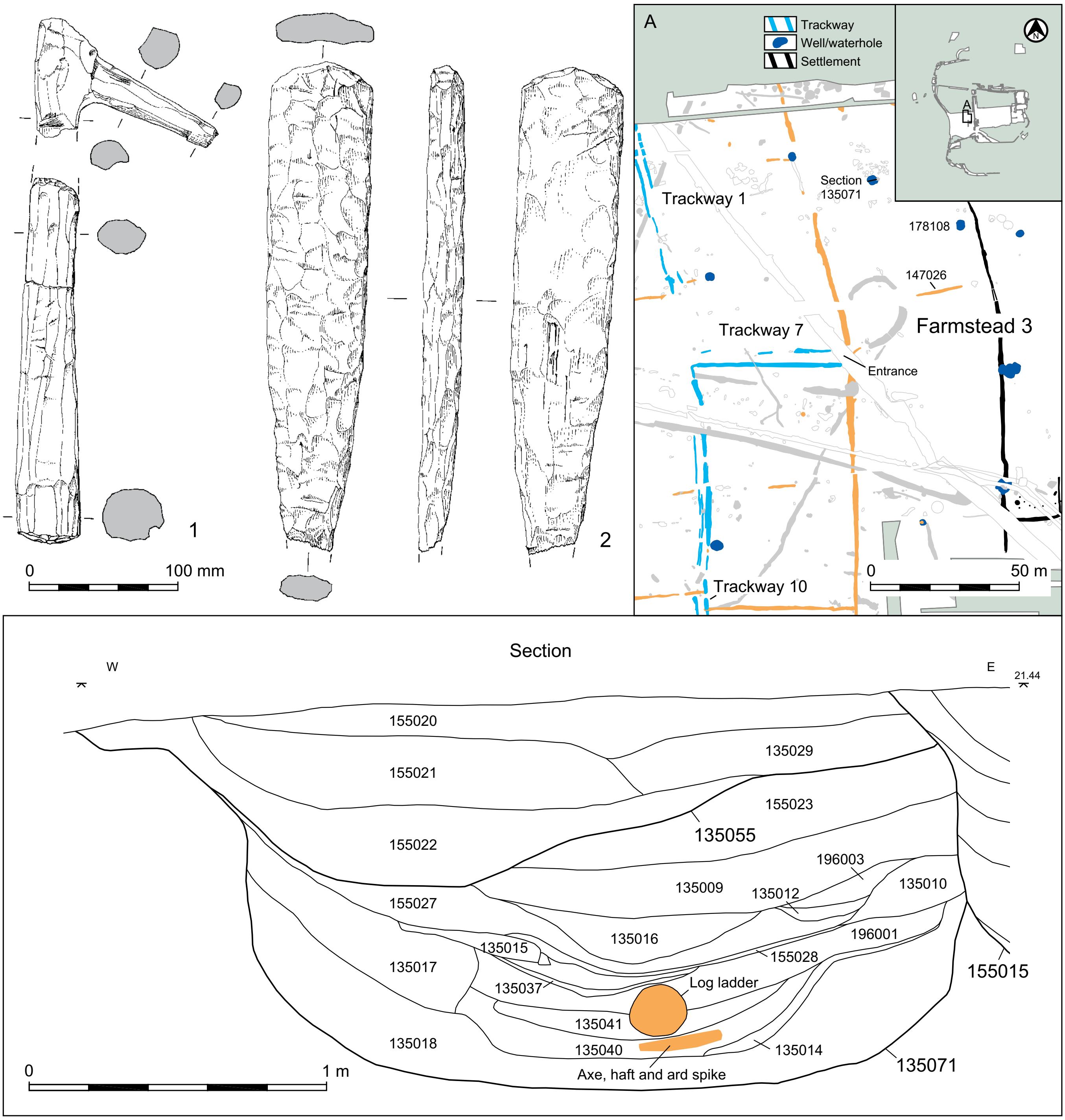


Figure 3.14: Waterhole 135071 and wooden objects (1. Axe haft; 2. Ard spike)

slightly while plants such as Senecio/Bellis type (eg ragwort/daisy) and ferns (undifferentiated) declined and there was very little change in other taxa.

These changes suggest that a local fire had affected some of the hedgerow plants so that their flowering was reduced, but that this had had the effect of allowing the pollen of other plants to be recorded. There seems little doubt that the pollen diagram is recording some small-scale local disturbance, probably caused by the fire. The hedge itself might have been burned or it might have been coppiced with the wood loppings being burned close by.

It is clear from the pollen diagram that the effects of the perturbation soon diminished and the elder quickly re-established its dominant effect in the pollen record. Other woody plants also recovered, and there is little doubt that the effects of fire had allowed a better representation of Prunus-type (eg sloe) and other rosaceous plants such as bramble and hawthorn...

The local burning event did not affect local cereal growing and these crops actually seem to have increased throughout the zone. All other taxa exhibit relatively minor fluctuations and these are probably functions of variable taphonomy rather than any meaningful management of the site.

Plate 3.5: Wooden axe haft from waterhole 135071

Plate 3.6: Wooden ard spike from waterhole 135071

Another decline in elder and fungal remains, and increase in microscopic charcoal followed. Again, the local woody plants (possibly those in the hedge) were adversely affected by the fire. Maple, Crataegus type (hawthorn), and Prunus type (sloe) also declined but Viburnum (another shrub commonly found in hedgerows today) was recorded for the first time. Cannabis type pollen also failed to be recorded and this gives added weight to the contention that it had been growing as a hedgerow climber. Even greater impact on the hedgerow and any other trees and shrubs growing in the catchment occurred subsequently. Most either declined or were not represented. Values for cereal type pollen also dropped while grasses and some other herbs seem to have been enhanced by events. Certainly Silene type (campion), and Succisa (devil's bit scabious) were better represented along with the grasses, although bracken declined. The pollen spectra in this zone are probably reflecting the effects of small scale management although there is little doubt that cereal production had either moved away slightly, or had declined in a real extent in the immediate locality.

This process seems to have culminated in the severe cutting/burning of the elder bushes. Cereal production also declined in the vicinity of the feature. The increase in herbaceous pollen, particularly that of plantain, campions, dandelion-like plants and, eventually, bracken and hogweed/fool's parsley suggest that the sward at the base of the hedge remained lush. It is possible that they were actually growing in the ditch and out of reach of stock animals. There is little doubt that there were small-scale changes in the area but it is doubtful that there were meaningful alterations in the landscape further afield.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

Located 30 m west of the proposed palisade, waterhole 135071 (Fig. 3.14) provided no indication of the presence of settlement or buildings. Robinson (Framework Archaeology 2006, 128) observed that the high levels of scarabaeoid dung beetles indicated that domestic animals were concentrated in the vicinity, suggesting that the enclosure in which this pit was situated was used for management of stock which grazed over a much wider area.

This, however, is contradicted by the pollen and insect record for pit 178108, 30 m to the south-east, which indicates arable land from which stock had been excluded. It is then perhaps the case that dung was deposited into the pit deliberately, adding to the impression that this area in the north-west corner of the enclosure was a space set aside, separated from grazing land to the south by east-west ditch 147026 (Fig. 3.14).

Waterhole 135071 seems to have been a focus for deposition (see artist's reconstruction in Plate 3.4). The sequence is as follows:

1. The lowest fills (eg 135018) were deliberate deposits to provide a more solid platform for drawing water, and may have been revetted: although there was no conclusive evidence of wattle, the lack of primary erosion from the sides of the waterhole suggests some level of maintenance during the initial use of the feature.

2. The next phase appears to represent a time when the waterhole was going out of use. Waterlogged organic-rich deposits 135040 and 135041 produced wooden artefacts, including:

…a deposit of bark (Alnus sp.), a log ladder [Fig. 3.15] and artefacts (basketry, an axe haft and ard spike [Fig. 3.14, 1 and 2 respectively]). 106 other loose pieces of wood were recovered including wood chippings (Prunus, Populus, Fraxinus, Quercus, Salix and Alnus spp.), bark chippings (Salix and Fraxinus), sections of roundwood (Frangula, Fraxinus, Alnus, Quercus, Prunus and Salix spp.) and stake points (Salix and Quercus spp.)... the diverse composition and the fact that much of the roundwood consists of twig-type material suggests that this is a casually derived assemblage.

(Allen in Framework Archaeology 2006, CD Section 6)

Several pieces were radiocarbon dated. In 135040 an oak heartwood stake provides a *terminus post quem* for the deposit of 1530–1310 cal BC (Wk-10030; 3168±46 BP), while a willow stake off-cut which is unlikely to have survived long unburied (and consequently to be contemporary with its context) gave 1430–1310 cal BC (Wk-10035; 3048±46 BP). The axe haft (presumably for an early socketed axe) dated to 1440–1310 cal BC (NZA14903; 3071±55 BP), while the ard tip gave a date of 1410–1280 cal BC (NZA14906; 3065±75 BP). Overlying these, in 135041, waterlogged chaff dated to 1400–1260 cal BC. Taken as a whole, the date of deposit 135040 is estimated as 1420–1310 cal BC *(Healey, CD Section 20)*, indicating that the deposition of these objects and the change in use of the feature was broadly contemporary with the remodelling of the settlement enclosure.

The log ladder (Fig. 3.15) had probably been partially sunk into the basal deposits to provide a firmer seating. During excavation it was suggested that a deposit of bark was the remains of a container but specialist examination cast doubt on this interpretation. What seems likely is that a wooden haft (Fig. 3.14, 1; Plate 3.5) for a socketed axe and a Neolithic ground stone axe were deliberately placed on the surface of deposit 135040. This was then covered by a deposit of wooden material (135041) which contained an ard spike (Fig. 3.14, 2; Plate 3.6).

The axe is complete and in good condition, with much of the original polished surface surviving. It is somewhat plump in appearance, with a rounded butt and sides and a blade that is not particularly sharp. Macroscopic examination with a hand lens showed that the axe probably belongs to petrological Group I , an uralitised gabbro or greenstone likely to come from the Penzance area of Cornwall…

A Neolithic stone axe in a 'placed' deposit of Middle Bronze Age date is unusual though not entirely without precedent. Complete stone axes found in particular post-Neolithic contexts are especially suggestive of intentional deposition. One such axe, identified petrologically as Group XX, came from the Bronze Age enclosure at Rams Hill, Berkshire (Bradley & Ellison 1975, 86; BER 70), where its position in

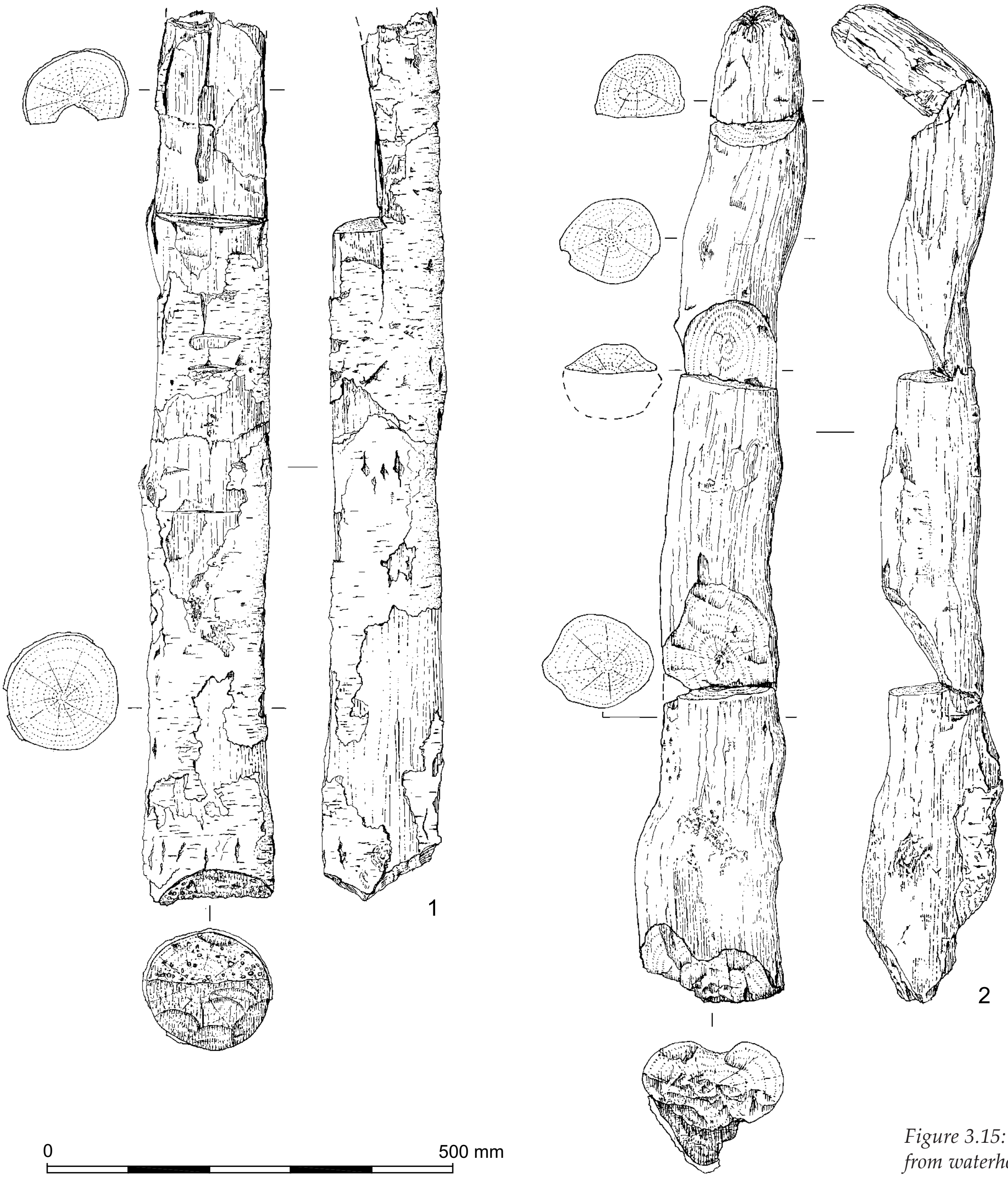


Figure 3.15: Log ladder from waterhole 135071

a foundation trench for the rampart at the southern entrance may be of some significance (Bradley 2002, 54)…

There are more instances of stone axes which, although not complete, were found in specified Bronze Age contexts. One such fragment came from one of the central postholes belonging to a house at Thorney Down, Wiltshire, where it was associated with Deverel-Rimbury pottery. J.F.S. Stone wrote at the time that 'its occurrence here can hardly be fortuitous' (1941, 132; WI 48) and referred to another axe fragment found in the ditch of the Bronze Age enclosure at Boscombe Down East (Stone 1936, 479; WI 189). Both these fragments belong within petrological Group I…

The waterhole at Terminal 5 is in an area of Bronze Age fields where there had been previous specific Neolithic activity, being sited in the centre of the smaller (C2) cursus. The axe could have been a casual find, picked up as a curiosity. However this particular axe is in good condition, suggesting that it may have remained all along in personal possession, perhaps even being cared for as an heirloom. The conclusion may be that by the Bronze Age stone axes had not entirely lost their former value.

(Roe in Framework Archaeology 2006, CD Section 5)

The pollen record indicates that,

…the landscape was extensively open during this phase of the site's development… Cereals were probably being grown fairly close by and open soils are evidenced by the frequent representation of ruderals such as Chenopodiaceae, Rumex (docks), Polygonum aviculare (knotweed), and Apiaceae (hogweed family). However, pasture also seems to have been very important in this area and herb-rich grassland dominated the site. Pteridium appears to have infested the well-drained, more acidic areas and the presence of Calluna (heather) hints at a degree of soil impoverishment locally.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

3. The deposition of the artefact assemblage seemed to signal a change in the history of the waterhole, which was allowed to silt slowly with material derived mainly from the erosion of the surrounding ground surface.

During the next phase of sediment accumulation, the marginal soils had become wetter and there were floating aquatics in the feature. Cyperaceae, Filipendula, Lythrum portula (water purslane), Mentha type, Sphagnum moss, Lemna (duckweed), and algae were all recorded. Their presence indicates that the waterhole might have been somewhat neglected. Glomus type indicates that soils were eroding into the feature. These fungal bodies are found associated with living plant roots.

There are marked changes in the pollen spectra of dryland plants which might indicate human impact. Although Alnus was at a very low level in the basal level in this zone, it seems to have flowered very prolifically and its pollen accounted for nearly 40% of TLPS. Tilia declined to extinction but other woody plants seem to have been little affected. There was certainly a large increase in microscopic charcoal concentrations and whatever the nature of the change in land use in the locality, fire might have played a role in it. The herbaceous flora was also affected with some herbs like Plantago lanceolata being enhanced while others such as Potentilla type (eg silver weed), Senecio/ Bellis (ragwort/daisy), and Pteridium declining. The marked increase in Ranunculus type (buttercups) could be related to the increased wetness around the waterhole since R. lingua and R. flammula are commonly found growing on wet soils.

Although these changes appear fairly dramatic in the pollen spectra, they might only represent a fairly short period of different land management. For example, there might have been some attempt to burn off dead biomass in the winter and active removal of bracken and ragwort from pasture. A release of nutrients from the burnt dead sward could result in enhancement of growth of other herb species. Interpretation of these events is certainly not easy. As regards the dramatic increase in Alnus, it might simply reflect a relaxation of the local cutting regime so that pollarded trees were able to flower prolifically. Tilia seems to have been adversely affected and Quercus and Pinus were less well represented. But, their values were so small in the previous zone that it is difficult to know whether these changes are meaningful.

There is little doubt that herb-rich pasture continued to dominate the area around the feature, and that the nature of the hedgerow seemed to have been little affected by any of the land use changes. Cereals were a little less well represented but this might simply mean that crops were being grown slightly further away. Crop weeds such as Centaurea cyanus (cornflower), and Anthemis type (eg mayweed) and plants characteristic of open soils were certainly growing locally.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

4. The waterhole was finally deliberately backfilled, possibly to level the ground.

The ard spike from this feature is one of a number of such objects recovered from waterholes within the large 'D'-shaped enclosure (and more widely). Although somewhat enigmatic, the interpretation of these objects (formerly referred to as 'beaters') is at least plausible (see discussion in *Farmstead 1* below), in which case their careful deposition in significant locations and associated with other notable objects highlights the importance of agricultural processes in the lives of the inhabitants of Bronze Age Heathrow.

A second ard spike came from well 592384 which recut an earlier pit (located on Fig. 3.16). This example had been cut from tangentially-faced *Acer campestre L.* timber, worked on all surfaces, and tapering evenly along its length. The thinner end was worn and abraded to an approximate oval cross section, while the thicker end was less worn and polygonal in cross section.

This pattern of a large pit recut by a smaller waterhole is repeated in features 611100 and 611107 (Fig. 3.16) situated towards the north-east corner of the enclosure. The pollen assemblage from the lower fills of 611100, referred to as a pit, was dominated by

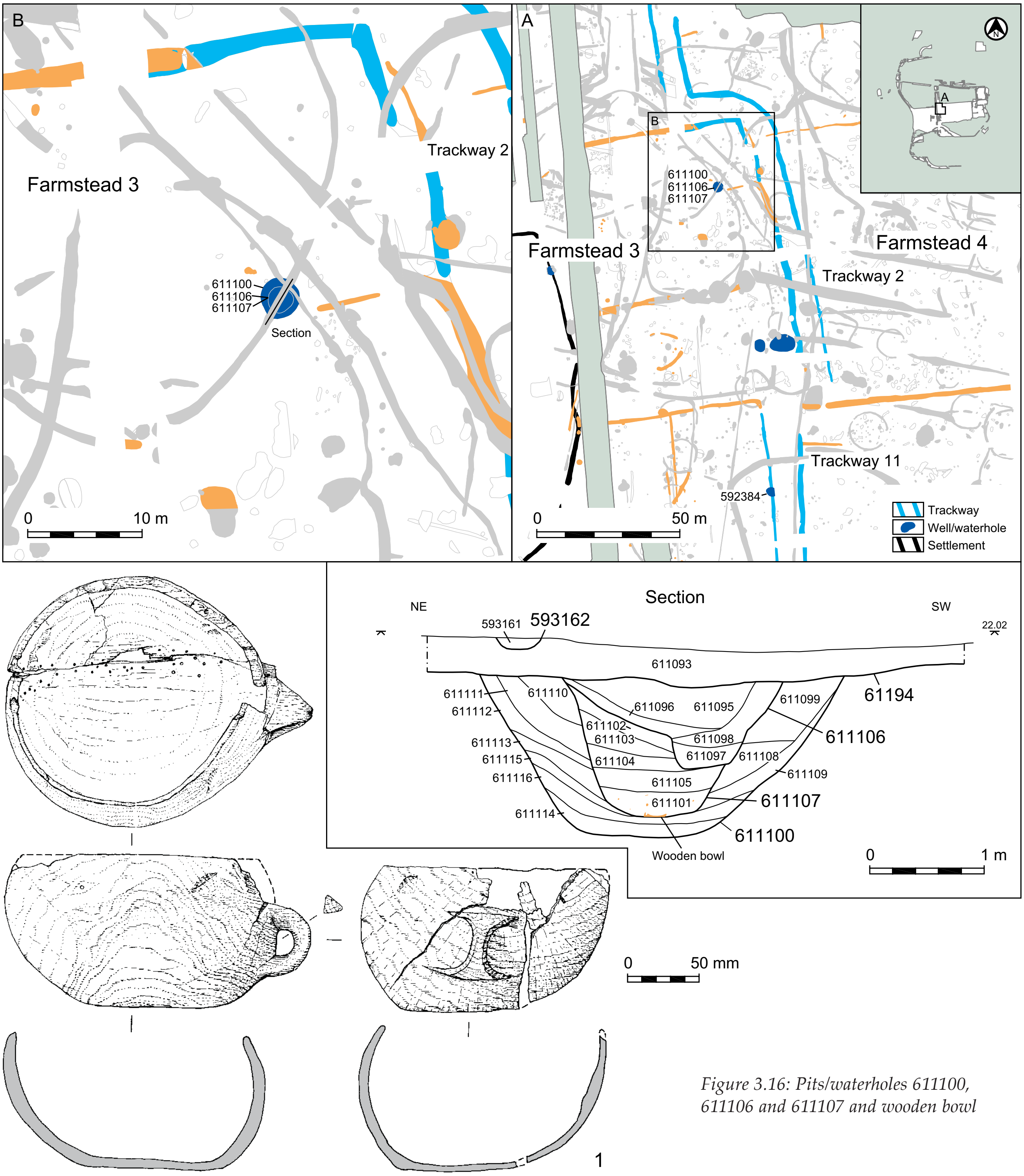


Figure 3.16: Pits/waterholes 611100, 611106 and 611107 and wooden bowl

grasses, with many grassland herbs, although ribwort plantain had a rather low value suggesting that grazed grassland was limited or at a distance. Quite high values of cereal crops, including emmer/spelt, barley and possibly oats, and the weeds associated with arable fields suggest that cereals were being grown nearby. Taxa which are characteristic of hedgerows were also well represented with the occurrence of the pollen of many rosaceous taxa, ivy, ash and maple (*Acer*). There was also 5% oak pollen which may represent oaks growing as standards in the hedgerows, or may be from woodland further away. Hazel and alder pollen were also present.

The lower fills of the recut, referred to as a waterhole (611107), contained a rather different pollen assemblage. Duckweed was quite common, suggesting that the feature held standing water but was perhaps not being kept clear of weeds. Grass pollen was dominant, and several clumps of grass pollen were found, suggesting that either grass was hanging over or was being introduced into the waterhole. *Glomus* spores were also common in all levels, and several eggs of the parasitic intestinal nematode *Trichuris* were also present. Nettle values were also quite high, a plant of nitrogen-enriched soils often linked to areas with defecation. This suggests that the feature served as a 'wallow' and waterhole for animals.

Again, as in the pit 611100, taxa associated with arable fields (cereal cultivation), pastures and meadows, and open waste and disturbed ground were present, and hedgerow taxa were common.

Higher fills contained many herbs characteristic of cereal crops and arable fields, trackways and waste and open ground. There was some evidence for less pasture, with characteristic taxa having only low values or being absent (eg ribwort plantain, buttercups, sorrel, and greater/hoary plantain), and a slight increase in cereals. The three basal subsamples contained high values of bracken, which may be associated with a drop in grazing pressure, or may have been dumped into the pit as household waste. There were also slight increases in some other taxa which may be associated with derelict or open ground (eg goosefoots, dandelion-type, and possibly cleavers (*Galium aparine*) (Rubiaceae)). Plants associated with hedgerows or scrub were also at lower values. As with the lower fills, *Glomus* spores and *Trichuris* eggs were common. Duckweed pollen was absent suggesting that either the pit was dry at this time, or that it was being cleared and kept open. The upper two subsamples had high values of duckweed pollen, and spores of the green alga *Spirogyra* were also present, suggesting that the pit then had standing water, was not being cleared, and possibly was no longer in use. No parasitic eggs were found, suggesting it was no longer being used as a cesspit or animal wallow. Taxa characteristic of hedgerows or scrub were particularly well represented and could represent a cessation of hedgerow maintenance allowing increased flowering or the development of scrub on abandoned land. Bracken spore values were much lower in these upper subsamples.

Plate 3.7: Wooden bowl from waterhole 611107

Certainly there seems to have been some local change in landuse.

Lower fills 611101 and 611105 of waterhole 611107 contained a range of wood and wooden objects including sections of *Corylus avellana L.* and *Quercus* spp. roundwood, a *Quercus* spp. heartwood chipping, part of an *Alnus* spp. board, some unidentified fibrous material, and a remarkable carved bowl (Fig. 3.16; Plate 3.7).

Cut from a halved *Populus* spp. blank, the rim is towards the inside of the parent log. The vessel has a single integral carved loop handle, a flat base and no decoration. The surfaces are worn and the bowl was found split in two along an old break which has pairs of stitch holes (with *in situ* fibrous material) either side of the break forming a repair. Three dates were obtained on this vessel, all statistically consistent and giving a weighted mean of 1430–1370 cal BC (72%) or 1350–1310 cal BC (23%). Healey notes that this

…weighted mean is statistically consistent… with the date of a chip of 10- to 15-year-old oak branchwood from the same deposit… Since the bowl was not freshly made when deposited, the age of the oak may give some indication of the age of the vessel when placed in the waterhole.

(Healey, CD Section 20)

A low density scatter of pits, gullies, postholes and other features occur within the large 'D'-shaped enclosure, but very few resolve into meaningful patterns. Fewer still contain any significant artefactual or palaeoenvironmental assemblages, and those that do generally date to the Late Bronze Age. More evidence of Middle Bronze Age activity however occurs outside the enclosure, in the western field system.

The western fields

Trackway 7 lead westwards out of the large 'D'-shaped enclosure to join Trackway 1, which provided access into a system of regular rectilinear fields (see Fig. 3.10 above). The fields east of Trackway 1 had their long axes aligned north-south, while those on the other side of the trackway were aligned east-west.

As noted previously, Trackway 1's southern end is formed by the intersection of two east-west field boundaries with the trackway ditches, and by a posthole set between the ditches of Trackway 10 (Fig. 3.17). Although there are no stratigraphic relationships to prove it, it is at least possible that this 'stop' between Trackways 1 and 10 is a later insertion, and that the trackway was originally continuous. If this is the case, then Farmstead 3 would initially have been considerably larger, and would have

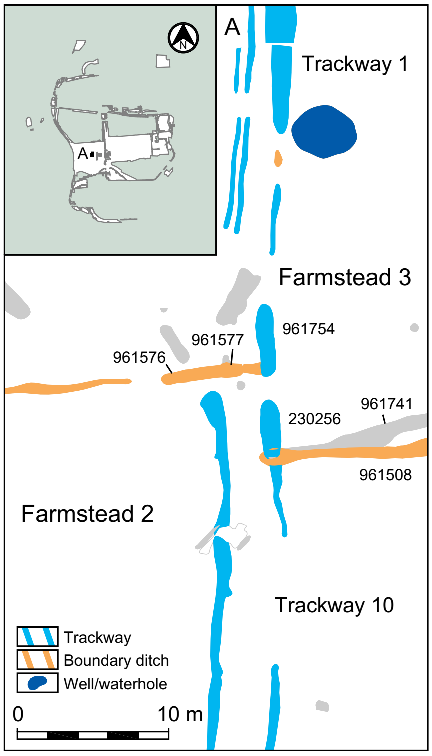


Figure 3.17: Junction between Trackways 1 and 10

included the area designated as Farmstead 2. As the radiocarbon determinations from Farmsteads 1 and 2 suggest (see below), it seems possible that this division of the farmsteads was at least broadly contemporary with the remodelling of the Settlement 4 enclosure, around 1400 cal BC.

As in Settlement 4 and the outer 'D'-shaped enclosure, the majority of evidence for activity in the western fields of Farmstead 3 was retrieved from a series of wells, waterholes and large pits scattered throughout them, most of which lie on or adjacent to field boundaries.

For instance, well 156028 (Fig. 3.18) lay in the south-east corner of a field, and its creation must have predated at least some portion of the east-west ditch forming that field's southern boundary, since ditch 156029 cuts the fills surrounding the well shaft (but not the shaft itself). Field recording and *Volume 1: Perry Oaks* (Framework Archaeology 2006) present this feature as a waterhole (156028) later cut by a well (156031). A re-examination of the sequence however suggests that the feature was always a well and that—rather than being recut—the well shaft was a part of the original use of the feature.

The primary fills were caused by rapid slumping of the sides of the feature. A column of wattle panelling was then constructed to form a cylindrical well shaft against the outsides of which the larger pit was backfilled. An ard spike (See Allen below for discussion) and wooden haft for a socketed axe (Fig. 3.18; Plate 3.8) were placed on the base of the vertical shaft. Radiocarbon determinations of 1440–1290 cal BC (NZA14905; 3019±65 BP) and 1460–1300 cal BC (NZA14904; 3103±65 BP) respectively were obtained, and the date of the deposit containing the artefacts is modelled as 1420–1290 cal BC probably 1410–1340 cal BC.

Anobium punctatum (woodworm) and the synanthropic beetle Ptinus fur, which tends to occur inside buildings, raised the possibility that there was a settlement, or at least a timber building, close to Feature 156028. However, members of the Lathridiidae (Species Group 8) and insects of foul organic refuse were not particularly high. There was no strong evidence of any waste-ground type habitat.

(Robinson in Framework Archaeology 2006, CD Section 12)

The well seems to have been situated close to a woodland edge environment (possibly a hedgerow) with maple, Prunus type (cf sloe), Sorbus type (eg rowan), willow, and Viburnum (guelder rose) growing with hawthorn, and possibly bramble. The values for Hedera (ivy) were particularly high and this suggests that the climber was growing very close to the well and supported by the hedge shrubs.

The relatively high levels of microscopic charcoal indicate that people were active close to the feature but, in addition to the woody taxa, the herbaceous pollen spectra also suggest a relaxation in activity in the vicinity of the waterhole. Grass pollen was relatively high and reached values of 40% in the middle and towards the end of the zone. Grazing pressure seems have been reduced so that herbs such as Hypericum perforatum type (St. John's wort), Polygala (milkwort), Potentilla type (tormentil/silverweed), Prunella type (self heal), buttercups, ribwort plantain, Trifolium type (clover), Lotus type (bird's foot trefoil) and others were able to flower. Ruderals such as goosefoot, docks, dandelion-like plants, hogweed/fool's parsley, and Sinapis type (eg charlock), and Artemisia (mugwort), were very well represented and this suggests that open ground was infested with these waste ground weeds. Centaurea cyanus (corn flower), a plant associated with cereal crops, was also growing locally and many of the herbs could have been growing at the margins of (or even within) crop fields. Cereals were certainly being grown and/or processed in the vicinity although they declined towards the end of the zone.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

Plate 3.8: Wooden objects from well 156028

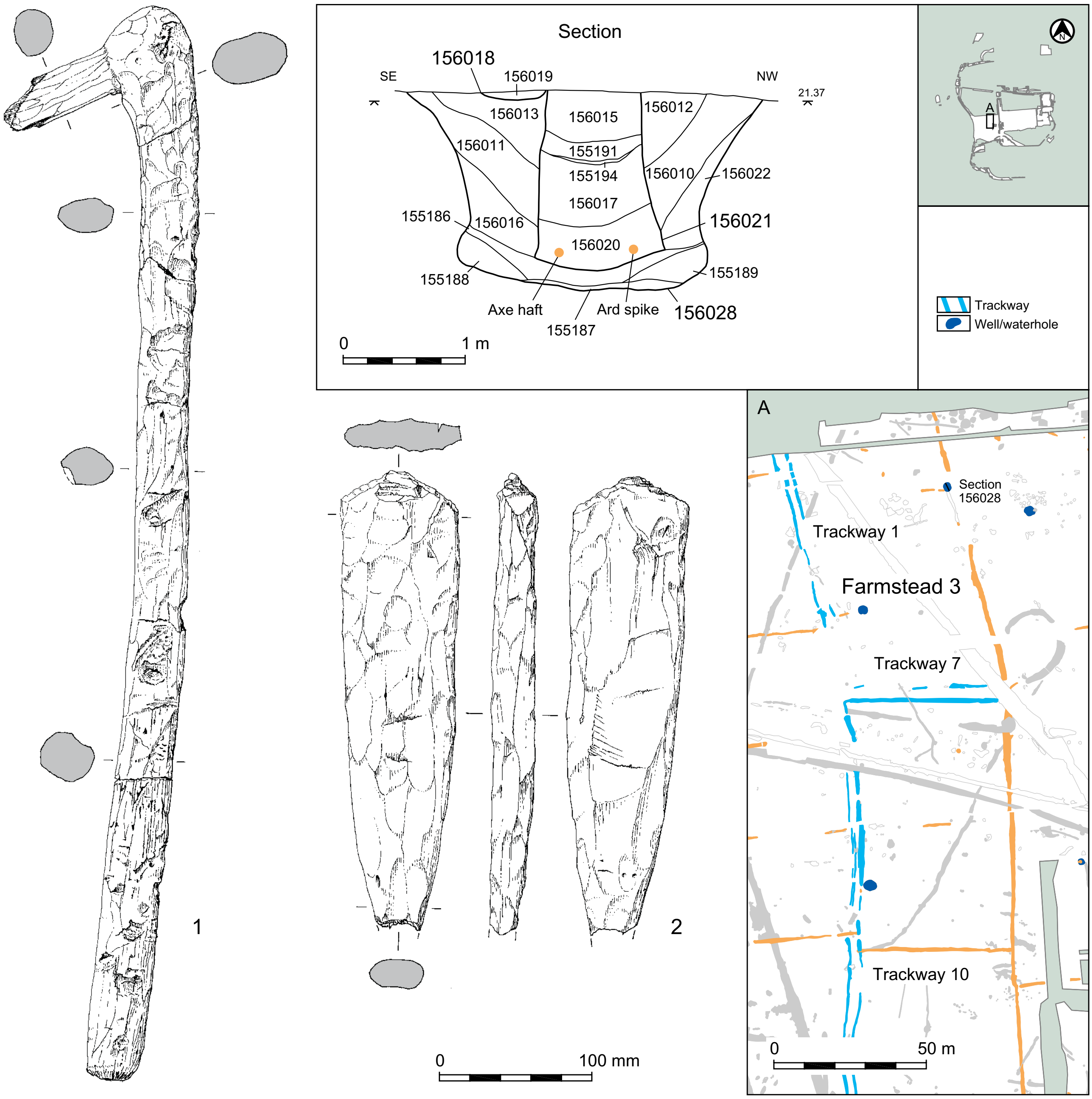


Figure 3.18: Well 156028 and wooden objects

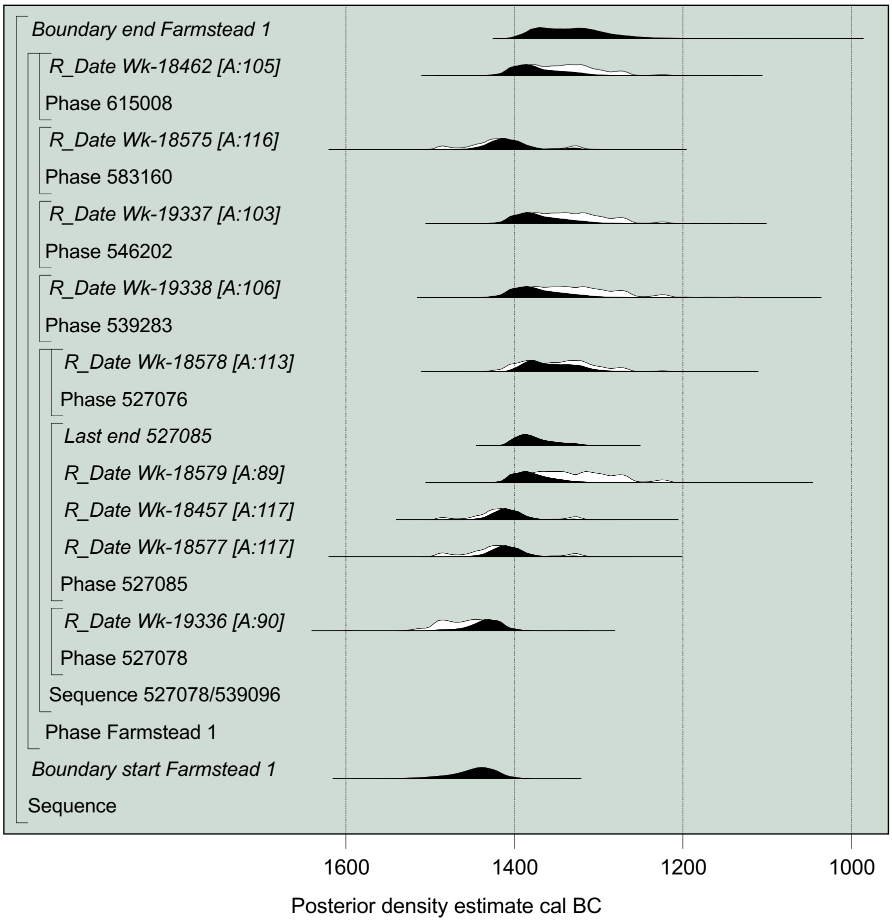
At some point, the wattle lining collapsed (or began to collapse) and a timber revetment was constructed to strengthen the well shaft. Radiocarbon determinations from wooden chips derived from the manufacture of the revetment provided a *terminus post quem* of 1620–1460 cal BC (Wk-10031; 3260±57 BP), and a date of 1400–1230 cal BC (Wk-10028; 2942±59 BP) which is more likely to relate directly to the activity. This is supported by a date of 1400–1240 cal BC (Wk-9376; 3015±56 BP) on waterlogged seeds from the first organic silting of the shaft.

The soils around the feature continued to be wet and the presence of Lythrum portula (water purslane) might indicates standing water, although this plant can also grow on waterlogged soils. There are very marked changes in the pollen spectra between this zone and the lower one. Woody taxa continued to be well represented although alder and hazel declined slightly the middle of the zone. The hedge seems to have continued to flourish although the fall in ivy pollen suggests that some shrubs had been cut. Certainly Prunus type (eg sloe) disappeared from the record and Rosaceae (hawthorn/bramble) was diminished.

Cereal pollen was less frequent, grass pollen percentages dropped, and other herbs such as Ranunculus type (butter-cups), mugwort, and ribwort plantain declined. These changes were reflected in a marked increase in dandelion-like plants, bracken and other ferns and suggest that animals had been brought in again to graze the local pasture. There are many dandelion-like plants included in the pollen taxon 'Lactuceae' and a great number have a flowering peak early in the season. Dandelion (Taraxacum officinale) starts flowering in April while grasses reach their peak in June. It is possible, therefore, that

Above. Plate 3.9: Artist's reconstruction of Farmsteads 1 to 3, Phase 2

Right. Figure 3.19: Radiocarbon dates for Farmstead 1



animals were being brought into these pastures after the main flowering peak of the Lactuceae but before the main flowering peak of grasses. The high levels of bracken might indicate preferential grazing since sheep have little effect on this fern. They tend to avoid it and so it would not even get trampled.

Higher levels were characterised by a significant drop in woody plants and bracken, an increase in cereal type, dandelion-like plants, ribwort plantain, and buttercups, followed by a marked decrease in cereal pollen… The hedge seems to have been intensively exploited and finally removed (or at least heavily cut). Grazing still seems to have been important and grass pollen percentage changed very little. Microscopic charcoal levels increased markedly and there might have been some burning close to the feature. Indeed, the hedge itself might have suffered fire damage since the drop in hedgerow taxa was significant.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

Post-Deverel-Rimbury pottery from the upper fills of the well shaft indicated that it continued to fill during the period 1150–750 BC (see below).

South and west of Farmstead 3, a number of fragmentary field systems hint at the existence of more and less regularly arranged sets of enclosures, trackways,

Figure 3.20: Farmstead 1 and Settlement 7

fields and settlements (see artist's reconstruction in Plate 3.9). These (consisting of Farmsteads 1, 2, 5 and 12) make up the aggregate landscape in the sense that they share no necessary dominant alignment, and appear to have accreted rather than been laid out according to a dominant plan. Indeed, one of them (Farmstead 12) has an arrangement so at odds with the others that it may represent the northernmost element of an entirely separate set of landscape divisions.

Farmstead 1

This farmstead lay at the western extreme of the excavated areas. Unlike the majority of the other farmsteads the excavated portion contained no double-ditched trackway, and its boundary with Farmsteads 2 and 3 on the east was instead marked by a segmented ditch following the line of a palaeochannel. This channel seems to have been silted for 5000 years when Farmstead 1 was laid out, but environmental evidence shows that the area had stayed wet at least into the Late Neolithic, and the line of the channel would appear to have existed in the Middle Bronze Age as a boggy linear hollow.

The exact layout of fields in this farmstead is difficult to reconstruct, due to the remarkable persistence of some land divisions and boundaries into the post-medieval period. However, concentrations of Deverel-Rimbury and post-Deverel-Rimbury ceramics in some ditches indicate the usual divisions into small fields, generally aligned with their long axis east-west, more rarely north-south. A small number of pits scattered amongst the fields tended to contain a little Middle Bronze Age pottery along with occasional burnt flints and pieces of fired clay. Wells and waterholes are also present. An almost-square arrangement of ditches and gullies may mark the location of a settlement enclosure. It is far from certain what form any buildings here may have taken—or indeed if there were any present at all. The few surviving pits and postholes form no coherent patterns, and a settlement is only really suggested by the arrangement of ditches and the slightly higher concentrations of Deverel-Rimbury and post-Deverel-Rimbury ceramics within the area they demarcate. On the southern edge of the settlement, pit 615008 had a log ladder against its northern side, and contained fragments of a Deverel-Rimbury bucket-shaped jar and a cylindrical loomweight.

Radiocarbon dates for features within this Farmstead (Fig. 3.19) suggest occupancy over two centuries following 1500 cal BC. Two main periods of activity seem likely, with the first falling 1500–1400 cal BC and the second 1400–1300 cal BC.

1500–1400 cal BC

The earlier group of determinations probably relate to agricultural activity prior to the establishment of the farmstead, when the site lay within the wider landscape of Farmstead 3. They date a pit cut by later field boundary ditches, and an east-west ditch (Fig. 3.20). The lowest fill of this early pit (527078: 1490–1390 cal BC; Wk-19336; 3185±33 BP) contained a rich assemblage of plant species (twigs and wood fragments, charcoal, blackberry and three-nerved sandwort seeds, rough chervil, and Rubus/Rosa-type thorns).

These taxa suggest the presence of a shaded, hedgerow-type vegetation very close to the pit. Larger trees, however, were not represented. Weeds of nutrient-rich soils were common but not abundant. Grassland taxa were present, particularly those of damp soils. Some of these may represent the vegetation growing around the pit, such as gypsywort and mint. The presence of water plantain seeds suggests standing water was present in the feature.

The charred plant remains consisted of several hulled barley grains, a possible bread-type wheat grain, some emmer and spelt chaff (both cereal confirmed through the presence of well-preserved glume bases) and several barley rachis fragments. Weed taxa consisted primarily of several cleavers nutlets and vetch/tare seeds.

(Carruthers, CD Section 14)

The evidence for this feature being set by a hedgerow adjacent to damp grasslands suggests that it may have been located at the boundary between an agricultural field and grazing or waste land. This suggestion fits very well with its location beneath a later field boundary and close to the line of the palaeochannel. Insect evidence further adds to this picture, being…

…characterised by the recovery of large numbers of Scarabaeidae or 'dung beetles' and taxa associated with open grassland. The 'dung beetles' include Onthophagus similis and O. ovatus, Colobopterus erraticus, Aphodius rufipes and Aphodius coenosus all of which are found in dung, on open and sandy ground (Jessop 1986). Many of the Carabidae or 'ground beetles' from these samples are also found on open sandy grassland including Amara aenea, Asaphidion pallipes and Anisodactylus nemorivagus (Hyman 1992, Lindroth 1974, 1985, 1986), the elaterid Agrypnus murina is also found in sandy, dry meadows and heath (Koch 1989b). Several of the taxa recovered are associated with open grassland (ecological group 3). Typical of this type of landscape are the Sitona spp. 'clover weevil', Mecinus pyraster which is associated with plantain (Plantago spp.) and the Apion spp. which are often found on a range of leguminous plants. The presence of disturbed ground is also suggested by Brachypterus urticae which feed upon nettle (Urtica spp.). In contrast, other carabids recovered such as Pterostichus cupreus and Pterostichus nigrita, are associated with damper meadows and moist clay soils (Lindroth 1974, 1985, 1986)

(Tetlow, CD Section 17)

Clearly the pit was in proximity to a dung heap derived from more than one area, perhaps suggesting a dump at the edge of a field. The presence of dung and charred grains indicate a mixed economy, with both arable and pastoral farming. The possibility of occasional flooding again fits very well with the proximity of the feature to the palaeochannel. Taken together, these indicators are all of a feature located at the edge of a field, on perhaps marginal land in an area used for the storage of dung and disposal of waste.

A second feature is likely to be broadly contemporary on the basis of radiocarbon determinations. This ditch (583160: 1460–1370 cal BC (89%) or 1360–1320 cal BC (6%); Wk-18575; 3137±36 BP) has environmental evidence entirely in keeping with that from pit 527078:

Alder, elderberry and blackberry seeds were frequent, and stinging nettles and other weeds of disturbed, nutrient-enriched soils were again dominant. Some grassland taxa and wet-ground weeds (duckweed, spike-rush (Eleocharis subg. Palustres) were also recorded. The insect assemblage indicated that a high dung input had occurred in the area, so it is likely that livestock were grazing close to the ditch… the woody taxa could have come from material washed in from the alder-enshrouded palaeochannel nearby, or a hedge may have existed along the ditch and organic decay had caused the loss of leaf fragments, thorns and twigs. Charred plant remains were sparse in this sample, with just a few chaff fragments from emmer and barley being identified. Weedy vetches were again present.

(Carruthers, CD Section 14)

1400–1300 cal BC

The second phase (1400–1300 cal BC) is likely to date the establishment of the farmstead. The determinations come from north-south and east-west aligned field boundary ditches, and from pits within the suggested settlement. This phasing of the radiocarbon determinations suggests that Settlement 7 was established some centuries after the first field systems had been laid out. The possibility is therefore that Settlement 7 was established in an existing field system. If so, these fields may have belonged originally to Farmstead 3. As will be seen, Farmstead 2 was also probably established in what had been fields of Farmstead 3, and consequently it may be possible to detect the fragmentation of an initial large establishment into a number of smaller units. Although the available dating places this division at around 1400 cal BC it may not have been a single event, but rather spread out.

Some remodelling of boundaries and access would have been likely if this scenario has any validity. Ditches 539096 (modelled as dating to 1420–1320 cal BC; Wk-18457; Wk-18577–9) and 539283 (1430–1300 cal BC; Wk-19338; 3062±39 BP) date to this period, and were in very close proximity to the earlier dated features, allowing close comparison of temporally separate environmental assemblages.

Ditch 539096 (which cut pit 527078) contained well-preserved samples in two of the lower fills which were rich in cereal processing waste of several types: the coarse material such as straw and weed seed heads removed early in the processing; and the finer chaff fragments and weeds removed at later stages. It is possible that the material represents uprooted burnt sheaves rather than processing waste, since weed seeds and cereal grains were frequent.

Differences in the quantities of different weed taxa and between oats (a few grains only, present in two of the samples), spelt (only present in small quantities), emmer (the dominant cereal in five of the six samples) and hulled barley (dominant in the sixth) suggest a series of dumps from different crops rather than one single uniform deposit.

Only a few waterlogged seeds were present in the samples, primarily thick-coated seeds indicating that waterlogged conditions had not been maintained throughout the deposit's history. Taxa such as blackberry, fool's parsley and spike-rush indicate that a disturbed, damp habitat existed around the feature.

Ditch 539283 lay immediately north of ditch 538160. A sample from its lower fill…

…contained frequent fragments of wood, twigs and bark. Alder (Alnus glutinosa) seeds were common and several other woody taxa were represented, including willow (Salix sp.), blackberry (Rubus sect. Glandulosus), cf. sloe (Prunus sp. fragment), elderberry (Sambucus nigra), and the woodland herb three-nerved sandwort (Moehringia trinervia). These remains were not abundant, there were some signs of decay, and thorns and leaf fragments were not present. It is likely, therefore, that this material may have washed into the bottom of the ditch during flooding episodes of the adjacent palaeochannel, or have been blown in from nearby hedges or scrub.

Most of the other waterlogged plant remains came from common weeds of cultivated and waste ground, particularly from soils with some nutrient enrichment, eg stinging nettles (Urtica dioica). Grazed grassland was also represented (eg thistles (Cirsium/Carduus sp., greater plantain (Plantago major)). A few duckweed (Lemna sp.) fruits indicated that the ditch had held water long enough for this free-floating plant to become established, although very few other marsh or wet-ground remains were present.

The charred plant remains were frequent and well preserved, having been protected by the damp, organic conditions. They comprised mainly wheat chaff fragments, with frequent emmer/spelt grains and some hulled barley. The predominant cereal represented by the chaff was emmer wheat (Triticum dicoccum), but small quantities of spelt chaff were present (ratio 15:1, emmer: spelt). A few cereal-sized straw nodes and stem bases (culm nodes and culm bases) were present to indicate that crops had been harvested by uprooting rather than using a sickle, but much more substantial evidence of this was found in pit 527078. The few weed seeds present were common weeds of cultivated and disturbed ground, several of which were also present as waterlogged remains. The most significant of these were orache (Atriplex patula/prostrata) which was the most frequent taxon and which indicates soil enrichment (perhaps manuring of fields), and a few small-seeded weed vetches (Vicia/Lathyrus sp.). This type of waste was very similar to that recovered in much greater concentrations from pit 527078 c 100 m south-east of ditch 539283. The dominance of chaff fragments indicates that it derives primarily from cereal processing waste, although some accidentally burnt whole spikelets may have been included.

(Carruthers, CD Section 14)

Charcoal from both ditches contained a mixed range of species, the most common being:

Quercus (oak) and Maloideae (hawthorn type). The condition of the charcoal was too poor to distinguish between Alnus/Corylus (alder/hazel) and either or both species could be present. The presence of species such as Alnus glutinosa (alder) and Populus/Salix (poplar/willow) indicates that wetland resources were also being exploited, since these taxa prefer damp soil conditions. None of these species burn very well, at least not unless well seasoned (Edlin 1949), so it perhaps not surprising that they are not better represented in the charcoal record. It may be significant that the ditch with the largest wetland assemblage (539283) was in the western edge of the site, on the lower lying levels. This suggests that the gathering of fuelwood was very local. In general, there is a strong presence of scrub/hedgerow species such as Prunus, Maloideae, and Rhamnus which supports the evidence from the pollen that the area was well cleared.

(Challinor, CD Section 15)

The environmental evidence then suggests no great change between the earlier and later periods. Some additional information is however provided by an assemblage of animal bones from ditch 539283.

Most bones from this feature were in moderate condition and a small proportion in good condition. Apart from most fragments being unidentifiable, some bones of sheep/goat (only sheep identified), pig, medium mammal and small mammal were found. Bones from large mammals like horse and cattle are absent. The only elements present were: skull, horn core, mandible, vertebra, tarsals, metapodials and phalanges. The assemblage thus likely resembles primary butchery waste (O'Connor 1993). A high proportion of the bones show different stages of burning (charred, calcined), as the assemblage consists of butchery waste; they cannot originate from the sweeping of hearths. It is more likely that waste was burnt to reduce the amount and subsequently buried in disused features.

(Knight and Grimm, CD Section 13)

Evidence of the range of activities undertaken within Settlement 7 itself comes from the contents of several pits. Pit 546202 (1420–1300 cal BC; Wk-19337; 3062±32 BP) near the southern boundary of the enclosure had a rich organic assemblage, assumed to derive from domestic hearths.

… an organic fill at the base of the pit contained no artefacts, so it does not appear to have functioned as a rubbish pit. It did produce quite a few charred cereal remains, but it would appear to have been much too wet to have functioned as a storage pit.

The waterlogged remains consisted primarily of twigs and wood fragments…abundant stinging nettle seeds with a range of other weeds of disturbed places. Blackberry seeds were also frequent, and alder seeds and catkins were common. Elderberry and rose were the other woody taxa present. Damp ground taxa were scarce, but gypsywort, sedges and mint (Mentha sp.) were probably growing around the margins of the feature. No true aquatics were present. Grassland (Ranunclus spp.) was also represented.

The charred plant remains consisted of primarily chaff fragments from (in order of predominance), emmer wheat, hulled barley and just a trace of spelt wheat. The cereal grains comprised mainly hulled barley, with emmer/spelt and one possible bread-type wheat grain. Since chaff is more likely than grain to have been differentially destroyed during charring and redeposition, *the original composition of the assemblage was probably much more chaff-rich. The deposit may represent cereal processing waste, perhaps with some spoilt grain or unprocessed spikelets mixed in. The weeds included docks, chickweed, frequent vetch/tare and clover-sized legumes, cleavers, scentless mayweed and several chess (Bromus sect. Bromus) caryopses. The latter is of note since chess tends to increase with the increased cultivation of spelt wheat, and Helbaek (1953) suggested it was an introduced weed of spelt. The only two other occurrences of chess in the MBA samples were in two other features that were rich in charred cereal processing waste (samples 17524 and 24051), both of which produced at least some evidence for spelt wheat. Several charred straw nodes and cereal-sized culm bases were recovered, suggesting either that whole, uprooted cereal plants had been burnt, or that mixed burnt waste from both the early stages (straw and weed head removal) and later stages (fine chaff and weed seed removal) of cereal processing were dumped in the feature.*

(Carruthers, CD Section 14)

Adjacent to this pit, a second (546171) was undated, but is likely to be contemporary. It contained:

A 'beater' cut from halved Field Maple timber with one tapered and rounded end and other end roughly hewn. No evidence for mounting or hafting. The narrower end is quite worn to a rounded near oval cross section devoid of tool marks whilst the wider end still exhibits rough axe hewn facets from shaping. Though slightly abraded, the facets are still clear and fairly sharp. No fixings or fittings are present.

It was previously considered (Allen 2001) that these artefacts might have had a symbolic use as wooden axe head substitutes for missing metal examples, based on their form, wear pattern and association with used axe handles with missing blades. The examples from T5 show more clearly that differential wear is present. One end—in each case the narrower end—is worn while the thicker end is not. In the light of this and of further research, it is now possible to offer a more convincing identification of these 'beaters'. Early forms of tillage utilise an Ard. At their simplest, these consist of a beam or bow, used to tow and/or push, and to steer, into which is fitted a share. The share is housed in a socket cut through the bow and wedged in place, leaving the share projecting down from the bow, cutting the furrow as the assembly is pushed or pulled along. The most basic form of share is known as a 'Bar Share', a simple length of wood, stone or metal wedged into the bow.

If one of these 'beaters' were fitted into such a socket and wedged in place it could easily act as a 'Bar-Share'. The woods from which these beaters are cut (Acer campestre L and Pomoideae spp.) are fine grained and relatively hard wearing and would be quite suitable for such a purpose. The differential wear is very similar to that exhibited by stone examples described from Shetland and Orkney (Fenton 1964, 265-7) and on Romano-British iron examples from Silchester, Hampshire and Great Chesterford, Essex. These have tips worn

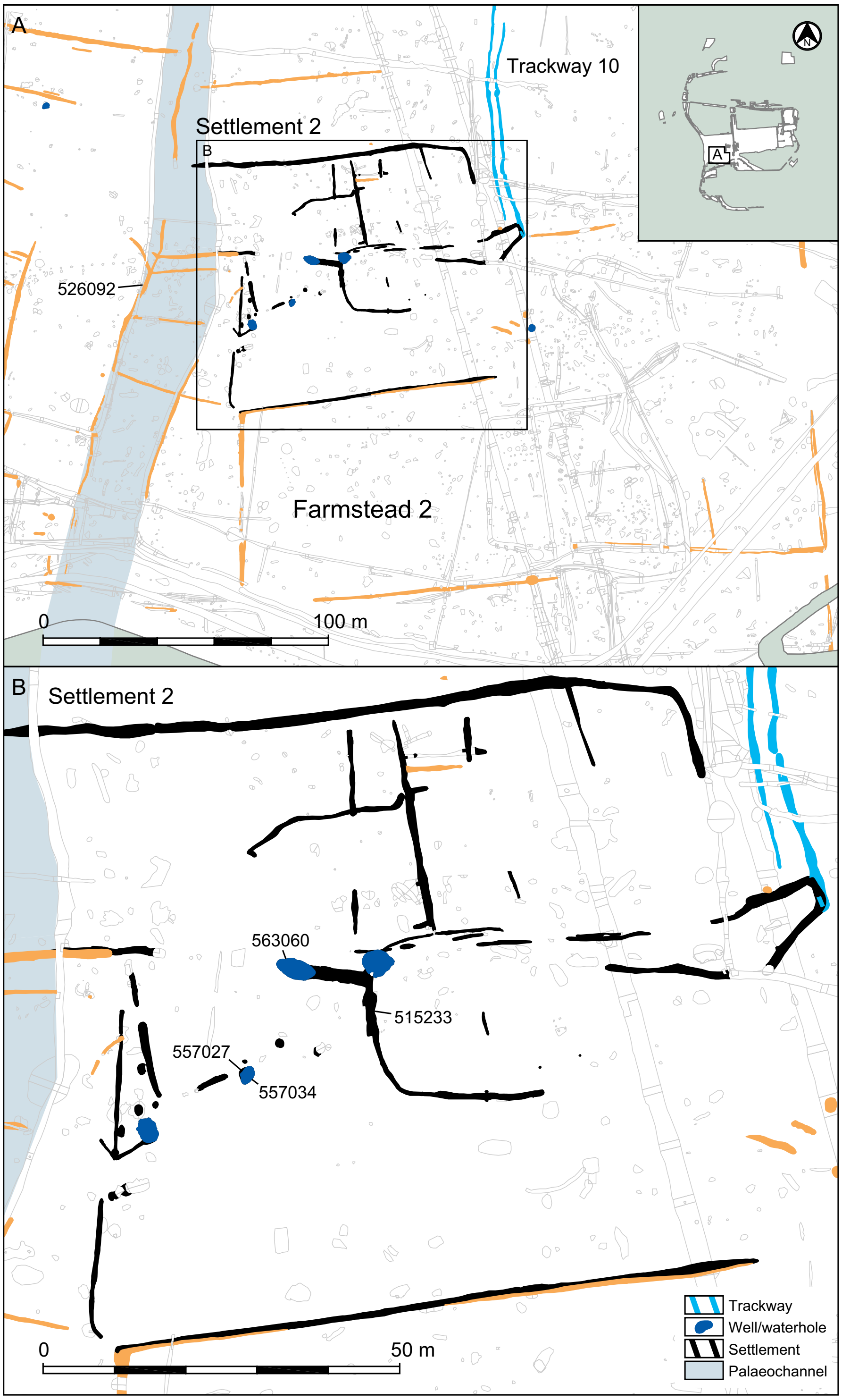


Figure 3.21: Farmstead 2 and Settlement 2

to a tapering oval cross section over some 100-150mm of their narrow ends, but are otherwise undamaged. The 'beaters' from T5 exhibit very similar wear patterns and are of similar size to the majority of the stone and both of the iron examples. It seems inescapable that these 'Beaters' are Bar Shares - the discarded working tips of an early form of plough.

(Allen, CD Section 11)

On the settlement's southern border, well 615008 contained fragments of a Deverel-Rimbury bucket-shaped jar, a cylindrical loomweight, a *Fraxinus excelsior L.* stake point, two *Quercus* spp. heartwood chippings, which might once have been a stake, and an *Alnus* spp. log ladder from the lower fill (1430–1310 cal BC; Wk-18462; 3070±32 BP).

The picture of activity in Settlement 7 and Farmstead 1 is very scanty, due largely to the small fragment which was excavated. It seems probable however that the settlement was established around 1400 cal BC in an area which had been occupied by fields for around a century. Some rearrangement of land divisions is attested. A very similar situation is evident in Farmstead 2.

Farmstead 2

Farmstead 2 (Fig. 3.21) lay to the south-west of Farmstead 3 and east of Farmstead 1. The palaeochannel seems to have formed its western boundary, and boundary ditches divide it from Farmstead 3. There are some indications (mainly morphological) that this area too may have initially been a part of Farmstead 3.

Settlement 2 lay at the core of this farmstead. It was defined to the north and south by existing east-west field boundary ditches, both of which seem to have been modified following the construction of the settlement. The northern ditch was extended eastwards over the central bank of the Stanwell Cursus, while a recut of the southern boundary ditch contained significantly more Middle Bronze Age pottery than the original fills, suggesting that the

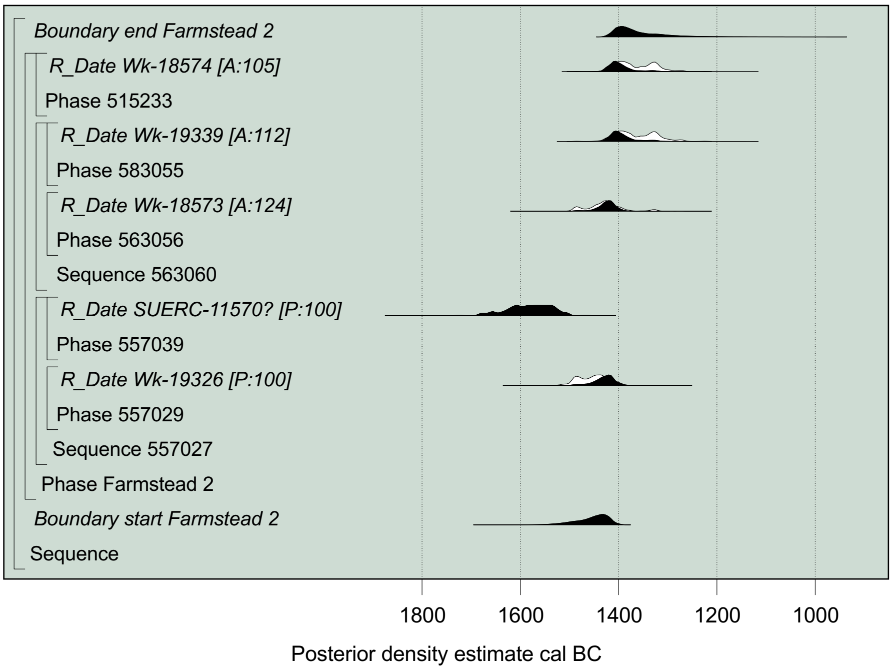


Figure 3.22: Radiocarbon dates for Farmstead 2

recut was contemporary with the settlement. To the west, the boundary of the settlement was formed by a series of shallow north-south aligned ditches and the palaeochannel, by now a low-lying boggy area. On the other side of the palaeochannel, ditch 526092 formed the western boundary between Farmsteads 1 and 2, and was characterised by large numbers of dung beetles and taxa associated with open grassland. The species encountered in these features match those from pit 527078 in Farmstead 1 (see Fig. 3.20).

Trackway 10 formed the northern end of the eastern settlement boundary; the southern portion *may* have utilised the central bank of the Stanwell Cursus, although it is only the absence of other features that suggests this.

No internal building plans survived. The only indications of any structure consist of a relatively substantial double palisade trench which enclosed three sides of an area 23 metres square in the centre of the settlement. Whether this enclosure contained buildings or was somehow related to stock control cannot be ascertained. South and north of this small central enclosure were areas which differed in character from each other: to the south a single open area, to the north a series of smaller subdivisions.

Only four radiocarbon determinations were obtained (Fig 3.22) but these at least suggest the same two-period division as Farmstead 1; that is, before and after approximately 1400 BC. The earliest date (Wk-19326: 3176±33 BP; 1490–1390 cal BC) came from well/pit 557027 on the boundary between the northern and southern areas (located on Fig. 3.21), the earliest of a sequence of pits within Settlement 2. Together with the well which later cuts it (557034) these features provided a detailed sequence of environmental data for a large portion of the settlement's period of occupancy.

Pit 557027 began life as a well (or at the very least as water-filled) in an environment of damp meadows and pastures. Pollen attests to some nearby arable cultivation (crops including oats/wheat, barley type and flax) and the presence of trackways and open ground as found around habitations. Elder, willow and alder indicate damp habitats, probably the nearby palaeochannel, and abundant charcoal attests to many local fires.

Charred and waterlogged plant remains suggest that both fills of this feature included deliberate dumps of domestic waste, including typical weeds of cultivation, or of open habitats that are frequently disturbed, perhaps deposited amongst cereal processing waste (a little waterlogged chaff was present). Grassland was also much in evidence, particularly open, grazed pastures.

The floral assemblages from 557027 are characteristic of a pastoral landscape with some crop growth, hedgerows, and open waste ground. Insects indicate open grassland, grazed by large herbivores, and also the proximity of human habitation.

The landscape around the pit seems to have been open grassland grazed by large herbivores. This is suggested by the relatively large proportion of 'dung beetles' ... such as Geotrupes, Onthophagus and Aphodius species. Indicators for the nature of the surrounding vegetation again indicate disturbed ground. This includes insects such as the 'leaf beetles' Chrysolina fastuosa, which is found on dead and hemp nettles (Lamiun and Galeopsis spp.) and Hydrothassa spp. which is found on buttercups (Ranunculaceae) (Koch 1992). The weevil Ceutorhynchus pervicax is found on cuckoo flower (Cardamine pratensis) (Koch 1992) a species of plant with is particularly associated with damp pasture (Stace 1991). Sitona spp. are normally found on clover (Trifolium spp.), vetches (Vicia spp.) and wild pea (Lathyrus spp.) (Koch 1992).

A number of taxa recovered, such as the histerid 'pill beetles', Ceryon spp and a range of small staphylinids such as Anotylus rugosus, A. nitidulus and A. sculpturatus are all associated with decaying settlement waste and materials but can also be found in animal dung (Hansen 1987; Tottenham 1971). Similarly, a single individual of the 'common woodworm,' Anobium punctatum also was recovered, but this species is not restricted to human settlement and can occur in the dry deadwood of isolated trees in the countryside.

(Tetlow, CD Section 17)

Both fills also contained dense animal bone, most in good or fair condition. Only cattle and sheep/goat (no positive goat) were identified, a narrow range of species for the size of this assemblage which is larger than that from the periods immediately earlier and later which may therefore originate from a limited scope of activity, perhaps purely

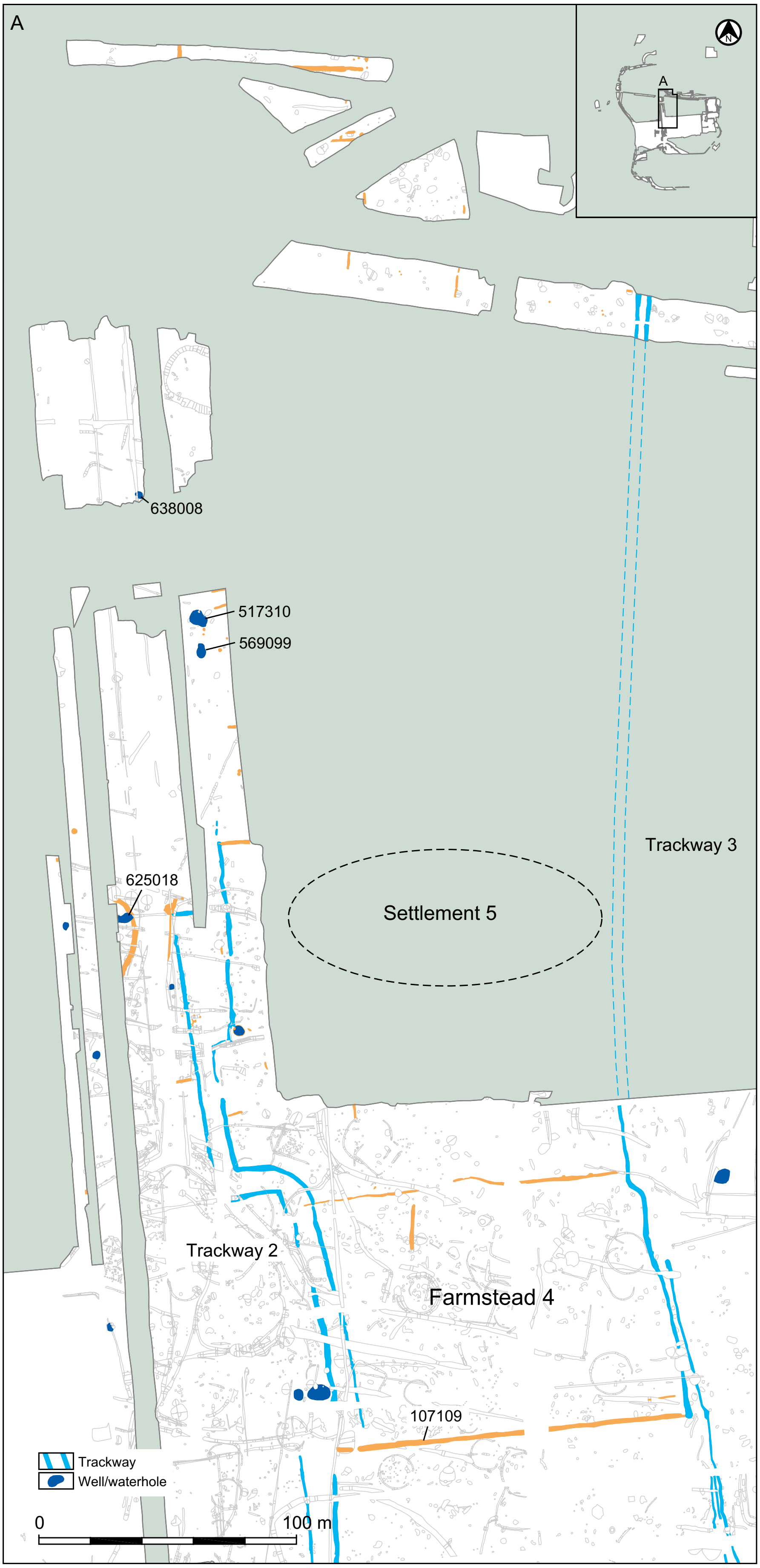


Figure 3.23: Farmstead 4 and Settlement 5

domestic/consumption. In both deposits neonatal individuals and porous bones from young animals were recovered; elements of the young animal(s) are not replicated between contexts and may signify the deposition in consecutive deposits of remains from the same carcass(es), or that the two contexts may not be strictly separate.

(Knight and Grimm, CD Section 13)

Pit 557034 cut into the top of 557027. The lowest fill again contained pollen assemblages indicative of nearby pasture, although there was evidence of decreased grazing pressure and an increase in arable cultivation (or the inclusion of cereal processing waste).

The uppermost fill contained large quantities of burnt flint and some Middle Bronze Age pottery, suggestive of a backfill of household debris. Pollen assemblages from this level are dominated by types…

…characteristic of open, waste land, trackways and ruderal communities. Evidence of pastures and crops is less than in previous fills, and the biodiversity has decreased. This suggests that although some pasture and arable fields were still in the area, they may have been further away or less than in the time of previous fills. Higher spore values of ferns and bracken may be further evidence of increased dereliction. However, as the fill was probably household detritus, coming from open, waste ground around habitations, this may account for the change in pollen assemblages.

(Peglar et al., CD Section 16)

Barley grains from waterhole 563060, one of a series of features which cut a subdivision of the northern area, returned a date of 1470–1380 cal BC (94%) or 1490–1480 (1%) (Wk-18573; 3149±32 BP); barley from a higher fill of this same feature dated to 1440–1320 cal BC (Wk-19339; 3094±33 BP), as did a determination on charred barley grains from ditch 515233 which formed an element of the central enclosure (Wk-18574; 3094±31 BP).

What the dates from these features suggest is that—as in the case of Settlement 1—Settlement 2 was a later establishment, with activity belonging in the period 1500–1400 cal BC restricted to agriculture within what would at that time have been the south-west corner of Farmstead 3. Settlement 2 was constructed in an existing field, the boundaries of which were modified accordingly. Domestic activity within the settlement area is indicated by a near-complete cylindrical loomweight from the palisade ditch.

Farmstead 4

This farmstead is very poorly represented, to the point that it is almost impossible to date its establishment or discern its form (Fig. 3.23). Given its near-invisibility, it is perhaps worthwhile rehearsing the evidence for its existence.

Trackway 2 provides some of the most compelling evidence for a 2nd millennium farmstead in this area. The northern-most sections of this trackway are short narrow gullies suggesting areas of fences or gates, or perhaps moveable panels across openings. Access is provided into fields to the east and west. Ditches are often recut, but no stratigraphic relationships with field boundaries are available. The northern end of the trackway appears to form some kind of stock-holding area perhaps designed to temporarily pen animals as large flocks were separated into the smaller fields into which Trackway 2 feeds.

South of this area the trackway narrows and turns east and then south around the already existing corner of the large 'D'-shaped enclosure of

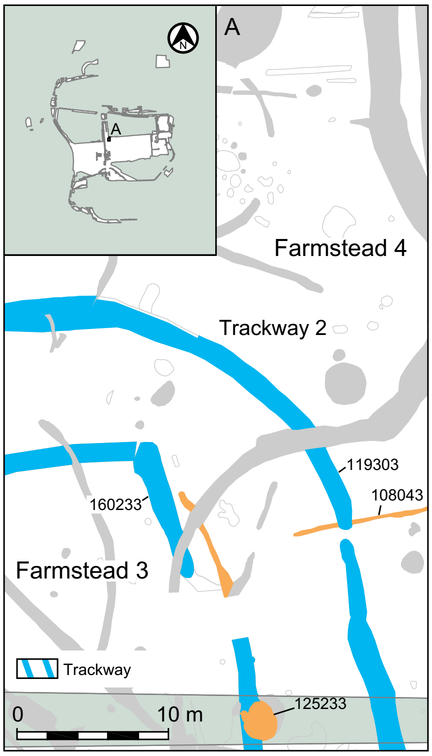


Figure 3.24: Stratigraphy of Trackway 2 and intersecting boundaries

Farmstead 3, into which it does not provide access. From this point on, the eastern boundary of the 'D'-shaped enclosure forms the western side of Trackway 2. No stratigraphy demonstrates the relationship between the two, but radiocarbon dates for the two farmsteads show that Farmstead 3 is earlier, and the opposite sequence would make little sense, requiring an invisible reason for Trackway 2 to turn to form a corner into which the 'D'-shaped enclosure was built. Dating evidence for Trackway 2 is provided by over 6 kg of Deverel-Rimbury pottery (two bucket-shaped jars and a globular vessel) in its western ditch, north of Farmstead 3. Clearly then, although

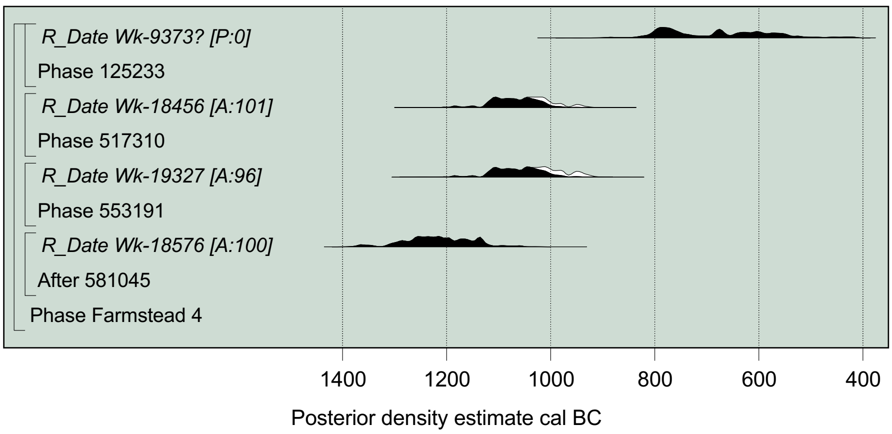


Figure 3.25: Radiocarbon dates for Farmstead 4

Plate 3.10: Artist's reconstruction of Farmstead 5

later than Farmstead 3, Trackway 2 is definitely dated to the Middle Bronze Age, and may belong to the post-1400 cal BC phase of settlement.

Where Trackway 2 turns back south its eastern side cuts east-west field boundary ditch 108043, south of which is a short section of trackway ditch which may block an earlier access east into the field (Fig. 3.24). Trackway 2 terminates immediately north of east-west field boundary ditch 107109 which crosses its line to cut the eastern side of the large 'D'-shaped enclosure boundary (Fig. 3.23).

Such were the distributions of the excavated areas that the northern part of Farmstead 4 was almost uninvestigated: portions of ditches lay on the same alignments as others of this phase (and in some cases were more securely dated by Deverel-Rimbury and post-Deverel-Rimbury ceramics). Charred grain from a secondary fill of one such ditch produced a radiocarbon determination of 1380–1050 cal BC (Wk-18576; 2980±34BP; 581045), but this date only provides a *terminus ante quem* for the feature. Radiocarbon determinations for this farmstead are given in Figure 3.25.

More certain evidence consisted of pits, wells and waterholes of the same types as encountered in the other farmsteads. For instance, 625018 was a well or waterhole with Deverel-Rimbury ceramics in the lower fill and post-Deverel-Rimbury higher up; 569099 was a ramped waterhole of 2nd millennium date. Upper fills of this feature contained small amounts of post-Deverel-Rimbury ceramics, and it is to this period that most of the surviving evidence of activity in Farmstead 4 belongs. For the earlier parts of the 2nd millennium, however, there is virtually no other securely-dated evidence.

Farmstead 5

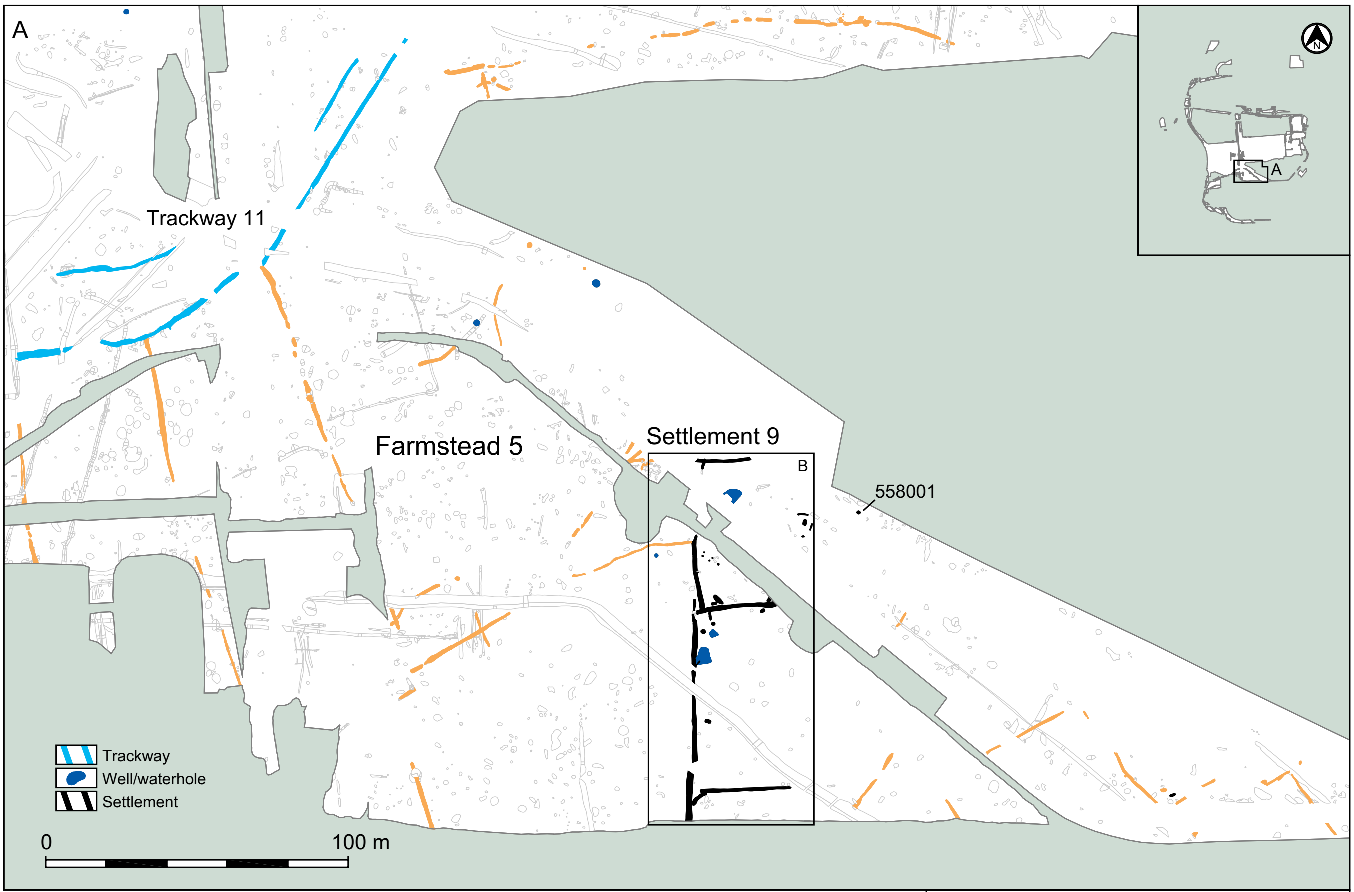
This farmstead lay south-east of (and partially adjacent to) the large 'D'-shaped enclosure of Farmstead 3 (see Fig. 3.26 and artist's reconstruction in Plate 3.10). Only small portions lay within the limits of excavation, and its form is consequently not easy to reconstruct. Indeed, it is not entirely clear how this farmstead fits into the pattern of the aggregate and coaxial systems: in places, the alignment of the field boundary ditches has more in common with the farmsteads of the coaxial system. Only two radiocarbon determinations were obtained (from a pair of intercutting features), given in Figure 3.27.

The northern boundary of this farmstead was formed by a meandering interrupted ditch which ran between (but did not intersect with) Trackways 11 and 3. This ditch separated Farmstead 5 from a sub-square block of land of approximately three hectares which cannot be satisfactorily assigned to any of the farmsteads, and which may have been common land. This plot is discussed further below.

This boundary ditch is dated to the 2nd millennium by Deverel-Rimbury ceramics in its fills, and also in small features which cut it. The same is true of some of the field boundaries, although the numbers and weights of recovered ceramics are very low, and the ceramics in the recuts sometimes belong to post-Deverel-Rimbury traditions.

Settlement 9

Situated in the centre of Farmstead 5, Settlement 9 consisted of a number of trenches and gullies apparently forming and sub-dividing a large square enclosure similar to Settlements 2 and 7.



As with the fields within which it was situated, the ditches defining this settlement contained a ceramic sequence of Deverel-Rimbury in the lower fills and post-Deverel-Rimbury in the upper fills and recuts.

Within the settlement, a large well (551006) and a possible waterhole (528154) contained a limited range of objects by now familiar from other such features: the basal fills of the former contained wooden objects (sharpened stakes, board fragments) which had probably originally revetted the sides. Waterhole 528154 had Deverel-Rimbury ceramics throughout most of the sequence and small quantities of post-Deverel-Rimbury ceramics in the upper fills. An adjacent small pit (544061) had portions of a Deverel-Rimbury jar on its base.

This waterhole and pit lay in a small group of four features in the north-west corner of the southern subdivision of Settlement 9. Completing the group were pit 579172 and waterhole 544093. The latter contained quantities of Deverel-Rimbury pottery throughout its fills, along with other material suggestive of domestic waste.

Pit 579172 (Fig. 3.28) contained a suite of material which appeared to be deliberately deposited. The lowest fill contained a complete knobbed cup (Fig. 3.28, 1), unusual in terms of its

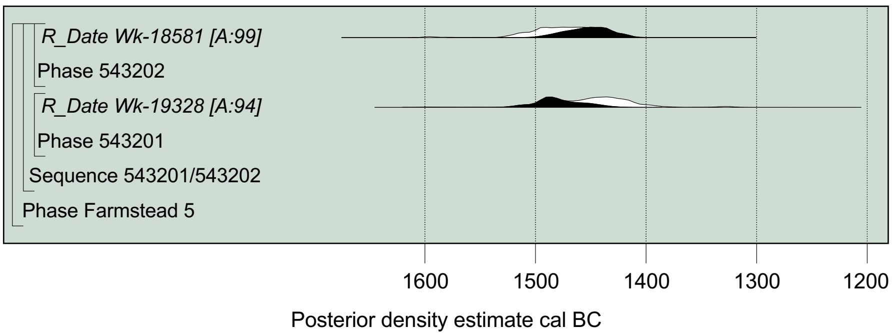


Figure 3.27: Radiocarbon dates for Farmstead 5

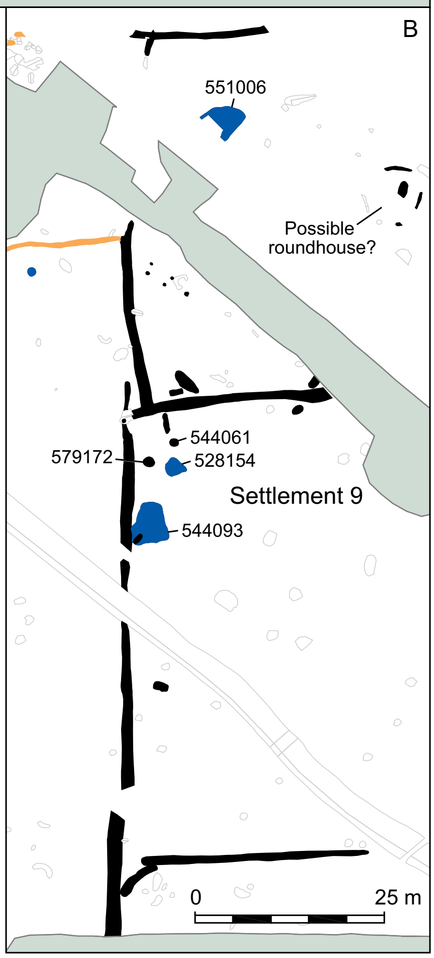
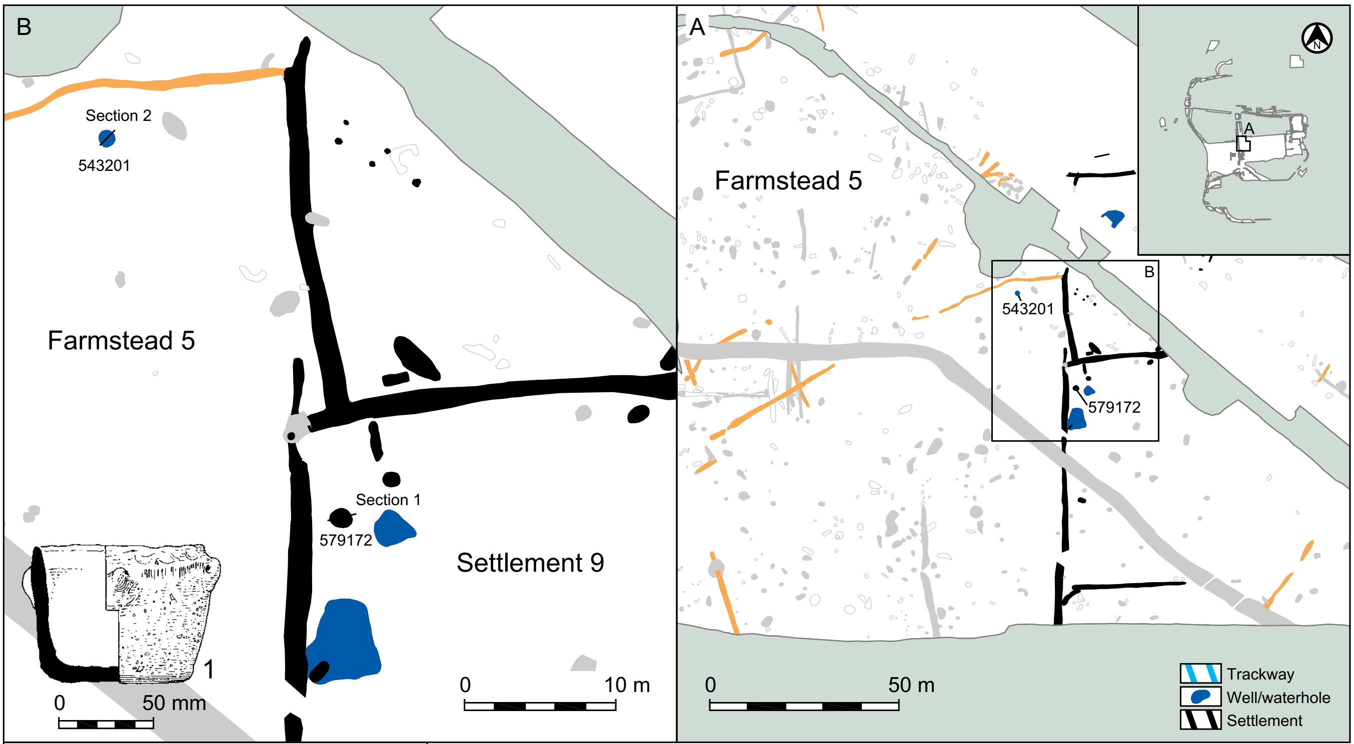


Figure 3.26: Farmstead 5 and Settlement 9



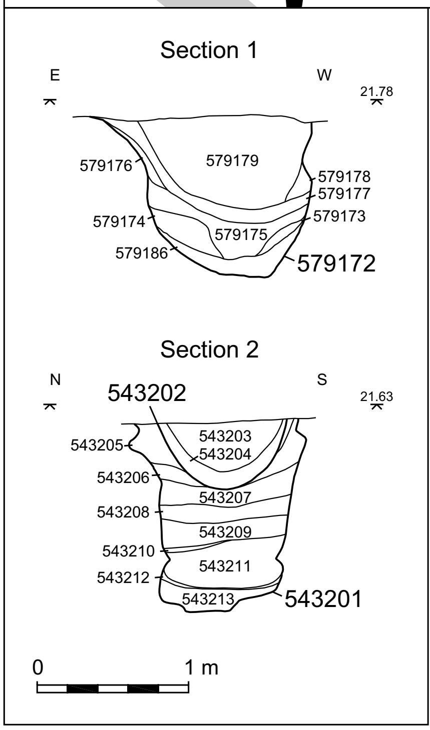


Figure 3.28: Pit 579172 and well 543201 with illustration of knobbed cup

form, fabric and decoration, each of which is matched only by a single sherd from well 543201, 29 m to the north-west (see below). Pit 579172 appears to have been newly-dug when the cup was placed upright on its base, in a gravelly backfill. It is difficult to interpret this as anything other than an intentional placement—it is highly improbable that a complete vessel would be casually discarded, and chance loss does not seem likely.

Following some weathering of the sides of the feature, a broken saddle quern was placed into the pit, and higher layers contained fired clay (possibly fragments of hearth lining) and more pottery (predominantly Deverel-Rimbury). The material from the higher layers has the appearance of domestic refuse, and this is perhaps borne out by the lithic assemblage from this feature.

A total of 67 struck flints was recovered from three deposits, most from 579177. The flintwork forms a fresh, uncorticated, technologically-coherent assemblage, and can be dated through its association with Deverel-Rimbury pottery to the Middle Bronze Age.

The assemblage predominantly consists of squat, angular, hard-hammer flakes with no platform preparation. The collection includes two cores, one tested nodule, one flake from a hammerstone and a small number of chips (nine pieces). Several flakes of the same flint type were noted, suggesting that the assemblage derives from a very limited number of cores, although fewer refits were identified than expected.

Retouched pieces include a serrated blade and a scraper. These pieces seem to have been more carefully worked than other pieces in the assemblage and are manufactured from a seemingly better quality flint, perhaps indicating a different origin to the rest of the assemblage.

(Cramp and Leivers, CD Section 4)

Well 543201 (Fig. 3.28) lay approximately 13 m outside the settlement enclosure ditch. However, it contained a range of material in its fills that complemented that from features within Settlement 9, and it seems likely to represent similar activity. The lowest fill contained the sherd of Deverel-Rimbury matching the knobbed cup from 579172, while a sample from a thin layer of gravel immediately above it contained several charred emmer/spelt wheat grains, barley grains, a little emmer/spelt chaff (including some possible spelt glume bases) and a few weed seeds. The weeds included the usual taxa (scentless mayweed, cleavers, vetch) as well as black bindweed (Fallopia convolvulus) and ribwort plantain (Plantago lanceolata). Charred grain from this sample gave a radiocarbon determination of 1530–1430 cal BC (Wk-19328; 3171±39 BP; 543212).

No further material was recovered from this well, which seems to have filled naturally. It is possible that the material from the two lower fills represent some kind of token foundation deposit, although it is as likely that they were merely casual discards.

The upper fills of the well were cut through by a slightly smaller pit (543202). A sample from the two fills of this feature:

…contained frequent large charcoal and cereal remains. Emmer/spelt wheat was well represented by both grains and chaff fragments. Both emmer and spelt were positively identified from the chaff fragments, but for the first time spelt was present in significant numbers, exceeding emmer by a small margin. Weeds included black bindweed, dock, vetches, cleavers, scentless mayweed and chess. A few hazelnut shell fragments were also recovered. Although this assemblage appears to be slightly more advanced than the other Middle Bronze Age cereal assemblages, due to the increased spelt content, a radiocarbon date on an emmer/spelt grain produced a date of 1500–1410 cal BC (Wk-18581; 3207±32 BP3204).

(Carruthers, CD Section 14)

These fills contained a range of materials which are suggestive of some light industrial process. Quantities of burnt flint and fired clay were recovered, and the cut was lined with a thick band of charcoal, containing some substantial pieces of charred wood. Above this, an ashy grey fill contained more burnt flint, charcoal and fired clay. The layers beneath the charcoal were unaffected by heat, however, so the material must be dumped rather than result from *in situ* burning.

Within Settlement 9 there are some slight hints of buildings and other structures. These occur in the northernmost section, where the bulk of the dated evidence is Late Bronze Age, with which the structures may be contemporary (although none is dated by any material association).

A double line of postholes only 1.3 m apart and adjacent to the enclosure ditch opposite pit 543201 may form one side of a small building. The longest side is only 6 m long, and not quite straight, so certainty is impossible. Located 30 m to the east, an interrupted ring of ditches may be a drip gully marking the location of a roundhouse (Fig. 3.26). The diameter of the ring is 7.5 m, which would place any structure within the range of better-attested Bronze Age buildings: at Stansted for instance, the Bronze Age round-houses were between 5.5 and 7.6 m in diameter (Brown and Leivers 2008). Off centre within this possible structure on the north-east side was a rectangular pit. No material was recovered.

The Coaxial Landscape

The farmsteads yet to be discussed are for the most part very different in nature to Farmsteads 1–5. Farmstead 3 provided a core around which others accrued or from which they were divided over time. In the coaxial landscape however there is no obvious chronological priority to any particular farmstead and all share a basic alignment and are demarcated by trackways. Given the lack of any chronology between different farmsteads in the coaxial landscape, they will simply be described in order from west to east.

Farmstead 6

The northern half of this farmstead was separated from Farmstead 4 to the west by the double ditches of Trackway 3 (Fig. 3.29). The southern half borders the putative Common land (see below). Four radiocarbon determinations were obtained, placing activity throughout the second half of the 2nd millennium

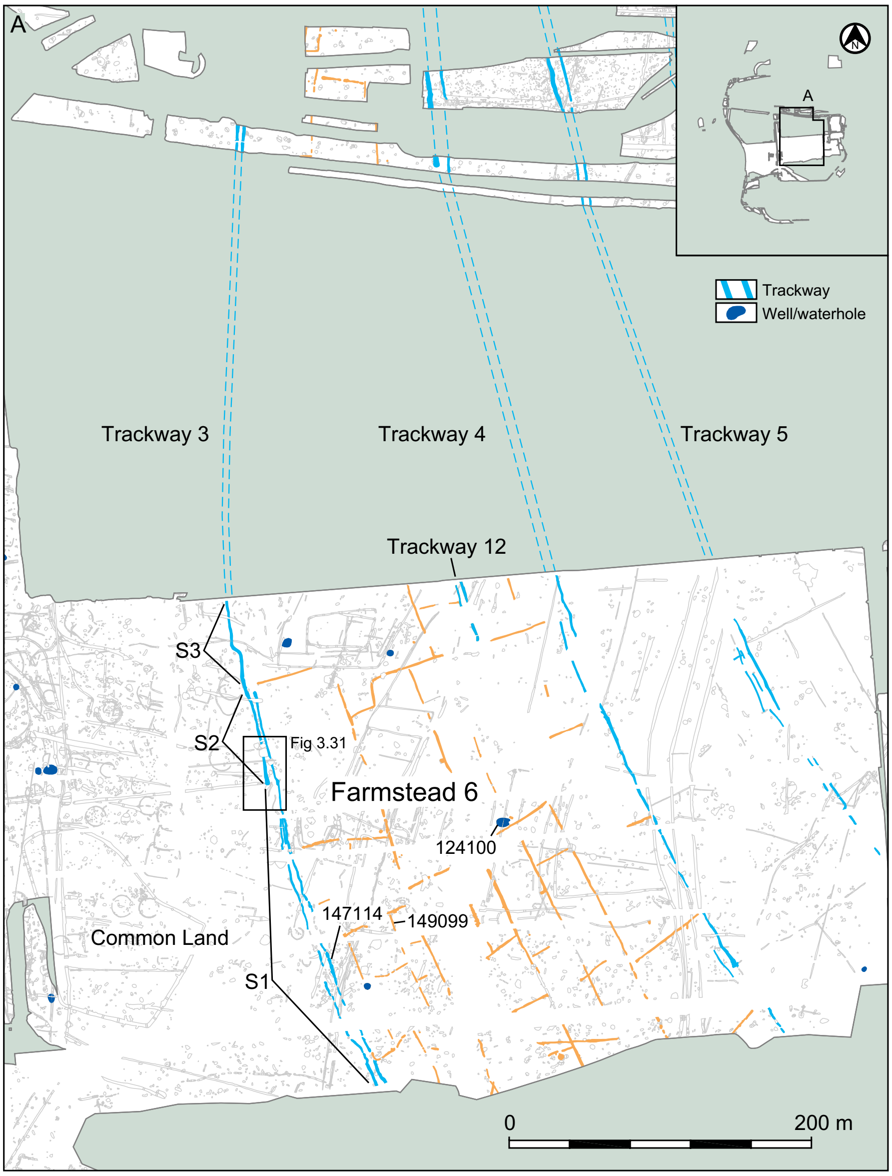


Figure 3.29: Farmstead 6

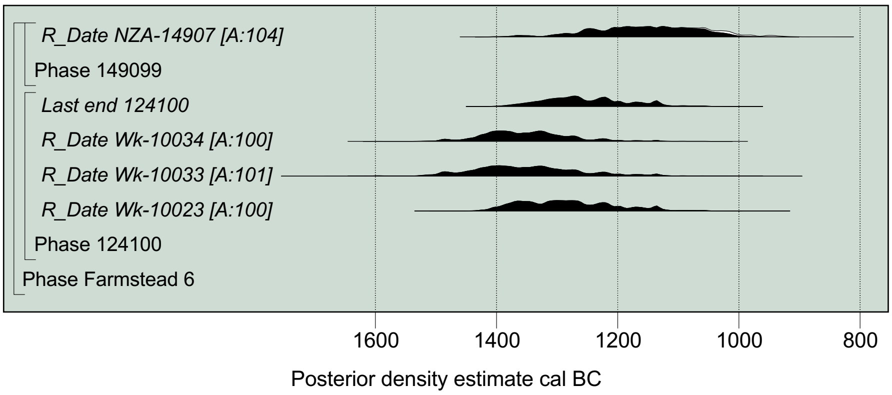


Figure 3.30: Radiocarbon dates for Farmstead 6

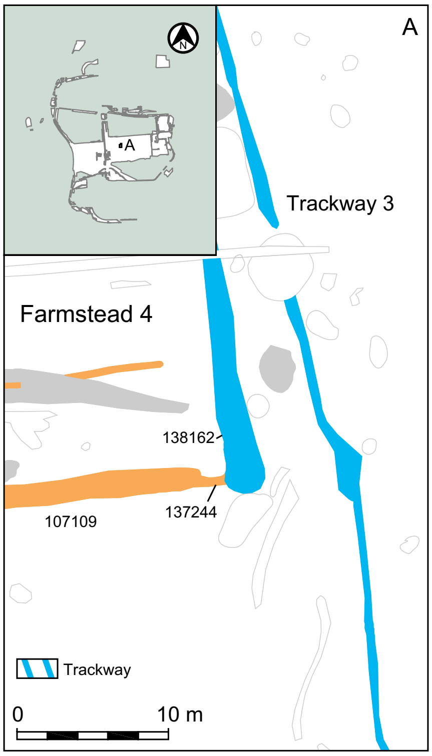


Figure 3.31: Stratigraphic relationships in Trackway 3

(Fig. 3.30). The earliest three date large waterhole 124100; NZA 14907 relates to recut field boundary ditch 149099.

Trackway 3

This trackway provides some of the strongest indications of the chronological expansion of the field systems from south to north across the landscape. The first section of Trackway 3 runs from the southern end of the excavations as far north as the northern end of the Common. Access is to both the Common on the west, through a series of features which look very much like some sort of stock control gate, and to the fields of Farmstead 6 on the east. Ditch segments are recut and there are minor shifts in alignments on occasion. Further south there is much truncation, but segments seem to be recut, to intersect, and there are real termini at various points on both sides and a pair of later 'gap blocking' insertions at the south end. The east and west sides of this part of the ditch clearly develop in concert—the type and technique are mirrored exactly on either side and seem to relate in some way to the size of the adjacent field enclosures and the provision of watering. There is very little dating, but one section (147114, which may be a recut segment) has more Deverel-Rimbury than post-Deverel-Rimbury, and lower down.

The second section runs from the northern end of the Common to the northern end of the rectilinear fields on the east. The apparent differences between this section and the first and third may not be chronological, but may be due to the different nature of the adjacent field enclosures. North of these fields, there is no ditch on the eastern side, and the western ditch originally terminated at this point (although it was later re-cut).

The southern terminal of the second section of the western trackway segment cuts a very short east-west ditch segment (137244) which is also cut by the main east-west field boundary (107109; northern Common boundary) here (Fig. 3.31). The ditch segments on both sides originally terminated at this same point. This phase is undated.

The third section extends the western side of the second phase ditch through a marked 'dog leg' where the trackway turns to avoid a tree. The ditch cuts the northern terminal of the section 2 ditch, and there are post-Deverel-Rimbury ceramics in a fill low in the sequence (but only two sherds weighing five grams). The double-ditched trackway was encountered again in a very short section some 295 m further north.

There are three possibilities for phasing this trackway:

i) Phase 1 runs to the northern end of the Common; Phase 2 extends the line to the northern end of the rectilinear fields on the east; Phase 3 extends the western side of the trackway. In favour of this option is the fact that there are very definite (or morphologically very likely although unrecorded) breaks and intersections of characteristically different ditches at the identified points. Phase 2 cuts a gully on the line of the north Common boundary.

ii) Phase 1 runs to the northern end of the rectilinear fields on the east; Phase 2 extends the western side of the trackway. In favour of this option is the fact that this extension would only become necessary once Trackway 2 had been inserted, requiring definition of the boundaries of new fields between Trackways 2 and 3.

iii) Phase 1 runs to the northern end of the Common; Phase 2 extends the line to the northern end of the rectilinear fields on the east and to the limit of excavation on the west. In favour of this option is the uniform nature of the ditches north of the Common.

Whatever the exact sequence, it seems beyond doubt that Farmstead 6 underwent expansion northwards at some point or points throughout its existence. More extensive excavation has allowed a reassessment of the evidence for the area presented in *Volume 1: Perry Oaks* (Framework Archaeology 2006), and the tentative identification of a settlement here (*Volume 1's* Settlement 6) is now discounted. There is, in fact, no sign of a settlement anywhere within Farmstead 6, although the likelihood is that one existed. Given the evidence of other Farmsteads and Settlements discussed below, any settlement is most likely to have been located outside the area of excavation, either to the south or (more probably) to the north.

In the absence of any settlement, evidence of use is once again limited to the pits, wells, waterholes and other features scattered throughout the fields. Most contained a background scatter of material that is most probably simply discarded rubbish (struck and burnt flint, small amounts of animal bone, Deverel-Rimbury and post-Deverel-Rimbury pottery, fired clay), but some were more revealing.

At the base of ramped waterhole 124100 a timber and wattle revetment separated gravelly material on the ramp from the shallow pool (Fig 3.32). The revetment produced three radiocarbon determinations (WK10023, 3029±51 BP; WK10033, 3097±74 BP; and WK10034, 3091±57 BP) giving modelled dates for its construction of 1390–1120 cal BC.

After an unknown period of time, the pool was deliberately filled with dumped material including a large amount burnt flint. Subsequent fills contained varying quantities of burnt flint, as did a shallow rectangular feature (124085) 1.6 m to the north-west, which may have been a water trough.

It is possible that these two features were used in some process involving the heating of water. There are no indications of what this process might have been, but the large quantities of burnt flint recovered from the features (together with the higher than normal densities from nearby field boundary ditches and other features) suggests that the burnt flint debris was probably strewn over a wide area following successive episodes of heating and boiling.

It can therefore be postulated that a burnt mound existed adjacent to the waterhole. The activities leading to the creation of such features remain ambiguous, despite continued investigation, but the most usual interpretations are as cooking sites (eg Buckley 1990), breweries (Pitts 2009) or as steam baths (eg Barfield and Hodder 1987). It is unlikely that the heating of stones (whether or not for the subsequent heating of water) served

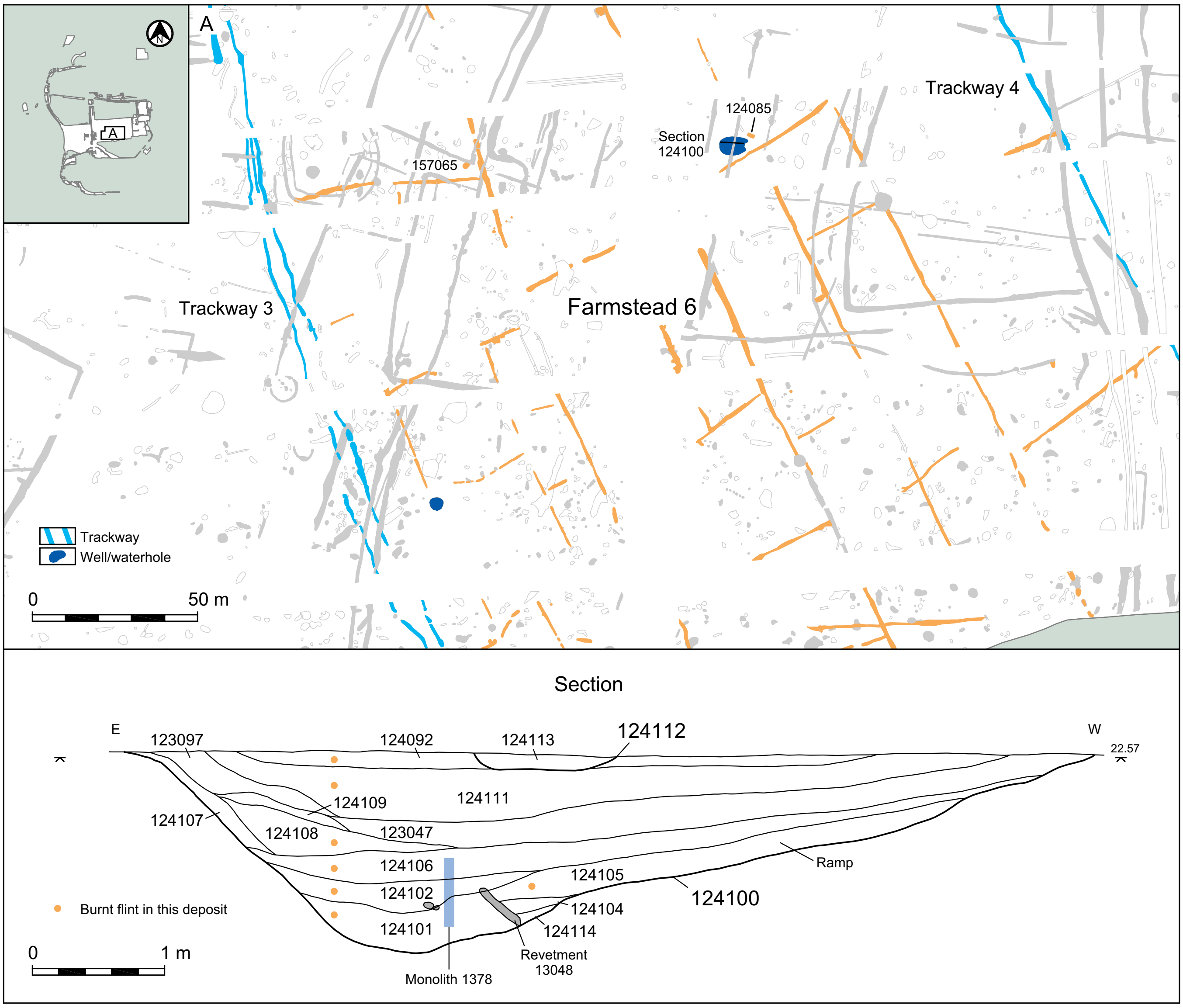


Figure 3.32: Waterhole 124100

a single purpose universally, and even less likely that the sites divide neatly into cooking and bathing locations. As Keith Ray notes, the mounds will have been '…one locus of mediation of interests and strategies among several others' (1990, 10).

The putative Terminal 5 burnt mound complex was located amidst the fields of Farmstead 6, some distance away from any settlement. The exact nature and purpose of the complex will probably remain uncertain but the depositional sequences in waterhole 124100 and possible trough 124085 suggest that people periodically gathered at this location to take part in activities that may have involved feasting, cleansing or other things. None of these activities is necessarily unusual in itself—the Bronze Age inhabitants of Heathrow undoubtedly ate cooked food, and presumably bathed—but the setting for these activities, and the scale of them in this location, suggestive of communal activity, provides an indication of formal and symbolically-charged aspects to these undertakings. It could then be that this waterhole was involved in the performance of ritual acts.

One reason for the importance of ritual in small-scale societies lies in the absence of an elaborate state apparatus. In state societies, the reproduction of authority is secured by the persistence of a whole series of institutions across the generations—in ours by parliaments, police forces, the judiciary, social security, the health service, and so on. All of these institutions guarantee that from one generation to the next there will be some degree of stability: that authority will be acknowledged and respected, that laws will be upheld, and that norms and values will be maintained. In the absence of these agencies, authority often tends to be maintained through other strategies: perhaps some kind of orientation towards the frequent repetition of particular activities in specific ways, placing tradition at the centre of social order. So at a very basic level, one of the key roles of ritual lies in the performance of traditions, customs, and beliefs, manifesting order in the present.

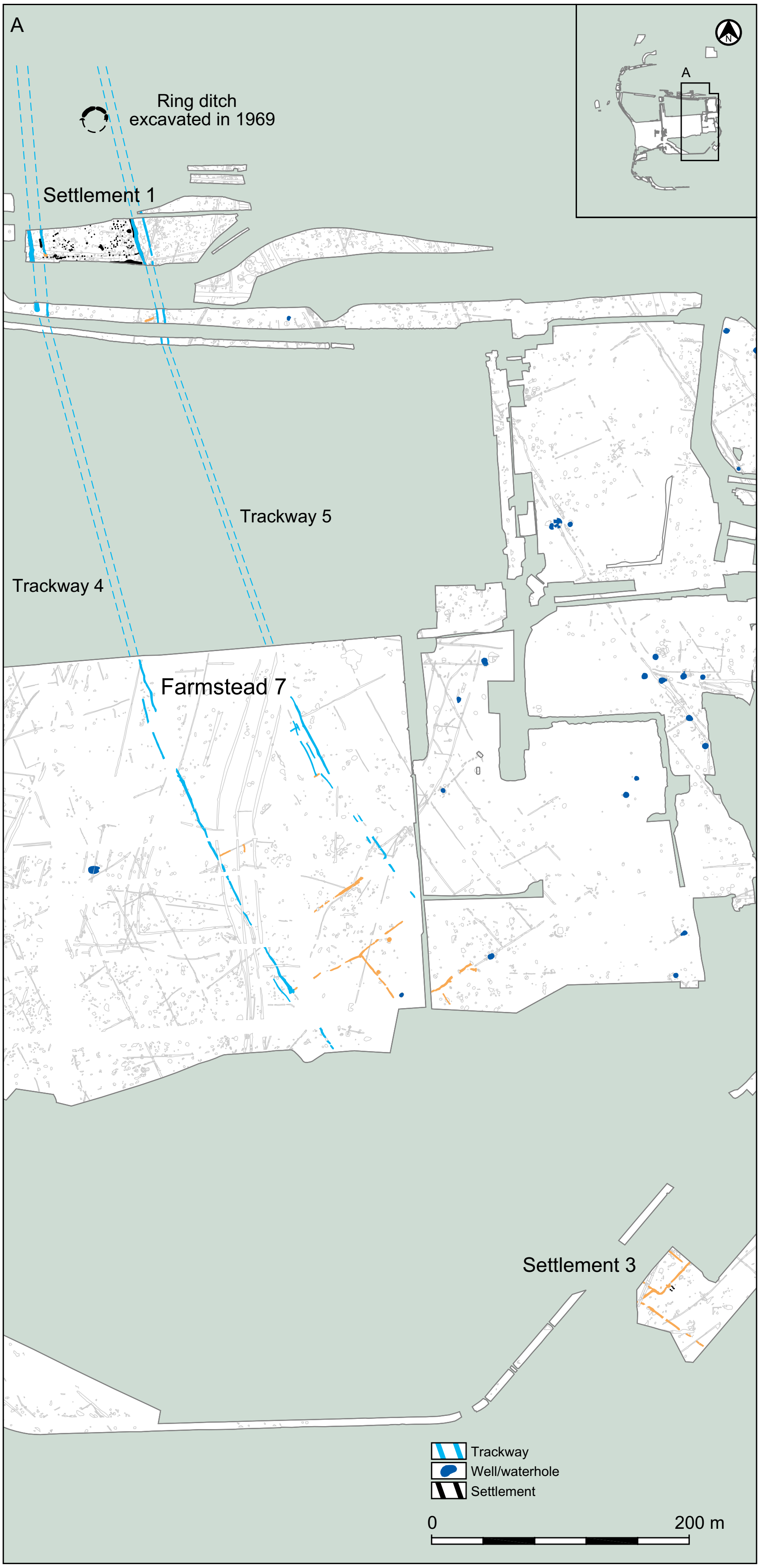


Figure 3.33: Farmstead 7

Plate 3.11: Artist's reconstruction of Farmstead 7

Rituals tend to be sets of actions which are played out (or performed) rather than just abstract beliefs. These actions tend to derive from the past, or to be thought to derive from the past, so that ritual is sanctioned by tradition. Ritual tends to be highly symbolic in character: all of the actions, gestures and utterances involved tend to have a greater significance, and most of the material objects used can be considered as material symbols, even when (as they often are) these objects are also normal day-to-day items, like pots, or heated stone. Finally, ritual is often in some way distinguished from normal day-to-day life, and demands different modes of conduct, even if this is in the midst of one's everyday activities.

Such rituals act as collective representation; as a means by which the group as a whole communally expressed its most deeply-held values. By performing these values together, communities are able both to reaffirm their commitment to a particular moral code, and to create a sense of unity, of integration, and social well-being.

Ritual also allows communities to come to terms with changes in their own make-up. Two basic ritual forms are often identified, known as calendrical and life-crisis rituals. Calendrical rituals, like harvest celebrations or solstices, allow societies to mark off time and its passing, while at the same while imposing on time a formal structure. Life-crisis rituals, by contrast, are concerned with particular individuals and their change in status from one class of person to another. What this does is to give an impression that life, death, ageing and reproduction are things which can be controlled or sanctioned by society, rather than simply inevitable processes.

These life-crisis rituals—commonly referred to as rites of passage—tend to have a particular structure to them, consisting of three phases. In the first the existing order of the world is acknowledged; in the second that order is dissolved or inverted; and in the third a new order is created. In this new order, people have been re-classified: they have moved from child to adult, from unmarried to married, from alive to dead, or any of a whole range of other possibilities. Rites of passage tend to make use of a spatial symbolism, involving passing through portals, or going off to secluded places and coming back. So the removal of people from the community and their return is used as a metaphor for their re-classification as a new kind of person. In the process of re-incorporating people into society, the solidarity of the community as a whole is re-created. In this sense, the setting of the Farmstead 6 waterhole in the middle of the fields and away from any settlement may be significant.

The importance of this kind of ritual is as a re-definition or re-classification of the world. And this points to the significance of material objects in ritual: its use, location and deposition can be deeply bound up with the classification of the things of the world. In this sense, the repeated deposition of ard spikes, whole or broken pots, scarce and valuable metal objects, wooden bowls and so on in waterholes points to the continued importance of these locations in the creation and maintenance of the Bronze Age world at Heathrow, and in this light something as seemingly mundane as a dump of burnt flint may be understood as equally significant.

Farmstead 7

Farmsteads 6 and 7 were separated by Trackway 4 (see Fig. 3.33 and artist's reconstruction in Plate 3.11). At its northern end, the western side of this trackway is in fact the western boundary ditch of Settlement 1 (it is wider,

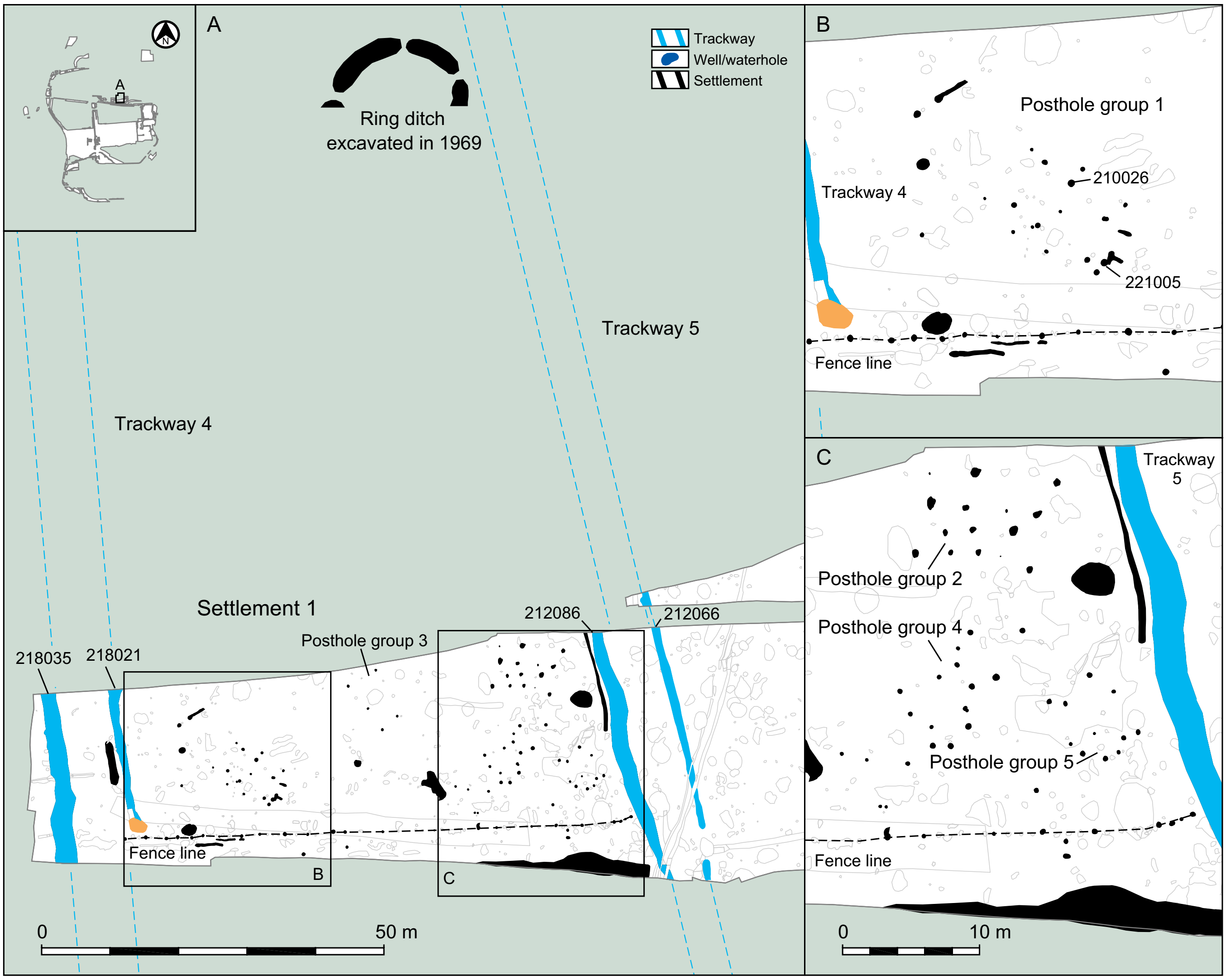


Figure 3.34: Settlement 1 in Farmstead 7

deeper, much more substantial and defensive than any of the trackway ditches elsewhere), so it is arguable that the trackway lies *within* the settlement at this point. This ditch has post-Deverel-Rimbury and Deverel-Rimbury ceramics in the middle fills and post-Deverel-Rimbury in the upper, and cuts an east-west field boundary containing Globular and Early Bronze Age pottery. The eastern ditch is much less substantial and has predominantly Deverel-Rimbury ceramics (there is only a very little post-Deverel-Rimbury).

South of the settlement, the trackway is of more normal form, shallow, with external banks. Survival is very poor, and dating evidence is limited to a single sherd of post-Deverel-Rimbury pottery for the entire surviving length, although there are a number of observable parallels between this trackway and Trackway 3. Both seem to consist of a series of shorter inter-cutting segments at their southern ends and longer, more continuous sections further north. Similarly, while the northern-most portion of Trackway 3 has no eastern side, the northern-most portion of Trackway 4 south of Settlement 1 has no western side. Other surviving features in these areas suggest that the ditches here need not have been truncated away, and that this may have been the original morphology, even though both trackways are present as double-ditched further north.

No radiocarbon determinations were obtained from features belonging to Farmstead 7, so relative dating from ceramics has to be relied on to provide a broad sequence. For the most part, these ceramics were recovered from features within Settlement 1, at the northern end of the farmstead.

Settlement 1

This was the best-preserved of all the settlements excavated at Terminal 5 (Fig. 3.34). Situated at the northern end of Trackway 4, it lay *c* 60 m and 300 m south of a pair of undated, interrupted ring ditches partially excavated in 1969 (Canham 1978).

Plate 3.12: Complete pot placed on the base of 210026

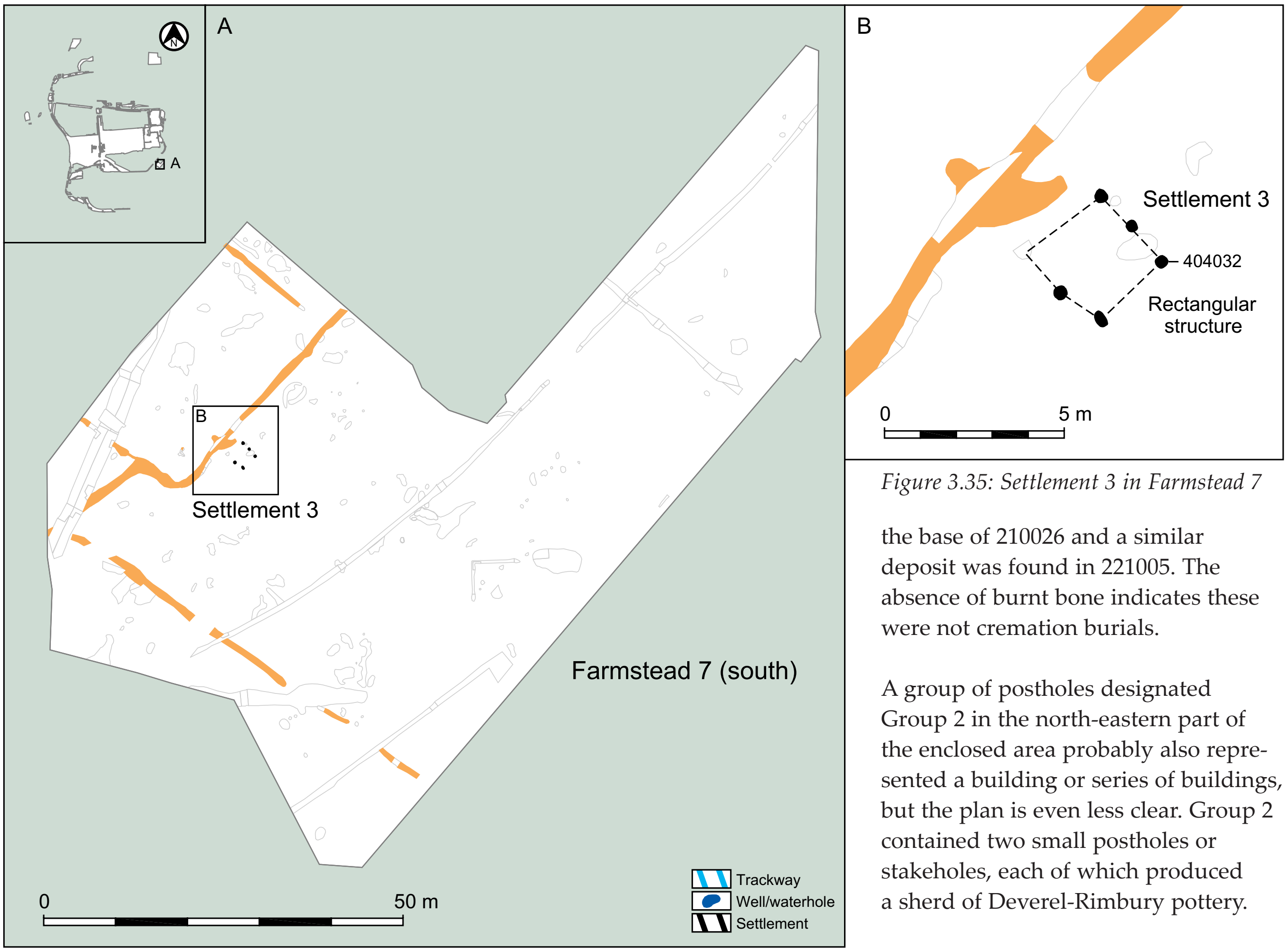


Figure 3.35: Settlement 3 in Farmstead 7

The 2nd millennium settlement was defined to the west and east by substantial boundary ditches, which formed parts of Trackways 4 and 5. Trackway 4 lay within the area of the settlement, and provided access to it, while Trackway 5 lay outside the boundary ditch, within Farmstead 8, and did not provide access to the settlement. Both trackways had internal banks, which is again in contrast to the trackways elsewhere that generally had banks outside the ditches.

The northern extent of the settlement remains unexcavated below the airport operational area; the southern boundary was defined by a post-built fence which ran from the eastern boundary ditch towards the eastern side of Trackway 4. These two features did not intersect, there being a gap of approximately 2 m between them, presumably allowing access to and from the settlement area. Beyond the fence line to the south a large linear pit or ditch may have been a further boundary marker, or perhaps a quarry, although this seems to belong to a later phase of use of the enclosure (see below).

Within this area a number of post settings were identified which probably represent buildings of various sorts. The plans of these are at best partial and interpretation is further hampered by the scarcity of stratigraphic relationships between the features, but some at least formed reasonably convincing building plans.

For example, Posthole Group 1 covered an area *c* 10 m long and 5–6 m wide. The postholes appear to have made up a substantial structure (although the exact form remains uncertain), with two intercutting postholes indicating a phase of repair. Perhaps the most interesting aspect of this structure was the 274 sherds (8041 g) from at least two Deverel-Rimbury bucket-shaped jars deliberately placed in two postholes or pits, 210026 and 221005. Plate 3.12 shows a complete pot placed on the base of 210026 and a similar deposit was found in 221005. The absence of burnt bone indicates these were not cremation burials.

A group of postholes designated Group 2 in the north-eastern part of the enclosed area probably also represented a building or series of buildings, but the plan is even less clear. Group 2 contained two small postholes or stakeholes, each of which produced a sherd of Deverel-Rimbury pottery.

Three other posthole groups (Group 3–5) were recognised within the enclosed area, all of which probably made up at least one building. The proximity of Posthole Group 5 to the bank associated with the settlement's eastern boundary ditch 212086 indicates that the building must have either have gone out of use before the bank was constructed or have been built partially on the decaying earthwork, but there is insufficient evidence to clarify which. None of the features produced any datable finds.

Settlement 3

At the south-eastern extreme of the excavated areas, a limited portion of Farmstead 7 was encountered, containing a small post-built structure (Fig. 3.35). This area has been identified as Settlement 3 with some reservations, since evidence for settlement here is at best tenuous.

Five or six postholes belonging to a rectangular structure measuring 2.73 m x 2.27 m were the only settlement features identified. The only dating evidence was a single small sherd of Deverel-Rimbury pottery from post-hole 404032. The building was situated immediately adjacent to field boundary ditches, which had been recut several times. These contained both Deverel-Rimbury and post-Deverel-Rimbury ceramics. They also contained large quantities of burnt flint, which had apparently derived from the rectangular building. Analysis of the charcoal from the postholes suggested that it came from the remains of domestic fires associated with the building (Challinor in Framework Archaeology 2006, CD Section 10).

Interpretation of this structure is difficult. It somewhat resembles the four or five structures identified at Settlement 1, but is distinct in that it is apparently isolated among fields. It is possible that the structure may have been an agricultural building rather than a dwelling.

Farmstead 8

Farmstead 8 was located in the eastern half of the coaxial landscape, defined to the west by Trackway 5 (Fig. 3.36). Its eastern limits were defined to the north by Trackway 9, though this was not traced into the main excavation area. Features belonging to this farmstead produced three radiocarbon determinations (Fig. 3.37). Wk-19330 (3303±32 BP; 1670–1500 cal BC) dated a charred grain of indeterminate *Triticum* sp. from a fill of waterhole 693006 in Farmstead 8. The early date has been discussed previously, but it is worth noting here that—if the true date were to lie at the younger end of the distribution—this determination could overlap with Wk-18549, suggesting that this pair of dates accurately reflect the beginnings of activity at the southern end of this farmstead. Wk-18459 (3215±31 BP; 1530–1420 cal BC) dated a wooden stake driven into the base of freshly-dug waterhole 510047, and is the earliest entirely reliable date relating to the coherent system. Wk-19333 (2877±39 BP; 1210–980 cal BC) dates waterlogged buttercup seeds from the base of waterhole 685032 (see below).

Trackway 5

Trackway 5 forms the eastern boundary of Settlement 1 in Farmstead 7, but provides no visible access to it. To the south it leads through Farmstead 8 (forming its western boundary), while only 70 m beyond its known northern extent lies a ring ditch (Site A: Canham 1978). Like Trackway 4, the western ditch adjacent to Settlement 1 is much larger than is normal for the other trackways, and shallows away from the enclosure. There is Deverel-Rimbury in the upper fill here. On the east there is access into fields. These segments are also dated by Deverel-Rimbury pottery.

Some 290 m south of the settlement the trackway consists of segments showing re-alignments, which also typified the southern parts of Trackways 3 and 4. Much is lost to truncation, but surviving stratigraphic relationships

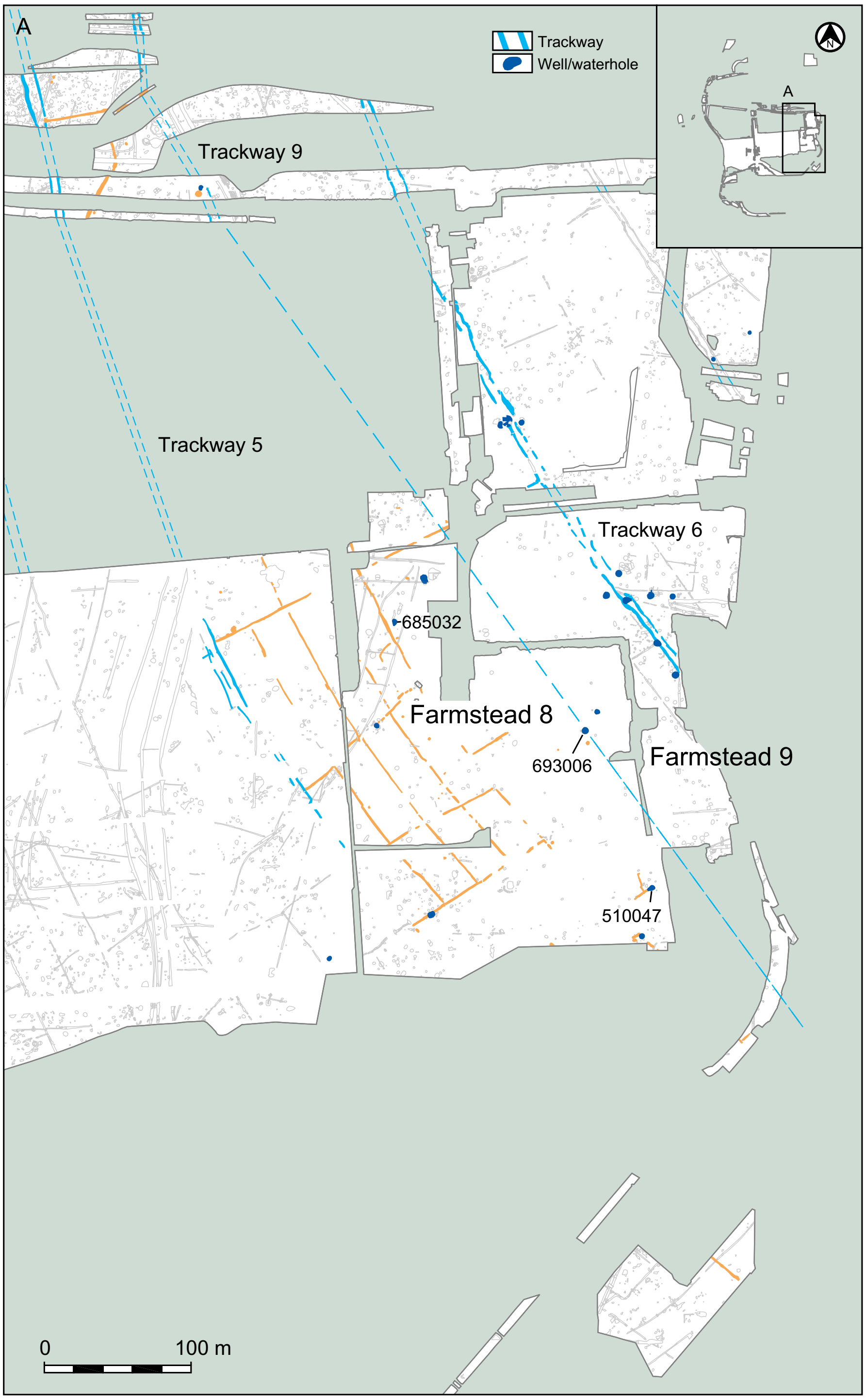


Figure 3.36: Farmstead 8

show that it is cut by at least two east-west field boundaries of fields belonging to Farmstead 8.

The usual range of pits, wells and waterholes was encountered, dating to both the Middle and Late Bronze Age. Reliably dated earlier features were mostly at the southern end of the excavated area.

Waterhole 510047 originally lay very close to a hedgerow of field maple, willow, blackberry and hawthorn and/or sloe. The absence of stinging nettle seeds suggests that vegetation around the waterhole was being cut down, presumably to facilitate access. The water surface appears to have been kept clear (no aquatic weeds had become established and marginals and wet-ground plants were not represented). Pollen is indicative of pasture and meadow, with arable fields in the vicinity (cereals included emmer/spelt, barley, possibly oats, and a little flax).

Waterhole 693006 was located on the eastern edge of the farmstead, only 11 m from waterhole 687011 in Farmstead 9 (see below).

A sample from a lower backfill (but not from the base of the waterhole) produced an abundance of seeds from wasteground weeds such as stinging nettles and pale persicaria (Persicaria lapathifolia), suggesting that the sample may represent a period of abandonment. There was some evidence for the dumping of waste, in that small fragments of charcoal were frequent in the sample. Domestic charred waste, however, was not abundant, as only two poorly preserved charred cereal grains (including an indeterminate wheat grain (Triticum sp.)) and one or two weed seeds that may have been deposited amongst cereal processing waste (eg poppy (Papaver cf. dubium, parsley piert (Aphanes arvensis)) were recorded. The arable weeds, however, can also grow in waste places so they may have been growing locally on disturbed areas of soil.

Further evidence suggesting some degree of abandonment of the waterhole was the frequency of fruits of the free-floating aquatic plant, duckweed (Lemna sp.). Most of the waterhole fills from Terminal 5 contained very few aquatic plant remains, suggesting that they had been well-used and possibly deliberately kept free of aquatic weeds. Duckweed can rapidly colonise an abandoned pond or ditch, particularly if it is eutrophic. The high nutrient status of waterhole 693006 and its surrounding vegetation was confirmed by the abundance of seeds from stinging nettles and members of the Chenopodiaceae family (including fat hen, orache and many-seeded goosefoot (Chenopodium polyspermum)). Other nitrophilous plants such as chickweed and black nightshade (Solanum nigrum) were also common.

(Carruthers, CD Section 14)

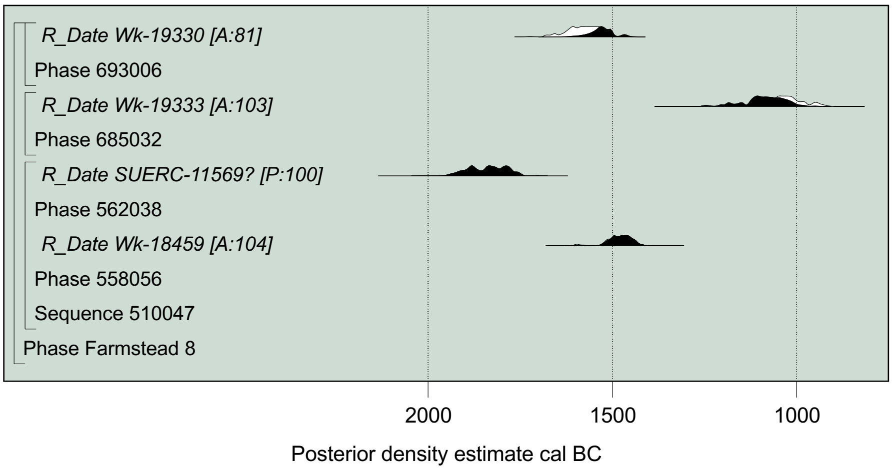


Figure 3.37: Radiocarbon dates for Farmstead 8

Charcoal from the feature consisted entirely of *Quercus*, with fragments of roundwood, heartwood and sapwood. The dominance of oak in this sample is unusual since all other samples from Terminal 5 produced mixed assemblages. It is likely that either the assemblage relates to the function of the fire, or that structural timbers had been used.

Farmstead 9

At this point, there may be a change in the layout of the farmsteads of the coaxial landscape (Fig. 3.38). Whereas Farmsteads 6, 7 and 8 are all bounded on the western side by a double ditched trackway which separated them from their neighbours, Farmstead 9 does not have such a feature forming its western boundary (unless Trackway 9 were to have continued southward in the manner of the other trackways: there is no evidence for this, however). Instead, the double-ditched trackway (6) of Farmstead 9 runs through the approximate centre of the field system.

Trackway 6
At the northern limit of excavation, Trackway 6 provided access into fields to the west. The ditches here were segmented, with a series of intercutting terminals suggesting that the segments were a series of cleaning re-cuts.

A little further south, the western ditch was cut by a pair of east-west field boundary ditches which run east. There is no surviving eastern ditch to the trackway at this point, and two possibilities arise:

i) this is another 'blocking' point in the trackway system, perhaps here suggesting a later division into northern and southern parts

ii) there is an east-west trackway here linking Trackways 6 and 8

Perhaps it is more likely that both of these are true, ie that Trackway 6 is blocked at this point by an east-west trackway which links it and Trackway 8, and that this 'blocking' represents a later sub-division of the landscape into north-south blocks.

Although the evidence is not entirely convincing, it is also possible that north of this point Trackway 6 communicated with fields to the west only; while south of this point access was to fields to the east and west. There was access to the east immediately south of the east-west boundary/trackway.

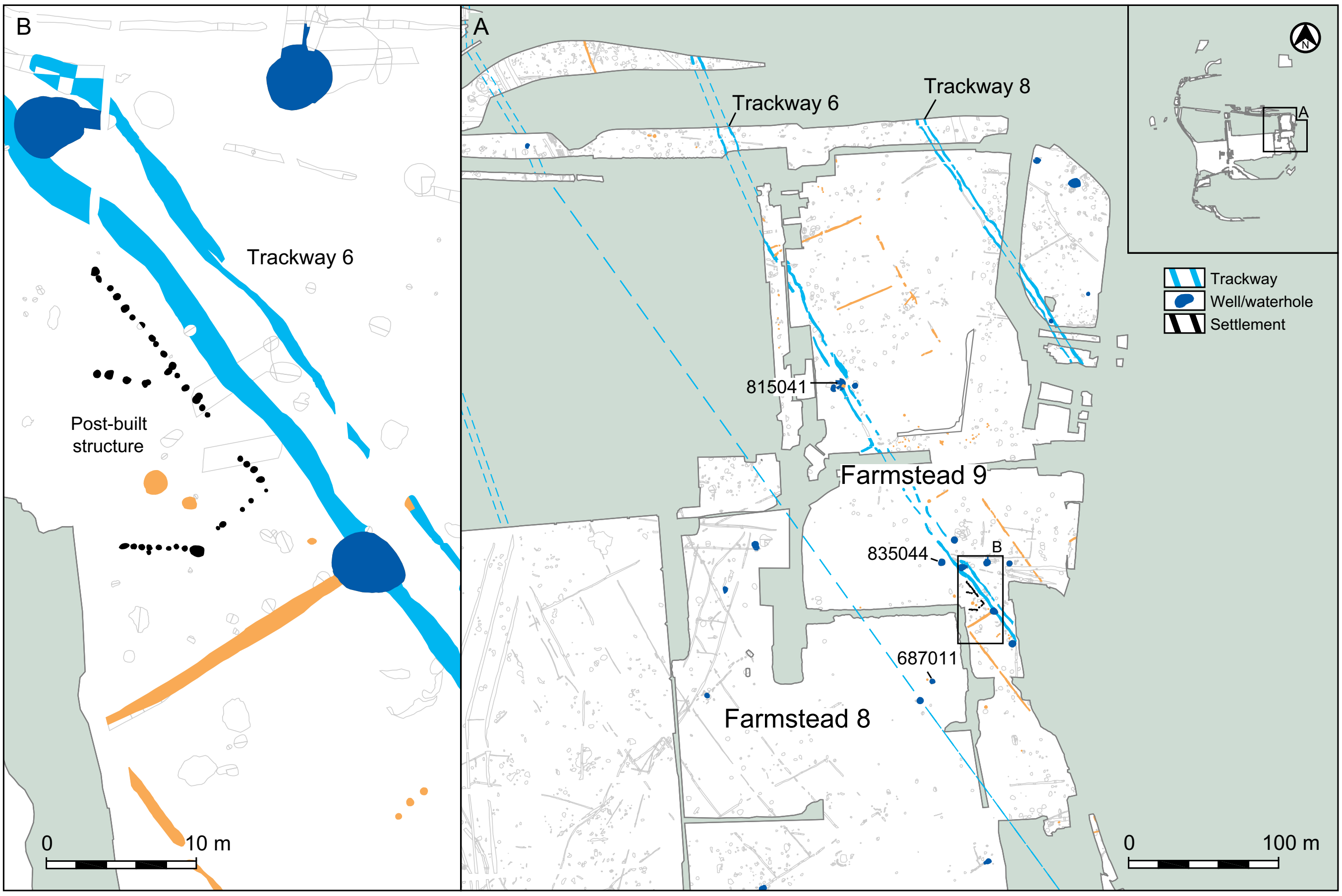


Figure 3.38: Farmstead 9 and post-built structure

Some more segments south of here on the west side of the trackway had 'scouring' recuts, while on the east the re-cuts were more like re-alignments of the ditch. The eastern side also kinked around a tree which was growing *within* the trackway. Gaps in the western side communicated with fields to the west. Dating is limited to a single sherd of post-Deverel-Rimbury pottery from a point high up in the fills.

A Middle Bronze Age waterhole (815041) sits in the line of the trackway. This feature contained Deverel-Rimbury ceramics and one and a half kilos of burnt flint. There do not seem to be any stratigraphic relationships between the waterhole and the ditches, which terminate a short way from it (giving access west) or continue past it (a gap here gives access east). It seems possible that north-south access was possible past this waterhole as there was 1.5 m of space between the feature and the eastern trackway ditch, but it is debateable whether this would have provided a functional thoroughfare for people and livestock, given that the space may have been narrower prior to truncation of the ground surface.

Charred and waterlogged plant remains from the primary fill of this feature included woodland or hedgerow taxa and aquatic or marshy plants.

The remains from these groups were from a wider range of taxa and more frequent than in any of the other waterholes in the area. Woods/hedgerow plants included blackberries, rose, sloes, hazelnut, hawthorn, dogwood, possible alder buckthorn and the herb, three-nerved sandwort. This range of small trees and shrubs includes several thorny species that are useful for hedging. Since few thorns or leaf fragments were present it is likely that a hedge was located close to the waterhole but not directly adjacent to it.

Both rooted marginals (such as crowfoot, water-pepper, spike-rush) and free-floating true aquatics (eg duckweed) were common throughout the sample column, indicating that the feature had retained water to this level for the whole period of formation of context 827096. There was no obvious evidence for the deposition of waste or the eutrophication of this waterhole, although a modest number of nitrophilous weeds (eg nettles, chickweed, fat hen) were present. It is possible that the feature was not so heavily used by livestock and/or humans as some of the other, weed-free waterholes...

(Carruthers, CD Section 14)

Adjacent waterholes indicate the growth of scrub around the features as they were abandoned. Other Middle Bronze Age waterholes occur further south, but none contain any notable palaeoenvironmental or material assemblages, with the exception of 687011. The primary fill of this feature produced an assemblage of wooden objects (Plate 3.13) consisting of 38 unidentifiable bark chippings, six stake points, seven sections of roundwood, three board fragments and 23 non-refitting fragments of a ?*Salix* spp. 'bark container' with no working marks, cut edges or features.

South of the waterhole there was more access to the west, and the trackway ditch was cut by a pit with 16 sherds of Deverel-Rimbury pottery, demonstrating that here at least, dating is solidly Middle Bronze Age. Another access point to the west lay where the trackway and a field boundary met: the access south of this field boundary seems to have been closed by a short ditch segment at some point.

To the south there were more scouring re-cuts and gaps affording access to the west and east, but truncation from this point is severe on both sides. Importantly, the trackway kinked around the Farmstead 9 post-built structure on western side (only the western side kinks, narrowing the trackway).

This structure (Fig. 3.38) consisted of an 18.5 m long row of 23 posts running parallel to the western ditch of Trackway 6, with a 3 m long row of four posts at a right angle to the southern end, and a 3.5 m long northern row of five posts and a 5 m long southern row of ten posts aligned east-west. There is no independent dating evidence for this structure, and a Middle Bronze Age date is inferred from the fact that the western ditch of Trackway 6 diverts around it, suggesting that the structure was standing when the Trackway was laid out. This is another hint that the southern ends of the coaxial field systems are amongst the earliest parts of agricultural landscape, and an indication that there was some activity prior to the establishment of the first field systems.

The nature of this structure is very difficult to determine. It seems unlikely to have been a domestic building, and it is in fact not certain that it was a building—in the sense of a roofed structure enclosed on at least three sides. A number of possibilities arise:

i) the posts may have formed fences which marked field boundaries or other enclosures. In this instance the assumption would be that this was an earlier phase of field boundary creation than the ditched embanked hedgerows of the main Middle and Late Bronze Age system. This is perhaps unlikely since two of the four elements of the structure do not lie on any alignment followed by any other physical landscape division.

Plate 3.13: Wooden objects in waterhole 687011

ii) The posts form some manner of enclosure within a field, probably related to stock control; they may be fragments of a system of collecting pens, crushes and drafting races and gates (as, for instance, at Storey's Bar Road, Cambs.—see Pryor 2001, 417–8), or they may be part of a farm stockyard (as, for instance, at West Deeping, Lincs.—see Hunn 1993), in which case a nearby settlement is implied.

Only 15 m north of this structure was waterhole 835044, which;

…produced some evidence for the deposition of domestic waste, and possibly occasional use of the waterhole for retting (flax processing). The sample came from the primary sediment, and some of the twigs were straight and of the dimension to suggest a wattled lining may have existed.

The traces of domestic waste included a charred chess seed (Bromus sect. Bromus), a fragment of flax capsule (Linum sp.), several stinking mayweed seeds (Anthemis cotula), and some fragments of possible corn cockle seed (cf. Agrostemma githago). Although stinking mayweed can grow as a weed of damp, disturbed clay soils, by the LIA/ERB period at T5 it was growing as an arable weed, i.e. charred seeds were present amongst charred grain. In this instance, only waterlogged seeds were present, so this may represent a stage at which the weed had been introduced amongst imported grain, but it had only become established as a ruderal weed of heavy damp soils, prior to the wider ploughing up of heavy soils for arable in the Iron Age. Corn cockle is also an introduced arable weed that became a common crop contaminant by the early Medieval period. In the British Isles its earliest published records are Iron Age in date (e.g. Silchester (Jones, 2000; Collfryn, Jones & Milles, 1989), although a few Neolithic and Bronze Age records exist for other parts of Europe. When present as small waterlogged fragments of seed, it often indicates the presence of human sewage, since the large seeds of corn cockle become ground up with the corn in flour. Although the black, spiny fragments are very distinctive, it is unfortunately not possible to confirm the identification from incomplete seeds.

Nitrophilous weeds (mostly stinging nettle) were present but not abundant, so the dumping of domestic waste was not excessive at this time. A few wet/damp ground plants that may have been growing around the waterhole were represented, including water pepper (Polygonum hydropiper), clustered dock (Rumex conglomeratus) and gypsywort (Lycopus europaeus), but no free-floating aquatics were present. The only woody taxon was a few blackberry seeds.

(Carruthers, CD Section 14)

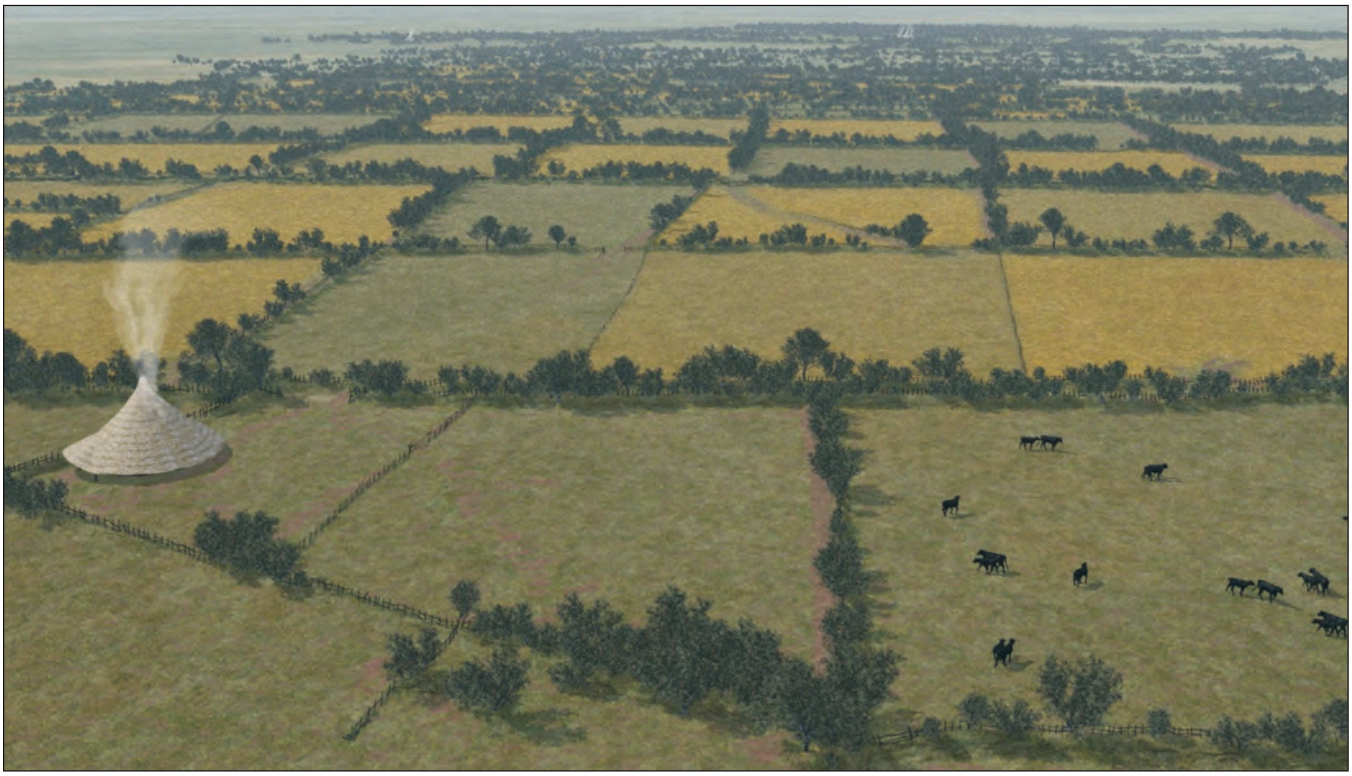


Plate 3.14: Artist's reconstruction of Farmstead 10

Farmstead 10

Farmstead 10 lay at the north-eastern limit of the main excavations, and as such was not subject to extensive area excavation (Fig. 3.39). However, enough of the farmstead was encountered to determine the normal pattern of double-ditched trackway passing—as in Farmstead 9—through the approximate centre of fields, with wells, waterholes and associated features (see artist's reconstruction in Plate 3.14). Indeed, in Farmstead 10 there are relatively good indications of sequence and subdivision.

Three radiocarbon determinations were obtained, all on cremation burials (Figs 3.39–40). OxA-16126 (3060±28 BP) dates 554566 to 1410–1210 cal BC, while OxA-18031 (2906±30 BP) dates 827119 and OxA-18032 (2905±30 BP) dates 830083, both to 1220–1040 cal BC. The latter two cremation burials are both probably Late Bronze Age in date, associated with Settlement 8 to the south-east (see below).

Trackway 8

The western side of this trackway was of segmented construction, but some of the resultant gaps were too narrow to have been functional and result in an almost continuous western side for the entire length. The only possible access to the west was at the very southern end by a field boundary. This is probably for the suggested east-west trackway joining Trackways 6 and 8. As with the trackway ditches in other farmsteads, the southern portions are more segmented than the northern (on both sides).

A further indication of the longevity of Trackway 8 consists of the gravel

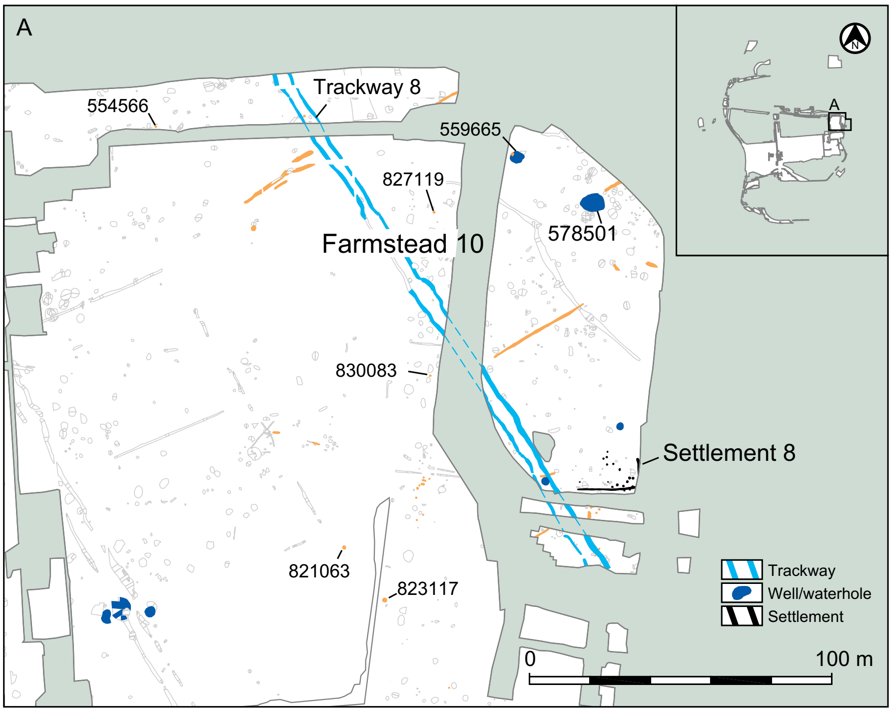


Figure 3.39: Farmstead 10

surfacings and resurfacings which survive at various points (Plate 3.15). These have a series of relationships with the trackway ditches and recuts which demonstrate maintenance of both the trackway surface and flanking ditches over a long period.

Aside from the trackway, features of this farmstead dating to the Middle Bronze Age (on the basis of ceramic associations or radiocarbon determinations) consist of a pair of waterholes, a pair of pits and a cremation burial. The radiocarbon determination of 1410–1210 cal BC (OxA-16126; 3060±28 BP) for the unurned cremation burial in pit 544566 at the northern end of the farmstead confirms activity in this period, but there is no visible associated settlement, and indeed it may be the case that such burials would have been made away from any dwellings. The location of agricultural features in the northern fields (waterholes 549272/559665 and 578501) and what may be more 'domestic' features at the southern end of the farmstead (for instance pits 821063 and 823117—the latter had a substantially complete Deverel-Rimbury jar at its base) may support this contention.

The primary fill of pit 821063 contained much larger concentrations of charred cereal remains than the waterholes in the vicinity, indicating that domestic waste had been deposited in the feature.

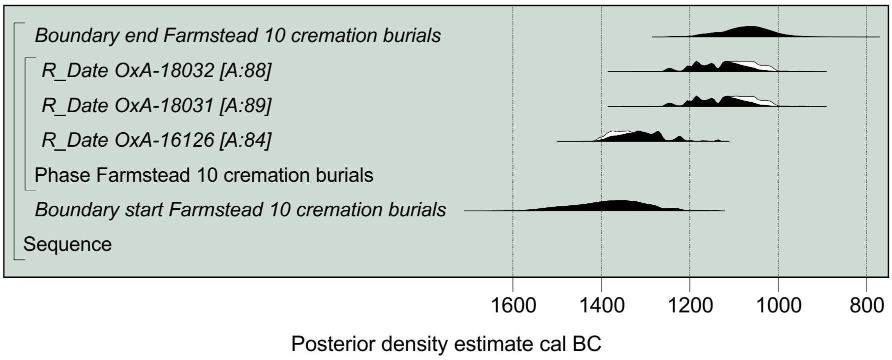


Figure 3.40: Radiocarbon dates for Farmstead 10

Periods 6, 7 and Early Iron Age: 1150–400 cal BC

Many of the Middle Bronze Age farmsteads discussed above contain evidence of some survival into the 1st millennium BC. This consists primarily of post-Deverel-Rimbury pottery incorporated in ditch fills of the field systems; recutting of the Middle Bronze Age pits and waterholes scattered throughout the fields and settlements; the digging of new features of this type; and the extension of the system through the foundation of new settlements.

Two different trajectories of settlement are apparent within the very late 2nd and early 1st millennium BC evidence. On the one hand, settlement within the aggregate landscape appears to coalesce: in a reversal of the tendency towards fragmentation visible after around 1400 cal BC, in the Late Bronze Age and Early Iron Age periods settlement seems to have been concentrated in the eastern half of Farmstead 3 and in Farmstead 4. On the other hand, in the coaxial landscape and further afield to the north and south, the tendency seems to have been towards sub-division and the creation of new, smaller farmsteads.

Farmstead 3

There is a dearth of radiocarbon determinations to place features within this period, but ceramic associations indicate that Farmstead 3 continued to be occupied into the 1st millennium BC (Fig. 3.41).

The upper fills of many of the wells, pits and waterholes dating to the Middle Bronze Age contain post-Deverel-Rimbury ceramics (for instance in 141024 and 156028), while others were recut. These recut examples include 135055, which was cut into to top of 135071.

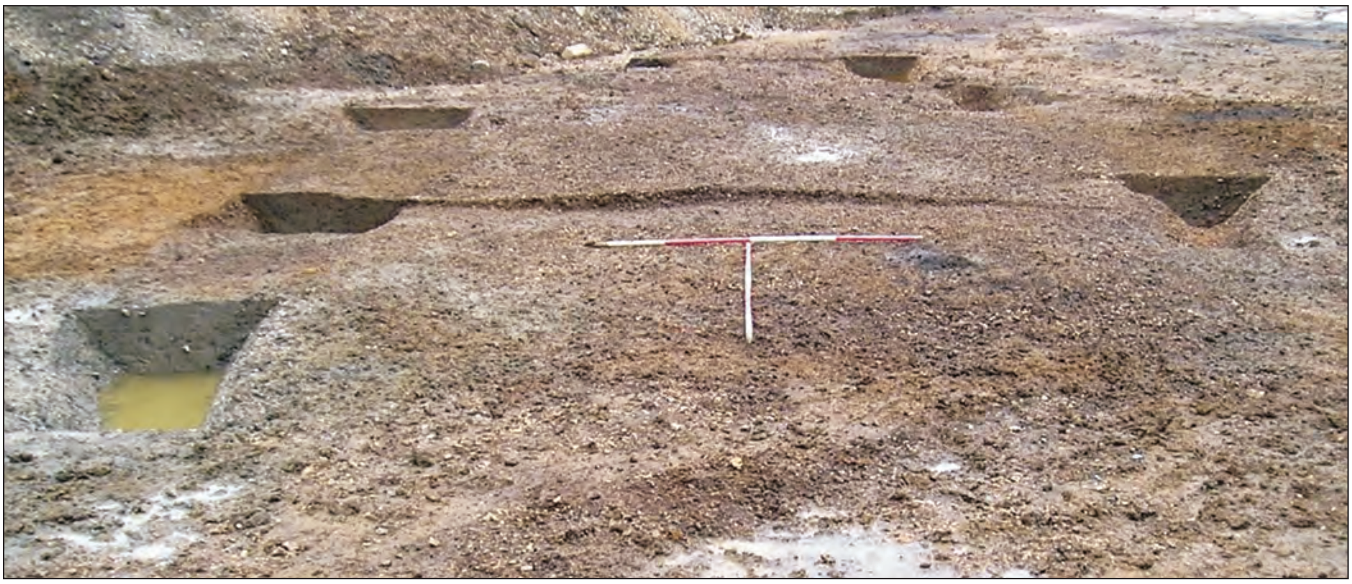


Plate 3.15: Surfaces of Trackway 8

Sometime between 1150 and 750 BC, the location of waterhole 135071 became a focus of activity again when ramped-access waterhole (135055) was dug into the top of the original feature (see Fig. 3.14 above). A small pottery vessel was placed in the uppermost fill of the new waterhole, echoing the deposits of artefacts in the base of the original feature.

Assessment of sediments gave an impression of fairly dry conditions around the feature early in its history. It was situated in an open landscape, dominated by weedy pasture. *Tilia* and Rosaceae (cf hawthorn) were growing near the feature and, although there was a mixture of trees growing in the catchment, *Alnus* being the most frequently recorded, they were either intensively managed, or growing some distance away. No arable activity was recorded but local soils were bioactive and eroding into the hole, as evidenced by *Glomus* type fungal remains.

Later in the sequence, local soils appear to have been much wetter, and Cyperaceae and *Filipendula* (meadowsweet) were recorded. However, there was no direct palynological evidence for standing water in the feature. Grazing intensity was reduced, and cereal pollen was frequent, indicating that cereal growing became more important close by.

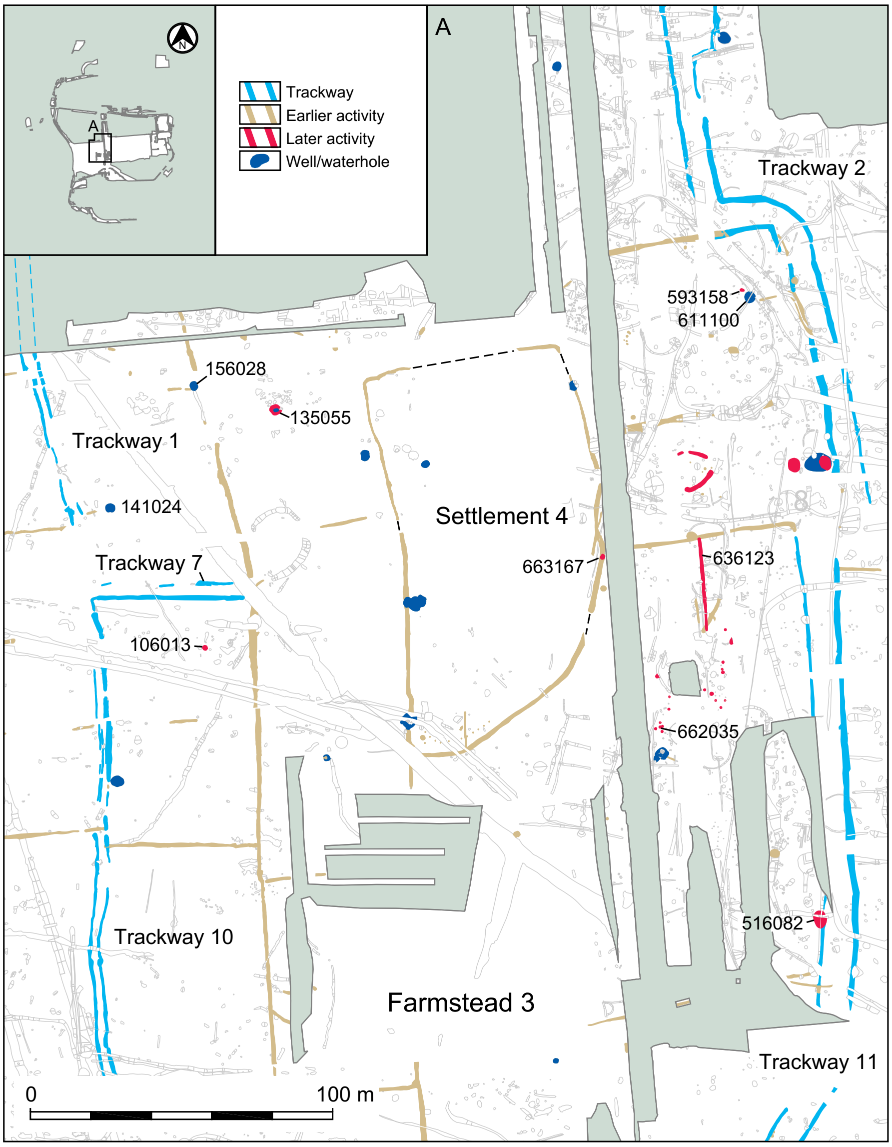


Figure 3.41: Late Bronze Age activity in Farmstead 3

It is unclear whether the later re-working of existing Middle Bronze Age features represents a continuing concern with supplying water to animals. However, the shallow depth of many of the later cuts suggests they were associated with settlement rather than an attempt to reach the water table, as was the case with many of the earlier pits.

A number of other features can be dated to the Late Bronze Age, including a cremation burial, pits and a well (Fig. 3.41).

Cremation burial 106013

Pit 106013 contained cremated human bone. Ceramic associations indicate a Late Bronze Age date for the deposit. The majority (55%) of the bone was recovered from the primary fill, with only 10.6% from the narrow middle lens of material, and 34.4% from the third, final fill. The greater proportions were in the south-west (54.4%) and north-east (30.7%) quadrants, with only 0.5% deriving from the south-east quadrant. The absence of a mass of fuel ash and the concentration of bone in parts of the fill suggests this deposit, or contemporary series of deposits, represent the remains of an unurned cremation burial, largely deposited within a limited 'strip' extending NE-SW across the 1.2 m diameter pit. The precise sequence of events is unclear, but may have included the main 'burial' deposit followed by scattering of the remaining bone collected from the pyre site for burial within the grave as it was being backfilled, and/or some exchange of material between the fills as a result of bioturbation. The small amount of pyre debris recovered may have been an incidental inclusion of material collected with the bone from the pyre site, rather than one of the deliberate deposits of pyre debris, in which case one would expect to see a greater mass of fuel ash.

That the remains recovered from the three different layers all derived from the cremation of the same adult (probable female) was indicated by the lack of duplication of discrete skeletal elements, the commonalty in indications of age, sex and in pathological lesions between bone from all levels and quadrants, and the direct joins between bone fragments from the primary and tertiary fills.

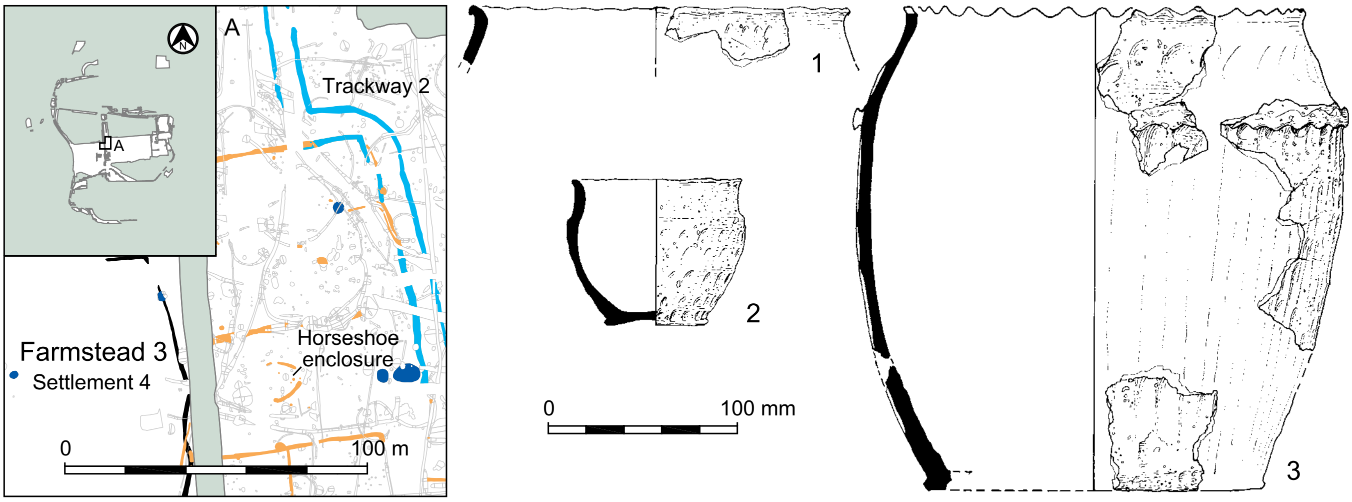


Figure 3.42: Ceramics from the Late Bronze Age horseshoe enclosure in Farmstead 3

The deposit appears completely isolated from any other contemporary burial. Similarly isolated or small groups of Bronze Age cremation burials are not uncommon, with several from the general vicinity including two urned burials from Prospect Park (McKinley 1996), and up to 14 urned and unurned Middle and Late Bronze Age examples from Imperial College, forming small groups or being deposited in isolation (Crockett pers. comm.). Several features containing what may prove to be deliberate deposits of pyre debris were identified at Imperial College in association with one small group of burials (ibid.), and pyre debris was recovered in the backfills of the graves at Prospect Park (McKinley 1996). The form of the burial at Terminal 5 is slightly unusual, the bone apparently being deposited as a spread on the base of the grave cut, but some such deposits have been observed in the Bronze Age (eg Downes 1995).

Other Late Bronze Age features

Other deposits indicative of continued settlement in Farmstead 3 and especially around Settlement 4 include pit 593158, adjacent to well 611100/611107, which contained post-Deverel-Rimbury ceramics including portions of a decorated bowl. Other features dated to the 1st millennium include waterhole 516082 (which cuts the western ditch of Trackway 11).

The majority of the material evidence for 1st millennium activity within Farmstead 3 comes from within and around the rectangular area immediately outside the entrance to Settlement 4 (Fig. 3.41). In the centre of this area, and facing the entrance, was a small horseshoe-shaped enclosure. Soil micromorphology suggests that the surrounding area was given over to arable land with local animal activity, perhaps stock management. However, this feature was also the location of some noteworthy deposits, including fragments of perforated clay slab and more particularly a sizeable assemblage of pottery.

Although perhaps simple domestic rubbish, the scarcity of perforated clay slabs at Terminal 5 and their ambiguity may suggest some significance. One terminal of this enclosure ditch also contained substantial portions of three very different vessels: a coarse jar of unusual form (Fig. 3.42, 3); a fine biconical bowl (Fig. 3.42, 1); and a substantially complete small short-necked jar (Fig. 3.42, 2) with a rim diameter of only 85 mm.

East of the horseshoe enclosure, waterhole and well complex 103040, 103038, 136194 (Fig. 3.43) contained another ceramic assemblage which was very obviously a deliberate and significant deposit. The earliest feature in this group was a ramped waterhole, 103040. This feature is undated, but could belong in either of the two phases of 2nd millennium activity postulated above. At some point, well 103038 was cut through its fills. The excavator believed that 103038 was in turn cut by shaft 136194 to form a well, but, due to extremely difficult excavation conditions, precise interpretation of this complex sequence is not possible. Nevertheless, the original interpretation is described here, with the shaft shown on the section in Figure 3.43 as cut 136194. The base of well 103038 was revetted to retain the soft, unconsolidated fills of the earlier ramped waterhole, 103040.

A significant artefact assemblage was recovered from the basal fills of both well 103038 and shaft 136194. Well 103038 contained an almost complete post-Deverel-Rimbury bipartite jar (Fig. 3.44, 1) and a decorated bowl (Fig. 3.44, 5); the jar had an external burnt residue over the rim and upper part of the vessel. Shaft 136194 contained a carinated bowl (Fig. 3.44, 4) along with two carinated drinking vessels (Fig. 3.44, 2–3; Plate 3.16). The latter have no known direct parallels in Thames Valley assemblages, although the profile of the form echoes exactly that of the accompanying bowl form—both forms have convex neck profiles and omphalos bases, and these three vessels were almost certainly made at the same time as a ‘matching set’. The two drinking vessels both have simple linear decoration around the neck and carination. All three of the vessels within this deposit and been partially burnt, with localised ‘blistering’ and refiring of exterior surfaces in each case, and the bowl has what appears to be a large post-firing perforation in the base (perhaps a deliberate ‘killing’ of the vessel). This group is likely to belong to the Early Iron Age.

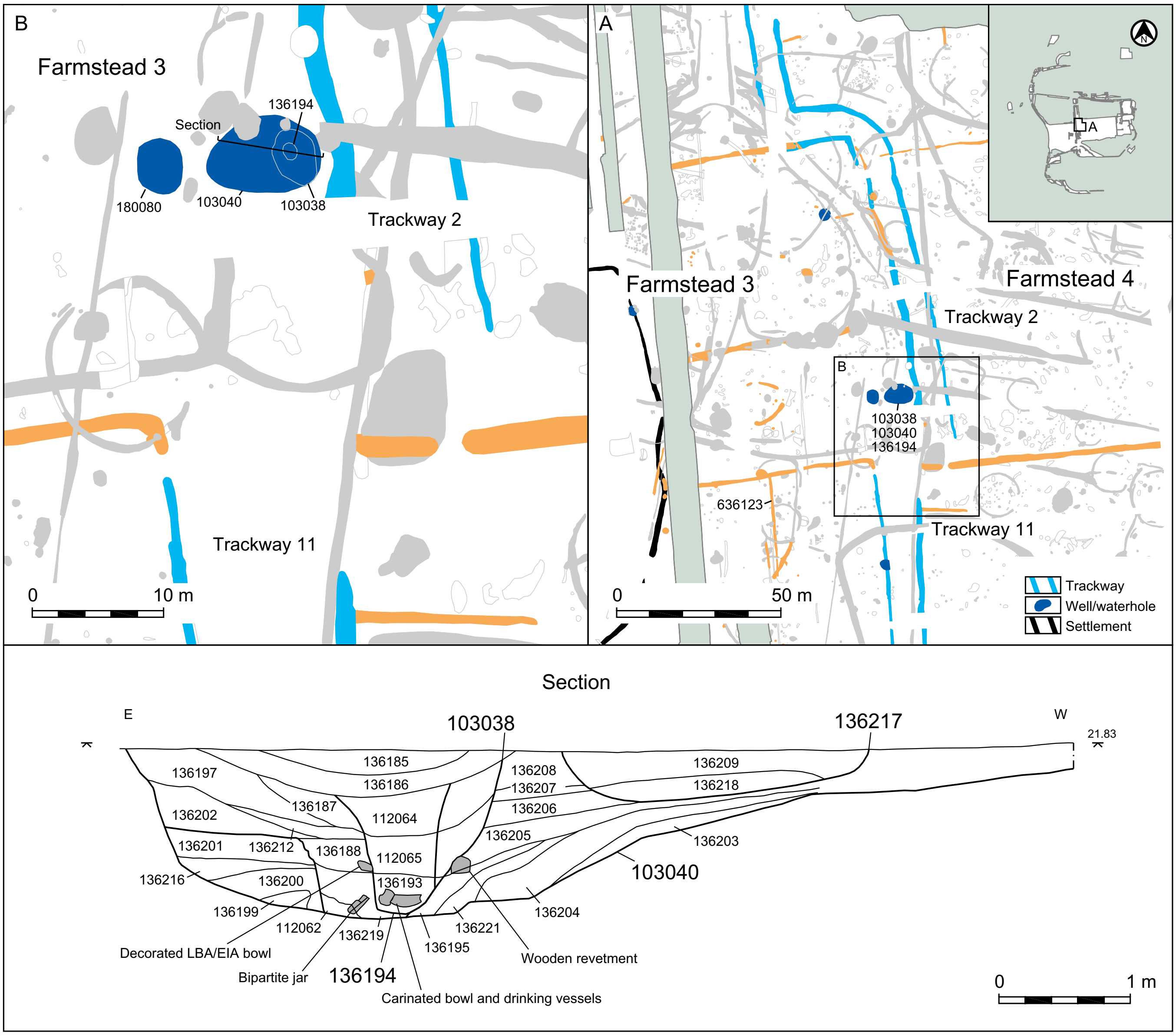


Figure 3.43: Waterholes and wells 103038, 103040, 136194 and 136217

These are clearly deliberate and structured deposits. The vessels can be seen as symbolic 'foundation deposits' made at the beginning of the lives of these features, perhaps akin to the communal 'feasting sets' identified by Anne Woodward (1998–9) from the Neolithic onwards. For the Late Bronze Age, she defines these 'sets' as consisting of a single large, often thin-walled, vessel, one or more medium-sized jars, and one or more drinking vessels. If these two deposits are combined, the vessels could conceivably be seen as one such 'set'.

This pattern of deposition of complete pots has been observed elsewhere, most recently at Swalecliffe, Kent, where a complete vessel ('pot 3'), resembling the bi-partite carinated jar from waterhole 103038, was placed at the base of a waterhole in a dense complex of other such features (Masefield *et al.* 2003, fig. 28, plate 11). Radiocarbon and dendrochronology date this deposit to the 'turn [ie early] of the eighth century BC' (Masefield *et al.* 2004, 338) and we can postulate a similar date for the deposition of the Terminal 5 vessel.

A radiocarbon determination on waterlogged seeds from basal fill 136193 (the context of the carinated vessels) (Fig. 3.43) produced a date of 1620–1320 cal BC (Wk-9375; 3197±57 BP). The seeds, however, may have derived from the earlier waterhole, 103040, since the pottery from 136193 clearly belonged to the Early Iron Age ceramic tradition.

Immediately west of these features, waterhole 180080 produced waterlogged plant macrofossil remains from its base, with the dominant group comprising typical weeds of disturbed / cultivated land, along with cereal grains and chaff fragments indicative of domestic waste, fodder or dung (see Framework Archaeology 2006, 160). This was also…

…the earliest sample to produce macroscopic evidence of heathland, with several heather (Calluna vulgaris) shoot tips and some cross-leaved heath (Erica tetralix) leaves. Pollen evidence for heathland vegetation was recorded in the earliest pollen zone in M/LBA pit 178108. Heather grows on sandy and peaty soils, but cross-leaved heath is typically found on wetter, boggy

Plate 3.16: Ceramics from well 103038 and shaft 136194

areas of heath. These remains could represent locally growing vegetation, in which case they indicate that the local soils had deteriorated following the clearance of scrub and/or woodlands. However, the presence of cereal waste also suggests that it could have been deposited in domestic waste, fodder or dung. The only woodland/scrub/hedgerow seed found in this feature was a single bramble seed, so some changes in the landscape appear to be taking place.

(Carruthers in Framework Archaeology 2006, CD Section 9)

Another pit/well (663167) cut the Settlement 4 enclosure ditch immediately south of the entrance (see Fig. 3.41). A fill low in the sequence contained a small flat-based high shouldered bi-partite jar with a simple impressed finger nail pattern on the shoulder. This vessel was not complete when deposited—the centre of the base was missing, as was over half of the wall/rim above the shoulder. This is probably an Early Iron Age vessel, a date also suggested by a fragment of an omphalos base and a flaring outwardly burnished lower wall from a bowl in the same deposit. The outside of the jar is sooted and the inside has very heavy burnt residues on the upper two thirds; portions of the outer surface have spalled away. In all, this looks like a cooking accident—the jar left in the fire and allowed to boil dry.

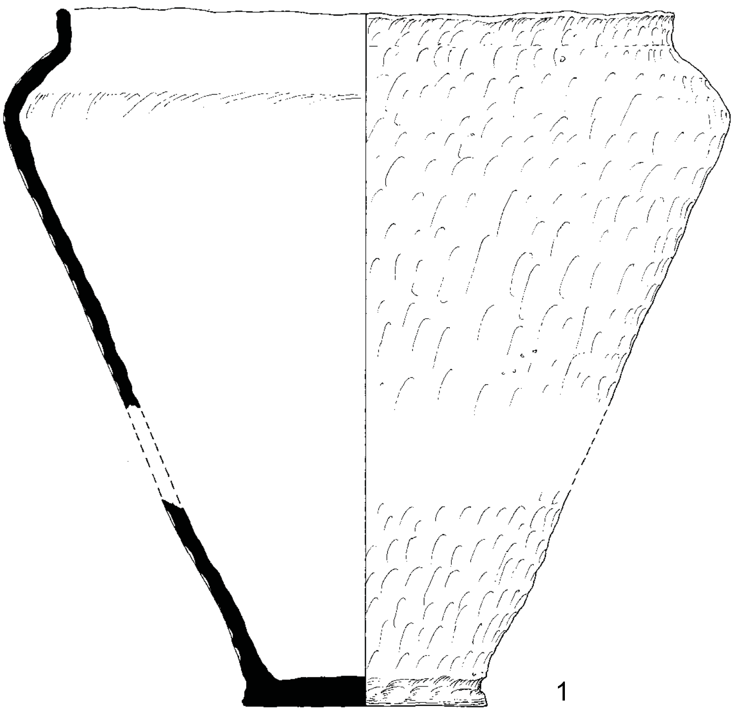
A well preserved but extremely limited insect assemblage was recovered, restricted to species of the Scarabaeidae family. Meaningful interpretation is virtually precluded, although nearby grazing animals are clearly suggested.

A deliberate dump of midden material overlying the pottery produced well-preserved waterlogged and charred plant remains, a large proportion of which comprised twigs, wood fragments and decaying wood fibres.

The dumped waste consisted of abundant burnt fine cereal processing waste, such as awn fragments, barley rachis fragments and emmer/spelt glume bases. A few cereal grains (hulled barley and emmer/spelt wheat) were present, but not enough to suggest that whole ears or spikelets of cereals had been burnt as offerings. The ratio of barley grains to rachis segments was roughly one to ten, as opposed to the three to one that would have been present with whole ears. The emmer/spelt ratios were also one to ten where they would have been two to one. The few arable weed seeds present included corn spurrey (Spergula arvensis), a weed of acidic, sandy soils. The recovery of an oat rachilla demonstrated that wild oat (Avena fatua) had been growing as a weed amongst the cereals.

The waterlogged plant macrofossils comprised a range of weeds of damp grasslands (including ragged robin (Lychnis flos-cuculi), blinks (Montia fontana ssp. chondrosperma) frequent rush seeds (Juncus sp.)) and disturbed places, with just a trace of woodland taxa (one rose seed and a thorn). Nettle seeds were scarce but other high-nutrient indicators such as fat hen (Chenopodium album) and many-seeded goosefoot (C. polyspermum) were well-represented. Damp ground taxa (eg sedges, (Carex spp.), spike-rush (Eleocharis subg. Palustres)) were more common than in other waterholes, but true aquatics were again not present. Once again, a trace of waterlogged cereal chaff was present (one cf. spelt glume base).

(Carruthers, CD Section 14)



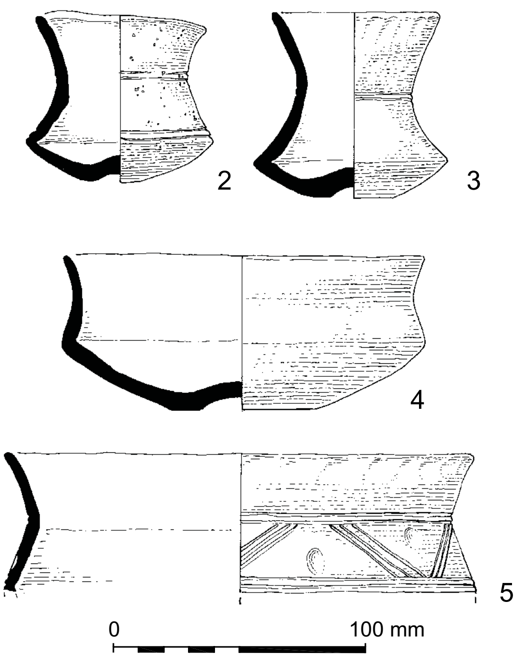


Figure 3.44: Ceramics from well 103038 and shaft 136194

Plate 3.17: Perforated clay slab from pit/waterhole 638008

Immediately south of the entrance enclosure, ditch 636123 (Fig. 3.41) contained 95 sherds (weighing 4173 g) from a large short-necked jar. At the southern end of this ditch, a scatter of small pits and postholes were mostly undated, although pit 662035 contained two large sherds of a coarse vessel, along with 135 sherds (1889 g) from a very large bowl or short-necked jar in an unusual vesicular fabric (Fig. 3.45). The majority of the surviving sherds derived from the rim (almost complete; flat and generally everted, but highly variable around the 440 mm diameter), neck and shoulder, with only nine base sherds present (the base diameter was perhaps in the region of 160–190 mm). The neck had an applied cordon decorated with finger impressions and the shoulder had occasional shallow vertical impressions, possibly finger-nail. The surface is slipped, but survival is highly variable with some sherds very badly pitted and others surviving in good condition. The best parallels for the form of this unusual vessel (the only instance of its type in the Terminal 5 assemblage) come from Canham's Site K (1978, 27 fig. 17 no 65 especially) although the size and vesicular fabric are best matched in a very large shouldered jar from Caesar's Camp (Grimes and Close-Brooks 1993, 345–6 fig. 30 no 87). Other domestic material from this pit included 40 small fragments of amorphous fired clay.

This concentration of material in the eastern half of Farmstead 3 is one of the strongest indications of settlement location in this period from anywhere in the aggregate landscape. The only other concentration of material lies slightly to the north and east, in Farmstead 4.

Farmstead 4

The evidence for Late Bronze Age activity in Farmstead 4 typically takes the form of quantities of refuse in the highly truncated remains of pits and ditches (Fig. 3.46). Pit 609020, for instance, contained numerous small fragments of animal bones, quantities of burnt flint and sherds (mostly small) from several post-Deverel-Rimbury vessels. Other features had rather different contents. For instance, pit 638008, which may have been a small waterhole subsequently used for the disposal of domestic waste, contained over 1.5 kg of post-Deverel-Rimbury pottery, and approximately half of a perforated clay slab (Fig. 3.46; Plate 3.17)

Fragments of several such slabs were recovered during the excavations at Terminal 5, although this is the most complete example. Other examples are known from the region, including a group of five from Yiewsley (Champion 1980, who also provides a distribution map for the Thames Valley). The purpose of these objects is unknown, although they vary only slightly from a basic pattern. The example from 638008 is slightly larger than most, and has more perforation, but retains the characteristics that mark most examples, including the slight groove around portions of the circumference. Although ambiguous, these slabs are normally thought to be associated with some domestic or perhaps light industrial process (eg cheese making).

A second very large ramped waterhole in Farmstead 4 (517310; 6.75 x 5.6 m) seems to date to the late 2nd millennium (Fig. 3.46). Rapid collapses of gravel from the sides of the original cut contained portions of two post-Deverel-Rimbury vessels, and these gravels had subsequently been partially removed by a scouring recut. This recut contained an extensive assemblage of wooden and ceramic objects (Fig. 3.47).

The earliest fill contained stake points (two Salix spp., one Pomoideae spp.), roundwood fragments (one each of Alnus spp, Corylus avellana L. and Fraxinus excelsior L.), Salix spp. and Quercus spp. chippings. Several fragments of broken wooden artefacts were also present, including two separate withy ties (one Salix spp, one Frangula alnus Mill.), part of a Quercus spp. board with carved step or stop at one end and part of the wall of a hollowed vessel, probably a bucket, cut from Fraxinus excelsior L.

(Allen, CD Section 11)

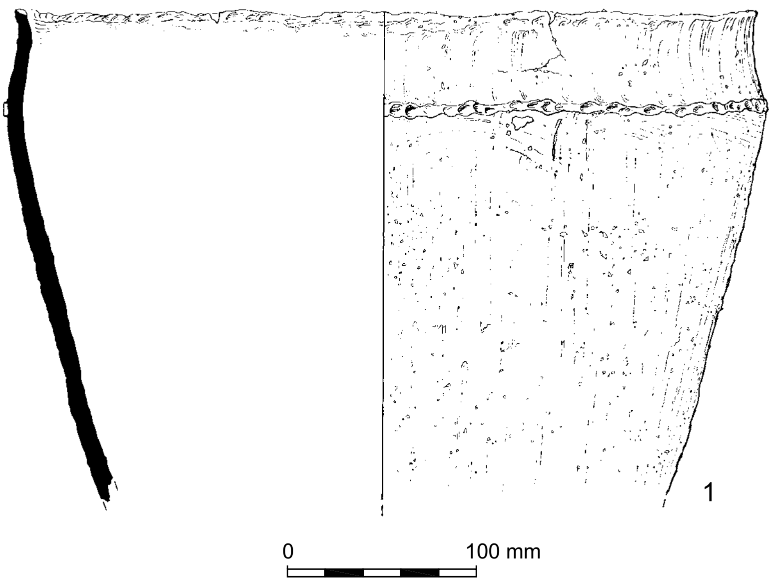


Figure 3.45: Very large bowl or short-necked jar from pit 662035

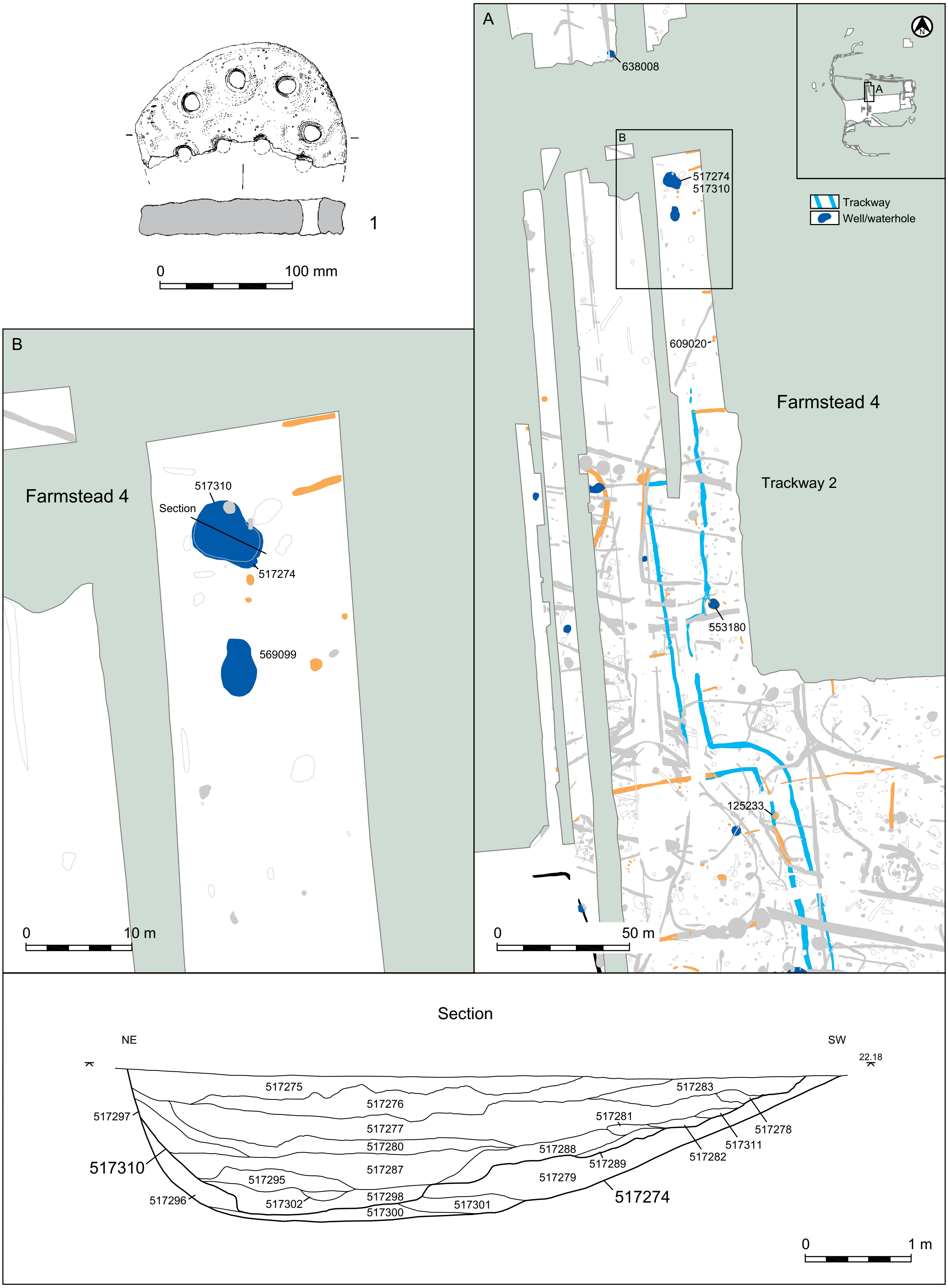


Figure 3.46: Late Bronze Age activity in Farmstead 4 and waterhole 517274/517310 section and perforated clay slab from 638008

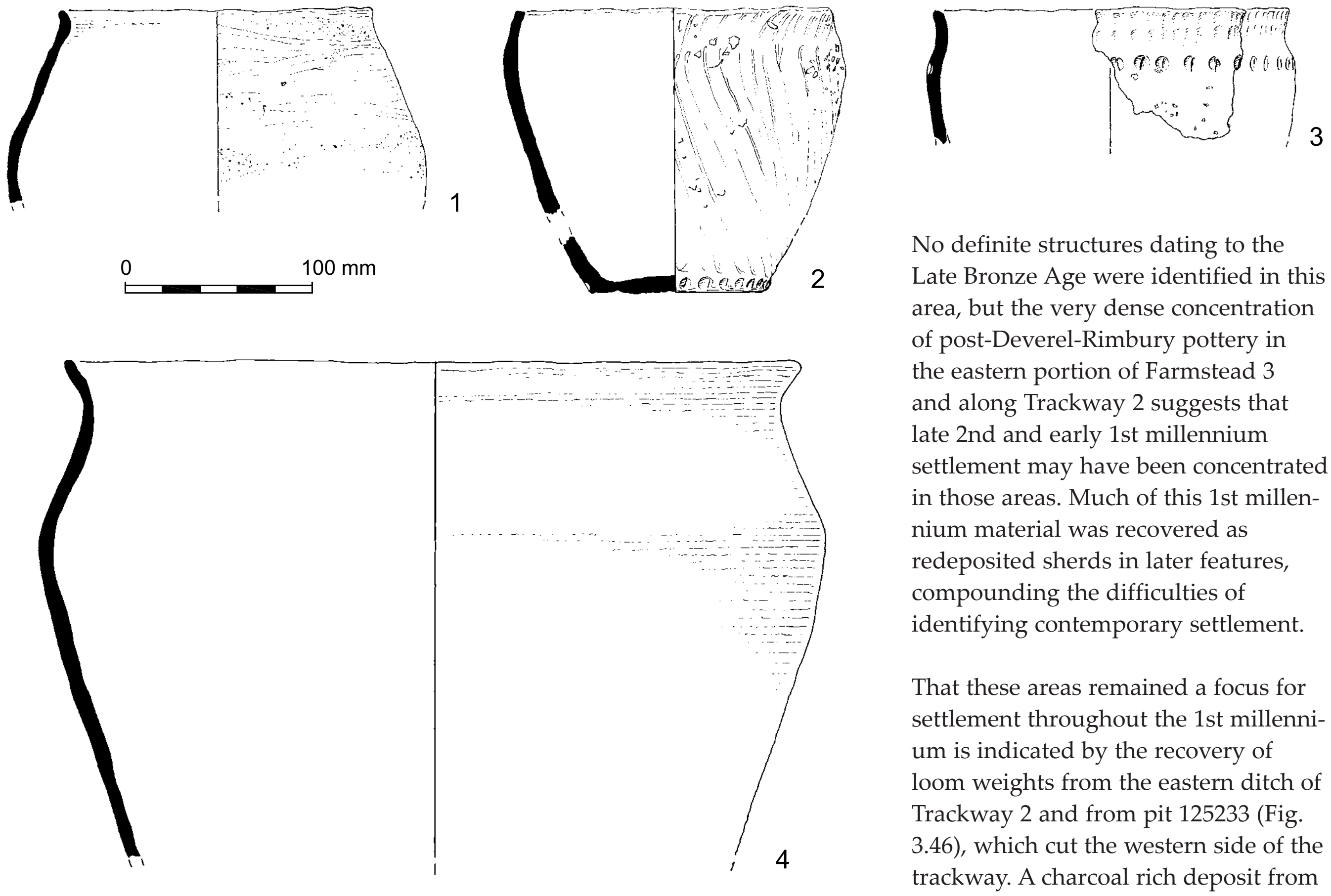


Figure 3.47: Pottery from waterhole 517310

One of the withy tie ropes gave a radiocarbon determination of 1160–980 cal BC (93%) or 1190–1170 cal BC (2%) (Wk-18456; 2871±29 BP), dating the objects securely in the Late Bronze Age. This date fits very well with the ceramics from the same fill.

Basal fill 517298 contained 117 sherds from six vessels, including a short-necked jar in fineware FL11 [Fig. 3.47, 1], and a biconical bowl [Fig. 3.47, 2], a shouldered bowl [Fig. 3.47, 3], and an extremely large shouldered fineware bowl or jar [Fig. 3.47, 4]. Several sherds from at least three vessels show signs of over- or re-firing, and two vessels have surface spalling. The deposit is clearly different in intention to the ceramics in the higher fills of the same feature, which appear to result from unstructured rubbish disposal.

It is possible that the group represents the result of a house or other fire, such as was suggested for the slightly later material from Longbridge Deverill Cow Down (Hawkes 1994). At Terminal 5 however, there is no obvious settlement in the immediate vicinity, being rather amongst field systems, and removed from the main distributions of contemporary pottery.

(Leivers et al., CD Section 1)

The question of the whereabouts of the settlement associated with Farmstead 4 is not easy to resolve. Activity at this time is incontrovertible: as well as the ceramic evidence, a second waterhole in Farmstead 4 (553180) contained worked wood which gave a radiocarbon determination of 1200–970 cal BC (Wk-19327; 2859±33; Fig. 3.46). Two possibilities arise. Firstly, crop marks plotted from aerial photographs suggest an arrangement of possibly Bronze Age features to the north of the Farmstead 3 'D'-shaped enclosures, which may represent an enclosed settlement in Farmstead 4 (see Fig. 3.23 above). Secondly, truncation (severe in this part of the site) may have removed postholes, drip gullies, beam slots and other ephemeral settlement traces entirely.

No definite structures dating to the Late Bronze Age were identified in this area, but the very dense concentration of post-Deverel-Rimbury pottery in the eastern portion of Farmstead 3 and along Trackway 2 suggests that late 2nd and early 1st millennium settlement may have been concentrated in those areas. Much of this 1st millennium material was recovered as redeposited sherds in later features, compounding the difficulties of identifying contemporary settlement.

That these areas remained a focus for settlement throughout the 1st millennium is indicated by the recovery of loom weights from the eastern ditch of Trackway 2 and from pit 125233 (Fig. 3.46), which cut the western side of the trackway. A charcoal rich deposit from the top of this pit produced a radiocarbon determination of 840–410 cal BC (Wk-9373; 2569±62 BP; 125228). Associated ceramics included a finger-impressed jar (Fig. 3.48, 5) amongst potentially later forms (Fig. 3.48, 1–4).

Alternatively, rather than postulating a settlement from which all structural traces have been erased, much of this material, and especially the redeposited element of it, could represent a dispersed midden deposit. A number of other sites dating to the late 2nd/early 1st millennium BC, including East Chisenbury (McOmish 1996) and Potterne (Lawson 2000), are characterised by the accumulation of large concentrations of pottery, flint and animal bones. During analysis of the Potterne site, Lawson (2000, 264–272) conducted a wide-ranging review of formation processes and the structure of similar sites in southern Britain. This discussion will not be repeated here, but the post-Deverel-Rimbury associated concentrations in Farmsteads 3 and 4 resemble these sites in some respects, particularly in terms of the presence of large accumulations of domestic rubbish at a single location.

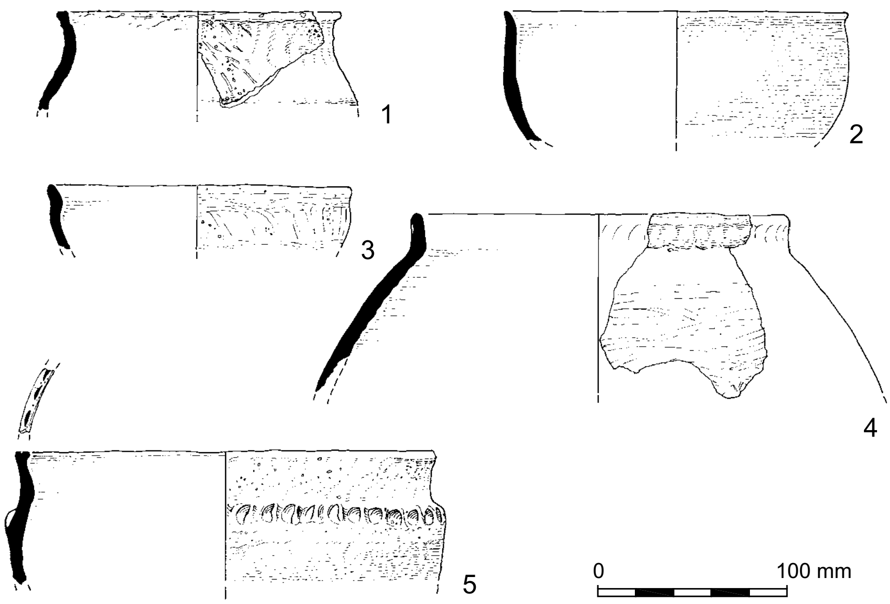


Figure 3.48: Pottery from pit 125233

Farmstead 7 and Settlement 1

Whilst there are no structures within the area of Settlement 1 that can be definitely ascribed to the period 1150–750 BC, there are sufficient post-Deverel-Rimbury ceramics and features to suggest that some level of activity continued at the settlement during this period (Fig. 3.49).

The major features include the recutting of the westernmost boundary ditch of Trackway 4 and the digging of a very large feature, 212066, immediately to the south of the fenceline. The fills of the recut ditch were stained dark with comminuted charcoal and contained pottery, burnt and struck flint, fired clay and burnt stone, the sort of material that would be produced by domestic activity. Very little post-Deverel-Rimbury pottery was recovered from the silts of the other trackway ditches defining the settlement, suggesting that they had silted up by this time.

Feature 212066 was only partly exposed within the excavated area. It may have been either a large ditch or a series of pits or quarries. The fills produced 94 g of Deverel-Rimbury pottery and 168 g of post-Deverel-Rimbury pottery, along with struck flint and a small quantity of fired clay and burnt flint.

Within the settlement area, a few postholes produced small sherds of possible post-Deverel-Rimbury pottery, as did a small 'T' shaped gully (211081) near Posthole Group 1. These features are sufficient to suggest the presence of structures of some sort during the period 1150–750 BC, although gully 211081 is more likely to belong to Posthole Group 1.

One very notable feature of either phase of this settlement is its lack of a water supply. No features were encountered which could possibly have served as wells or waterholes; it can only be assumed that such features lay in the northern (unexcavated) portion.

South of the settlement large areas of Farmstead 7 were without evidence of any sort, field boundary ditches and other features being entirely absent due to more than normally severe truncation. Only at the southern end of the Farmstead does the usual pattern of enclosures and features survive (Fig. 3.50). In this area were large pits and waterholes containing the familiar range of material dominated by post-Deverel-Rimbury ceramics and in one pit (148042) a portion of a saddle quern.

The most notable group of ceramics came from pit 146048, which contained fineware bowls with short upright or everted rims and rounded or carinated shoulders and well finished surfaces (Fig. 3.50, 1–4), with jars in the same fineware fabrics, some with finger-impressed shoulders (Fig. 3.50, 5). This amounted to a substantial ceramic assemblage (927 sherds; 9841 g) consisting of a maximum of 13 bowls and seven jars. A significant proportion of the assemblage shows clear signs of having been burnt or overfired to

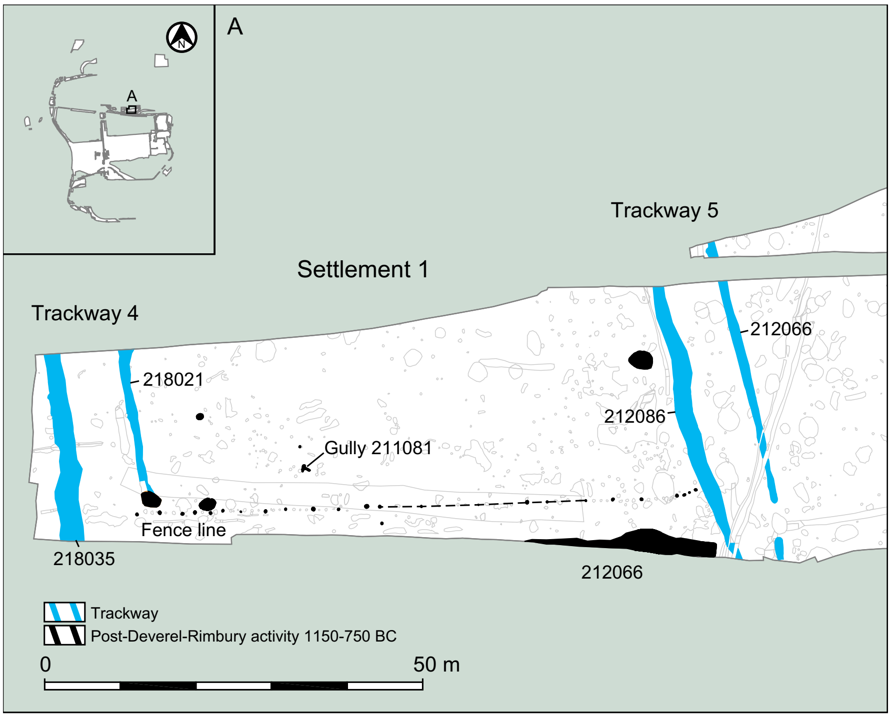
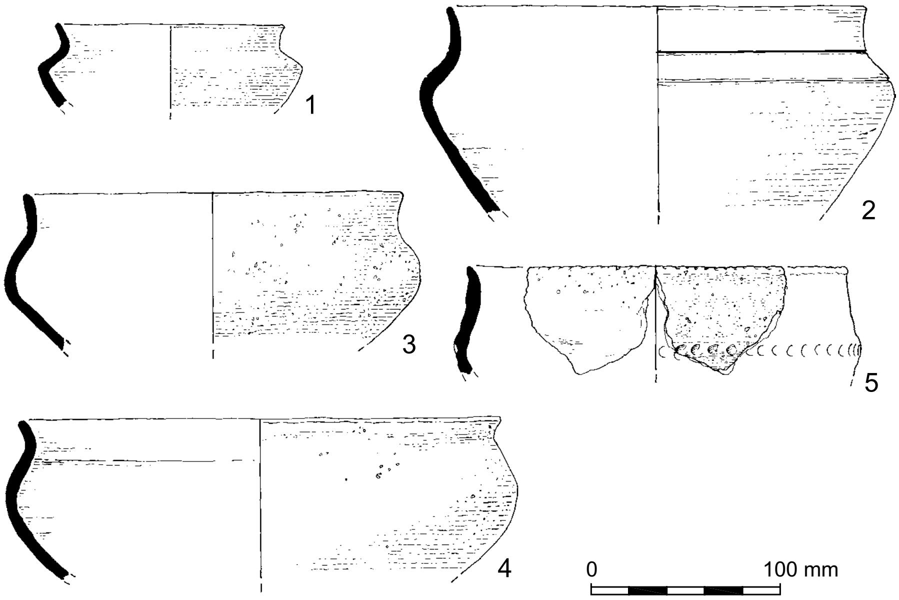


Figure 3.49: Late Bronze Age activity in Settlement 1 of Farmstead 7



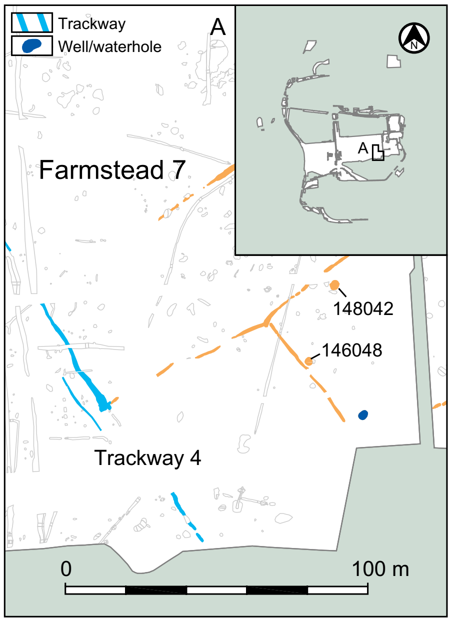


Figure 3.50: Late Bronze Age activity in the south of Farmstead 7 and pottery from pit 146048

varying degrees—sherds have a friable, powdery texture and have frequently been (re)fired to a pale grey colour. Some examples have slightly blistered surfaces, and some show evidence of surface spalling.

Taken together, the similarities in fabric type, the limited range of vessel forms and the possible signs of firing errors are suggestive of groups of waster material from pottery production. Such evidence is extremely rare for the prehistoric period, when any physical traces of pottery production (in bonfire or simple clamp kilns) would necessarily have been quite ephemeral. There is no evidence for *in situ* firing, and if these are wasters, they appear to have been deposited from sources elsewhere. The feature is not located amongst any obvious settlement.

Farmstead 8

Most of the detailed evidence for activity in this farmstead dates to the Late Bronze Age, and some provides a picture of local activities and land use (Fig. 3.51). Pit 509174, for instance, seems to have been a dumping place for household waste, overhung with grass rather than surrounded by bare earth as it probably would have been if used by animals. Alder, oak, hazel and willow pollen suggest a woodland edge environment, as do rosaceous shrubs and other taxa associated with woodland edges, glades, or hedges. No cereal grains or other unequivocal evidence of arable fields were found in this fill (probably due to the distance of this feature from any settlement) but many taxa associated with grassland were present.

Throughout the subsequent life of the pit there is decreased evidence of woodland and increasing values of taxa characteristic of waste and disturbed land, as well as a small increase in arable fields at the expense of grassland.

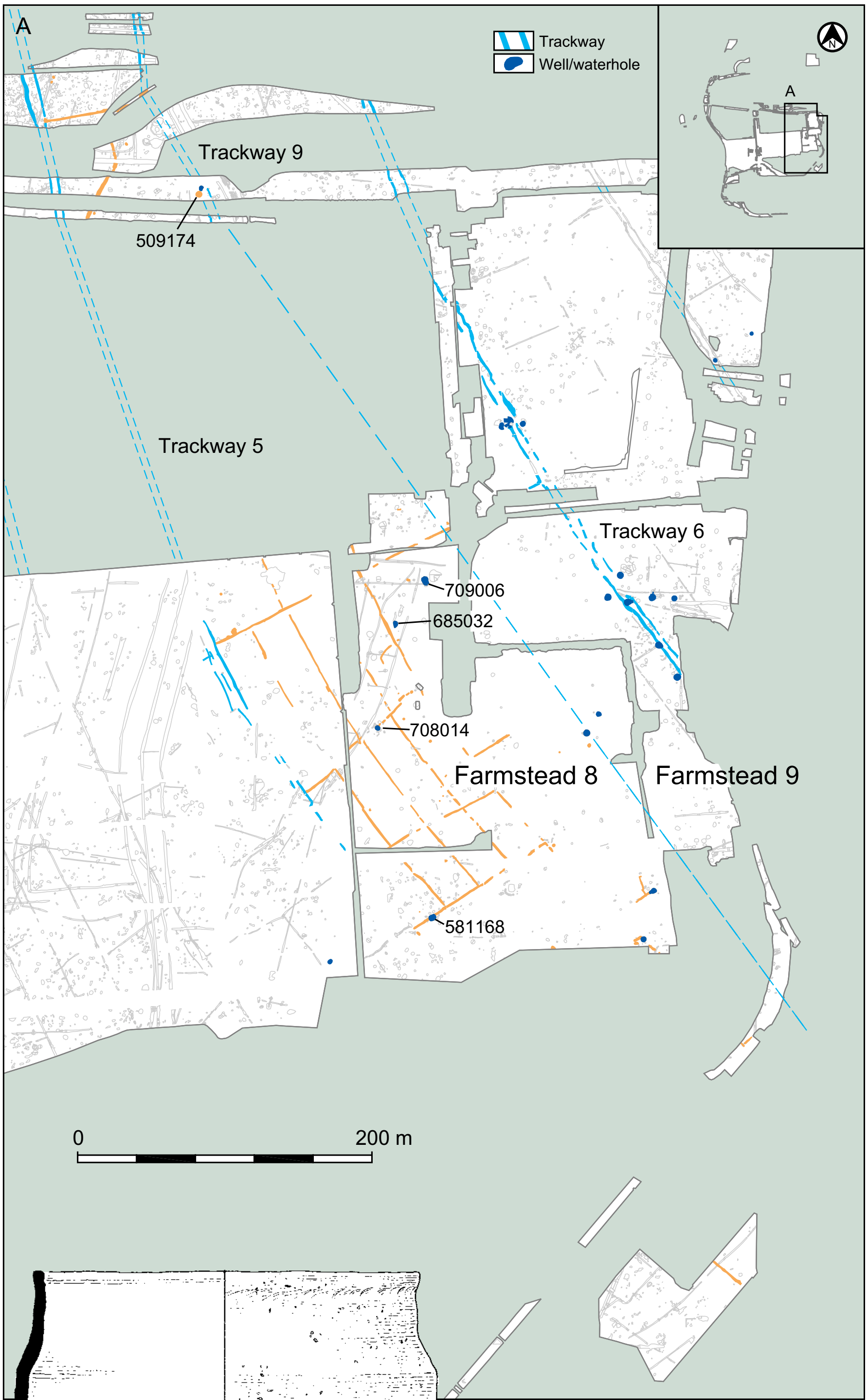
A similar setting and sequence applied to well/waterhole 685032 (containing another example of a log ladder), 320 m to the south. Abundant hawthorn, blackberry and sloe again indicate a woodland edge environment, while weeds of cultivated/disturbed ground were common but not particularly abundant. Grazed grassland and hedgerow/wayside taxa were present and a few damp ground plants were recorded (gypsywort, mint, sedge).

The pollen evidence from the basal fill of the waterhole indicates that during its initial infilling the landscape surrounding the feature consisted of open/rough grassland with some areas under cultivation. Very limited stands of tree/shrub were also present, which regenerated very slightly during some periods. Essentially, however, the landscape remained very open in the area during the Late Bronze Age/Early Iron Age period.

Waterhole 581168 contained a very large assemblage of post-Deverel-Rimbury ceramics, mostly in a small pit cut into the upper fills, but in lesser quantities throughout. The pit contained cess, over 2 kg of pottery—including a pair of short-necked jars (Fig. 3.51, 1–2)—much charcoal, a cut piece of a copper alloy ring or bangle (which is most likely an intrusive Romano-British piece) and an assemblage of 46 struck flints in fresh condition. The flintwork is technologically consistent with the date provided by the pottery and appears to represent a mixed deposit of utilised flints and knapping waste. This feature appears to be a rubbish pit cut into the top of the waterhole.

The waterhole also contained almost 8 kg of burnt unworked flint, which may relate to its particular function, industrial or otherwise.

Charcoal from the upper fills of this feature comprised Quercus (oak), Corylus avellana (hazel), Alnus/Corylus (alder/hazel), Prunus spinosa (blackthorn), Maloideae type, Acer campestre (field maple) and Fraxinus excelsior (ash). There is a larger



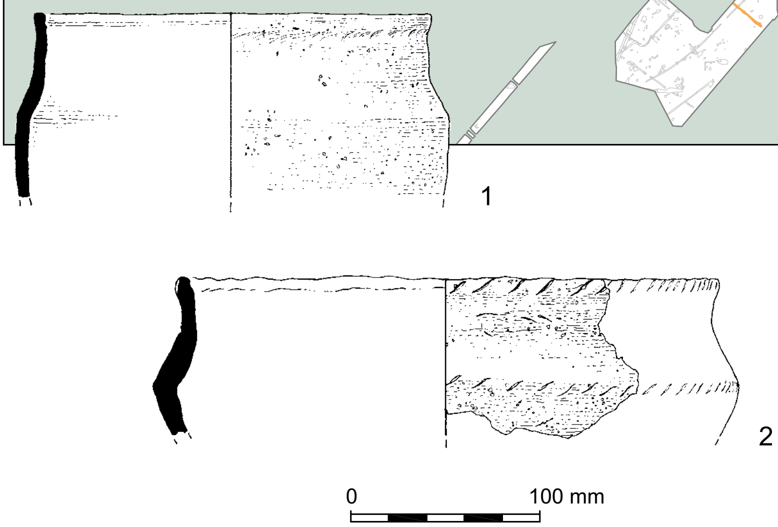


Figure 3.51: Late Bronze Age activity in Farmstead 8 and pottery from pit cut into waterhole 581168

component of Prunus in these later samples, which may be significant since it is intolerant of shade and suggests an even more cleared landscape. Moreover, Fraxinus, which is a coloniser, was present.

The selection of fuelwood in this period seems to be consistent with the earlier phases. Oak continues to be utilised but a range of other, supplementary woods are also used. Many of these derive from hedgerow/scrub and presumably reflect what was easily available in the increasingly cleared landscape.

(Challinor, CD Section 15)

Located 133 m to the north, waterhole 708014 (Fig. 3.51) contained only a small quantity of artefactual material, predominantly in the lowest fill, including a cylindrical loomweight and a possible *Salix* bark container (Plate 3.18). The refitting parts appear to have a deliberately cut curving edge, and there are indications of several small through holes in some fragments.

Plate 3.18: Bark container in waterhole 708014

The feature…

… had odd grains of duckweed in the basal fill, providing evidence for standing water. The lower part of the fill was dominated by grass and nettle pollens, including clumps indicative of their growth around the waterhole. Fungal spores and Trichuris eggs, characteristic of the inclusion of faecal material into the sediment, were also present. Cereals included oats/wheat, barley, emmer/spelt and rye. Two grains of hemp/hops were also identified. This is the earliest evidence for the growth of rye from this site. Many other taxa are characteristic weeds of arable fields, grassland, waste, rough ground and trackways. There is increasing evidence of woodland.

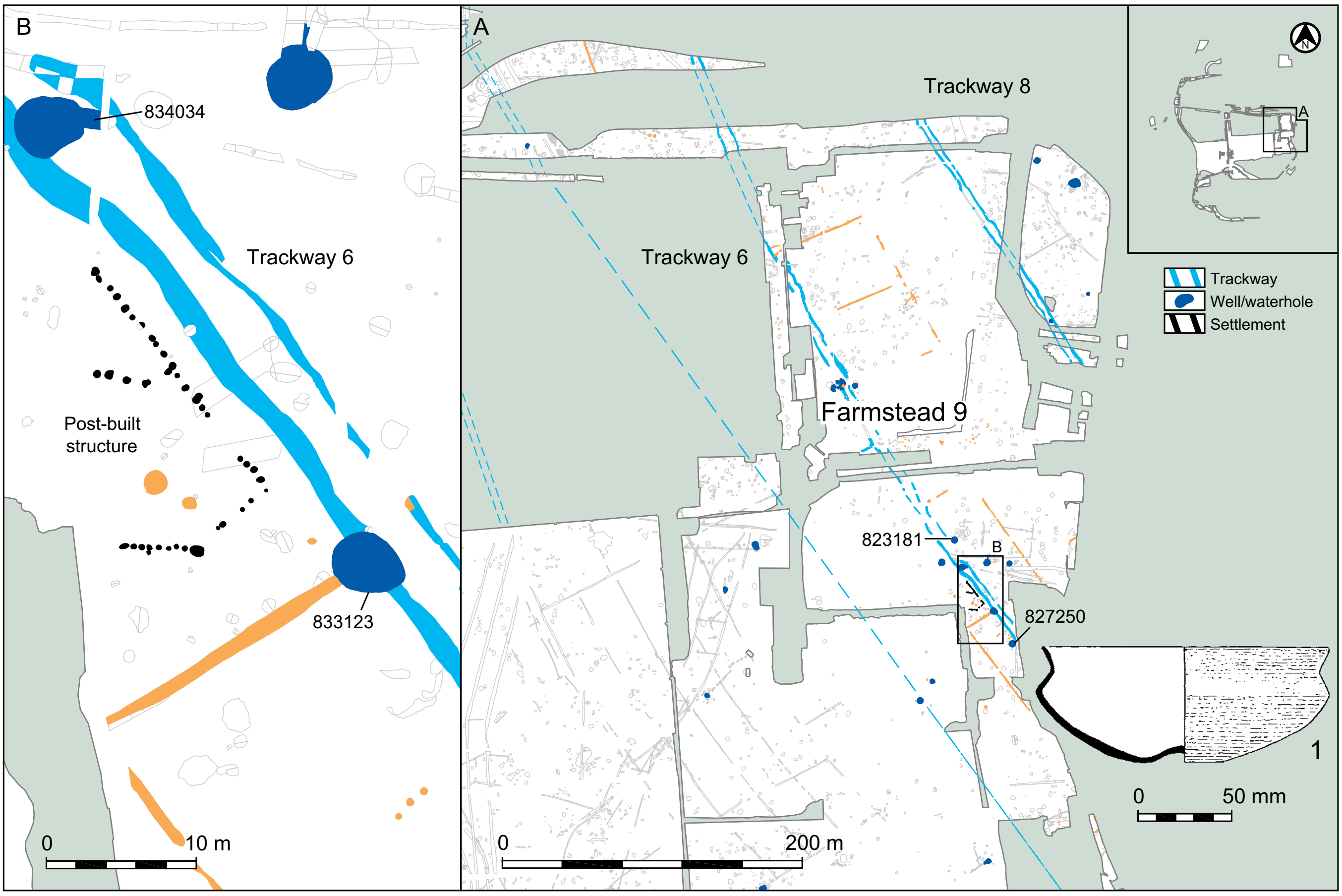


Figure 3.52: Late Bronze Age activity in Farmstead 9 and carinated bowl from waterhole 833123

The upper part of the fill has increasing amounts of tree and shrub pollen (especially lime and hazel) and fern spores, particularly those of polypody (Polypodium vulgare). There is a concomitant decrease in herbaceous taxa especially grasses. Charcoal values are higher and then decrease. These assemblages suggest that there is woodland regeneration close to the sample site, or that trees and bushes of lime and hazel which had previously been pollarded or coppiced had been abandoned and had begun to flower again. Pollen of taxa characteristic of hedgerows decrease as tree and shrub pollen increases. Fungal spores and Trichuris eggs disappear suggesting that there was abandonment of the waterhole. Grass pollen decreases. There were still some arable fields, although perhaps further away, and evidence of rough and waste ground.

(Peglar et al., CD Section 16)

The presence of much faecal material suggests that this feature was probably a watering place for animals or became used as a cesspit rather than as a source of water for human use.

Waterhole 709006 lay *c* 105 m NNE of 708014, and contained a substantial quantity of animal bones. A small rectangular pit 8 m to the west contained over 12 kg of burnt flint, and may be another example of a trough associated with the heating of water.

Farmstead 9

Farmstead 9 contained Late Bronze Age features that were typical of the wider landscape (Fig. 3.52). Wells and waterholes containing log ladders, post-Deverel-Rimbury ceramics and (sometimes very substantial) quantities of burnt flint lay amongst a background scatter of pits and other small features which generally contained very little.

A substantially-complete fineware carinated bowl came from towards the top of the fill sequence in waterhole 833123 (Fig. 3.52), which cut through the western ditch of Trackway 5 at its junction with a field boundary. The feature contained a substantial amount of post-Deverel-Rimbury ceramics throughout its fills, along with burnt flint and animal bone in sizeable quantities, and a saddle quern from mid way up the fills. The pottery vessel is akin to the 'sealing deposits' of wooden and other artefacts seen in other waterholes, although there are no other examples of whole or near-complete vessels in sealing deposits. Other sherds from lower levels in this feature are predominantly rims or decorated upper body sherds, and this point is worthy of note as it highlights a repeated distinction: while ditches tend to contain bases and lower body sherds, seldom decorated, waterholes (and to a lesser extent, pits) are more likely to contain complete or near complete vessels or decorated fragments, often rims.

The lower fill of this feature produced a similar range of palaeoenvironmental material to the other features in this area, that is:

…occasional signs of domestic waste, some nitrophilous weeds of disturbed and cultivated places, a few damp ground taxa

Plate 3.19: Artist's representation of sheep herding within a Bronze Age farmstead

that may have been growing as marginals (water pepper, blinks (Montia fontana ssp. chondrosperma, mint, sedges) and only traces of woody taxa (hazelnut shell, elderberry). This southerly group was clearly growing in a more open location that was closer to human habitation than the northern group. Alternatively the differences may be temporal, with further clearance of scrub and hedgerows having taken place since the MBA and more domestic waste being distributed around the site in the LBA period.

(Caruthers, CD Section 14)

Other notable deposits came from waterhole 827250, 25 m to the south. This feature contained a log ladder, and—more remarkably—a complete bark container (Plate 3.20). Ceramics from this feature include a mix of Deverel-Rimbury and post-Deverel-Rimbury from throughout the sequence.

Waterhole 823181 further north-west contained an environmental sequence indicative of landscape changes throughout the period.

The [pollen] evidence shows that the area around the waterhole consisted of fairly open woodland during its initial stages of infilling (tree & shrub pollen representing 60% TLP), and this woodland was dominated by oak with little alder and hazel scrub. Other tree and shrub pollen was also recorded, however only two or three grains represent these types, which suggests they were not well represented in the woodland flora. Grasses dominate the herbaceous assemblage, which, alongside fairly abundant ribwort plantain pollen, and the presence of common sorrel, buttercups, sedge, members of the cow parsley family, composites (daisy family and dandelion type) salad burnet and bedstraws, indicates the presence of pastures and meadows. The recording of nettle, which grows in nitrogen-enriched soil, plus bracken spores, which is common in grazed woodland, may indicate the presence of livestock.

Plate 3.20: Bark container in waterhole 827250

The nearby cultivation of oats/wheat and barley is indicated, as is the possible cultivation of hemp/hops; although the latter may originate from native hops growing in nearby hedgerows or scrub. Other taxa indicative of arable land are also recorded, including black bindweed, knotgrass and goosefoot. However, some of these taxa are also frequent on disturbed ground and around habitation sites.

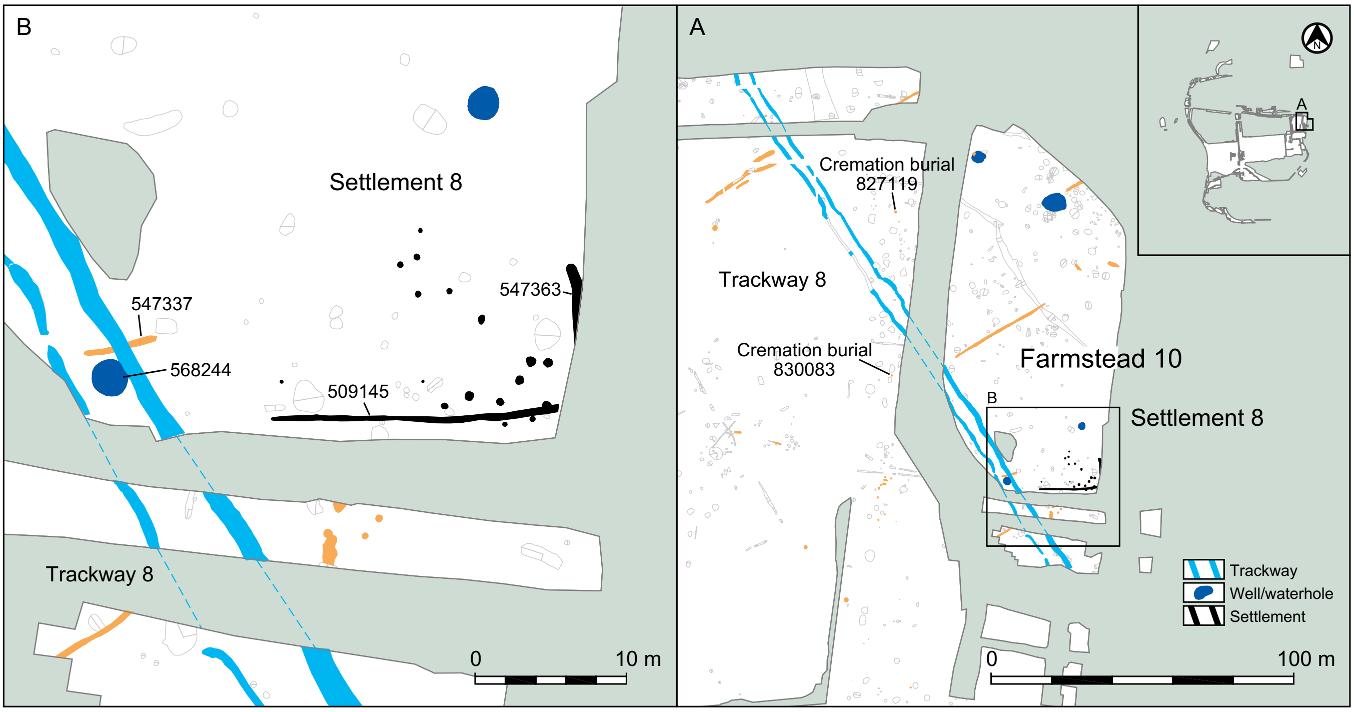


Figure 3.53: Late Bronze Age activity in Farmstead 10 and Settlement 8

A change is recorded at 0.57 m depth which shows a marked decline in oak pollen and a corresponding rise in alder, hazel, and rosaceous taxa (hawthorn, cherries, whitebeams), which, common at woodland borders, may indicate the opening up of the oak woodland around the waterhole, or, alternatively, the expansion of hedgerows nearby. This change in the woodland flora is accompanied by a marked rise in grass pollen, a very slight increase in cereal pollen, and a slight increase in the number and diversity of arable weeds including a slight rise in mugwort and goosefoot, and the first appearance of pollen from the cabbage family, St John's wort, and black nightshade. Herbaceous taxa indicative of pasture are also recorded, including bird's-foot trefoil, ribwort plantain, greater and hoary plantain, cinquefoils and buttercups. The pollen record appears to signify a period of increased management of the landscape with designated areas of arable and pastoral land with possible boundary hedges where oak woodland persisted perhaps further away. The marked rise in horsetail at this level is difficult to interpret, however, it could mean that denser vegetation was being left to grow immediately around the waterhole, perhaps as a result of less trampling by livestock. The appearance of pondweed at this level may corroborate this, and suggests that aquatic vegetation was now growing on the surface of the water.

Regeneration in oak woodland, with the persistence of some hedgerow species is indicated at 0.45 m depth. At the same time cereal pollen declines alongside a reduction in the associated arable and pastoral weed flora described above. Although the two samples above 45 cm depth were poor in pollen, the very top sample taken at 27 cm depth, suggests that this was a temporary recovery in woodland, and by the final stages of infilling, the area was very open with little hazel/oak woodland, dominated by herbaceous taxa indicative of pasture, such as grass, daisy-type, dandelion-type, ribwort plantain, greater and hoary plantain and buttercups.

Changes in the charcoal values more or less mirror the oak curve, and indicate that decreased burning activity was taking place during the period of increased landscape management. It is possible that burning activity, be it for clearance or domestic fires, was taking place further away from the areas of farmed land.

(Peglar et al., CD Section 16)

A further waterhole in this farmstead (834034) dates to the 1st millennium cal BC. This feature sits in the centre of Trackway 6, effectively blocking it. The contents of this waterhole were in no way remarkable (a little post-Deverel-Rimbury pottery, some burnt clay and flint), but its positioning is noteworthy, since it rendered north-south movement along the trackway impossible. This phenomenon is also seen in Farmstead 10.

Farmstead 10

The dating of two unurned cremation burials, 827119 (OxA-18031; 2906±30 BP) and 830083 (OxA-18032; 2905±30 BP), to 1220–1040 cal BC is strongly suggestive of Late Bronze Age settlement and activity in this farmstead (Fig. 3.53). It may also be the case that Settlement 8 dates to this period, although the evidence is entirely circumstantial.

The settlement itself is demarcated by a pair of ditches (509145, 547363) at right angles and aligned cardinally (rather than sharing the alignment of the fields and trackway). The southern ditch (aligned east-west) is dated by an assemblage of post-Deverel-Rimbury ceramics; the eastern ditch (aligned north-south) contains Middle Neolithic Impressed Wares: these are in poor condition and likely to be redeposited. Within the settlement a scatter of 17 postholes were excavated, three containing post-Deverel-Rimbury ceramics. A possible roundhouse with

Plate 3.21: Artist's reconstruction of Farmstead 11

a diameter of approximately 7 m may have stood in the south-east corner of this settlement. A pit a little way to the north and not certainly associated contained small quantities of both Deverel-Rimbury and post-Deverel-Rimbury pottery.

Corroborating evidence for the existence and date of this settlement lies in the nature of the trackway and some associated features immediately to the west. A Late Bronze Age waterhole (568244) and short gully (547337) block the trackway, and there are re-cut terminals to the trackway ditches immediately to the north and south of these which appear to be contemporary. These seem to provide access to the settlement on the one hand and into the fields north of it on the other, effectively diverting traffic along the trackway into the settlement, around the waterhole. What this may alternatively suggest is that Settlement 8 is in fact some form of stockyard or holding pen, designed to facilitate the sorting of animal as they were herded along the trackway (see artist's reconstruction in Plate 3.19).

Farmstead 11

While it has been argued that the northern and eastern limits of the field systems were very distant from Heathrow, this may not be true in the north-west (Fig. 3.54). Here, a small settlement was encountered within an enclosure and fragmentary field system, the alignment of which is at odds with that of Farmsteads 1–10 (see reconstruction in Plate 3.21).

A series of five radiocarbon determinations was obtained, placing activity in and around Settlement 10 in the last two centuries of the 2nd millennium (Fig. 3.55). Cremation burial 699001 dated to 1300–1100 cal BC (Wk-18463; 2989±28 BP); posthole 699042 dated to 1260–1060 cal BC (Wk-18465; 2944±36 BP); cremation burial 699010 dated to 1220–1050 cal BC (93%) or 1260–1230 cal BC (2%) (Wk-18464; 2921±30 BP); waterhole 711024 dated to 1260–1000 cal BC (Wk-19332; 2917±36 BP); cremation burial 699046 dated to 1220–1040 cal BC (OxA-16320; 2891±30 BP).

The fields of Farmstead 11 are regularly arranged in a NE-SW/NW-SE alignment. South-west of Settlement 10 is a series of approximately 30 m-wide strips which are evidently fields. Within one was waterhole 711024, the basal fill of which contained a morticed *Quercus* spp. timber cut from a halved parent log with no bark present.

Waterlogged plant remains were not abundant in the lower deposit (sample 27205), and other organic remains such as twigs were present in small quantities. The most dominant group of taxa was the weeds of disturbed, nutrient-enriched soils such as fat hen, stinging nettles and chickweed. A few alder seeds were present, suggesting that alder scrub/woods were growing fairly close to the feature. A trace of charred cereal processing waste (an emmer glume base and a couple of weed seeds) provided scant evidence for human activity occurring in the area.

The upper, possibly later, dry deposit (context 711029, sample 27207) produced only charred plant remains, consisting of a small amount of burnt cereal processing waste and other domestic debris. This may represent ash cleaned from a domestic hearth, or material blowing in from nearby hearths. The fact that the cereal grains were in a poor state of preservation supported this suggestion. The main crop

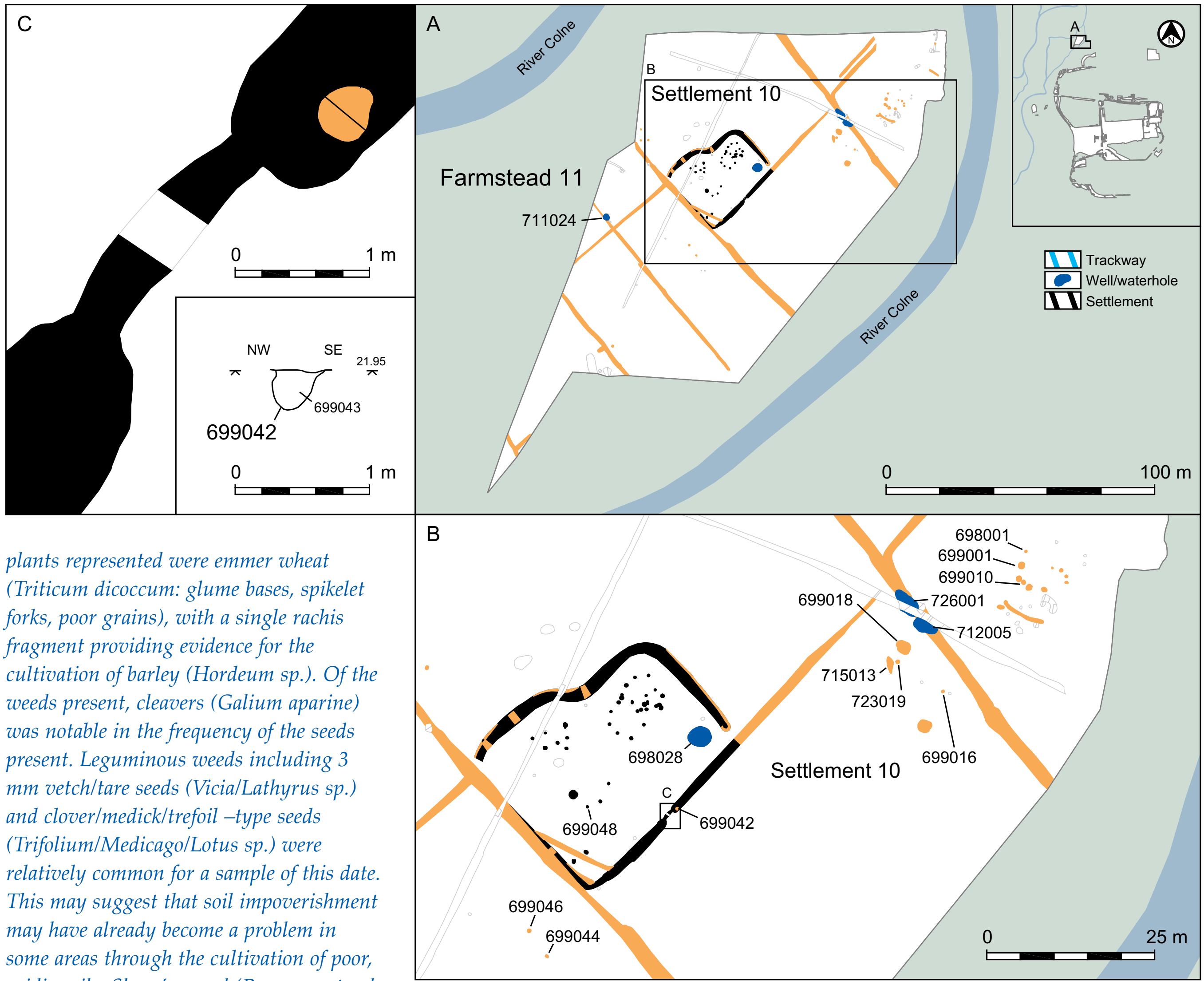


Figure 3.54: Farmstead 11 and Settlement 10

plants represented were emmer wheat (Triticum dicoccum: glume bases, spikelet forks, poor grains), with a single rachis fragment providing evidence for the cultivation of barley (Hordeum sp.). Of the weeds present, cleavers (Galium aparine) was notable in the frequency of the seeds present. Leguminous weeds including 3 mm vetch/tare seeds (Vicia/Lathyrus sp.) and clover/medick/trefoil –type seeds (Trifolium/Medicago/Lotus sp.) were relatively common for a sample of this date. This may suggest that soil impoverishment may have already become a problem in some areas through the cultivation of poor, acidic soils. Sheep's sorrel (Rumex acetosella), an indicator of acidic soils, was present. Onion couch tubers (Arrhenatherum elatius var. bulbosum) were also present, and this grass can become an arable weed for a short period where coarse grasslands have been recently ploughed. The presence of a few hazelnut shell fragments in the deposit indicated that other types of domestic waste had also been dumped.

(Carruthers, CD Section 14)

Settlement 10 was situated in the south-western corner of a large plot almost exactly twice as wide as those already discussed. That this set of field boundaries, enclosures and settlement was laid out as a unit is suggested by this continued relationship between different plot widths, to which the settlement enclosure conforms, being almost exactly 30 m wide. The apparent entrance to the enclosure was on the south-eastern side, and consisted of a 1.8 m wide gap in the flanking ditch. It is possible that this gap was closed by some form of wooden structure, since the gap is crossed by a beam slot, and there is a posthole (699042) in the ditch to the north-east.

In the eastern corner of the settlement enclosure, a recut waterhole (698028) with a wattle lining contained post-Deverel-Rimbury ceramics and a thick layer of twigs, leaves and bark, indicating a hedge east of the feature, presumably marking the settlement boundary. A second shallow pit lay to the west, close to two groups of stake and postholes which do not resolve into convincing structures. In the north-eastern corner of the enclosure, however, a group of eight postholes define a circular setting approximately 5 m in diameter (Fig. 3.54). This appears to be a roundhouse, possibly with a doorway on the south-eastern side. Another group of 14 postholes forms a slightly less regularly circular structure, again of approximately 5 m diameter, with a porch on the south-east. The two buildings overlap, and one must therefore replace the other, but no sequence can be detected. A single sherd of post-Deverel-Rimbury pottery came from a pit within the second structure.

The most notable feature of Farmstead 11 is the scatter of small pits containing unurned cremation burials and redeposited pyre debris. Two (699044 and 699046) lie in the field west of the settlement, one (699048) is within the settlement enclosure, one (699016, pyre debris only) lies in the large field south of the settlement, and three (698001, 699001, 699010) are among a small cluster of postholes, pits and gullies in the next field to the east. A start date for the cremations can be estimated at 1430–1110 cal BC and an end at 1200–960 cal BC *(Healey, CD Section 20)*.

In each case, the bone was probably deposited as a separate entity either within an organic container or possibly as a heap within the grave cut, with subsequent deposits of pyre debris prior to sealing the grave.

It is immediately striking that a surprising range of taxa were utilised in these cremations and only three of the six confirmed cremation deposits were dominated by a single species. The dominance of a single species in Bronze Age cremation assemblages has been noted at other sites and may be of ritual significance (Thompson 1999). Certainly, there is some suggestion that fuelwood was more carefully selected for cremations than for domestic purposes at other sites. Oak is commonly used for cremations, since it is highly suited to the practical requirements of cremating a human body (Edlin 1949). It is perhaps surprising, then, that oak is not better represented. Nonetheless, the other species used, Maloideae (hawthorn type), Corylus (hazel) and Rhamnus (buckthorn) have been recovered from cremation assemblages at other sites (Parry 2006). The single fragment of Ulmus (elm) may have been an accidental inclusion on the pyre, or deliberately included as a pyre good. It seems unlikely to have been selected as fuelwood, since it is the only fragment recovered from the assemblages and, although the pollen record at Perry Oaks (Wiltshire in Framework Archaeology 2006) indicates that elm was growing in the catchment area in the Middle Bronze Age, it was not commonly used as fuelwood. Elm wood was used in the past for a number of structural and artefactual uses, including coffins (Gale & Cutler 2000), which may be significant.

The assemblage from 669016 differs from the other Terminal 5 cremation deposits in so far as it is almost exclusively comprised of Prunus spinosa (blackthorn), with a single Alnus fragment. This is similar to Middle/Late Bronze Age cremation assemblages at Dorney (Challinor forthcoming) and Ashville (Jones 1978) which were also dominated by Prunus. In that respect, it would be appropriate as a pyre-related

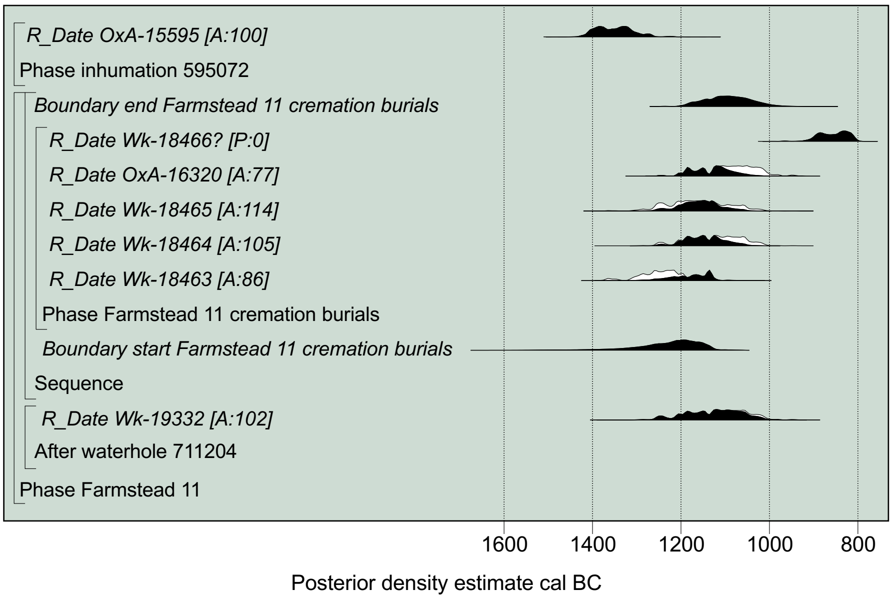


Figure 3.55: Radiocarbon dates for Farmstead 11

assemblage, but it does contrast with the other confirmed cremation deposits at Terminal 5 and since there is no human bone, its function must remain uncertain.

A recent study of Early/Middle Bronze Age cremation burials at Raunds suggests that there may be a correlation between the age/sex of the deceased and the fuelwood used, where infants and adults tend to be associated with a single species and children with mixed assemblages (Campbell & Robinson, in press). The results from Terminal 5 do not entirely fit into this hypothesis since neither 699001, an infant, nor 699046, an adult, were dominated by a single species. Nonetheless, 5 of the 8 cremations from Heathrow which produced analysable charcoal are consistent with the Raunds results. The link with gender is more difficult to analyse since we do not have a full dataset to compare.

The presence of Arrhenatherum elatius (onion couch) tubers in three of the cremation deposits is also of interest. Why these tubers are frequently recovered from Bronze Age cremation deposits is still unclear, but is discussed in the Perry Oaks charcoal report (Challinor 2006). The assemblages which produced the tubers are all from redeposited pyre debris, and it has been argued that assemblages characterised by mixed species and tubers may have resulted from a specific pyre construction, over a pit (Campbell & Robinson, in press). In that case, it is apparent that the pyre construction did not relate to the age or size of the deceased, which were an infant, a subadult and an adult.

(Challinor, CD Section 15)

The similarities between this series of burials make the demonstration of any sequence difficult if not impossible, but other elements of Farmstead 11 indicate a chronology potentially beginning in the Middle Bronze Age, with either continual or sporadic settlement into the Early Iron Age.

Early Iron Age evidence is not common, but consists of a series of pits cutting and west of one of the field boundary ditches. One (726001) was probably a waterhole, used towards the end of its life as a grave.

Waterlogged remains follow the pattern of most of the others examined to date. Wood fragments and twigs were abundant and leaf fragments, seeds of woody taxa (blackberry, maple, dogwood, elderberry) and thorns were common. Alder seeds and catkin fragments were notably frequent in this sample, as was the case with a Middle Bronze Age feature in this area (Waterhole 711024). It is clear that alder carr growing along a nearby palaeochannel of the River Colne extended to this area of the site during the Bronze Age/Early Iron Age.

Other plant remains were not frequent in this very woody sample, but the usual range of weeds of cultivated/disturbed *soils, grazed grasslands and hedgerows was recovered. No aquatic plants and only a couple of sedge seeds were found. A couple of waterlogged emmer/spelt chaff fragments and a couple of charred weed seeds was all that was present from economic plants.*

(Carruthers, CD Section 14)

The remains of an inhumation were encountered at the top of the fill sequence. This burial (Skeleton 703006) has been provisionally dated to the Iron Age based on the proximity and similarity between pits 726001 and 712005, the latter of which contained a sequence of post-Deverel-Rimbury to Middle Iron Age ceramics. In reality, however, the skeleton is undated since the attempted radiocarbon dating failed.

The skeleton had been placed in the pit orientated north-south. The posture was difficult to determine owing to the poor preservation of the remains, however the arms at least were judged to have been flexed and it is likely that the individual had been buried in a crouched position. A crouched body position was standard practice in Bronze Age and Iron Age inhumations and it persisted as a minority rite throughout the Roman period (Philpott 1991, 71).

(Geber, CD Section 12)

Fifteen percent of this skeleton survived, namely the skull, upper appendage and ribs. Molar attrition indicated an age of approximately 25 to 35 years but no indicators were available with which to estimate the sex of the individual.

The adjacent pit (712005)—immediately to the south and cutting the same field boundary ditch—was wattle lined and appeared to be a second waterhole. The secondary fill contained portions of an Early Iron Age carinated bowl and Middle Iron Age pottery, above which was over 2 kg of burnt flint. This suggests a link between this feature and three pits a few metres to the west. Pit 699018 contained almost 10 kg of burnt flint (Plate 3.22); next to it 723019 was a small pit/depression containing scorched earth, while pit 715013 contained more burnt flint. None of these three features is independently dated, but the prevalence of burnt material and evidence of *in situ* heating suggests a link between all of them. This may be another 'burnt mound' complex: the link (if any) between this and the human remains in waterhole 726001 remains conjectural.

Plate 3.22: Burnt flint feature 699018

Farmstead 12

The very south-eastern corner of the Terminal 5 excavations revealed numerous isolated field boundary ditches that formed no coherent pattern on their own but which clearly form a part of the landscape investigated by Poulton (1978) and O'Connell (1990) (Fig. 3.56).

That landscape was typified by a field system aligned NE-SW, crossed by two double-ditched trackways 170 m apart on the same alignment (O'Connell 1990, 36). The field boundaries and trackway ditches encountered during the Terminal 5 excavations share this alignment, and in some instances are demonstrably features visible on O'Connell's plot of cropmarks (ibid., fig. 3).

Very little detail can be drawn concerning Farmstead 12 from the Terminal 5 excavations, but O'Connell identified some limited settlement evidence, consisting of one probable and one possible hut. Recut wells and waterholes were encountered which mirror exactly those from across the Terminal 5 excavations: log ladders, wooden stake revetments, and domestic debris in higher fills were all present. The single radiocarbon determination obtained came from wood in the lower fills of one waterhole, gave 800–390 cal BC (HAR-4823; 2440±70 BP), essentially an Early Iron Age date. The pottery from this feature contained the greatest proportion of decorated wares from the site (O'Connell 1990, 53).

This is clearly later than the dated features from Terminal 5, and poses a number of problems. Firstly, the sample on which this determination was made is not securely located, being recorded only as wood from feature 553. The published description and section (O'Connell 1990, 41, fig. 24) shows a feature with numerous recuts, with wood in what may be the third and fourth cuts in the sequence. The location of wood marked on the section (in contexts 653 and 644) does not tally with that given in the description (in 595, the upper half of 609 and 636). Given these uncertainties, the radiocarbon determination clearly does not date the earliest phases of use of the feature.

Whatever the precise date of feature 553, a single determination cannot date a site, and in the light of the Terminal 5 evidence it is very difficult to sustain the suggestion that towards the 7th or 6th centuries BC the field ditches and trackways had become infilled and that the 'agricultural' period was followed by 'a period of occupational activity'—the huts, wells, and waterholes. It seems more likely that, as at Terminal 5, the settlement features were located amongst the fields and were broadly contemporary with them.

This, however, leaves the problem of the almost total lack of Deverel-Rimbury ceramics from O'Connell's excavations, and the fact of this absence cannot be ignored. While the published pottery distributions leave very few features with post-Deverel-Rimbury in their lowest fills, a ceramic Middle Bronze Age phase seems even less likely than a real absence of extensive Middle Bronze Age activity. It is perhaps the case then, that Farmstead 12 is an establishment of the 1st millennium BC.

This may not be altogether at odds with the rest of the Terminal 5 evidence. One thing that immediately sets Farmstead 12 apart at the most basic level of observation is the atypical alignment of its field systems. Somewhere beneath the southern airport landholding the field systems of which Farmstead 12 are a part must have met those of Farmsteads 2 and 5, and it may be the case that this area in fact marks the boundary between two major blocks of land division. The broad alignments of which the aggregate and coaxial systems are a part continue northwards and eastwards far beyond the confines of the airport, but the evidence of Farmstead 12 suggests that the southern end of these systems lay—frustratingly—beneath the pavement of the southern runways.

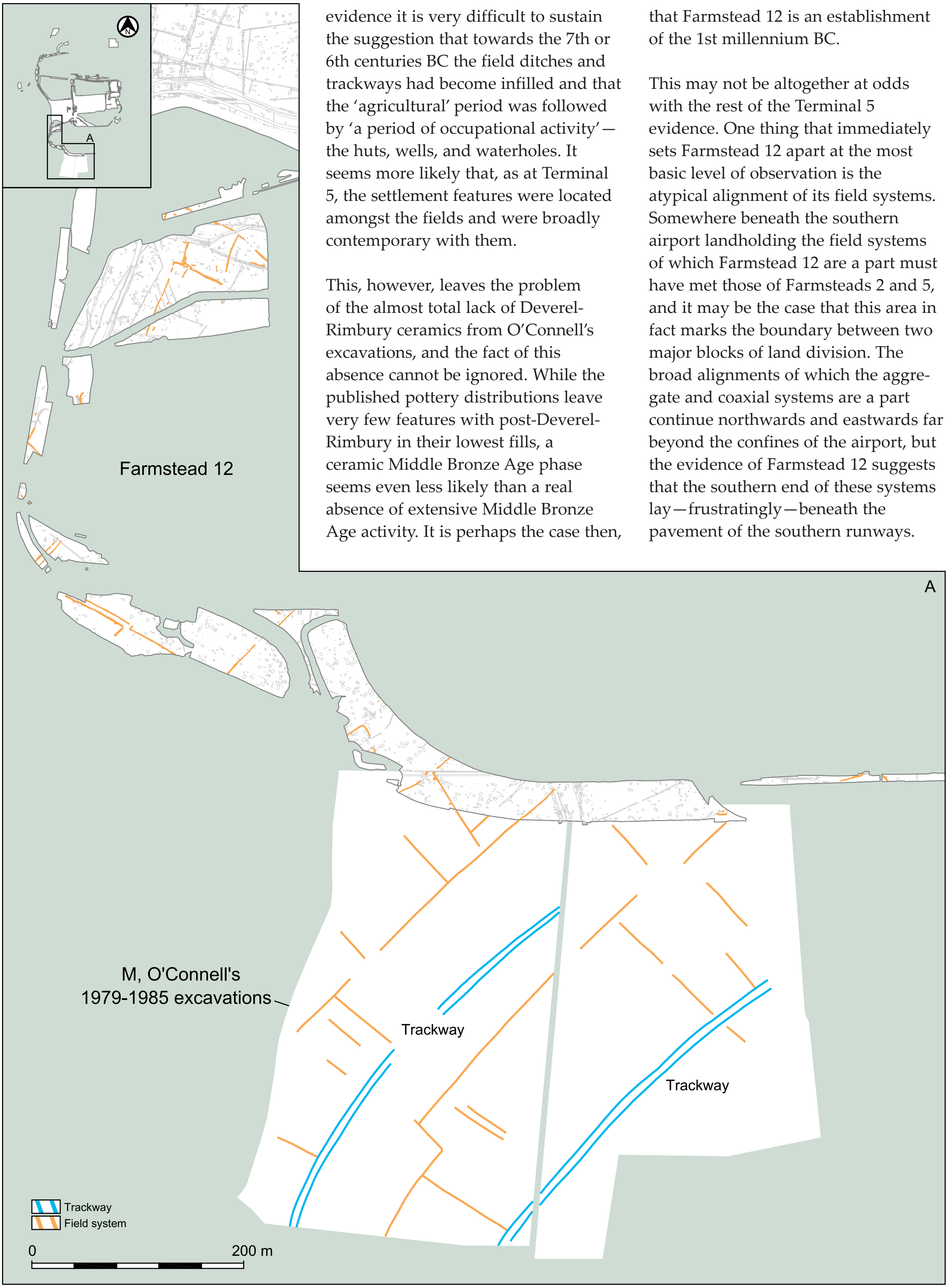


Figure 3.56: Farmstead 12 in relation to O'Connell's 1979-85 excavations

The Character of the 1st Millennium Settlement at Heathrow

Precise dating of developments in landscape use and settlement activity remain unclear, largely because the chronology remains grounded in the ceramic sequence. Moreover, Late Bronze Age and Early Iron Age pottery fabrics and forms are generally indistinguishable in the region, meaning that most undiagnostic body sherds can only be broadly dated.

Evidence for similar Late Bronze and Early Iron Age activity was encountered during excavations in advance of the Northern Runway extensions in 1969 (Canham 1978). Nonetheless, the evidence from past and recent fieldwork at Heathrow is insufficient to allow us to fully characterise the scale and nature of early 1st millennium activity or to determine the role of the settlements within a larger economic and social milieux of the Thames Valley at this point in prehistory. All that can be claimed with certainty is that, as agricultural activity continued, habitation persisted in some form until, at some point in the period preceding about 400 BC, the central part of the site was transformed by the establishment of a substantial nucleated settlement (see Chapter 4).

If the observed changes in settlement pattern are real, with a return to a single large focus of settlement in the aggregate landscape and a continuation of the pattern of smaller dispersed settlements in the coaxial landscape, then the trackways of the former would now simply be used for movement and stock management. In effect, the aggregate farmsteads would reunite and become one large pastoral/arable system, farmed by a community living in a single larger settlement, as they may well have been at the time of the foundation of the agricultural system. Given this, the fragmentation of settlement in the period after 1400 cal BC could be seen as a temporary aberration in a general pattern, were it not for the fact that elsewhere in the coaxial landscape fragmentation appears to have continued unchecked.

The usual causes suggested for such changes in society and its organisation include deterioration in climatic conditions and soil quality leading to increased pressure on resources. 'Pressure' is a term often used in a variety of contexts as an impetus for development or to explain change. Unfortunately, exactly what form this pressure is meant to take is often unclear.

If we take the evidence from Terminal 5, the beginnings of division around 1400 cal BC and the period of retrenchment a century later could be read as indications of such pressures. On the basis of insect remains Robinson makes a case for '…possibly a brief episode towards the end of the Middle Bronze Age when southern England had significantly warmer summers than at present' (Framework Archaeology 2006, CD Section 12), followed by a decline in temperature. Lambrick proposed a rise in the water table in the Upper Thames Valley from the Late Bronze Age (Lambrick 1992, 217), and the recutting to a shallower depth of waterholes during this period at Terminal 5 suggests a similar occurrence in the Middle Thames. Pollen, insect and waterlogged plant evidence indicate heathland at Terminal 5 from the latter half of the 2nd millennium BC. Such evidence could be read as the effects of a deteriorating climate and worsening soils, and these in turn could cause pressure on land and productivity. These pressures can be made to account for both the fragmentation of farmsteads into smaller units, with individual groups (perhaps families) staking stronger claims to dwindling resources, and for the unification of smaller units into larger wholes, with groups abandoning individual landholdings in order to pool those same resources. Such explanations cannot adequately account for the changes visible in settlement patterns throughout the second half of the 2nd millennium and into the 1st. Undoubtedly, climate and soils must have had some effect on how people lived, but for the most part the changes apparent in these were far from catastrophic.

The successful development of the individual landholdings may paradoxically have required more co-operation between groups. In other words, successful development would have reached a point where it could only continue by farmsteads working in co-operation, rather than isolation. In the aggregate landscape this appears to have involved a physical unity of settlement, but not in the coaxial landscape.

Common land?

The difference in trajectory of development in the aggregate and coaxial systems brings to the fore the possibility that they may in fact have belonged to two separate units of landscape, one (in the west) being a set of settlements and farmsteads in the valley of the Colne; and another (in the east) situated on the Heathrow Terrace. In this model, the Colne system (the aggregate landscape) would have included Farmsteads 1, 2, 3, 4, 11 and possibly 12, while the Terrace system (the coaxial landscape) would have included Farmsteads 6, 7, 8, 9 and 10. What is of some interest—and perhaps of very great significance—is that between Trackways 11 and 3 (in other words, between the boundaries of the two systems) is a three hectare plot of land which seems to have belonged to neither, but to have been accessible from both.

This plot survives untouched throughout all the changes and alterations to the trackways, fields and settlements around it, and not only is it untouched, it is also empty. There are no wells or waterholes or subdivisions or structures of any sort, and the almost inescapable conclusion is that this three hectare plot was in effect common ground, belonging to none, and accessible to all. Interestingly, it is also largely free of any earlier feature: it is crossed by none of the earlier Neolithic cursus monuments, and contains none of the clusters of pits which mark locations of Middle and Late Neolithic activity. In fact, it is not until the Iron Age that this plot is inhabited in any way that left a physical trace, at the point in time when the patterns of inhabitation which had typified the area for a millennia finally broke down.

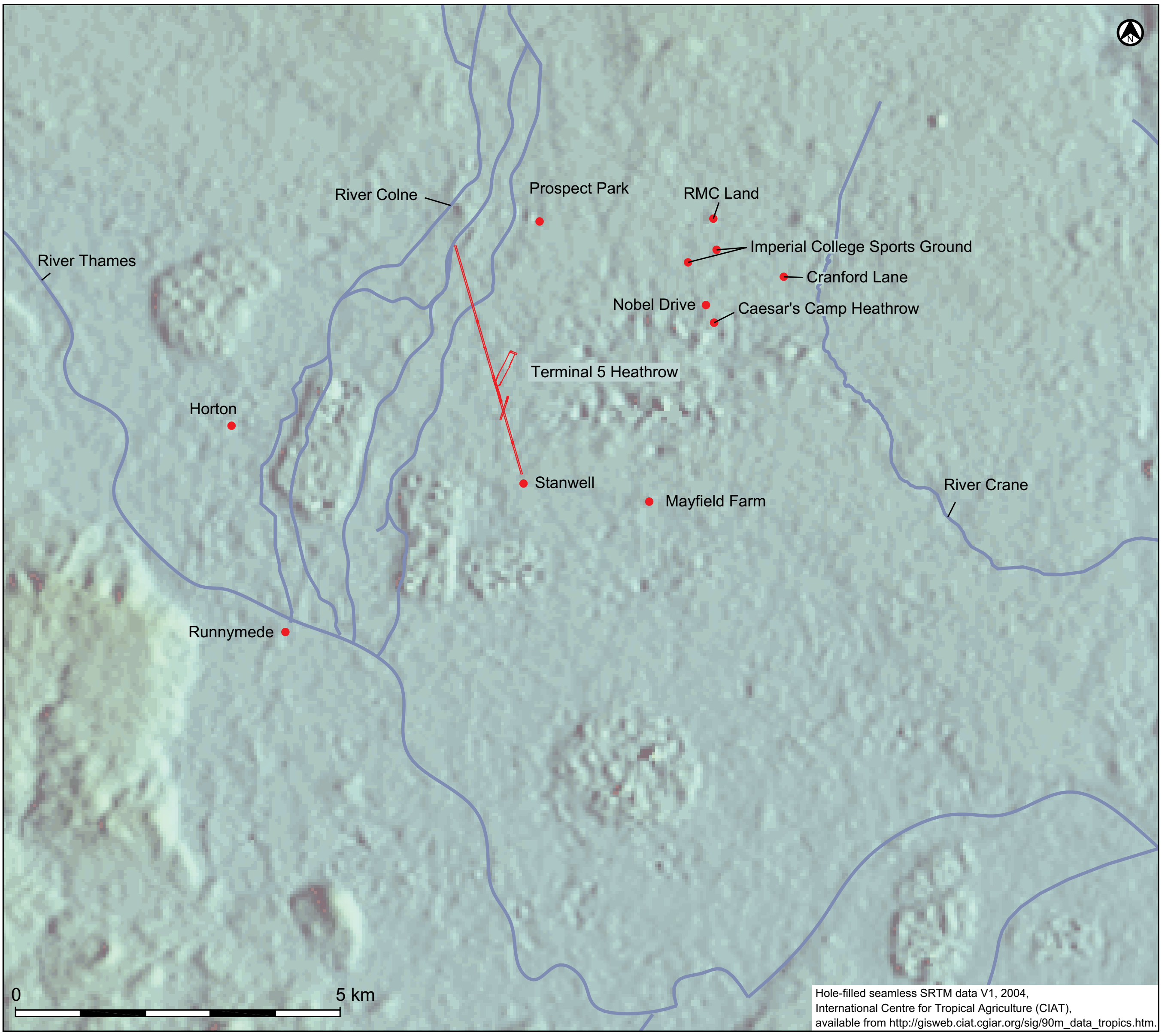


Figure 3.57: The regional Bronze Age landscape

Links with the hinterland

The mixed arable and pastoral system appears to have been highly successful, both economically and socially. Unfortunately, the prevalence of environmental evidence and the near-absence of other kinds of material (especially metalwork and burial evidence) preclude an understanding of how this part of life fitted in to wider Bronze Age society.

The evidence from the Terminal 5 excavations does not exist in isolation, however. All across the West London gravel terraces watching briefs, evaluations, excavations and non-intrusive surveys have revealed fragments of presumed and confirmed 2nd and 1st millennia settlements and field systems (see Fig. 3.57) of which the Terminal 5 examples are only a part. Making sense of this material as a whole is difficult, coming as it does from a range of sources with very different aims, but it is possible to suggest that planned and maintained agricultural landscapes like the one at Heathrow were characteristic of the gravel terraces and flood plains. Indeed, the most recent published considerations of this evidence (for instance Yates 2001, 2007) locate the Heathrow fields within a network that has the Thames as its southern boundary, extending from Runnymede to Hampton, and from Uxbridge to Ealing on the northern side.

The individual pieces of these systems, which have been revealed through excavation and other fieldwork, are necessarily fragmentary and dislocated: few can be pieced together to reveal even the broad outlines of landscape organisation, and not many are securely dated.

Although many parts of these widespread field systems have been encountered, very few in Heathrow's immediate surroundings have been published. At the time of writing, large areas to the north at RMC Land, Harlington and Imperial College Sports Ground, and to the west at Horton are under post-excavation analysis. They are revealing settlement enclosures, field systems, cremations and other funerary monuments, pits and waterholes indicating a relatively intense occupation of the landscape. At Imperial College, assessment revealed settlement enclosures between 250 m and 320 m apart containing very few structural remains, set amongst a fairly regular pattern of approximately north-south aligned ditches, 60–62 m apart with discontinuous east-west divisions. A small cremation cemetery was dated to the Middle Bronze Age on the basis of its associated Deverel-Rimbury ceramics (Crockett 2001).

In terms of Late Bronze Age activity, the best known is Caesar's Camp (Grimes and Close-Brooks 1993). Here pottery, loom weights, a collared bronze disc, a fragment of a bronze spearhead, part of a perforated clay plaque, and a fragment of a saddle quern demonstrated settlement activity of some sort, although no contemporary structures were detected (any present could easily have escaped detection, given the circumstances of excavation). Four pits, a hollow and a posthole are likely to be contemporary. Although interpreted as an open farm or village, on the basis of the Terminal 5 evidence it is just as likely that the evidence derives from an enclosed settlement, given the lack of investigation beyond the bounds of the then-upstanding Middle Iron Age enclosure.

North of the airport, a large number of sites have been investigated under the rubric of the West London Gravels Project (MoLAS, forthcoming). Most remain in assessment, but a number of broad patterns can be identified. As at Terminal 5, the excavated evidence falls—or can be suggested to fall—into a number of separate groups, all aligned at odds to each other. Elsden described one such group at and beyond the airport's north-east corner:

The distinctive orientation of the enclosure at Nobel Drive and the field system at Cranford Lane is also exhibited by crop marks representing large enclosures adjacent to Caesar's Camp, which lie at an angle to the Middle to Late Iron Age enclosure. Whilst these could be of Iron Age date, the differing alignments suggest that they might more plausibly be seen as part of the Late Bronze Age activity excavated in 1944 (Grimes & Close-Brooks 1993, 330-1). It is thus quite possible that all these features were parts of a series of Later Bronze Age field and enclosure systems, sharing a common alignment. This alignment appears to be derived from the overall slope of the valley of the River Crane in this area.

The end of use of this alignment may coincide with the extensive flood deposits seen at Cranford Lane, which sealed the Late Bronze Age features, and probably dated from the Late Bronze Age or Early Iron Age. Similar flood deposits were also seen at Newall Road… At Cranford Lane this alluvium appears to mark a break in the prehistoric occupation.

(Elsden 1997, 12)

This group of sites, which lies at the opposite end of the airport and in the valley of the Crane, cannot be linked physically with the Terminal 5 evidence, although clearly the contemporaniety and proximity of the two sets of systems are beyond doubt. Other sets of field systems however articulate directly with those encountered in the current excavations.

In particular, the evidence from Stanwell (part of—or at least a part of the same group as—Terminal 5's Farmstead 12) indicates connections with the series of fields and enclosures running eastwards along the edge of the terrace, which have been subject to a number of interventions. At Mayfield Farm, East Bedfont (Jefferson 2003), field boundary ditches aligned NE-SW extended southwards onto the Kempton Park Terrace, and the continuation of these systems off the Heathrow Terrace provides a link with those in the flood plains of the Colne and Thames, primarily at Horton (Wessex Archaeology 2009) and Runnymede (Needham and Longley 1980; Needham 1991, 2000).

This interconnected set of field systems is one of several flanking the Thames—this one being what Yates has called the West of London group (2001, 67–9, fig. 7.2 and table 7.1)—each of which has been argued to centre on a regional power base (the so-called aggrandised enclosures). The coherence of these groups is arguable, not least in terms of their chronology, as is the status of some of the claimed aggrandised enclosures (one of the postulated examples for the West London group at Mayfield Farm has only been subjected to trial trenching on a limited scale, and is as likely to be a Neolithic causewayed enclosure as it is to be a Bronze Age ringwork), and the Heathrow excavations have revealed that if it existed at all, the West London cluster had a very great degree of internal variation.

While the 2nd and 1st millennium field systems were very widespread, they clearly did not cover the entire area of Yates' West of London group. A series of differently aligned systems of fields and enclosures seems to have existed, some abutting each other, some separated by areas without visible fields.

The absolute extent of the field systems encountered in the course of excavations at Heathrow is unknown, but portions of at least three different systems appear to be represented. The main block of Farmsteads 1 to 10 seem to form a single unit (unless the division between the aggregate and coaxial systems is a boundary between blocks, one—the aggregate landscape to the west—in the valley of the Colne and the other—the coaxial landscape to the east—on the Heathrow Terrace) of unknown eastern, northern and western extent. Farmstead 12 at the southernmost limits of the excavations forms part of another pattern of fields that is known to have extended southwards at least to Stanwell, where the terrace edge is marked by a linear cemetery of round barrows, and by the double-ditched enclosure at East Bedfont (whatever date that site ultimately proves to be), and—even if this was not the southward limit of agriculture—it is at least probable that this point marked a major land boundary.

The possible existence of such boundaries highlights the lack of understanding of the political economy of the later 2nd millennium in the region, and how different units of land articulated. Indeed, it is not entirely clear what constitutes the region. As noted, David Yates has suggested that by the end of the 2nd millennium the Thames Valley had been divided into a number of blocks of managed land, each containing a high-status settlement and a concentration of metalwork in riverine contexts (Yates 1999). Clearly, the establishment of such extensive and well-ordered landscapes of fields and settlements represents an enormous expenditure of labour, and the ability for such an undertaking implies a well-structured social system.

The most commonly accepted economic model is one in which the establishment and maintenance of a field-system based mixed farming economy allowed the production, accumulation and distribution of surplus, through which wealth was created and controlled, reinforcing the already hierarchical and differentiated structure of society, what Yates has called a 'complex inter-regional exchange system based on social storage' (2001, 67).

Be that as it may, there are a number of broad similarities between many of the excavated field systems in the Thames Valley which indicate a shared economic base. Pastoralism is most often suggested as the main element of the economy, but—at Heathrow at least—cereal production was also present, and may have been as (if not more) important. This is one of the significant alterations to the proposed operations of a lowland farming system which comes about as a result of the Terminal 5 excavations: whereas several other sites have no evidence of the growing or processing of cereals, environmental evidence from Terminal 5 confirms that all stages of cereal production and use occurred on site. Francis Pryor has suggested that many Bronze Age field systems may have been oriented towards the management of livestock on an extensive scale, with cereal production geared more towards a subsistence, household level (Pryor 1999). An argument can be made for this being the economic model indicated by the Heathrow evidence. However, it is equally possible to propose the opposite: that the economy was one based on arable production, with pastoralism representing only a minor element. The difficulty in choosing between the two is that the evidence is equivocal: while the provision of water for livestock was a concern for the inhabitants of the Heathrow Terrace, and the trackways may have been intended to facilitate the movement of stock, there is very widespread pollen evidence for cereals, and charred and waterlogged remains of crops at all stages of processing, in addition to which, the presence of ard spikes in waterholes indicates the importance of agriculture of whatever sort. Given the nature of the evidence, it is difficult to argue convincingly for the absolute priority of one form of production over another, and all that can be claimed with certainty is that it is not necessary to propose 'a lowland farming system specialising in livestock rearing… depend[ent] on cereal producers elsewhere for grain supplies in exchange for meat' (Yates 1997, 10).

As well as the production and consumption of cereals and meat, other economic activities are attested, including the production of textiles, not only from wool, but also through the growing and processing of flax, present at Heathrow and elsewhere (Bray: Barnes and Cleal 1995; Reading Business Park had evidence of flax processing on a relatively large scale: Moore and Jennings 1992).

The agricultural field systems of the Thames Valley seem to have been linked by more than an economic base. Even in terms of construction there are similarities of detail which indicate some degree of connection amongst the different elements of the system. Of course, the basic elements of ditches, banks and hedgerows allow for little expression of difference, but the ways in which some of these building blocks were used differently at different times are more than coincidentally parallel. It has been argued that the trackways dividing the coaxial systems at Heathrow were originally constructed from series of short interrupted ditches, and only later by continuous ditches. Precisely the same is true at Reading Business Park (Moore and Jennings 1992), and at Butler's Field, Lechlade (Boyle *et al.* 1998, 17). The provision of water in wells and holes is common to many field systems. But, again, there are differences in access to other water sources: whereas many sites have ditched trackways leading down to the water's edge (according to Yates 'all the bounded landscapes were constructed with direct access to the main river course or tributaries of the River Thames'; 2001, 67), at Heathrow the trackways run parallel to the drainage. This in fact may be the strongest argument in favour of the Heathrow landscape being primarily arable: whereas herds of animals on the scale of those that would have been present if Heathrow were given over to the keeping of stock would have required access to more water than the holes could provide—and consequently to rivers—fields of crop would not.

The wells and waterholes scattered throughout the farmsteads brought water to an area that seems to have been largely without any flowing or standing surface sources. In addition, they seem to have played a vitally important role in the lives of the inhabitants of Bronze Age Heathrow. That they were more than simply utilitarian (or that their function as watering places was itself not simply utilitarian) is indicated by the range of other activities associated with them. The association of at least one waterhole with activities resulting in the creation of large quantities of heated flint has already been discussed, along with the possible ceremonial importance of those activities. Throughout this chapter, mention has been made of wooden, ceramic and other artefacts which had been placed in these features, often on the base, and apparently unrelated to their construction or function as water sources.

These objects include apparently unusual ceramic and wooden vessels (although it may be that it is the deposition—and consequent preservation—of these forms in waterholes that was unusual, rather than the forms themselves, which may have been entirely normal objects), wooden ard spikes, axe hafts and metal objects. The only object which is likely to have been truly unusual prior to its deposition is the Neolithic stone axe, which must have been at least a curiosity—if not a thing of some value—in the context of Middle Bronze Age society.

Again, the majority of these things are parts of the normal repertoire of objects which would have featured in the daily lives of the inhabitants of Bronze Age Heathrow, and their inclusion in deposits in the bases (or, in occasional instances, as 'sealing deposits') of waterholes fits very well into the understanding of ritual behaviour and its role in society, which has already been discussed. What is particularly interesting about many of the wooden artefacts recovered is that all of the dated examples (the wooden bowl, two axe hafts, three ard spikes) appear to have been deposited during a restricted period around or shortly after 1400 cal BC, precisely the point at which the restatement of social realities and norms would have been most needed, given the breakdown of Farmstead 3 into smaller units and the changes to life and society which would have occurred as a result.

The End

Identifying the processes which brought about the final abandonment of the system—or indeed the point at which it was finally abandoned—is close to impossible. In part, this is because some elements may not have been physically abandoned at all: there is evidence that some field boundary ditches, particularly in the area around Farmstead 2, were maintained into the medieval period. As the next chapter will demonstrate, however, Middle Iron Age settlement seems to have involved the establishment of new centres, having very little to do with any existing patterns.

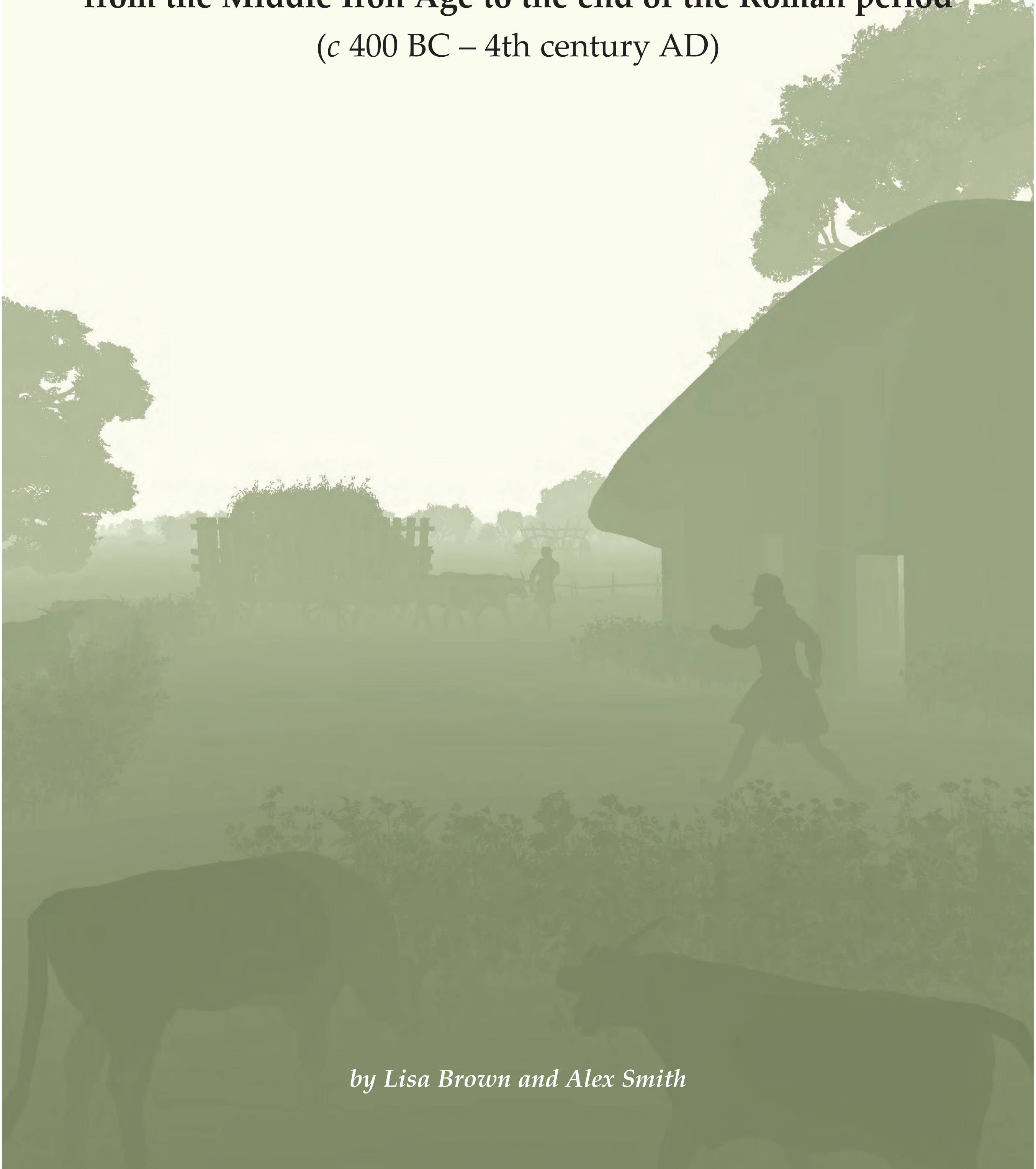
The end, when it came, seems to have been a widespread phenomenon with a broad contemporaniety. As at Heathrow, the majority of sites in the Thames Valley seem to have witnessed a halt at much the same time, in the 1st millennium BC. On many sites, Iron Age evidence is most notable for its absence, and in almost every instance where Iron Age evidence is found it either comes in the form of field boundaries with a different alignment to those of the Bronze Age (for instance at Nobel Drive: Elsden 1997) or is quite isolated from any earlier activity. Indeed, at Terminal 5 there is no convincing Early Iron Age element beyond a small number of largely isolated features and a few ceramic forms which seem to belong later in the post-Deverel-Rimbury sequence. It is perhaps significant that where Early Iron Age settlement has been identified—at Site K of Canham's excavations (Canham 1978), for instance—it lies to the north of the Terminal 5 excavations. At this site, the associated ceramics are mostly flared necked jars, and burnished bowls with tall necks (Grimes and Close-Brooks 1993)—typical Early Iron Age forms.

This phenomenon could be the result of a continuation of the pattern seen in the eastern Farmsteads of the Terminal 5 excavations—a continued northward expansion across the Heathrow Terrace. What then becomes of interest is what brought this process to a halt, and why it was that Middle Iron Age settlement seems to have been established in the one place where there was never any visible Bronze Age activity—in the three hectare plot of common land separating the aggregate and coaxial systems.

CHAPTER 4

The Development of the Agricultural Landscape from the Middle Iron Age to the end of the Roman period

(*c* 400 BC – 4th century AD)



by Lisa Brown and Alex Smith

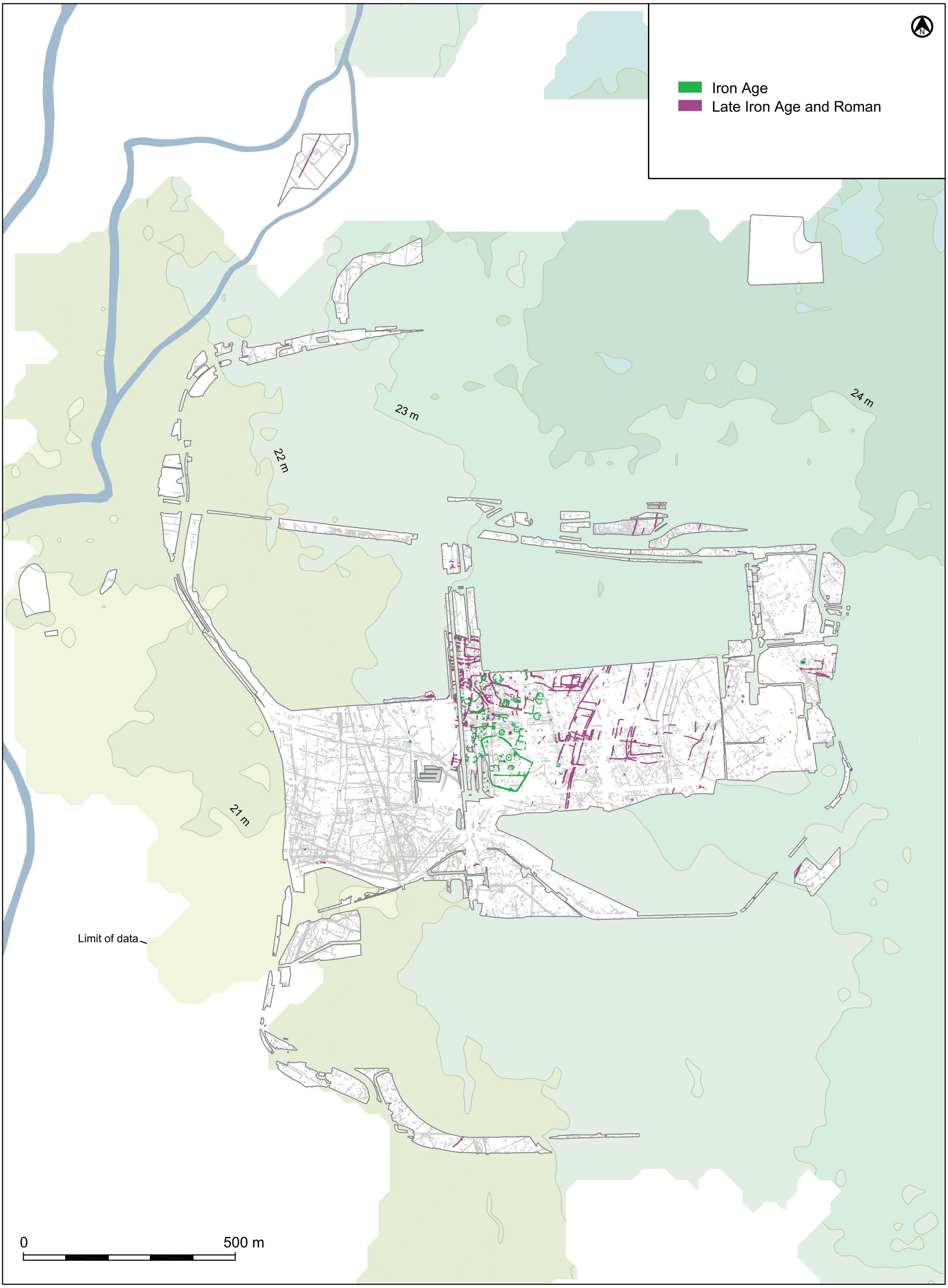


Figure 4.1: Extent of Middle-Late Iron Age and Roman occupation at Terminal 5

Introduction

This chapter takes forward the history of habitation and agricultural exploitation in the Heathrow landscape from the Middle Iron Age (*c* 400–100 BC) right through into the Late Iron Age and Roman periods (*c* 100 BC–AD 400) (Fig. 4.1). A brief summary of the evidence is presented first, before the chronological framework of the period is set out. There then follows detailed accounts of the settlement and landscape changes at Terminal 5, set within the wider context of the Middle Thames Valley.

Summary of the evidence

Middle Iron Age

After the abandonment of the small, dispersed settlements occupied by the Bronze Age inhabitants of the Heathrow area, and following what was an ill-defined period of occupation during the Early Iron Age, the landscape came under new social and economic influences that resulted in the emergence at around 400 BC of a nucleated open settlement of roundhouses, four-post structures and livestock enclosures defined by penannular gullies (Fig. 4.2). The settlement occupied what had been the location of two previous Bronze Age Farmsteads (3 and 4; see Chapter 3) and an open space adjacent to them, possibly the site of a midden that accumulated during the first half of the 1st millennium BC.

The daily and seasonal routines of the Middle Iron Age inhabitants continued to be dictated by the requirements of a localised, probably entirely subsistence-based agricultural regime that was apparently biased towards a pastoral economy throughout the Middle Iron Age. Although the population was probably of only modest size, it is clear that several family groups occupied the settlement at any given time during this period, and that the households probably operated as a community rather than as separate entities.

In the absence of almost any associated artefacts, apart from utilitarian pottery,

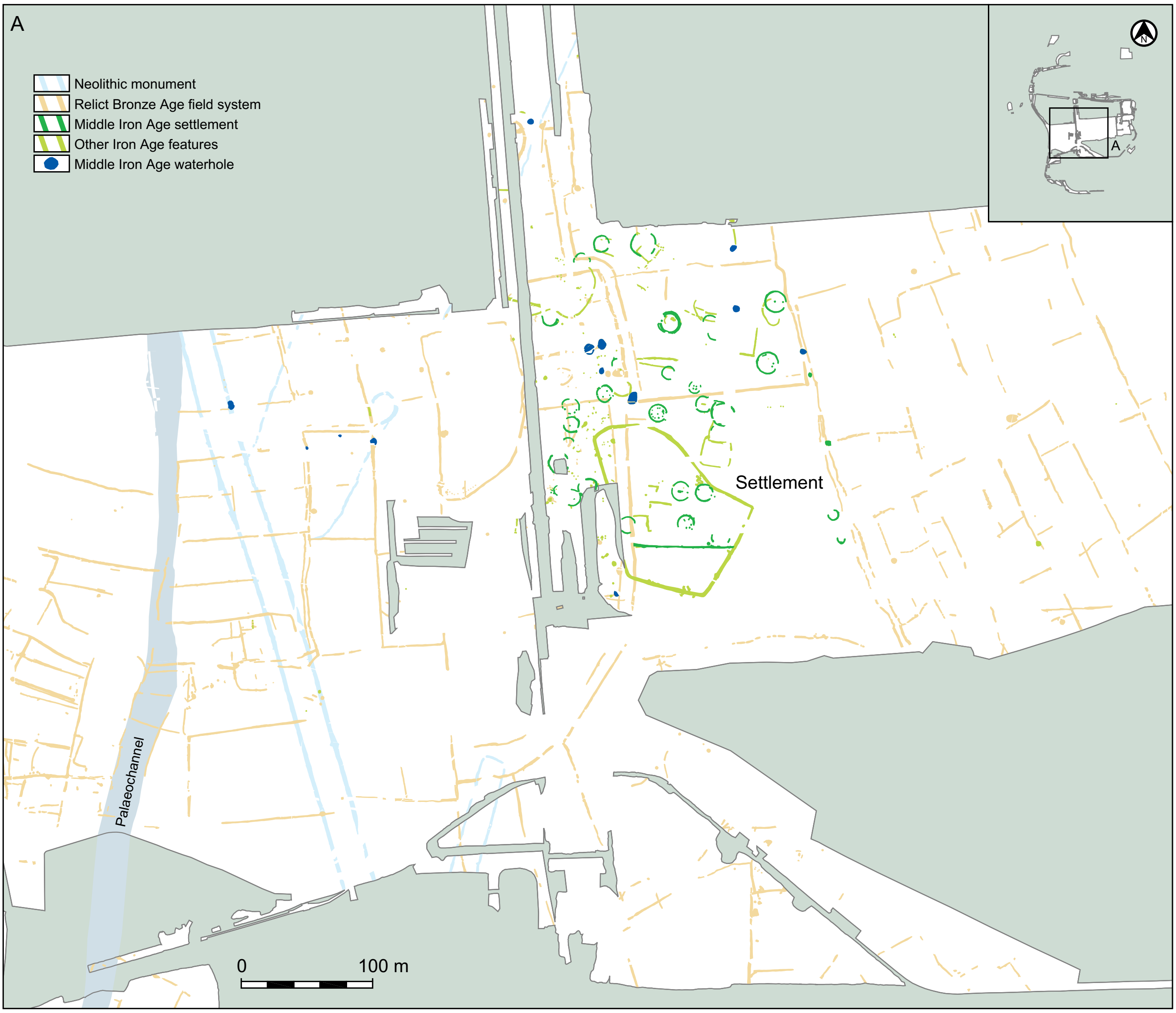


Figure 4.2: The Middle Iron Age landscape

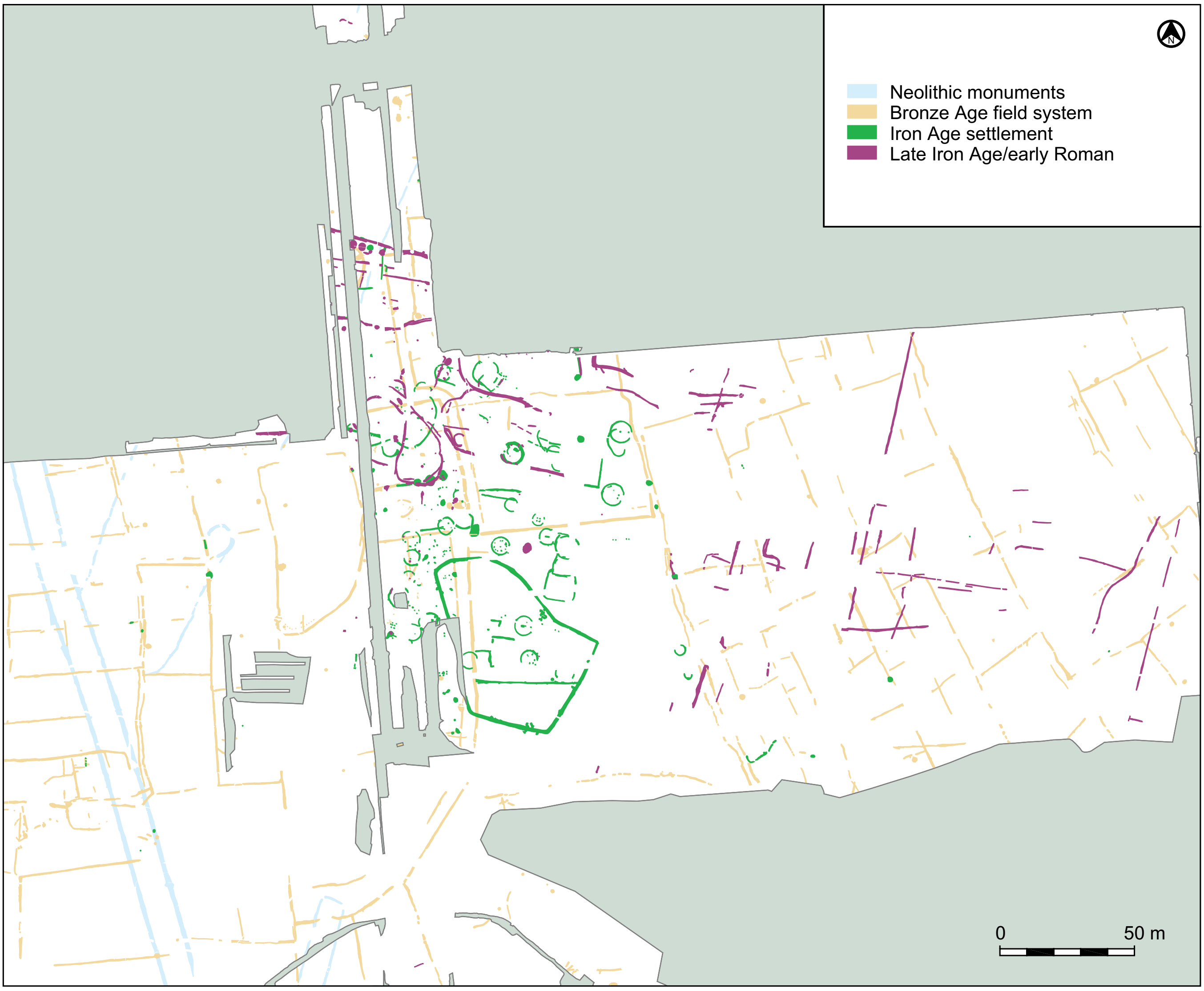


Figure 4.3: The Late Iron Age/early Roman landscape

the social context and status of the settlement can best be judged through a perspective of its agricultural output—its prosperity measured in animals and harvests rather than transferable surplus and exotic materials. The evidence for this was, however, also relatively poor. Size and exploitation of livestock herds could not be reliably assessed through the usual means of bone analysis as preservation was particularly poor at the site. A dearth of archaeobotanical evidence also proved problematic in determining levels of cultivation, especially as the Middle Iron Age inhabitants did not modify the Bronze Age field systems to any significant extent.

However, the reconfiguration of the Middle Iron Age settlement during several phases of development attests to a strong reliance on livestock and, presumably, their by-products. Animal enclosures were built within the settlement and subsequently enlarged time and again, culminating in the construction of a massive enclosure (EC1) that must have represented a collective enterprise.

Late Iron Age and early Roman

The Late Iron Age saw the onset of many changes at the Terminal 5 settlement, with the dispersed roundhouses and penannular stock enclosures of the Middle Iron Age largely giving way to a more nucleated settlement of enclosures and boundaries, and with a general lack of evidence for domestic structures, typical of this period (Fig. 4.3). Perhaps more significantly, the pattern of Bronze Age field systems to the east of the settlement were drastically altered for the first time in almost two thousand years, with a complete change in shape and orientation. These changes probably occurred on a piecemeal basis over many years, yet still marked an important shift in landscape organisation (at least in this area) that continued right through into the Roman period.

While pastoralism remained a fundamental part of the agricultural economy, with the large central enclosures likely related to stock management, the evidence suggests an increasing emphasis on cereal crops from the Late Iron Age onwards. It may even have been that the expansion of arable production was in part responsible for the establishment of the new eastern field system at this time.

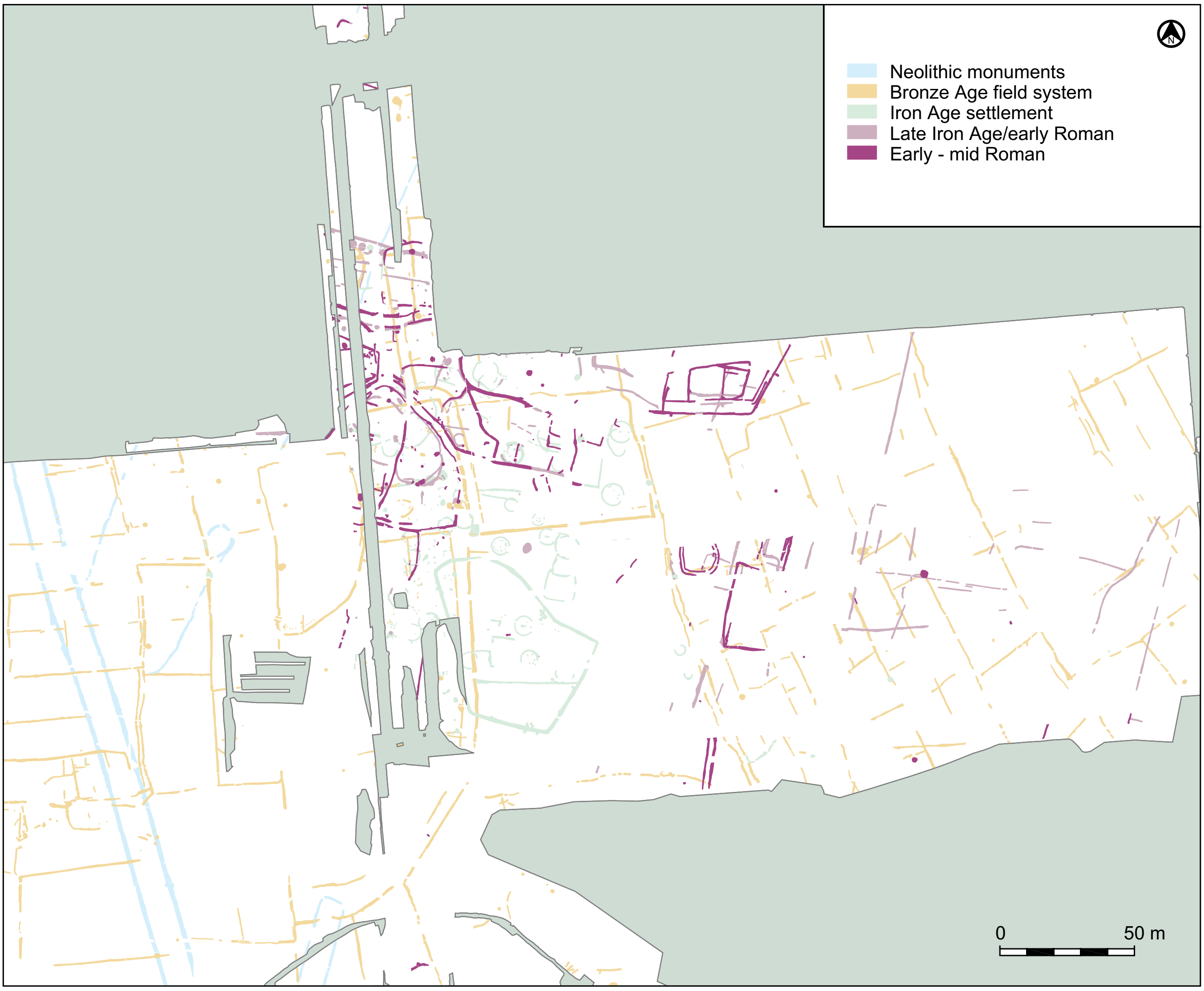


Figure 4.4: The early-mid Roman landscape

Early to mid Roman

The settlement and enclosure complex of the Late Iron Age appears to have been continually modified on a somewhat *ad hoc* basis into the early and middle Roman periods (Fig. 4.4), and whilst this was no radical reorganisation, the developments were almost certainly affected by increased influence from the developing Roman economic system, especially with the town at Staines less than 5 km to the south.

The enclosure system in the settlement was altered and expanded, which corresponded with the creation of a network of trackways and the appearance of four or possibly five potential rectangular buildings. There does not appear to have been any major change in economic practices, although there are signs of increasing diversification and expansion. Likewise, there are no indications of any deep-seated lifestyle changes for the inhabitants at Terminal 5, with little evidence for any elevated status. There may have been a low-level shift to more Roman styles of dress, culinary methods and aesthetics, but this probably reflects little more than the ready availability of certain types of goods rather than a conscious desire to emulate a Roman way of life.

Late Roman

Late Roman developments at Terminal 5 are characterised on the one hand by apparent continuity in terms of the maintenance of some existing enclosures and buildings, and on the other hand by the imposition of radically new styles of structure and wholesale changes to the eastern field systems (Fig. 4.5). It is quite possible that the potential buildings identified from the middle Roman phase continued in use into the 3rd and 4th centuries, when two more possible buildings were constructed, one (B6) comprising a substantial post-built structure, possibly of two storeys. Approximately contemporary with this was the re-development of the eastern field systems, which culminated in a substantial 'ladder' enclosure system, surrounding a major central droveway. This was on a scale not previously seen at the site, although it did in the most part maintain the approximate same orientation of the earlier fields, and so was not a complete break with the past.

The environmental evidence is insufficient to tell if there were any

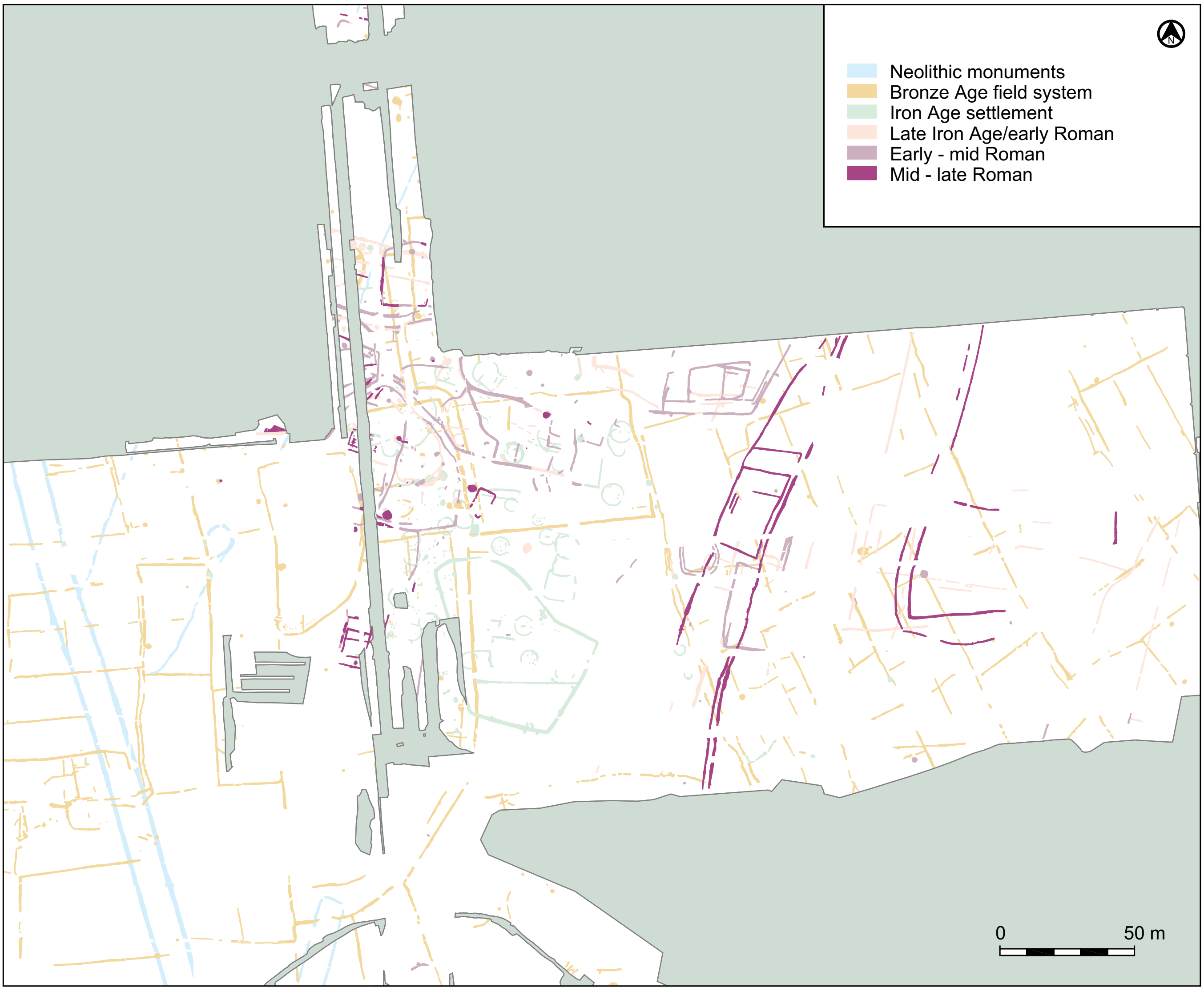


Figure 4.5: The late Roman landscape

major changes to the agricultural system, and it seems likely that the local community continued to farm the land, probably in much the same way as previously, with no obviously detectable increase in wealth or status. However, the substantial post-built structure and 'ladder' enclosure hint strongly at new external influences that may have been part of wider social, political and economic changes during the later Roman period.

The chronological framework

Our understanding of human habitation of the Heathrow landscape during the Middle to Late Iron Age and Roman periods, of its evolution and exploitation by the local inhabitants, and of the events and developments that instigated change or encouraged stasis within and beyond the immediate area, relies on having a sound chronological framework in which to build a narrative. This period, albeit spanning less than a thousand years, was a time of considerable change and innovation in southern Britain.

For the Middle Iron Age, that framework lacks the primary tool of written sources, so we are reliant on a small number of absolute dates, a relatively small artefact resource and stratigraphic evidence to provide a relative chronological sequence of occupation, deposition and abandonment.

By the Late Iron Age-early Roman period we are able to set our evidence in a wider scheme of coinage, pottery from well-dated centralised production centres in Gaul and Britain and written histories and observations. Although the written sources are inevitably biased, they provide an additional source of evidence to that offered by radiocarbon dates, stratigraphy and material culture.

Absolute dates

Although radiocarbon dating is the principal method of scientific dating for the later prehistoric period, much of the first millennium BC is affected by calibration problems so that the results often offer only very broad date ranges. Furthermore, in a landscape that has already seen intensive occupation by the Middle Iron Age, sample provenance and integrity can affect the outcomes of scientific dating.

Six samples taken from deposits at Terminal 5 returned results of Early Iron Age to Roman date (*see Healy, CD Section 20;* Fig. 4.6).

Early–Middle Iron Age

Radiocarbon determinations ranging from 400 cal BC to 360–50 cal BC were obtained for three samples, while one other was somewhat earlier at 780–387 cal BC (Fig. 4.6). Two unanticipated results came from deposits not originally interpreted as Middle Iron Age—one from a barley grain recovered from a pit originally phased as Bronze Age, the other from a waterlogged hazel fragment from an initially unphased pit in Area 16 (see Chapter 1, Fig. 1.2), *c* 850 m north of the main Middle Iron Age settlement. These dates allow us to place certain events within at least a broad Iron Age chronological framework.

The single Early Iron Age date (780–387 cal BC; WK11712) came from a fragment of a wattle hurdle structure in alder (*Alnus*) preserved in the palaeochannel (context 803009) in Bedfont Court to the west of the main excavation area, on the Colne floodplain.

The earliest Middle Iron Age date of 400–200 cal BC (WK 19341) was obtained from a fragment of hazel (*Corylus avellana*) (SF 8201) from an upper alluvial fill (552397) of tufaceous material and peat in pit 552395, reflecting the proximity of the feature to the River Colne. The pit lay within a natural palaeochannel in Area 19 (see Fig. 1.2), approximately 1 km north-west of the heart of the Middle Iron Age settlement. The radiocarbon date does not help us to date the digging of the pit, nor the earliest episodes of alluvial filling, nor does it provide proof of activity at the riverside during the Middle Iron Age, as the wood was a broken rather than a cut branch that found its way into the top of an otherwise undated feature. However, it does provide us with an important detail about the Middle Iron Age landscape—that hazel was growing along the riverbank during the period 400–200 cal BC.

A charred barley grain (sample <17519>) from the single fill (554144) of a pit (529306) cut into the backfilled eastern ditch of the C1 Stanwell Cursus in Area 49, some 255 m from the Middle Iron Age settlement, produced a date of 386–203 cal BC (WK 19335). Another charred barley grain (sample <17153>) recovered from the single fill (539451) of a shallow pit within a roundhouse (19) produced a date of 360–50 cal BC (WK19334).

Bayesian analysis of the Middle Iron Age radiocarbon results concluded that the barley grain from pit 529306 and the hazel roundwood from pit 552395 were very close in date *(see Healy, CD Section 20)*. The date from the second barley grain from the roundhouse pit (539450) was too broad to indicate whether barley cultivation continued into the Late Iron Age, and there is no other dated cereal from that period (see below).

Late Iron Age/early Roman

A Late Iron Age/early Roman radiocarbon determination of cal 170 BC–AD 220 (<Wk-19367>) was obtained from a fragment of unidentified animal bone from a primary erosion deposit (129113) of waterhole 129112 near the main settlement enclosures (Fig. 4.6; see below).

Late Roman

A single radiocarbon date relating to the late Roman settlement was obtained on cremated human bone from a burial along the projected southern line of a 'ladder' enclosure droveway in Area 72 (Fig 4.6). The bone seems to have been placed in a wooden box in a small feature (591052) and was accompanied by cremated animal bone and a fragment of iron. The determination of cal AD 250–380 (OxA-16127) was within the anticipated range for the burial.

Relative Chronology

Ceramic evidence

Our dating evidence for the Iron Age and Roman periods at Terminal 5 is based largely on ceramics—a relatively large component of the finds assemblage for these periods in contrast to the very restricted collection of metalwork and other artefacts. The pottery was generally preserved in only moderate to poor condition, and we are faced with the additional problems of redeposition, residuality and, particularly problematic for the Late Iron Age and Roman periods, a considerable intrusive presence created by the complex of intercutting and recut features within the nucleated settlement area.

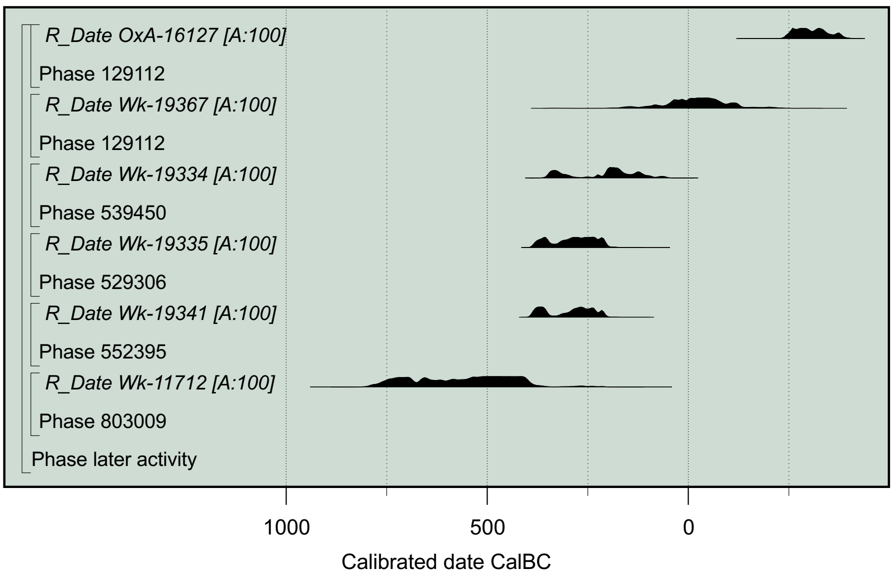


Figure 4.6: Iron Age and Roman radiocarbon dates

Figure 4.7: Middle Iron Age pottery distribution

No systematic analyses of later prehistoric pottery styles and fabrics have been carried out for the Middle Thames Valley region, so there is no established ceramic framework against which to test the Terminal 5 assemblages until the early to middle Roman period, when distinctive finewares, including continental imports, began to appear on the site.

Middle Iron Age pottery

Although pottery was by far the largest artefact category from Middle Iron Age deposits, the excavations produced a relatively small collection (4445 sherds /33,699 g), considering the total area excavated. The limitations of the ceramic evidence described above are compounded by the small number of diagnostic Middle Iron Age sherds recovered (profiles and distinctive or decorated body sherds; Fig. 4.7B). Most of the pottery of this date was highly fragmented, with an average sherd weight of only 7.6 g, and very few sherds were found in association with other datable artefacts, a problem common to many Iron Age sites in the region. Much of the material was only broadly dated on the basis of fabrics alone, but the fact that potting clays and tempers obtained from the sedimentary geology of the Middle Thames Valley are generally not very distinctive restricts the accuracy of this approach.

The range of fabrics and forms from T5 is closely paralleled by the assemblage from Caesar's Camp, which is dated c 400–100/50 BC on typological grounds (Grimes and Close Brooks 1993)... Both the Heathrow T5 and Caesar's Camp assemblages lack the distinctive features which might place them more closely within the regional ceramic sequence. There are none of the decorated wares typical of the ceramic styles of the Middle Thames or Wessex, nor the well finished saucepan pots of the Hampshire/Berkshire area, for which production and distribution on a regional scale has been suggested (eg Morris 1994)... The T5 examples are all in the sandy fabrics, presumably locally produced, which are also used for the more common jar forms. The presence of saucepan pots at Caesar's Camp is used to support a date for at least some of the occupation later in the Middle Iron Age sequence, following the radiocarbon dated ceramic sequence from Danebury (ibid., 356-7). If the T5 saucepan pots can be similarly dated this could push the sequence as late as the turn of the 1st century BC, but the evidence is extremely slight, and there is still no certainty as to whether the Middle Iron Age sequence is continuous, intermittent or short-lived, or whether a continuation beyond c 100 BC can be demonstrated. The near absence of decorated wares...could also have some chronological significance. Decorated bowls in fine sandy fabrics were found at Holloway Lane, Harmondsworth and Wall Garden Farm, Sipson, where they seem to be slightly earlier in date than the grog-tempered wares of Late Iron Age character (Lewis and Mason n.d. subsection 4.3.2.3).

(Leivers et al. CD, Section 1)

The act of deliberate deposition of pottery in pits, wells, ditch terminals and structural features is now recognised to have been a fairly commonplace practice during the Middle Iron Age in southern Britain generally. The waterholes and pits associated with the Terminal 5 settlement, however, contained relatively little pottery compared to the more ostentatious deposits of pottery vessels in Bronze Age waterholes and some Neolithic Grooved Ware pits. In fact, most Middle Iron Age sherds were recovered as fortuitous occurrences in the general fills of ditches and penannular gullies, the ditches surrounding a west-facing roundhouse (8) and a large irregular enclosure (EC1) (see below). Very little Middle and Late Iron Age pottery came from the Bronze Age field system ditches, which had apparently largely or entirely filled by that time. As a result, the Iron Age ceramic signature beyond the immediate settlement confines was virtually insignificant. As pottery was the most abundant dating tool for the Iron Age period at Heathrow, we have only an incomplete impression of how and when the wider agricultural prehistoric landscape was exploited after the Bronze Age.

Late Iron Age /early Roman pottery

A total of 1542 sherds (18,095 g) was attributable to the Late Iron Age/early Roman transitional period (100 BC to AD 100). This period overlaps to a considerable degree with early Roman ceramic phase (AD 43–120), with transitional grog-tempered and shell-tempered wares spanning both ceramic phases. This presents us with the well-recognised problem for this period in southern Britain of dealing with a lack of correlation between a protracted absence of change in material culture assemblages on some sites and that of historical events in the broader sphere.

In common with the Middle Iron Age pottery,

...few features produced large groups of Late Iron Age pottery, with only seven containing more than 25 sherds… Much of the assemblage therefore represents a background spread of material rather than any meaningful deposits. The preservation in the different feature types showed little variation, with the exception of two nearly complete vessels from well/waterhole 593207, generating a mean sherd weight of 55.4 g.

The number of key groups of Late Iron Age pottery is too small to make further comment on any phases within this period, however the 'Belgic' ceramic traditions of grog and shell-tempered fabrics, including bead-rimmed and necked, cordoned jars, continue throughout the 1st centuries BC and AD, and perhaps into the early 2nd century.

(Jones and Brown, CD Section 2)

Roman pottery

The Roman ceramics span the period from the mid 1st century AD through to the late 4th and possibly 5th centuries AD (Fig. 4.8). A total of 7497 sherds (95,962 g) of this period came from 689 deposits within a wide range of features—ditches, gullies, pits, postholes and the largest, better preserved sherds, from waterholes. Most context groups were again very small, containing five sherds or fewer. Only 58 context groups produced more than 30 sherds.

Following the Perry Oaks excavation it was thought that the much of the Roman pottery, particularly the late material, must have originated from

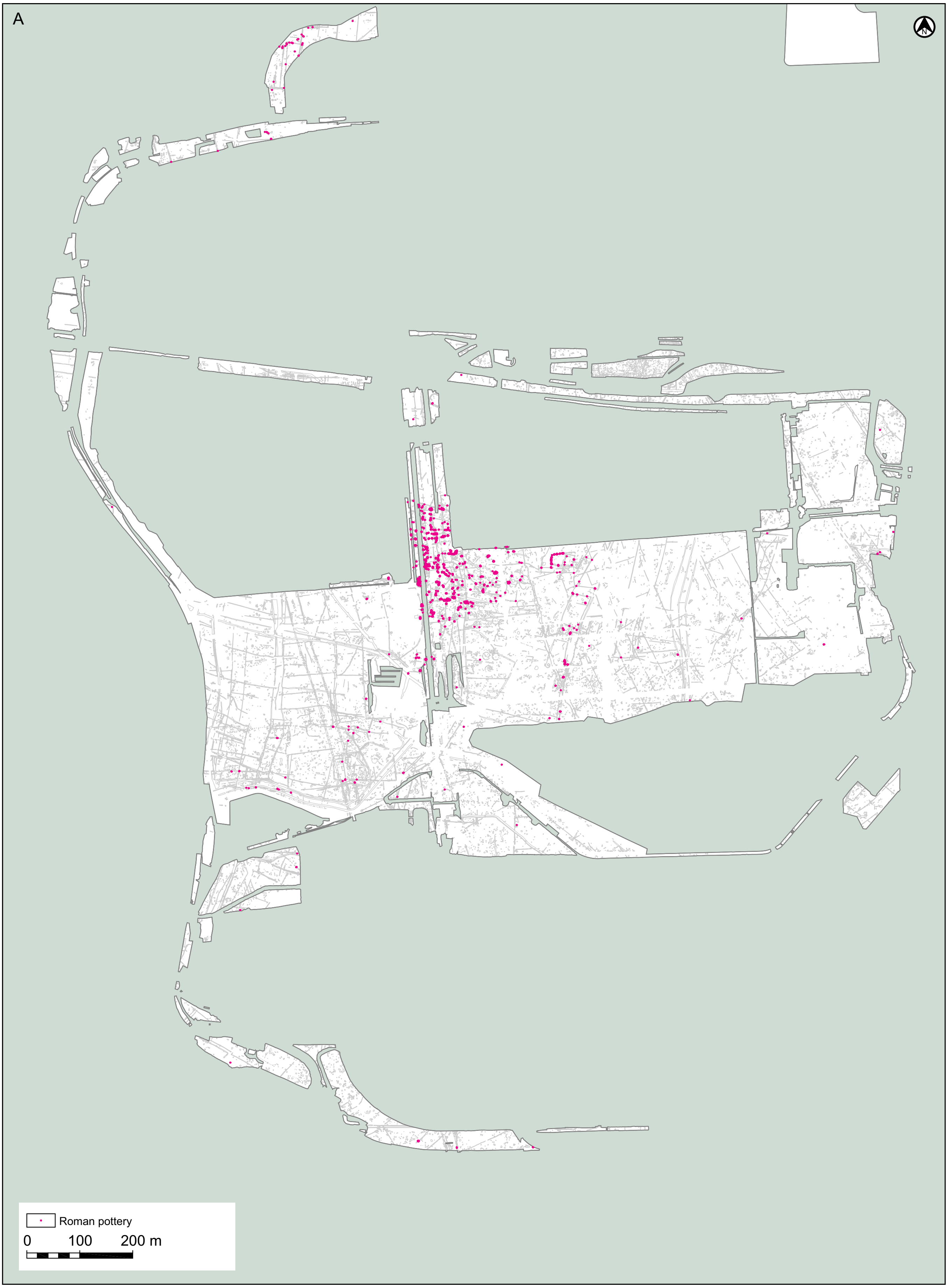


Figure 4.8: Roman pottery distribution

activity located beyond the excavated area as there was little structural evidence that corresponded to the date and character of the ceramics (Framework Archaeology 2007, CD section 2).

The results of the subsequent fieldwork at Terminal 5 provided a more convincing provenance for this material—more enclosure complexes and a large post-built structure in the north-west part of the Roman settlement. It is still feasible, however, that some elements of the mid and late Roman settlement lie beyond the limits of excavation. Along with the discovery of additional structural features at Terminal 5 came a larger suite of both early and late Roman ceramics. The early assemblage expanded to include more Romanised forms and imports, including Verulamium white ware products, south Gaulish samian and 1st–early 2nd century mica-dusted finewares.

During the early Roman period these ['Belgic'] fabrics and forms occur alongside more Romanised material such as greywares, whitewares from the Verulamium region, samian from southern Gaul and mica-dusted finewares. The samian is the only imported fineware, accounting for 1.3% of the Roman assemblage, comparable to other low-status rural assemblages such as Harlington (1%, Seager Smith forthcoming) and Horton (0.9%, Jones forthcoming)…'Romanised' forms of the early Roman period include copies of ¬Gallo-Belgic forms such as the girth beaker and platter, indicating an appreciation of these forms and a desire to copy them. Flagons from the Verulamium region were also in use. The remainder of the early Roman assemblage comprised utilitarian jars and bowls, particularly bead-rimmed jars and necked jars with 'figure-7' rims… During the late Roman period flagons, mortaria and beakers continue to be seen alongside bowls and jars, with finewares supplied by the Oxfordshire and Nene Valley industries.

(Jones and Brown, CD Section 2)

Other artefacts

The period from the Middle Iron Age onwards in southern Britain is often described as a time of 'intensification', in material as well as economic and agricultural terms (Haselgrove *et al.* 2001). One of the most striking features of this period generally is the sheer quantity of evidence of different classes, with pottery, metalwork, worked bone and more durable materials such as worked stone increasing to abundant proportions relative to previous periods. The contrastingly small and undistinguished artefact assemblages from the Terminal 5 excavations, including the pottery (eg see Fig. 4.9), must lead us to question why evidence of the phenomenon of intensification in the production and utilisation of artefacts was not apparent at Terminal 5, despite an apparent increase in the density of livestock during the period, suggested by the creation of numerous animal enclosures. The construction, renewal and proliferation of stockades from the Middle Iron Age to the Late Iron Age suggest an increase of pastoral productivity or at least of livestock management, even if it did not accelerate beyond subsistence level in the Middle Iron Age to the form of surplus economy required to support an exchange system or to acquire prestige goods.

The paucity of the Iron Age and Roman artefact assemblages was due to some extent on the loss of above-ground deposits through truncation, but this was clearly only one of a more complex set of factors, which probably included a genuine absence of material.

Metalwork
We will now consider the context of the dateable metal artefacts from the Terminal 5 excavations to see what they add to the chronological framework. Individual metal artefacts of a recognised typological category and

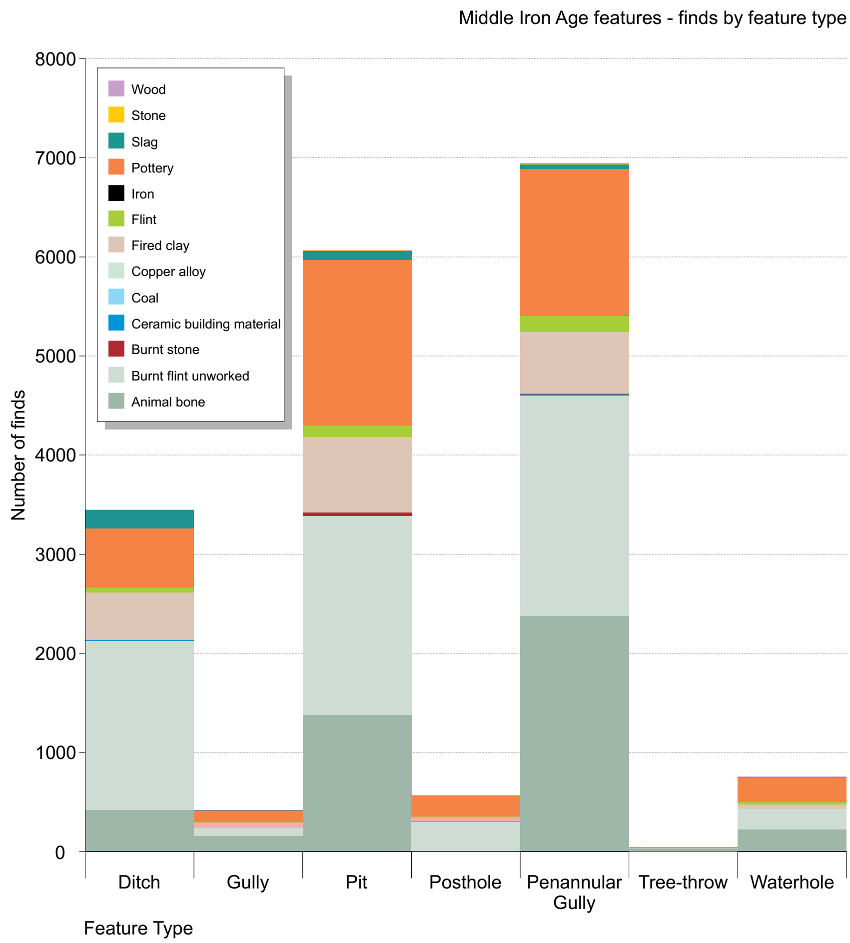


Figure 4.9: Middle Iron Age features – finds by feature type

ID No.	Fig No.	Feature	Context	Artefact type	Typological Date	Feature Date
SF26100	-	Boundary ditch 650008	650007	Spiral Cu alloy finger ring	IA	Late IA/early RB
SF27221	41	Pit 658188 in Roundhouse 21	658189	Cu alloy tweezers	Late IA/early RB	Late IA/early RB
SF26104	21	Enclosure ditch E7 636076	636076	"Nauheim derivative" brooch	Early-mid 1st century AD	Early RB
SF20064	22	Waterhole 523315	605217	? Colchester fibula	Early-mid 1st century AD	Late IA/early RB
SF13291	25	Trackway 4 ditch 614217	539387	2 piece Colchester fibula	Mid 1st century AD	Early/mid RB
SF13278	39	Enclosure ditch E4 593231	539424	? Cu alloy cast bead	Early RB	Early RB
SF29119	42	Gully 636149 Roundhouse 21	646083	Cu alloy military buckle	RB	Mid-late IA
SF29140	23	Enclosure ditch E8 636070	651090	? Colchester fibula	1st century AD	Early/mid RB
SF13271	24	Unstratified	Unstratified	2 piece Colchester fibula	Mid 1st century AD	-
SF12046	26	Pit 539392	539393	T-shaped bow brooch	Late 1st century AD	Early/mid RB
SF13186	27	Unstratified	Unstratified	Trumpet brooch	Late 1st-2nd century AD	-
SF27118	34	Waterhole 678025	678026	Cu alloy finger ring	Late RB	Mid/late RB
-	35	Building 6 posthole 659060	659061	Cu alloy finger ring	Late RB	Late RB

Table 4.1: Datable metal artefacts

period can provide a date for either a particular archaeological event or at least an indication of human presence within a broad time-span. However, very little dateable Iron Age and Roman metalwork was recovered from the site, partly due to the soil conditions, which are generally unfavourable to preservation of metal-work, and to the depth of truncation. However, the recovery of a few metal artefacts in reasonable or good condition from the site indicates that metalwork was genuinely scarce during the Iron Age and Roman periods. Even items commonly found on Middle and Late Iron Age sites, such as agricultural tools, knives and harness gear were totally absent, and structural fittings such the nails and clamps commonly used in the construction of Roman buildings were few. Material poverty and lack of contact with more prosperous communities must have been contributory factors.

Nonetheless, a small number of chronologically diagnostic Late Iron Age and Roman personal items found in a range of features, some securely stratified, were useful in narrowing down or confirming the date provided by pottery, coins and the few radiocarbon determinations.

Table 4.1 presents a list of the dateable metal artefacts and their provenance in order of typological date, and the period of the features determined by other evidence. Agreement is fairly good except in the case of SF 29119, a fragment of a Roman military type buckle, recovered from the fill of the recut gully of Roundhouse 21. The buckle is likely to derive from the Roman activity associated with enclosure E6, which post-dated the roundhouse.

Coins

Although Roman coins provide very precise dates of manufacture, the 52 coins recovered from the excavations are arguably more useful as indicators of coin use at Terminal 5 than as chronological markers. Many were unstratified metal detector finds from the topsoil or subsoil and their condition is generally very poor, with several illegible examples. The coin evidence supports the view that the Roman settlement was occupied, apparently continuously, until at least the end of the 4th century AD.

In the light of this, the relative dearth of coins of the 1st and 2nd centuries AD is slightly surprising, even with a small assemblage, and may indicate that coinage was rarely used on the site early in the Roman period.

(Cooke, CD Section 5)

The earliest identifiable coin is an As of one of the Antonine Empresses (AD 146–175) or Crispina (AD 177–before AD 192). The remainder, all *folles* or *antoniniani*, date to the late 3rd or 4th centuries with one unstratified piece dated to the 2nd century AD.

The (later) assemblage is dominated by radiate coins minted at the end of the 3rd century and coins minted between AD 330 and 348... with smaller peaks of coin loss in the second half of the 4th century. These coins indicate that the site remained in use well in to the late 4th century... and possibly into the 5th century...

Seventy percent of the coins came from the upper fills of three waterholes, and 22 of the site total came from the final silting of a single waterhole (527241).

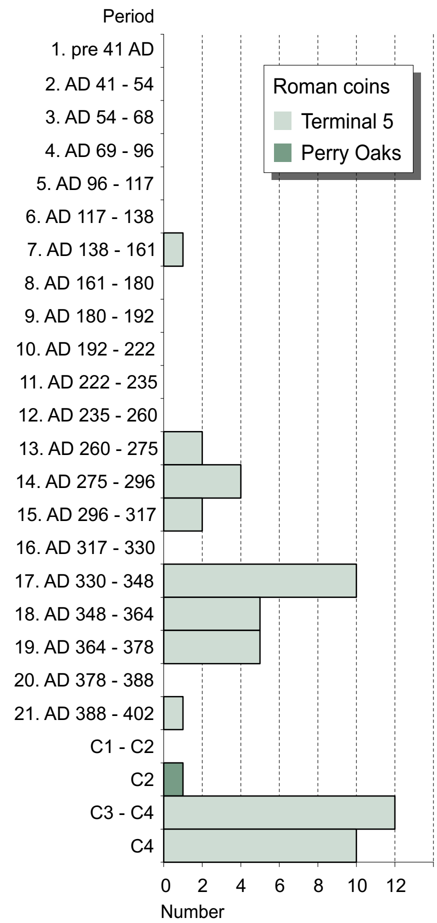


Figure 4.10: Chronological indicators: Roman coin chart

The presence of so many coins within a single feature is clearly unusual for the site, as is the presence (in this feature) of an early coin of Constantine I (SF 13240) in a deposit dating to the 350s AD. It may be that these coins actually represent a small dispersed hoard or that the feature was partially backfilled with rubbish from elsewhere on the site.

(Cooke, CD Section 5)

The topographic and cultural setting of the Middle Iron Age settlement

The topography of Middle Iron Age Heathrow

The Middle Iron Age nucleated settlement at Terminal 5 occupied a boundary zone between the western edge of the Taplow terrace and the eastern floodplain of the River Colne (Fig. 4.11). From this position the inhabitants of the settlement were ideally placed to exploit the possibilities afforded by the diverse landscape zones surrounding it. The wetter lower floodplain to the west would have been suited to livestock grazing, and the river would have been an important resource for water and riverine flora such as willow and rushes. As is usual for Iron Age sites, we have no evidence that the Middle Iron Age inhabitants exploited aquatic fauna such as fish and waterfowl for consumption, but a fragment of an alder wattle hurdle preserved in the palaeochannel (803009) in Trench 1017 (Bedfont Court), radiocarbon dated to 780–387 cal BC (WK11712) could have belonged to a fish trap.

The upper terrace to the east of the settlement would have provided drier ground for alternative pasture during seasonal flooding. This terrain would probably have retained sufficient levels of fertility for cultivation into the Middle Iron Age, despite more than two millennia of constant exploitation. However, the Bronze Age field ditches to the east of the settlement were neither obviously modified nor maintained during this time and the environmental samples produced evidence for only limited cereal production. This

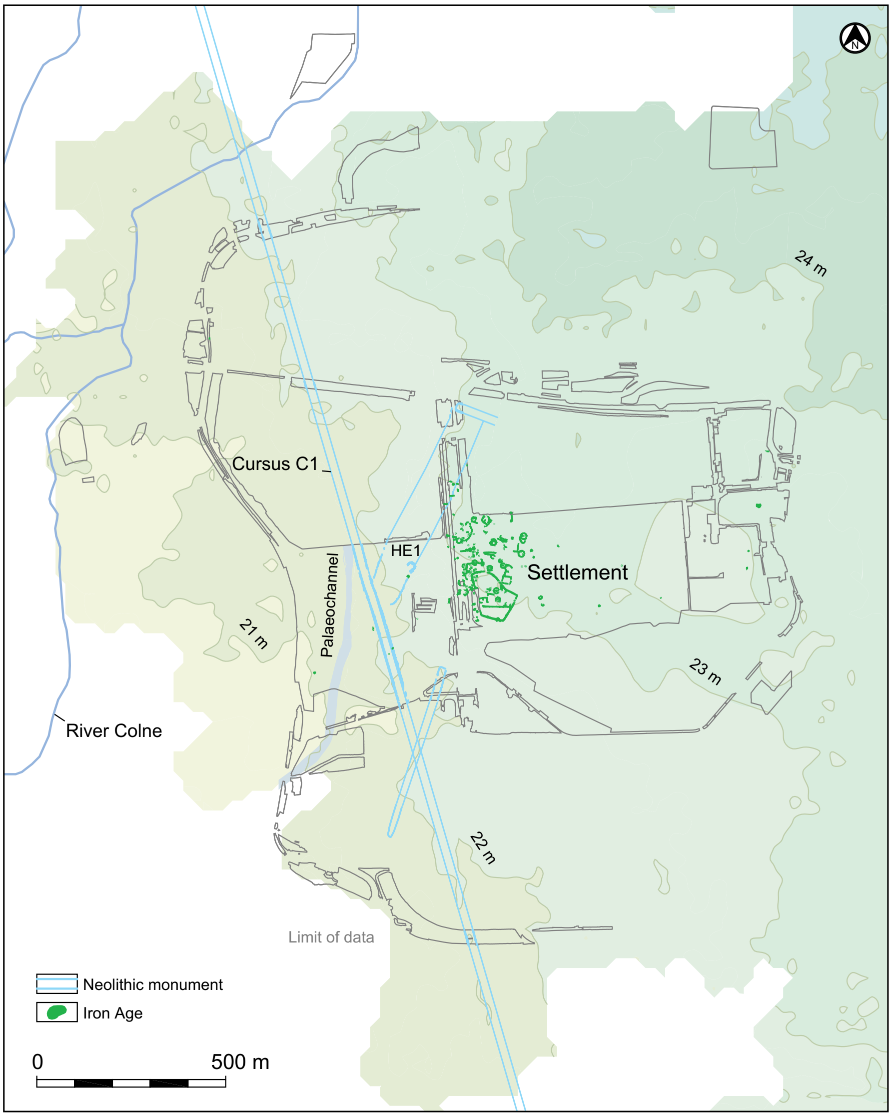


Figure 4.11: Topography of Middle Iron Age settlement

could point to, amongst other factors, a change in farming practices due to soil exhaustion, as was apparently the case at Horton, 5 km west of Heathrow on the Colne Brook (Wessex Archaeology 2009). There the Iron Age inhabitants were forced by the effects of over-farming of Bronze Age fields or by a rising water table to shift agricultural and settlement activity onto higher land.

Nonetheless, despite the lack of evidence for major modification or refurbishment of the Middle Bronze Age field systems at Terminal 5, their continued use can be supposed merely on the basis that the *raison d'être* of the nucleated settlement was subsistence farming based on a mixed pastoral and arable economy and that its continuing existence would have relied on the exploitation of the resources of the immediate locality. If cereal production continued at some level during the Middle Iron Age, as it clearly did, presumably this would have been undertaken in the fields surrounding the settlement. The reuse and construction of some waterholes during the Iron Age in locations that respected the Bronze Age field system also testify to the survival of some of the pre-existing layout, despite the fact that the ditches were neither extended nor maintained. Elements of the field systems to the west of the Middle Iron Age settlement may have endured even as late as the Saxon and medieval periods, lending weight to the somewhat controversial claim that areas of pre-Roman co-axial field alignments can still be detected in the modern landscape in parts of eastern England (Rodwell 1978; Williamson 1987; Hinton 1997).

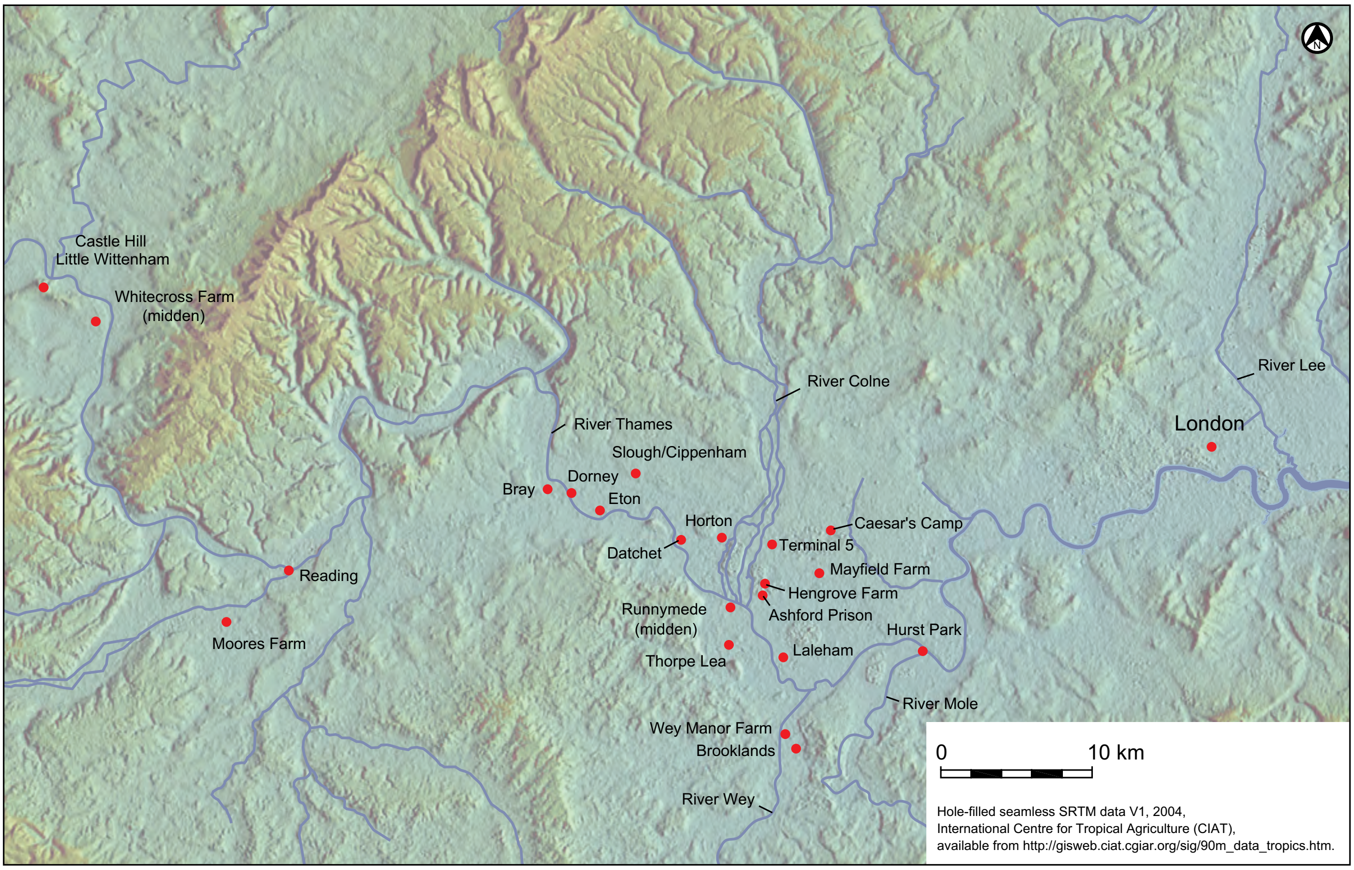


Figure 4.12: Middle Iron Age sites in the Middle Thames Valley

The local and regional context of the Middle Iron Age settlement

The siting of settlements along topographical boundaries was a common feature of settlement and exploitation patterns in the Middle Thames Valley during the Iron Age (Fig. 4.12). Evidence of Iron Age activity was found within an area of Bronze Age settlement at Mayfield Farm, East Bedfont, which lies on the boundary of two terraces to the south of Heathrow (Merriman 1990). At Thorpe Lea Nurseries near Staines, as at Terminal 5, traces of Iron Age occupation were found within a complex of Bronze Age fields (Hayman forthcoming a). The field system there was modified during the Iron Age with the addition of a long ditch and associated trackway, but gullies containing Iron Age and Roman pottery reflected the ancient boundaries. Survival of above-ground hedged boundaries (or banks) dating from the Bronze Age has also been noted on the West London and Surrey gravels at Hengrove Farm (Hayman forthcoming d) and Ashford Prison (Carew *et al.* 2006). At Eton Rowing Course, Dorney an Iron Age boundary ditch was cut diagonally across a Middle Bronze Age field system, but avoided two double enclosures that it contained (Allen and Mitchell 2001).

Similar patterns of landuse have been recorded further afield, in the Upper Thames Valley. Dispersed Late Bronze Age and Early Iron Age occupation at Shorncote, part of the Cotswold Community complex of sites, was succeeded by a Middle Iron Age settlement on the line of a long-lived boundary marking the edge of a gravel terrace and floodplain (Powell *et al.* forthcoming). The junction between the first and second terrace gravels at Horcott Pit also provided the setting for an Iron Age settlement (Pine and Preston 2004; Lamdin-Whymark *et al.* forthcoming). An Early-Middle Iron Age settlement at Bicester Slade Farm associated with a linear boundary occupied a geological boundary between an area of clay and limestone (Ellis *et al.* 2000). Several small Middle Iron Age settlements occupying terrace edges were also recorded at Farmoor (Lambrick and Robinson 1979), Thrupp (Everett and Eeles 1999) and Thornhill Farm (Jennings *et al.* 2004).

The cultural setting of the Middle Iron Age settlement

The Middle Iron Age settlement at Terminal 5 developed in the midst of a local landscape with a long history of habitation (see Fig 4.2 above). Due to later truncation of the site and limited stratigraphic evidence we cannot determine precisely how the settlement developed, but the Middle Iron Age layout clearly emerged within a pre-existing framework of recognised divisions in the landscape that reflected not only the natural topography but also a complex of ancient Neolithic and Bronze Age monuments, fields and habitual routeways. Traces of these earlier landscape features would have been extant well into the Iron Age as earthworks, hedges and fossilised trackways, which would have been of enormous significance in shaping and influencing the character of the Middle Iron Age settlement and the lives of the inhabitants.

The Middle Iron Age settlement within a relict landscape

As we have seen in Chapter 3, several of the Middle Bronze Age farmsteads at Terminal 5 appear to have survived well into the 1st millennium BC, and a number of new settlements were established within the pre-existing coaxial field systems. The foundations of the nucleated Middle Iron Age settlement emerged sometime around 400 BC within the Bronze Age aggregated landscape, occupying the south-eastern fringes of Farmstead 3, the southern fringe of Farmstead 4 and a block of open land ('Common land') immediately to the south (Fig. 4.13; and see Chapter 3), but avoided altogether the site of D-shaped Settlement 4, at least in structural terms. Whether settlement activity was entirely continuous at this location from the early part of the 1st millennium BC until the construction of the first of the Middle Iron Age roundhouses and stockades is uncertain, largely because it is difficult to date precisely Late Bronze Age and Early Iron Age pottery from the Middle Thames region. However, a particularly dense concentration of post-Deverel-Rimbury pottery redeposited in Middle Iron Age features in the eastern part of Farmstead 3 and along Bronze Age Trackway 2 suggests that in this particular location at least occupation could have been uninterrupted. Although no Late Bronze Age or Early Iron Age structures were identified here, occupation debris was abundant. A radiocarbon date of 1160–980 cal BC (Wk-18456) was obtained on material from a waterhole in the northern part of Farmstead 4 and a second of 840–410 cal BC (Wk-9373) came from charcoal in pit 125223 (see Chapter 3, Fig. 3.46), which cut the western ditch of Trackway 2.

An early 1st millennium midden?

It has been suggested in Chapter 3 that much of the Late Bronze Age/Early Iron Age pottery recovered from the site represented the remains of a dispersed structured midden of the type known from other late 2nd and early 1st millennium BC sites. Midden sites such as Potterne (Lawson 2000), East Chisenbury (McOmish 1996), Llanmaes (Madgwick 2008) and Whitchurch in the West Midlands (Sharples *et al.* 2008) are characterised by large accumulations of detritus that may include pottery, flint, animal bone and metalwork in a single area. The large open space within the previous aggregate landscape to the south of Farmsteads 3 and 4 at Terminal 5 may have been the site of just such a midden, albeit lacking metalwork or notably exotic components (see Chapter 3). This interpretation could account for the density of post-Deverel-Rimbury pottery and fuel ash slag captured in the fills of Middle Iron Age settlement features, for which no other explanation seems apparent (see below). The relationship of the Terminal 5 inhabitants with this specific landscape location may have had more to do with the way they engaged with their landscape and natural resources than with economic changes or social hierarchies. If the Middle Iron Age settlement had been founded on the site of a large structured midden, this would be a demonstration of conceptual as well as physical continuity of place. Although midden sites of this type were apparently abandoned during the early Iron Age (and this seems to be true at Terminal 5), the fact that this location became the focus of middle Iron Age occupation could suggest some level of continuity of identity and relationship with this part of the local landscape.

If we consider one particular roundhouse (8) (Fig. 4.13) within the history of the settlement we may be able to detect something of this significance of place. Roundhouse 8 may have occupied a site immediately to the north of the postulated midden (south of Farmsteads 3 and 4) and was unique within its Middle Iron Age setting in several respects. It was the only building with a west-facing entrance, its encircling gully was recut as a sizeable ditch and it was associated with a much higher density of artefacts, particularly pottery and bone, than the other roundhouses. It endured as a structure throughout the Middle Iron Age and its location was respected into the Late Iron Age. Roundhouse 8 may have superseded or formalised the midden site as a focus of communal ritual activity, involving the gathering of the families of the settlement (and perhaps visitors) to mark special occasions or negotiate disputes within a context of conspicuous consumption.

If the Middle Iron Age inhabitants acknowledged the importance of place represented by the site of the former midden they would also have been aware that earlier locations in the ancient landscape, surviving as earthworks of forgotten origin, could have had a special role in the lives of the communities that constructed them.

Middle Iron Age perceptions of the Bronze Age landscape

The ancient and highly organised landscape within which the Middle Iron Age settlement emerged was doubtless reflected during this period in surviving Bronze Age hedgerows, banks, trackways and waterholes (see Figs 4.2 and 4.13). We can be certain that the basic morphology of the coaxial fields at Heathrow was not deliberately modified during the life of the Middle Iron Age settlement in such a way as to leave archaeologically visible traces. This is in contrast to sites such as Eton (Allen and Mitchell 2001) and Thorpe Lea (Hayman forthcoming a), where new ditches and gullies were cut across and within the Bronze Age fields. However, to what extent the above-ground elements of the Bronze Age order survived into the Middle Iron Age at Terminal 5 is uncertain due to a paucity of sufficient evidence of any category—artefactual, stratigraphic or environmental—to fill in details of a broad landscape picture.

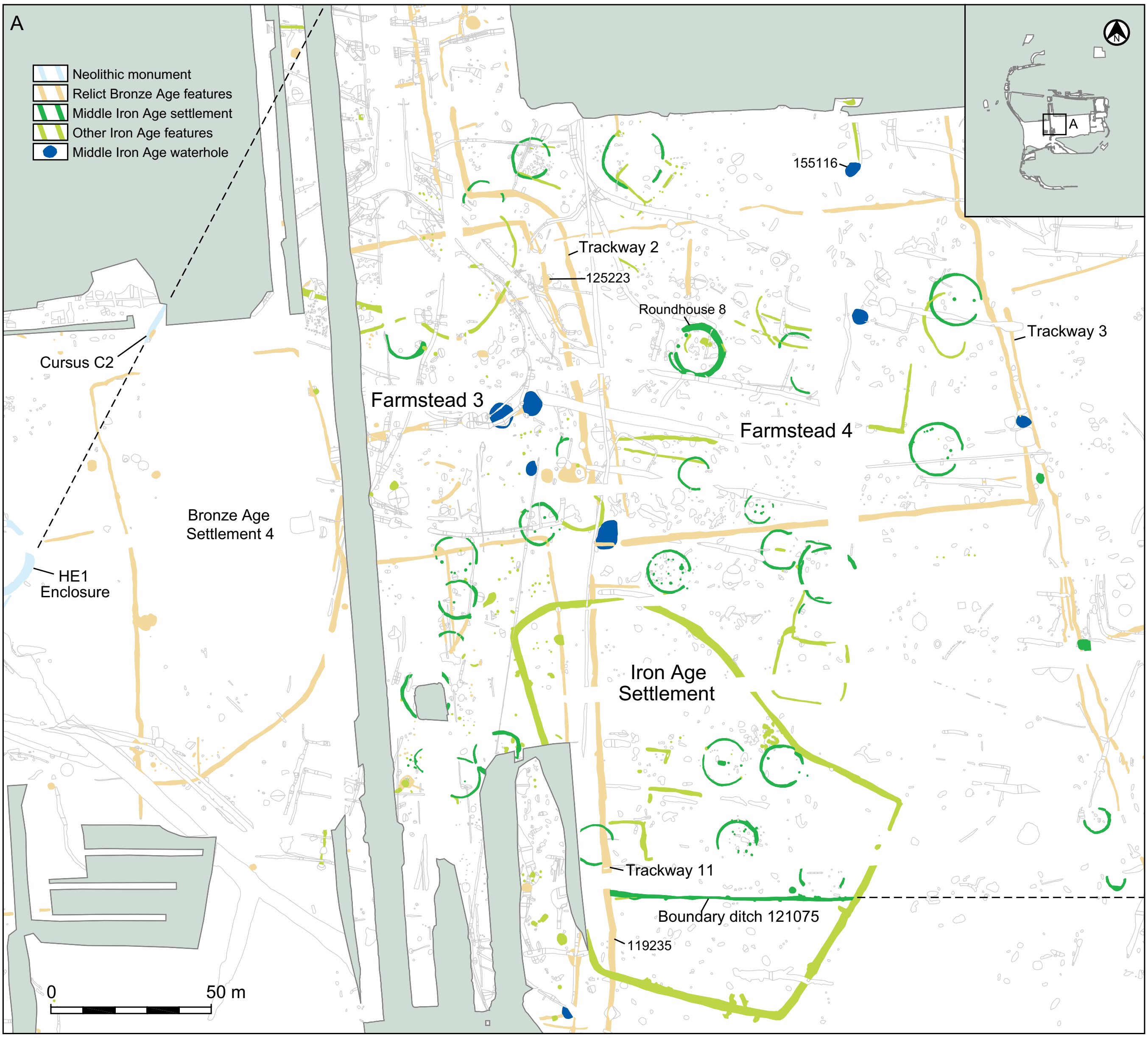
The Middle Iron Age inhabitants utilised the old Bronze Age Trackway 3 as the eastern boundary of their settlement (Fig. 4.13). This track had ceased to be a thoroughfare by the Iron Age, as several pits were dug along its length and filled during the Middle Iron Age. Nonetheless, it is clear that the line of the track retained some integrity as a boundary, as the settlement extended up to but not beyond it. The ditches had silted up and, although there was no convincing environmental evidence that hedges grew along this particular boundary during the Middle Iron Age their eroded banks may have survived (Wiltshire in Framework Archaeology 2006, CD Section 11).

The pits were perhaps dug to reinforce the boundary in a symbolic sense, as they would have posed no physical barrier, whether or not the banks were still extant. Alternatively, they may have been associated with some mundane activity more appropriately undertaken outside the limits of the settlement than within. The pits are discussed in greater detail below.

Figure 4.13: The Middle Iron Age settlement within the relic landscape

An east-west aligned ditch (121075) which marked the southern boundary of the settlement, was also probably Middle or Late Bronze Age in origin (Fig. 4.13). It survived as a ragged-edged linear feature, averaging 0.8 m wide and only 0.20 m deep and contained no dating evidence. However, it corresponded to the general pattern of the Bronze Age field system, stretching eastwards from the line of Trackway 2 within the aggregate fields, and it is equally plausible that it was maintained (perhaps with an adjacent bank) into the Middle Iron Age as that it was constructed during this time.

A small number of waterholes dug during the 2nd and early 1st millennium BC were maintained or renewed in the Middle Iron Age, all located within the site of the Middle Iron Age settlement or to the west of it. One of these (148303) was dug through the C2 Cursus (and a Bronze Age ditch) to the west of the Iron Age settlement and is alluded to below (see Fig. 4.15). The absence of new or reused waterholes in the fields to the east of the settlement indicates that there must have been some decline in pastoral activity in that area, but the low levels of arable agriculture reflected in the environmental evidence argue against an increase in cereal production as well. It may be that this period saw a coalescing of agricultural as well as settlement activity into a more restricted area of the landscape.



The farming practices of the Middle Iron Age inhabitants of Terminal 5 would have dictated that elements of the pre-existing landscape pattern not only be preserved but actively maintained by coppicing, pollarding and upkeep of at least some of the hedgerows. Certainly, the construction of timber-built roundhouses and fences and the procurement of firewood would have required such activity. At the opposite end of the spectrum, the pastoral regime may have allowed or encouraged the neglect or abandonment of some parts of the north-south aligned field system that would have hindered access of livestock herds to the river. So we cannot be sure whether the inhabitants looked out from their settlement over a broad expanse of hedged fields on all sides that closely resembled the pre-existing Bronze Age landscape or whether the prospect had been transformed to reflect the different social and economic order of the Middle Iron Age inhabitants.

Middle Iron Age perceptions of the Neolithic landscape

The earthworks of the Stanwell Cursus would have appeared as slight negative and positive features during the Middle Iron Age, the bank rising to perhaps no more than 0.2 m high above the surrounding floodplain. The views across to the monument from the nucleated settlement may have been largely obscured by ancient hedge and fence lines, others by the archaic banks of upcast produced when the ditches, now long since filled, first marked out the divisions of the Bronze Age landscape.

Sometime during the Middle Iron Age a group of farmers or herdsmen working on or crossing the floodplain dug a 2 m wide, shallow oval pit (529306) through the east ditch of the C1 Stanwell Cursus in Area 49 (Fig 4.14). The pit was backfilled with a gravelly soil (554144) incorporating the raked up remains of a bonfire incorporating a large quantity of flints. Within the charcoal-rich fill were fragments of animal bone in unusually good condition, including a cattle tibia, metarsal and scapula and a horse femur and metacarpal. The latter had scrape marks on the surface, suggesting butchery. Although there was no pottery in the fill, a radiocarbon date of 386–203 cal BC (WK 19335) was obtained on a charred barley grain. A seed of stinking mayweed (*Anthemis cotula*), a species rarely recovered from pre-Iron Age deposits (Jones 1981), confirmed an Iron Age date for the burning event. The site for the burial of this material may have been selected for no reason other than that the bank material was easier to dig through than the lower ground, but we cannot rule out the possibility that this location continued to serve as a venue for ceremonial activity several millennia after its construction.

The animal bone assemblage from this feature is summarised as follows:

In this very shallow feature, which contains only one (deliberate) fill, specific activity rather than gradual build up is inferred. Well-preserved large mammal limb bones (substantially complete cattle metatarsal and tibia and horse metacarpal and femur) and ribs, as well as sheep bone fragments, had been disarticulated and some smashed for marrow. Charcoal was present and one unidentified fragment had been burnt, although most did not provide any evidence of discard by fire or cooking (unlike Late Bronze Age Runnymede, where a lamb had been cremated and deposited in a pot in a midden; Needham and Sørensen 1988: 124). The large size of some of the fragments, which have clearly not been exploited for marrow, suggests that, for the bone in this feature, some of the nutritional value of the animal was not utilized. Whether this was due to an abundance of meat, a deliberate avoidance whether from taste or taboo, or a purposeful 'sacrifice' of food is uncertain. The presence of burnt material could indicate nearby cooking or disposal of animal products, but not whether this was undertaken nearby or close to the time of disposal.

(Knight and Grimm, CD Section 13)

Another feature (132266), a teardrop shaped waterhole, was dug through the fill of east ditch of the C1 Stanwell Cursus *c* 235 m further north (Fig. 4.14), probably in the Late Bronze Age,

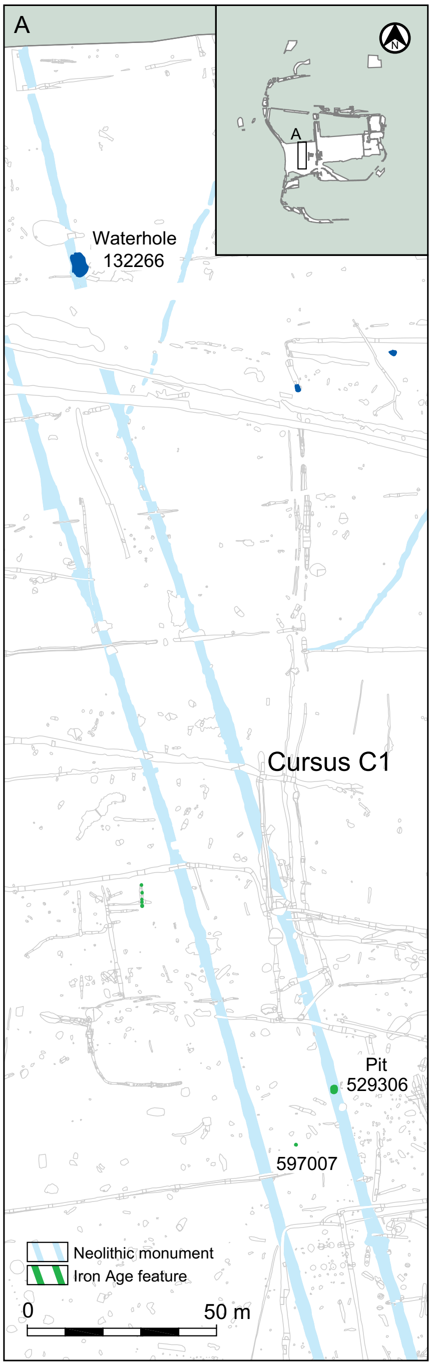


Figure 4.14: Middle Iron Age features in relation to the C1 Stanwell Cursus

judging by post-Deverel-Rimbury pottery in the surviving lower fill (132046). It was recut as a shallower feature during the Middle Iron Age and the fill (132256) contained a few sherds of pottery in sandy fabrics of Middle Iron Age type.

Earthworks of the Neolithic HE1 enclosure would also have survived to some extent into the Iron Age, and clearly attracted the attention of the Middle Iron Age inhabitants (Fig. 4.15; Plate 4.1). A linear ditch (136044) belonging

Above
Plate 4.1: Artist's reconstruction of the HE1 enclosure and waterhole 148303 in the Middle Iron Age

Right
Plate 4.2: Artist's reconstruction showing the HE1 enclosure used as an animal pen in the Middle Iron Age

to Late Bronze Age Farmstead 3 had been dug along the western side of the monument. Then, sometime during the Middle Iron Age a short linear ditch (136046), 6.5 m long and about 0.5 m deep, was cut through the fill of the Bronze Age ditch, directly across the original western entrance to the HE1 enclosure. We cannot determine to what extent the ancient monument continued to serve either some prosaic or ritual role during the Middle Iron Age, but when the short ditch was backfilled a complete 'saucepan' pot (Fig. 4.15) was deliberately placed within it. If the enclosure had been converted to a convenient livestock pen during the Iron Age, the ditch may have been used to control animal

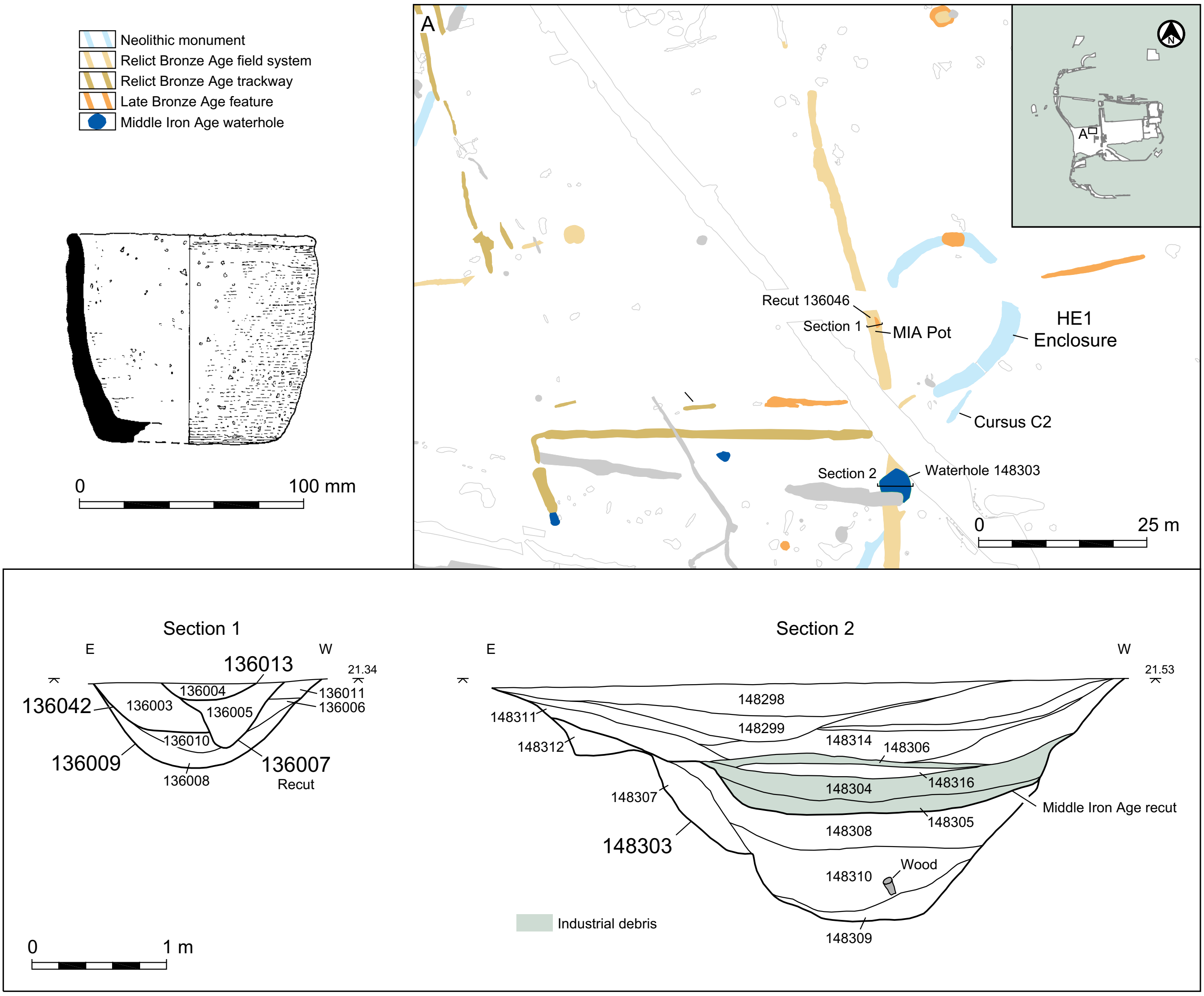


Figure 4.15: Iron Age activity close to the HE1 Enclosure

movement into and out of the monument, but this would presuppose the existence of a fenced or hedged barrier around its perimeter since the original earthworks would have been substantially eroded by this time (Plate 4.2). Conversely, the small ditch may have served as a notional barrier to access by people if the enclosure continued to fulfil some ritual role. In this case, the ancient bank need not necessarily have been enhanced as its mere presence, albeit eroded, could have served as a psychological barrier.

A large waterhole (148303) was dug or substantially recut during the Middle Iron Age close to the HE1 Enclosure (Fig. 4.15). It also cut Bronze Age ditch 136044 and would have been conveniently sited only 10 m away from the enclosure for watering livestock. However, the steep shape, narrow-stepped rim and contents of this feature suggest that it functioned as a well rather than a watering hole. The contents of the lower fills suggest a Late Bronze Age origin but from fill 148305 upwards the sequence reflected intensive Middle Iron Age activity, containing iron slag, 1 kg of fired clay, including a loomweight or oven brick, and almost 2 kg of Iron Age pottery. Whether the modified HE1 enclosure and the well functioned in tandem during the Middle Iron Age is uncertain, but concurrent activity is clearly attested, whether relating to agricultural, industrial or some other use.

In the next section we will examine in more detail the evidence for the environment of the settlement and the surrounding agricultural landscape.

The environment of Heathrow in the Middle Iron Age

Very little palaeo-environmental evidence was recovered from Middle Iron Age deposits at Terminal 5. This was due in part to the fact that most features of this period that survived truncation were very shallow penannular gullies and postholes. Despite the increased area of Middle Iron Age settlement examined in the recent excavations at Terminal 5, there were no samples of molluscs or insect remains of a quantity or quality suitable for analysis. Nor were there any further suitable pollen samples obtained, so we are still reliant on the two analysed as part of the Perry Oaks publication (Framework Archaeology 2006, CD Section 11). Assessment and analysis of charred plant remains and charcoal from the recent work enhanced only slightly the existing evidence, and no waterlogged plant remains were analysed.

Pollen

Samples from pits 137114 and 178015 in the eastern part of the Middle Iron Age settlement were assessed for pollen but only the sample from pit 178015 was analysed (Fig. 4.16). This feature, one of those cutting the eastern boundary of the Middle Iron Age settlement along the old Bronze Age Trackway 3, may not have been dug as a waterhole, but gleying indicates that some fills formed under wet conditions. An absence of eroded gravel at the base suggests it was continuously maintained until such time as it was allowed to collapse and silt up. Analysis of pollen samples taken through the fills provided good evidence for an evolving local environment at the eastern edge of the settlement.

The lowest deposit is characterised by very high levels of microscopic charcoal and an exceedingly open landscape. The feature itself was wet although there is no palynological evidence for standing water in this zone. Sedges, water mint, and meadow sweet were growing very close, probably at the wet edges of the pit. Fungal spores were also high in this zone and that might indicate that the pit dried out from time to time so that deposits became aerated enough to allow fungi to grow on organic debris falling into the feature. The area around the feature seems to have been very open, with woody taxa accounting for only about 5% of TLPS. Alder, pine, hazel, and oak were recorded but they were probably some distance away as single trees, or else all the trees and shrubs in the catchment were severely coppiced or pollarded.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

These results suggest that grazing pressure was particularly high when this feature was open, and that the abundant weeds identified from their pollen were avoided by grazing animals, or may have been growing on the edges of arable fields, on grassy banks between fields, or on open broken ground. Cereal pollen suggested that arable cultivation at some level was taking place during this time.

Higher up the sequence (178015/2 of the pollen column) there is evidence for a drop in the intensity of grazing, in the form of a slight increase in woody taxa with some scrub/hedge plants also present. Grasses increased but there was a slight decline in some weeds. The levels of microscopic charcoal were also lower, supporting the suggestion that there was a shift in activity, including a lowering of grazing pressure on the land surrounding the pit. Small amounts of cereal pollen pointed to continuation of arable farming in the vicinity, perhaps within the fossilised Bronze Age field immediately to the east of the pit.

In pollen zone 178015/3, there was further evidence for an even greater decline in grazing and management of woodland plants. Both grasses and woody taxa were more common, whilst the decline of ruderals (weeds) noted in Zone 2 continued. Again, the presence of cereal pollen pointed to continued arable cultivation. The presence of *typha* (reedmace) also indicated that the feature or its margins were very wet from time to time. This accorded with the recorded stratigraphy, which showed evidence of formation of some lower deposits in a watery environment.

The upper zone (178015/4) of the pollen diagram indicated continuation of an open landscape, with only a slight increase in tree and shrub growth, a significant increase in the representation of grass pollens, a smaller increase in cereal pollen, and a decline in ruderals. These indicated continued decline in grazing in the area, although it is possible that the evidence was distorted by hay-making or some similar practice:

If the cut were made after grass flowering but before the main flowering season of the grassland weeds, it is not difficult to see how this activity could affect the palynological record. Grass must be viewed as a crop (Lockhart and Wiseman 1983) and there is no reason why these Iron Age peoples should not have been making hay for overwintering animals or for some other domestic purpose.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

The pollen record from this pit indicated that a weedy grassland and ruderal weeds dominated the local landscape and that cereal cultivation took place in the near vicinity. Some trees grew in the pollen catchment but these were probably pollarded and/or coppiced, preventing flowering and causing them to be under-represented or absent in the pollen record. The pollen evidence also indicates that the importance of hedgerows in some parts of the settlement, a major feature of the Bronze Age landscape, may have been reduced by the Middle Iron Age, and Wiltshire (2006) suggests that grassy earth banks replaced hedgerows as field boundaries. Initially, although the values of pollen from grasses were low, the pollen record suggests a species-rich grassland with grassy banks between the fields, where some of the herbs may have grown. It is possible that grazing pressure was high in some areas and that the remaining herbs were unpalatable to the animals.

Subsequent changes in the pollen record, when the values of pollen from grasses and ribwort plantain increased, charcoal particles decreased and only low numbers of cereal pollen were identified, appear to represent a reduction in grazing pressure and a relaxation of land management. Towards the upper part of the sequence there were changes in the pollen record, which included a marked rise in pollen from grasses. These changes may also have been associated with a reduction in grazing pressure or are perhaps indicative of Iron Age hay-making (see Hodgson *et al.* 1999) when the crop was harvested after the grasses had flowered, but before the other herbs had flowered.

Unfortunately, the length of time during which this 0.85 m deep pit filled was impossible to determine, but

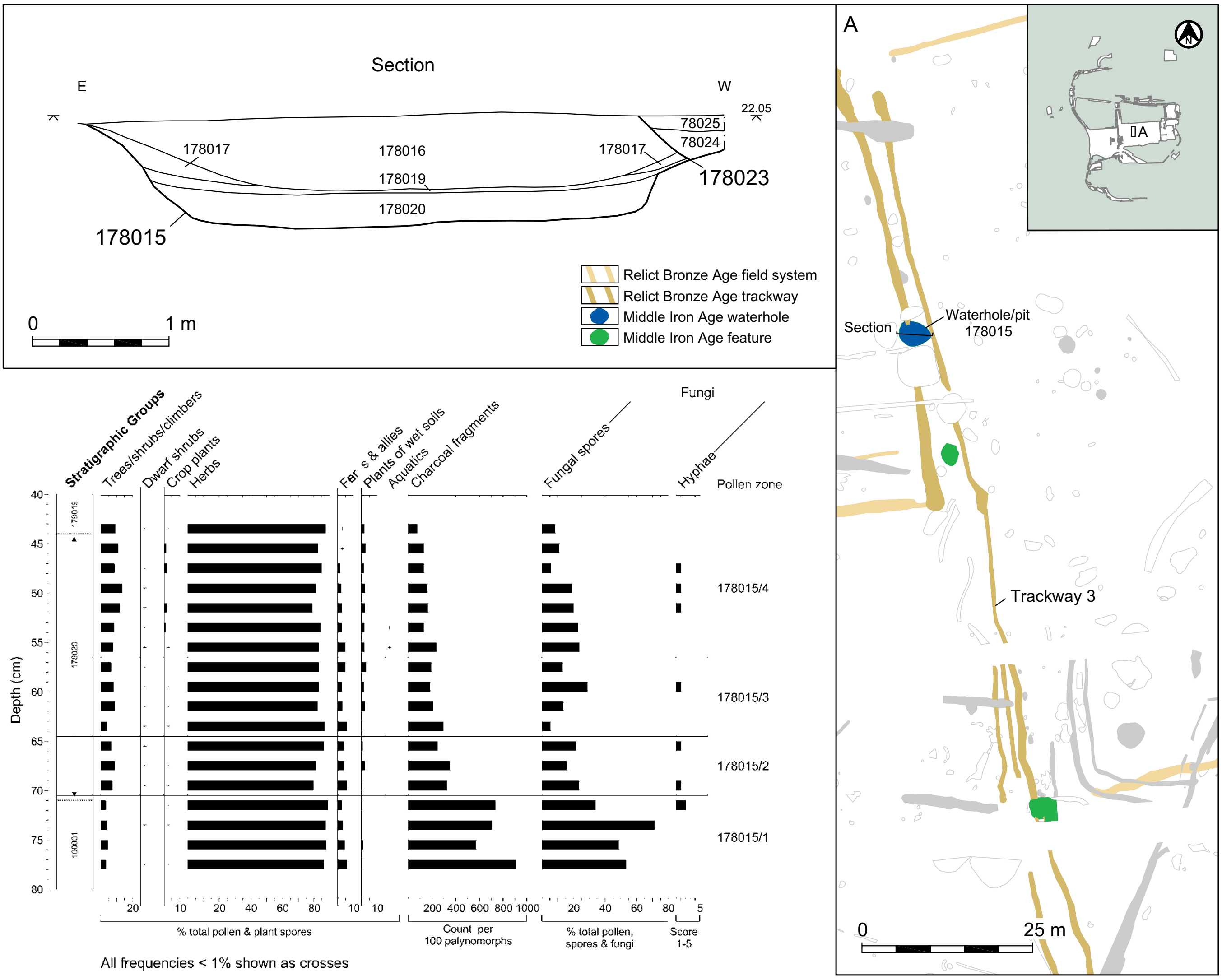


Figure 4.16: Pollen diagram for pit/waterhole 178015

the variations in flora and farming practices indicated by the analysis suggest a sequence of longer than a few seasons. The undiagnostic sandy sherds from the lower fills were dated only broadly to the Middle Iron Age, but a single grog-tempered sherd from upper fill 178016 is Late Iron Age. Nor do we have palynological evidence for environmental variation in other parts of the Middle Iron Age settlement and its contemporary landscape, so the evidence recovered from pit 178015 provides only a tantalising snapshot of a single location during an uncertain point in the lifetime of the settlement.

The general picture of this sector of the Middle Iron Age settlement environment is that it was,

...set in a very clear landscape with very few trees and shrubs. If they were present, then they must have been pollarded and/or coppiced very regularly so that woody taxa were not able to flower. Cereal growing /processing was being carried out at the site but marked changes in the pollen spectra show that either grazing pressure was lower than before or that the timing of hay making influenced the sward. There was no convincing evidence for hedges in this part of the site in the middle Iron Age and boundaries might have consisted of earth/grassy banks. These banks would have provided havens for many of the herbaceous plants found in the sample.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

A pollen monolith taken from the southern stretch (119240) of a large enclosure (EC1) in the southern part of the settlement, constructed during the later part of the Middle Iron Age, produced a sample (<1062>) that provided evidence that the surrounding landscape was predominantly...

...herb-rich grassland. Bracken was relatively abundant and may have been encroaching on the pasture. The presence of reedmace indicates that the water table was high within the ditch, although it may not have been waterlogged. The relatively high frequency of ferns might also represent plants growing in the moist and protected microenvironment offered by the ditch. No cereal pollen was found and there was no evidence that the feature represented a boundary between arable fields and other areas. The only woody taxa recorded were alder, pine, oak and hazel with the latter being the most abundant.

(Wiltshire in Framework Archaeology 2006, CD Section 11)

Pasture was clearly, then, an important element of the agricultural regime in this part of the settlement landscape, despite the decline in grazing indicated by the evidence from pit 178015 at the eastern edge of the settlement. The woody taxa, especially hazel and alder, suggest that the enclosure ditch may have been enhanced by a hedge.

Charred plant remains

The archaeobotanical evidence for Middle Iron Age Heathrow recovered during the earlier Perry Oaks excavations was fairly sparse. However, assessment of those samples recovered indicated that

...disturbed ground weeds (nettles and thistles etc.) were frequent at this time, suggesting that there may have been more emphasis on livestock rearing than arable cultivation.

(Carruthers in Framework Archaeology 2006, CD Section 9)

A single Middle Iron Age sample from the charred plants assemblage at Terminal 5 proved suitable for analysis. It was taken from pit 539450 in Roundhouse 19 in the southern part of the settlement and contained a single, deliberate backfill (539451) including daub, burnt flints, fuel ash slag, animal bone and pottery (see Fig. 4.22 below). The charred plants identified were poorly preserved emmer/spelt and barley grains, chaff fragments and weed seeds in roughly equal quantities, probably representing background waste material from hearths and floor surfaces swept into the feature along with other occupation debris. A barley grain from this deposit produced a radiocarbon date of 360–50 cal BC (WK19334).

As far as could be identified from the poor remains, the cereals present were primarily emmer/spelt wheat (Triticum dicoccum/spelta) with a trace of barley (Hordeum sp.). Some of the wheat grains were rounded, vacuolated and distorted in a similar fashion to bread-type wheat, but these were probably an aestivoid form of spelt wheat (Jacomet 1987). The weeds indicated poor, damp soils, since weed vetches (including Vicia cf, tetrasperma) were relatively frequent, and blinks (Montia fontana ssp. chodrosperma) and spike-rush (Eleocharis subg. Palustres) were represented.

(Carruthers, CD Section 14)

The results of this single sample indicated that cereal cultivation and crop processing were probably being undertaken on a fairly small scale, unlike the periods either side of the Middle Iron Age.

Charcoal

No charcoal from Middle Iron Age deposits was fully analysed but a range of context groups was assessed. The charcoal identified,

...consisted of a wide range of species, including Pinus (pine), Fagus (beech), Quercus, Corylus (hazel), Prunus (blackthorn), Maloideae, Rhamnus (buckthorn), Acer and Fraxinus. Most of the charcoal taxa ... are present in the pollen record, although the pollen for the Middle Iron Age suggests that the settlement was set in a very clear landscape with few trees and shrubs. The charcoal assemblages confirm that there were local woody resources, perhaps hedgerows and single trees bounding fields, which were being managed for fuelwood. The presence of Acer indicates relatively mature woodland or hedgerows, and the charcoal record in general does not suggest a shortage of resources, since oak is well represented. It seems likely that these resources were being pollarded or coppiced regularly, which would reduce the pollen production.

(Challinor CD section 16)

Although the charcoal evidence was limited due to a paucity of Middle Iron Age samples, there seems to have been a significant change from the earlier periods in the wood species exploited for fuel during this time. The use of oak increased from about 50% of fragments in the Bronze Age to 70% by the Iron Age, while field maple increased from 1% to 6% and pine appeared at 2%. This may suggest an increasing reliance on woodland and less on scrub and hedges, but the picture may be somewhat biased if the material analysed derived largely from timber off-cuts from roundhouse construction.

What did the Middle Iron Age landscape look like and how was it farmed?

The combined palaeo-environmental evidence presents a picture of a settlement landscape that included much open grassland and areas of disturbed ground where thistles, nettles and bracken thrived. The edges of waterholes and pits were ringed with meadow sweet, water mint and sedge. Although perhaps dominated by open ground, the area around the settlement supported stands or borders of pollarded and coppiced woodland and shrubs, including oak, hazel, maple and pine, and we know from the radiocarbon record that hazel was growing along the river Colne between 400–200 BC.

In the Middle Thames generally environmental evidence and changes in the levels of water tables indicate that the process of clearance, already well advanced for many parts of the valley floor in earlier prehistory, was consolidated, extended and probably largely completed during the late prehistoric period (Lambrick 2009). However, areas of woodland must have existed at Terminal 5 and other Middle Iron Age settlements, albeit possibly scattered and managed. Reynolds (1995, 200–1) concluded through experimental building that about 12 coppiced trees would have been required to build a four-post structure and 100 were needed for a roundhouse of average dimensions, allowing for posts, stakes and wattles. Although earth-fast timber structures can have a life-span of 20–25 years at least, repairs, rebuilding, reorganisation and fencing would have presented a high demand for woodland products. It is impossible to be precise, but the Middle Iron Age settlement would have required several hectares of woodland for construction and repair, and these resources were probably managed on a rotational basis in order to allow the 30–40 years required for the growth of a substantial structural timber (Reynolds 1995).

Bronze Age field hedges may have been maintained across large areas to the east and west of the settlement, but specific evidence for this is scarce and it seems clear that some hedge lines close to the settlement were reduced to grassy banks where herbaceous plants flourished. However, a hedge that included hazel was probably planted during the later part of the Middle Iron Age to enhance the ditched boundary of the large southern enclosure.

Arable cultivation was probably much reduced from the Bronze Age level during the Middle Iron Age. Emmer/spelt and barley grew in some of the ancient fields adjacent to the settlement on the higher terrace, but the soils were less fertile than they had been during the Bronze Age and grassland may have displaced cereals in some of the fields.

The settlement and surrounding landscape would have supported large numbers of domestic animals, including cattle, sheep, possibly goats and horses. Grazing pressure kept large areas of the landscape surrounding the settlement clear and, despite evidence that grazing pressure was relaxed at intervals in some areas of the site, this need reflect only seasonal variation rather than decreases in pastoral activity. Where land shortage was not a problem, as was the case in the Middle Iron Age at Terminal 5, foggage (dead or decaying grass remaining on land through the winter) would have supplied ample winter feed for livestock. The concentration of stock enclosures (see below) in the settlement area alone testifies to the significance of this element of the agricultural regime. We can imagine that the floodplain to the west of the settlement could have supported large herds of cattle and sheep and the animal bone assemblage shows that horses were not uncommon on the site from as early as the early Bronze Age *(see Knight and Grimm CD Section 13)*.

The Terminal 5 Middle Iron Age landscape in perspective

There is generally very little useful environmental information for the Middle Iron Age from the Middle Thames Valley, but according to the evidence obtained to date, far fewer settlements are known from this period compared to the Middle and Late Bronze Age. This may reflect a genuine decline in settlement activity in the region rather than failure to identify sites. Charred cereal processing remains are certainly less common at Iron Age settlements in the Middle Thames Valley than on Upper Thames Valley sites and the virtual absence of charred cereals at Moores Farm (Brossler *et al.* forthcoming) and a paucity of such material at Brooklands (Hayman 1991; forthcoming c) was notable (see Fig. 4.12 above). The trend towards a more intensively managed agricultural landscape observed for the Iron Age in the Upper Thames Valley seems to have been less pronounced in the Middle Thames region. To what extent this may have been a product of soil nutrient loss is uncertain, but the limestone geology underlying the Upper Thames sites would have reduced the fertility loss whilst the soils overlying the flint gravel on the gravel terraces of the Middle Thames Valley are more vulnerable to acidification and podsolisation. This process seems to have accelerated during the late prehistoric period.

The timescale of soil impoverishment at Terminal 5 is uncertain but heathland plants such as heather and bracken had proliferated even by the Late Bronze Age (Wiltshire in Framework Archaeology 2006), as had the occurrences of charred and waterlogged cereal remains. Equally few charred cereal remains were present in Iron Age samples at Thorpe Lea Nurseries, close to Terminal 5 (Robinson in Hayman forthcoming a).

The available evidence suggests that there were probably fewer Middle Iron Age settlements in the Middle Thames Valley than in the Upper Thames. The evidence from those that have been investigated suggests that such settlements that did emerge in the area during this time were not engaged in high levels of arable production. Even considering the dearth of storage pits on Middle Thames Valley sites, numbers of four-post structures and other possible grain storage facilities are no greater than in the Upper Thames and Hampshire, where these structures functioned alongside storage pits. Although resembling Upper Thames Valley sites in being extensively cleared, with large tracts of grassland pasture, it is possible that by the Middle Iron Age rough grassland, heath and scrub, which had gradually developed during earlier periods, came to dominate extensive areas of land between settlements, with a contraction of organised, enclosed land and managed woodland surrounding the settlements. The scale of woodland management required to establish and maintain a settlement of timber structures and fences would have been significant.

The Middle Iron Age Settlement

The inception of the Middle Iron Age settlement

As we have seen, the Middle Iron Age settlement emerged within an agricultural landscape that had a long history of reconfiguration and management, dating from the Neolithic period. By about 1600 cal BC the Heathrow landscape had undergone a process of agricultural and domestic agglomeration through the imposition of a complex field system within which several farmsteads and settlements were established. The locations of some of the Late Bronze Age/Early Iron Age wells and waterholes indicated that elements of the Middle Bronze Age agricultural field system were extant during the Middle Iron Age, albeit perhaps only as banks or hedges rather than maintained ditches. This continuity of land-use shows us that an ancient system of land control endured in some form, without significant alteration to some of its constituent elements.

In stark contrast to the persistence of field boundaries and trackways, the Bronze Age farmsteads and settlements were abandoned, apparently during the currency of post-Deverel-Rimbury pottery (*c* 1150–750 BC). By about 400 BC domestic occupation had coalesced within the previous aggregated landscape, with the establishment of a nucleated settlement corresponding approximately to the site of Bronze

Age Farmsteads 3 and 4 (see Fig. 4.13 above) and an open space to the south. Attempts to trace the development of the Middle Age settlement were hampered, as we have seen, by a paucity of closely dateable artefacts and absolute dates from relevant deposits.

The Middle Iron Age pottery from Terminal 5 generally lacks sufficient distinguishing features to link it securely to a regional Middle Thames ceramic sequence. Most of the (mainly very fragmentary) pottery could be classified only broadly within a date range of *c* 400–100/50 BC. Four 'saucepan' pots, including a complete example from ditch 136046 (see above), recovered from the site may allow us to argue that, in common with Caesar's Camp (Grimes and Close-Brooks 1993, 356), occupation of the settlement persisted into the later part of the Middle Iron Age. The recovery of pottery broadly dated to the late 1st century BC–early 1st century AD, on the basis of form and fabric typologies, secures a Middle Iron Age to Late Iron Age/early Roman sequence, but without complete confidence as to whether occupation was intermittent or continuous throughout this period, although the latter seems very likely.

Nonetheless, a conjectural sequence for Middle Iron Age habitation of the Terminal 5 site can be proposed. The image of the Middle Iron Age settlement captured within our surviving data hides a less visible history of inception and development, but several archaeological clues hinted at prior activity at this spot and at the nature of the genesis of the settlement.

Intercutting pit group

Immediately predating the floruit of the nucleated Middle Iron Age settlement a group of 32 shallow, intercutting pits were dug within what had been an open area to the south of Farmstead 4 in the Bronze Age (Fig. 4.17; Table 4.2). Twenty-eight of the pits were fully or partly excavated. The largest was 1.65 m across and the smallest only 0.21 m in diameter. None survived to a depth of greater than 0.5 m.

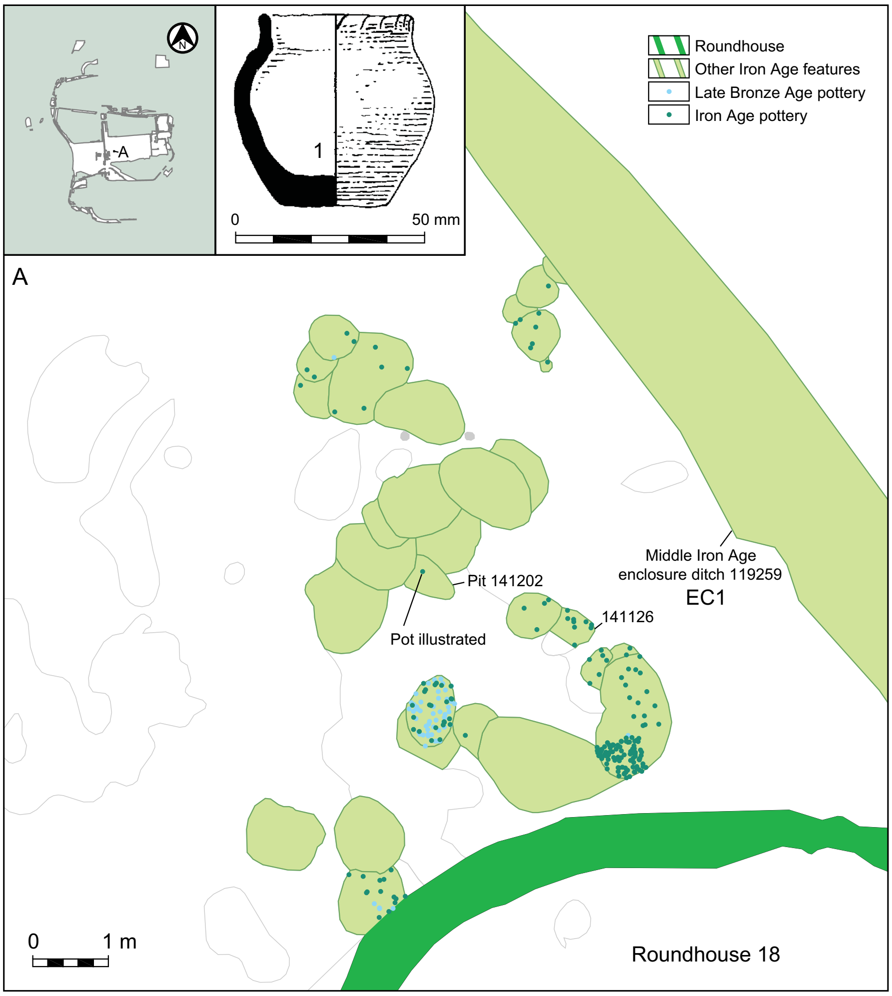


Figure 4.17: Middle Iron Age intercutting pit group

Several of the pits contained post-Deverel-Rimbury pottery and some also produced worked flint, burnt flint and stone, utilised stone (including quartzite hammerstones and a possible sandstone quern fragment), animal bone and fired clay. The nature of the fills and the domestic debris incorporated within them suggested that when the pits were levelled, they were backfilled with mixed material, some of which was shovelled out from old ground surfaces or middens that had accumulated during earlier phases of activity in this spot.

Shallow hollows of this type are typical of small scale quarrying activity, in this case probably for clay to create the daub needed in the construction of roundhouse walls, ovens and other structures. Bersu's ground-breaking 1930s interpretation of a similar feature at Little Woodbury, Wiltshire, as a 'working hollow', and of the deeper pits as grain stores rather than underground habitations, led to the recognition of posthole and beamslot evidence for roundhouse superstructures (Bersu 1940). Nonetheless, it is more plausible that 'working hollows' associated with Iron Age settlements (often referred to as threshing hollows) were either quarries for clay, soil or stone or holes for burying malodorous material. Threshing grain on a sunken rather than a raised platform would restrict the wind current necessary for the process, and undertaking activity of any type at Terminal 5 within a feature that would have trapped water, turning the space into a quagmire, would have been counterproductive. These daubing pits would have been one of the earliest elements of the nucleated settlement, but their contents provided evidence of even earlier activity at this location. The pit complex had been completely levelled by the time some of the roundhouses, including Roundhouse 18, were constructed adjacent to it, but it was likely to have been exploited for clay during the early stages of the Middle Iron Age settlement construction. The complex was cut later in the Middle Iron Age by the northern ditch of a large irregular enclosure (EC1 see below).

Most of the considerable collection of pottery from the pit group (375 sherds / 3109 g) was Middle Iron Age in date, securely linking the quarrying events to this rather than to an earlier period. Pit 141202 was not fully excavated but the top fill contained a complete Middle Iron Age miniature vessel (Fig. 4.17). Pit 141126 also produced two fragments of a similar miniature vessel in the same sandy fabric. Although it is tempting to regard these as votive deposits, it is equally likely that they were drinking vessels lost or disposed of during the taxing work of extracting clay and/or levelling the quarries. Otherwise, the pottery is more typical of domestic detritus, with an average sherd weight of only 8 g.

Fuel ash slag and post-Deverel-Rimbury pottery

The distribution pattern of fuel ash slag (FAS) and post Deverel-Rimbury pottery (Fig. 4.18) may provide further evidence that the Middle Iron Age settlement evolved from an earlier occupation focus. Fuel ash slag is a grey, powdery, vesicular, sometimes vitreous material, the product of burning clay and/or sand at extremely high temperatures. Its occurrence is frequently associated with the burning down (sometimes clearly deliberately) of roundhouses, especially during the Early Iron Age (Brown 2000; Webley 2007; Coe and Newman 1993), although it does occur in most periods (Caroline Cartwright, British Museum, pers. comm.). The distribution of FAS at Terminal 5 was widespread across areas occupied by the Middle Iron Age settlement. Figure 4.18 shows the overall distribution of this material in Iron Age features across the entire site but quantities were particularly dense within penannular gullies and associated features arranged in a ring in the southern part of the Middle Iron Age settlement. This annular arrangement represented the first phase of the Middle Iron Age settlement.

In the light of this, we could surmise that the initial settlement was constructed within an area where intensive burning, possibly even of earlier structures or hedgerows, had occurred, or at least where high temperature craft activity had taken place. No Late Bronze Age or Early Iron Age structures were specifically identified, but if they had existed, the evidence could have been obscured by later levelling and construction, or within the dense scatter of postholes and other small features, excavated and unexcavated, that crowded the Middle Iron Age settlement.

Table 4.2: Middle Iron Age intercutting pit group

Pit	Dimensions m	Pot No/g	*asw (g)	Pot date	Fired clay g	Burnt flint g	Flint No/g	Stone g =burnt	Bone g	Comments
141114	0.47	-	-	-	1	2	-	-	-	-
141112	0.55	1/6	6	E-MIA	-	-	-	-	-	-
141110	0.47	-	-	-	-	-	-	-	-	-
141108	0.64	6/35	6	MIA	3	2	-	2	-	-
141106	0.21	1/3	3	MIA	-	-	-	-	-	-
141118	0.61	3/35	12	LBA (1) & MIA	25	43	-	141	-	quartzite
141120	0.60	2/13	6.5	MIA	-	17	-	-	-	-
141210	0.65	1/8	8	MIA	-	-	-	42	-	quartzite pebble
141208	1.33	5/106	21	MIA	4	39	-	51	-	quartzite pebble
141204	1.20	17/150	9	LBA (1) & MIA	17	267	-	-	-	-
141216	1.40	61/282	4.6	LBA (4) & MIA	84	328	2/11	60	-	incl. 1 polished sandstone
141214	1.04	10/220	22	LBA (6) & MIA	-	84	1/121	-	-	-
141218	1.18	19/198	10.4	MIA	1	243	2/41	143	141	quartzite pebble
141186	0.68	-	-	-	-	-	-	-	-	-
141220	1.10	7/20	3	MIA	-	46	2/3	73	2	? Utilised sandstone quern?
141222	1.10	5/37	7	MIA	-	6	1/4	-	12	Horse bone
141224	1.00	-	-	-	-	-	-	-	-	-
141202	0.75	1/61	61	MIA	-	-	-	-	-	Complete pot SF175
141124	0.75	2/18	9	MIA	-	3	1/140	-	-	Burnt flint hammerstone
141126	0.70	9/60	7	MIA	4	17	-	-	1	Miniature pot
141147	0.95	74/377	-	LBA (50) & MIA	218	3044	2/4	66	7	-
141149	0.55	1/7	7	M-LIA	37	28	1/1	-	-	-
141226	1.90	-	-	-	-	0	-	-	-	-
141212	1.65	108/1146	10.6	LBA (1) & MIA	397	1009	4/252	1698	571	Horse, cattle, red deer bone
141128	0.50	3/4	1.3	MIA	-	72	-	-	-	-
141130	0.40	2/38	19	MIA	12	110	-	279	-	
166061	1.02	9/52	6	MIA	-	2	2/8	-	-	-
141136	1.00	12/175	14.5	LBA (7) & MIA	3	275	1/1	-	76	Sheep, goat, red deer bone
141138	1.00	18/58	3.2	LBA (4) & MIA	-	53	2/12	-	-	-

* average sherd weight

Figure 4.18: Distribution of fuel ash slag and post-Deveral-Rimbury pottery in Iron Age features

Settlement activity dating to the Late Bronze Age/Early Iron Age was also evident in the relatively high density of post-Deverel-Rimbury pottery recovered from approximately the same area as the FAS (Fig. 4.18).

Residual post-Deverel-Rimbury pottery was particularly abundant on the western side of the southern settlement area, notably in features associated with Roundhouses 5, 19, 21, 24 and Enclosures 26 and 30 (located on Fig. 4.19). What may have been the germ of an earlier nucleated settlement, or centre of some form of specialised activity, may have been subsequently masked within the heavily 'built up' Middle Iron Age agglomeration.

Why was the settlement established in this location?

Most of the artefact evidence dating to the first half of the 1st millennium BC, including pottery, FAS and perforated clay slabs, came from the rectangular open space to the south of Bronze Age Farmstead 3 and immediately outside the entrance to the D-shaped enclosure occupied by Settlement 4. Results of micromorphological analysis indicated mixed agricultural activity in the Late Bronze Age/Early Iron Age in this location, including livestock management, with evidence of trampling *(Macphail, CD section 19)*. Ceramic evidence, mostly from the upper fills of waterholes and wells, indicates that occupation also continued into the Late Bronze Age/Early Iron Age in the location previously occupied by Farmstead 3. The motivation for the shallow recutting of these features during this period is debatable, and could equally have reflected the need to maintain a water source for livestock or the type of pit digging activity typically associated other settlement activities.

In an earlier section we saw how activity began to coalesce within the Late Bronze Age aggregate agricultural landscape, leading finally to the establishment of a substantial nucleated settlement in the Middle Iron Age. It is conceivable that a structured midden, which included pottery and other artefacts as well as animal waste, developed in this location during the first half of the 1st millennium BC. A concomitant focus on collective behaviour and a pooling of resources may have either impelled or attracted settlement coalescence.

Although our evidence for this scenario is slender, several strands can be collated to inform such an hypothesis. A reduction in arable cultivation and a corresponding increase in pastoral activity has been observed for the period leading up to and spanning the Middle Iron Age (see above) at Terminal 5 and other sites. At Potterne the favoured interpretation for the 3.5 ha of dark, anthropogenic deposit was that it was a 'place where stock, predominantly cattle, were regularly pounded, maintained by a relatively small resident population' (Lawson 2000). Other structured midden sites in the Middle and Upper Thames Valley, such as Runnymede (Needham and Sørensen 1988; Needham and Spence 1996), Whitecross Farm (Cromarty *et al.* 2006) and Woodeaton (Harding 1987), were characterised by superficial artefact-rich deposits, which Needham and Spence (1996, 248) regard as specialist sites that served some function beyond that of 'undirected refuse aggregation.' Components of such middens vary. The Whitecross Farm deposit, for example, incorporated a substantial amount of charred crop processing waste, and several of these sites, including Runnymede, contained high status finds, including metalwork, within a matrix of foul organic matter. However, despite their individual differences, all of these midden sites shared the common features of substantial aggregation of cultural material and animal waste within a context of human interaction.

Structural evidence for the settlement

Our understanding of the layout of the settlement relies on a range of structural features—penannular gullies, postholes and trenches relating to buildings, pits and waterholes—as well as the topographic and constructed boundaries that defined the inhabited space. Roundhouses, stockades and four-post structures, amongst other less clearly defined settlement components, were newly constructed during the Middle Iron Age, but it is clear that Neolithic and Bronze Age earthworks and features, such as enclosures, trackways and waterholes, were reconfigured, recut or otherwise modified to suit the requirements of the Iron Age inhabitants (see above).

The basic plan of surviving Middle Iron Age features (Fig. 4.19) cannot be viewed as a static entity, rather as the incomplete picture of evolving and shifting habitation over a period of several centuries. The level of evidence lost due to truncation and other disturbance, the paucity of stratigraphic relationships and dating evidence for the period and the poor survival of organic materials like bone, wood, textile and leather, which would have formed the fabric of everyday life in the Middle Iron Age, make it impossible to understand precisely how the settlement would have looked and functioned at any given point. However, we can use the not inconsiderable combined evidence to depict the changing Iron Age landscape at Heathrow.

Boundary features

The Middle Iron Age settlement was essentially an open settlement, in that there was no substantial or continuous enclosure bank and/or ditch or other uniform feature bounding the habitation area. However, the scatter of roundhouses and enclosures ended abruptly on the line of liminal features on the eastern and southern sides, which can be taken to have represented at least symbolic, if not restrictive physical barriers (Fig. 4.19). It is not clear how far the settlement extended to the north and west as no such boundary features were identified on those sides of the settlement—merely an absence of settlement evidence beyond a certain point. Taken together, however, the evidence indicates that the settlement would have covered an area at least some *c* 225 m east to west and *c* 300 m north to south, although not all of that space need have been occupied throughout the Middle Iron Age.

The eastern side of the settlement was marked by a linear boundary, the relict Bronze Age Trackway 3, which by this time probably survived only as grass covered banks. No roundhouses or other significant features, apart from two or three small pits, were constructed to the east of the old trackway during the Middle Iron Age, and only a very sparse scatter of pottery of this date littered the eastern fields, captured in the subsidence hollows of earlier features. Trackway 3 had gone out of use as an access route before the settlement was fully developed because a series of pits was cut along its path (Fig. 4.19).

The northernmost pit was a wide shallow hollow (178015) described

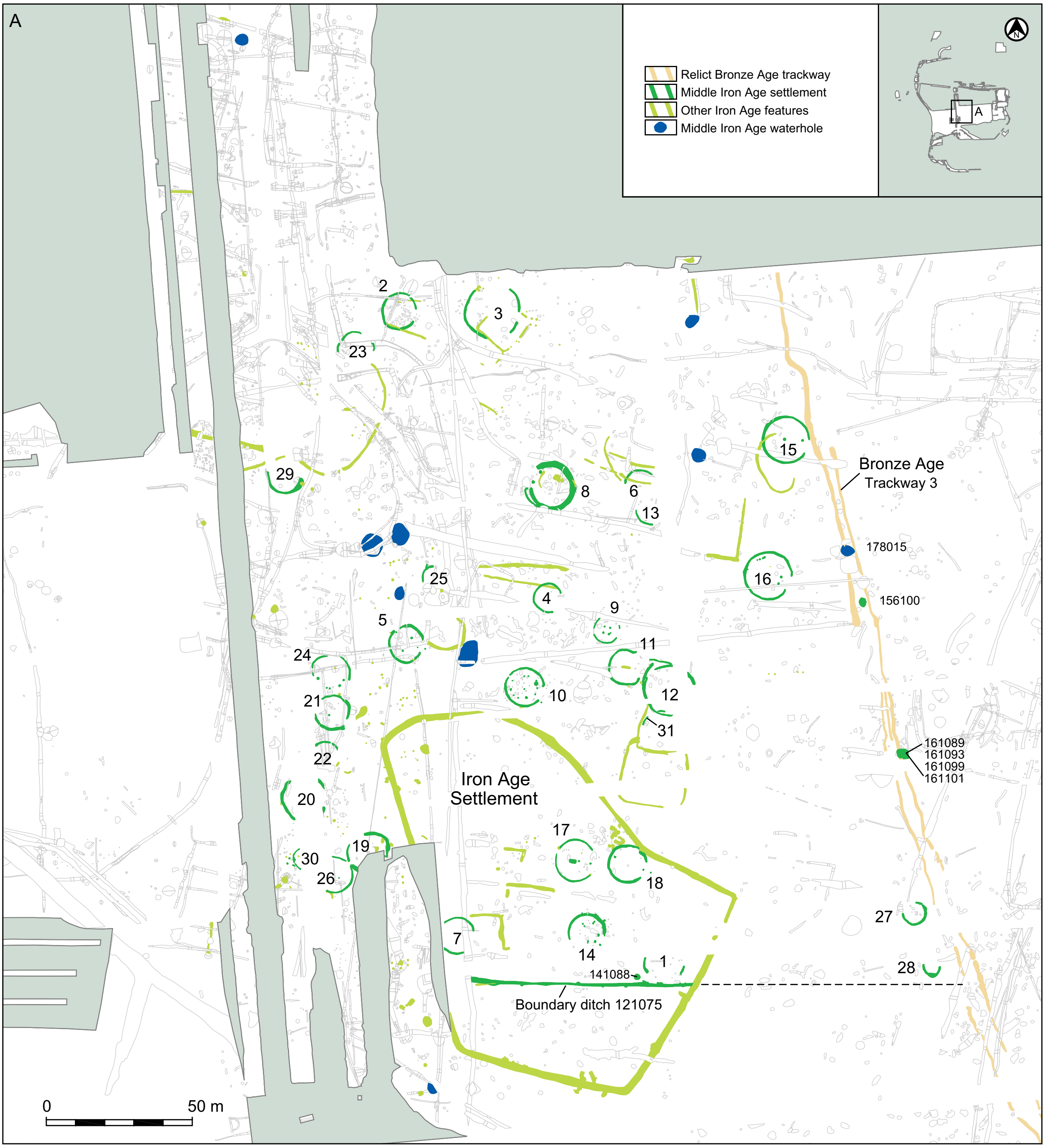


Figure 4.19: Middle Iron Age settlement (all phases)

above, which may have served as a shallow waterhole dug in an area with a high water table (see Fig. 4.16). The relatively large collection of 46 pottery sherds from the feature, including rims of globular jars, had, nonetheless, a very low average sherd weight of under 3 g. This and the presence of very small fragments of unidentifiable animal bone suggest that it was used for casual disposal of domestic waste at the edge of the settlement.

The date and function of a smaller pit 15 m to the south along the trackway was less secure. Pit 156100 was 2.8 m wide and 0.63 deep. It produced a few scraps of fired clay and a single Middle Iron Age sherd but its position along the boundary and absence of earlier or later ceramics suggest it was contemporary with pit 178015.

The fills of a group of four wide, shallow intercutting pits (161101/ 161099/161089/ 161093) (Fig. 4.19) produced one of the largest collections of Middle Iron Age pottery from the site, 483 sherds weighing 1770 g, and included fragments of at least five round-bodied jars. The fragmentary condition of the pottery, with an average sherd weight of only 4 g, and the large quantity of animal bone (mostly teeth)—of cattle, horse and red deer—suggests that this feature was also a rubbish pit.

Pit alignments were a distinctive form of boundary in prehistoric Britain, more common in some parts of England than others (Kidd 1999, 5–6), but nonetheless recognised in the Thames Valley (Bradley and Yates 2007). Some have been recorded in the Middle Thames Valley, for example at Datchett (Gates 1975) and Staines Road Farm (Jones and Poulton forthcoming). However, the pits in a given boundary alignment generally resembled each other and their fills were typically clean, so we can discard any proposition that the pits cut along Trackway 3 represented a pit alignment *per se.*

Ditch 121075, a narrow, shallow and irregular feature at the southern extreme of the settlement may have been the remnant of a Bronze Age field ditch or hedge (Fig. 4.19; see above). It was initially regarded as an internal division of the large southern enclosure (Framework Archaeology 2006, 190–1). However, it lies on the Bronze Age field system alignment and, although it produced no dateable finds and the eastern end of the feature was not traced beyond the limit of the southern enclosure, this could be simply a product of poor preservation and observation. There were no roundhouses or Iron Age waterholes south of the ditch, suggesting it was a recognised boundary during this period. A small shallow pit (141088) dug just beside the ditch produced four Middle Iron Age sherds and a few scraps of fired clay.

Penannular gullies and associated structures

Forming the basis of the Middle Iron Age settlement were over 30 penannular gullies, representing at least two phases, and perhaps more, of occupation (Figs. 4.19–20 and 4.26). The southernmost group of gullies was constructed in an annular arrangement approximately 180 m across around an open space, probably communal, roughly 65 m by 80 m across. The penannular gullies in the northern part of the settlement were, by contrast, more sparsely sited in a disparate scatter with no obvious focus.

Gully	Type	Truncation	Internal dia	Pot no.	Pot wt.	Pot avg.	Bone	Burnt flint	CBM	Fired clay	Burnt stone	FAS
1	Roundhouse	0.75-0.99	14 m	0	0	0	0	0	0	0	0	0
2	Roundhouse	1-1.24	12 m	9	23	2.56	2	239	0	1	0	0
3	Enclosure	1-1.24	19 m	127	1613	12.7	479	2429	0	702	0	0
4	Enclosure	0.75-0.99	9 m	2	17	8.5	0	49	0	2	0	0
5	Roundhouse	0.75-0.99	12.4 m	22	123	5.59	4	934	0	178	0	0
6	Enclosure	0.5-0.9	11 m	2	3	1.5	94	222	0	51	0	0
7	Enclosure	0-0.99	11.8 m	18	50	2.78	0	533	0	148	0	0
8	Roundhouse	0.75-0.99	15 m	350	3088	8.82	3482	6386	0	1802	0	483
9	Four-poster	0.75-0.99	9 m	1	4	4	0	0	0	0	0	0
10	Roundhouse	0.75-0.99	12.4 m	10	24	2.4	17	924	0	41	0	233
11	Enclosure	0.75-0.99	11.25 m	49	241	4.92	17	433	0	15	0	324
12	Enclosure	0.75-0.99	16 m	150	607	5.78	116	1705	22	348	60	40
13	Enclosure	0.5-0.99	13.5 m	13	3.25	18	0	0	0	69	0	0
14	Roundhouse	0.5-0.99	11.5 m	36	164	4.56	2	300	0	4	0	156
15	Roundhouse	0.5-0.99	15.4 m	95	269	5.83	237	2707	108	261	41	0
16	Roundhouse	0.5-0.99	15.4 m	38	195	5.13	13	286	6	232	0	1
17	Roundhouse	0.5-0.99	13.5 m	2	10	5	0	51	0	4	0	16
18	Roundhouse	0.5-0.99	12 m	0	0	0	2	0	0	0	0	0
19	Roundhouse	0-0.75	13.75 m	45	287	6.4	34	553	0	133	0	87
20	Roundhouse	0-0.75	14.25 m	3	20	6.7	0	125	0	59	0	0
21	Roundhouse	0-0.75	11 m	21	97	4.6	0	333	0	162	0	113
22	Enclosure	0-0.75	9 m	1	7	7	11	17	0	0	0	52
23	Enclosure	1-1.24	12 m	15	77	5	133	213	0	119	0	0
24	Roundhouse	0-0.75	12 m	6	39	6.5	17	214	0	129	0	0
25	Enclosure	1-1.24	8 m	0	0	0	0	2889	0	52	0	0
26	Enclosure	0-0.75	11.5 m	18	150	8.3	0	883	0	39	0	0
27	Enclosure	0.75-0.99	7.2 m	0	0	0	0	27	0	9	0	0
28	Enclosure	1-1.24	6 m	0	0	0	0	0	0	0	0	0
29	Enclosure	1-1.24	11.75 m	10	79	7.9	0	394	0	275	0	0
30	Enclosure	0-0.75	7.5 m	0	0	0	0	0	0	0	0	0
31	Enclosure	0.75-0.99	13 m?	0	0	0	0	34	0	0	0	0

Table 4.3: Middle Iron Age penannular gullies

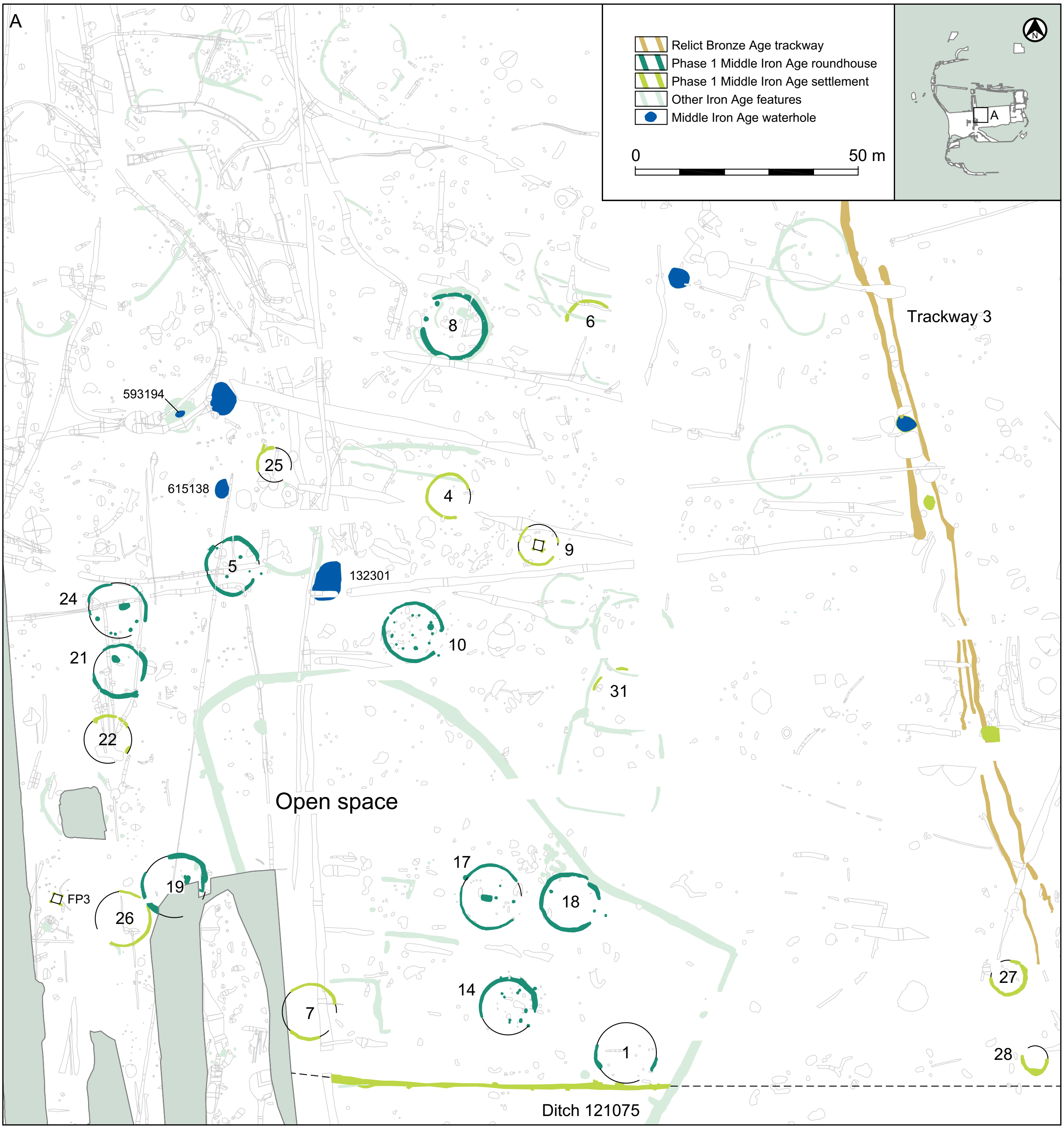


Figure 4.20: Middle Iron Age settlement (Phase 1)

Many of these gullies were highly truncated and discontinuous, but internal diameters were projected at between 5 m and 18.4 m, typically 9–12 m. Some certainly surrounded roundhouses. Based on the position of surviving structural features such as postholes representing door posts, post rings and central support posts, as well as hearths, all or most of the gullies enclosing roundhouses were probably eaves drip gullies rather than wall trenches or enclosure ditches. At Ashville, Abingdon, for example, similar gullies were believed to have been designed to carry away water shed from roofs and the general absence of evidence for internal structural features was attributed to truncation (Parrington 1978). Unlike earthfast features such as postholes, sill beam or mass wall construction need have left no archaeological trace.

Other penannular gullies marked the position of ancillary structures, such as working or storage areas or livestock enclosures. In at least one case a four-post structure was enclosed by a gully, while some well-preserved gullies located in areas of relatively low truncation had no associated structural features, suggesting that they were simply enclosed open spaces, probably livestock pens. Although similar gullies on some Iron Age sites seem to have originated as palisade fences (eg Lambrick and Robinson 1979), evidence for this was not recorded at Terminal 5 and, in general, they probably provided localised drainage to keep buildings and stores dry. Most of the gullies only just penetrated the underlying gravel, dug just deep enough to allow drainage without expending unnecessary effort.

Some examples of paired buildings and pens or annexes were evident within the Terminal 5 settlement (see below). Such pairings have been observed elsewhere in the Middle Thames Valley. There was no evidence for this arrangement at nearby Caesar's Camp (Grimes and Close-Brooks 1993) but at Ashford Prison, Middlesex (Carew *et al.* 2006) the arrangement of a group of nine Middle to Late Iron Age penannular gullies containing occupation debris suggests that these were houses sited to respect each other. In the Upper Thames Valley at Salmonsbury, two post-built houses dated by artefacts to the Middle-Late Iron Age were enclosed by a single ditch (Dunning 1976). Evidence for Middle Iron Age craft activity was almost entirely lacking at Terminal 5, but better preserved sites show a distinct pairing of domestic structures with workshops. At Hartshill Copse, West Berkshire a domestic roundhouse was linked to black-smithing annexe (Collard *et al.* 2006).

Details of the structures and enclosures represented by penannular gullies, their proposed functions and associated finds are presented in Table 4.3. Truncation levels for each are shown to indicate attrition and likely scale of loss of associated internal features and artefacts.

The brief summaries below classify Roundhouses, Enclosures and other associated structures according to their proposed phase and location within the settlement. There then follows a discussion of the changing character of the overall settlement within the different phases. For the purposes of this narrative, in order to qualify as a Roundhouse the associated elements must include evidence of a penannular gully and a number of structural features, which can include door and/or porch postholes, roof support postholes, hearths and wear hollows. Enclosures are defined by a penannular or annular gully but lack evidence for structural features, when truncation levels would have favoured their preservation. It can be assumed that enclosures used as livestock pens would have incorporated aboveground barriers such as palisades or hedged banks, which would not have survived truncation.

Phase 1

Enclosures 27 and 28

Located well removed from other parts of the Middle Iron Age settlement, Enclosures 27 and 28 were located in the far south-east, adjacent to Bronze Age Trackway 3 (Fig. 4.20 & Plate 4.3). Gully 128119 of Enclosure 27 was interpreted in the *Volume 1: Perry Oaks* as a possible 4th / 3rd millenium ring gully or an eaves-drip gully for a 2nd or 1st millennium BC house belonging to Bronze Age Settlement 6 (Framework Archaeology 2006, 131 and fig. 3.24). Although this interpretation has been discounted in the current volume, the gully sits uneasily in the context of a Middle Iron Age settlement, partly due to its small diameter of only 7 m and its north-west facing entrance. Bearing in mind the size, the orientation, the proximity to Bronze Age Trackway 3 (albeit reused as an Iron Age boundary) and the absence of dating evidence, the date and function of Enclosure 27 are best left open.

Plate 4.3: Enclosure 27

Enclosure 28, lying *c* 12 m to the south-east, was also small (5.6 m across), and quite badly preserved. Due to its proximity to Enclosure 27, along the eastern settlement boundary, it has been highlighted as a possible ancillary structure but a Bronze Age date is equally plausible. However, it is possible that both enclosures could have been small Iron Age stock pens or non-domestic structures sited on the edge of the settlement.

Roundhouse 1

The southernmost of the roundhouses was built close up against the southern boundary ditch (121075). Only a discontinuous, shallow arc survived, including a terminal forming one side of a south-east facing entrance. These formed an enclosure *c* 14 m in diameter. A set of double postholes possibly supported part of a 2 m wide gated entrance into the enclosure. Several internal postholes included a likely door post, indicating a roundhouse diameter of 9–10 m.

Roundhouse 14

Roundhouse 14 lay just 16 m north-west of Roundhouse 1 (Fig 4.21). Just over half of gully 128352 was preserved. It would have formed an enclosure with an estimated diameter of 11.5 m. The gully was recut, or reworn by roof alteration affecting water run-off, along its northern stretch by a narrower version, 128354. The northern terminal of a 3.85 m wide entrance was well-preserved (including a recut) but all that remained of the southern terminal was a shallow hollow (134180). The gully complex enclosed a roundhouse 8–9 m in diameter, represented by oval (probably double) door postholes 134182 and 134184. The other surviving internal features presented an unusual pattern. Although some of the postholes could have been remnants of a post ring, several paired postholes were excavated (eg 134186/134188 134191/134193 and 128344/128346) and at least two other pairs unexcavated. These could have marked a double wall line off-centre from the enclosure or, alternatively, internal divisions of earth-fast structures such as partition walls, furniture or upright looms. A shallow hollow (128348) close to the centre of the enclosed space represented the footings of a hearth or simply wear impact in the main part of the building. Several postholes on the external northern side of the enclosure could have supported fences or racks.

Enclosure 7

Located *c* 30 m west of Roundhouse 14, was a discontinuous curvilinear gully forming an enclosure (7) 11.8 m in diameter (Fig. 4.20). A possibly genuine gully terminus marks the position of a south-east facing entrance gap, whereas a gap on the western side is probably a product of truncation. Although truncation was relatively low in this area, no internal structural features were present.

Roundhouses 17 and 18

Two further potential roundhouses to the north of Roundhouse 14 lay just 4 m apart (Fig. 4.22). Roundhouse 17 comprised two lengths of gully (158160 and 158163) enclosing an area 13.5 m in diameter. The west facing gap may have been wholly or partly a product of truncation and the more convincing east-facing entrance was widened to an unlikely 8 m by the same effect. The gully probably enclosed a roundhouse *c* 9–10 m in diameter. Posthole 183038, 1.5 m inside the entrance gap, would have supported a single central post or was one of a pair of door posts. The southern terminus was cut at some point by posthole 158156, which may indicate gating of the enclosure. A small oven or smithing hearth (183034), 0.5 m long and containing fragments of charcoal, fired clay and burnt animal bone, lay within the centre of the enclosure next to a 2.4 m long sub-rectangular pit (183030). The pit contents included burnt clay, fuel ash slag and Middle Iron Age pottery. These two features resembled one in Roundhouse 19 and probably served a similar function (see below).

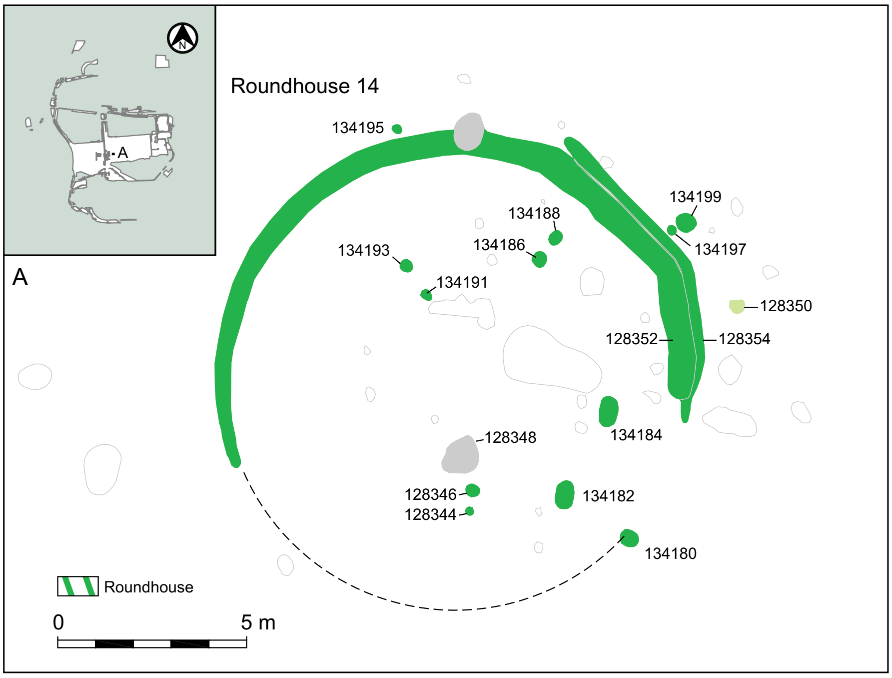


Figure 4.21: Roundhouse 14

Possible Roundhouse 18 comprised a penannular gully (166101) defining an enclosure 12 m in diameter, recut along all or most of its inner circuit by gully 166112. A posthole (166096) centrally placed within a 5.6 m wide south-east facing entrance, may have supported an entrance structure associated with posthole (166098), which lay just outside the enclosure. Although the pattern may be entirely fortuitous, a third posthole (166094), 1 m from the western side of the enclosure, appeared to be aligned with the other two in a arrangement seen in roundhouses on other Iron Age sites in the region (Lambrick 2009).

In Volume 1 ?Roundhouse 18 was interpreted as a securely dated Late Iron Age roundhouse constructed within the confines of the southern enclosure (Framework Archaeology 2006, 203). On closer inspection, neither did the gully incontrovertibly enclose a roundhouse (although it may have) nor

Plate 4.4: Gully of Roundhouse 19

was it constructed within the southern enclosure (EC1—see below), over its putative internal bank. The balance of the, albeit inconclusive, stratigraphic evidence suggests that the ditch of Enclosure EC1 impinged on the gully surrounding ?Roundhouse 18. Nor is there clear evidence for an internal bank, which, if it were to have existed, would have probably been dumped over the remains of the earlier penannular gully. ?Roundhouse 18 was, in fact, almost certainly one of

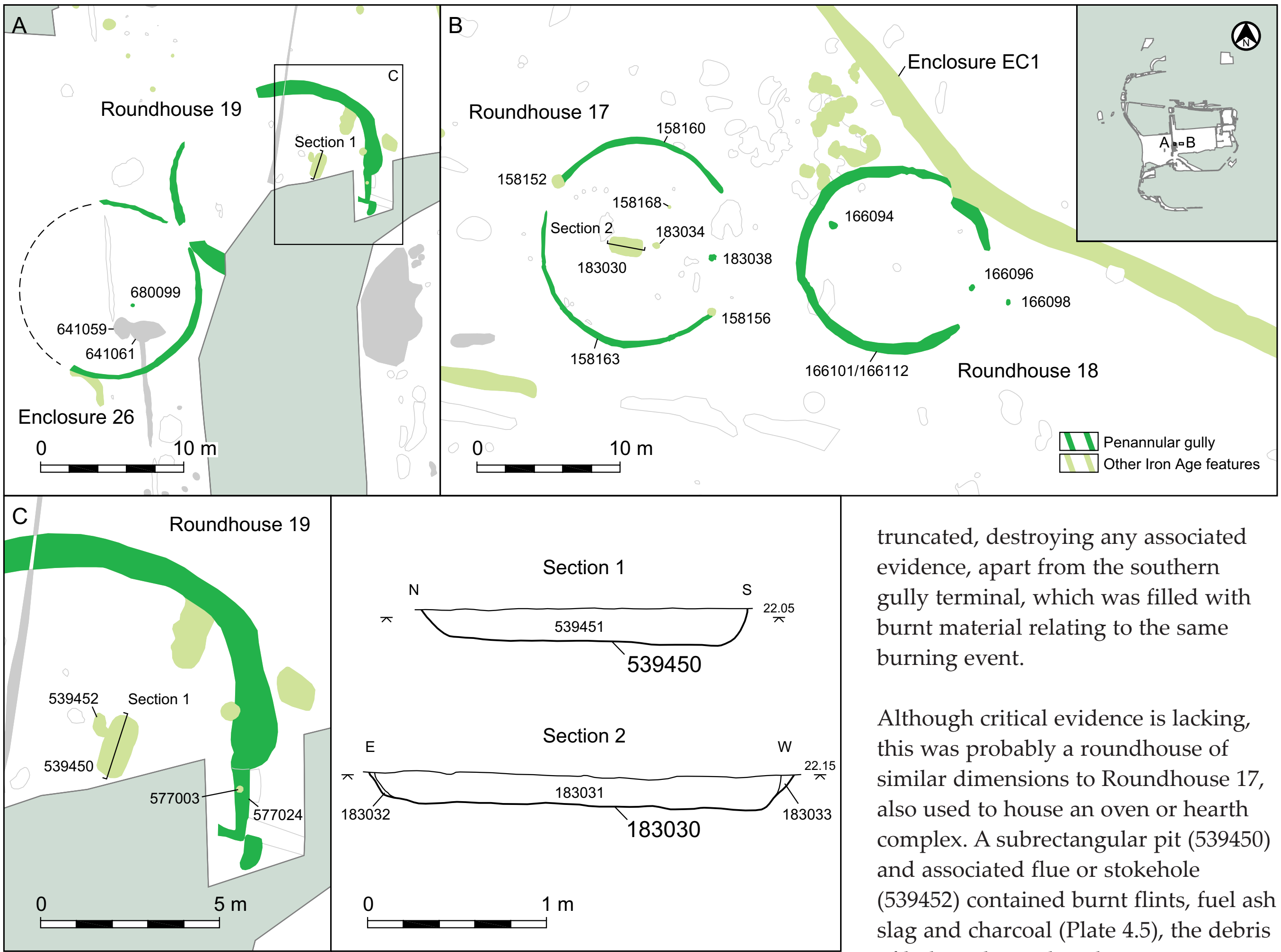


Figure 4.22: Roundhouses 17, 18 and 19 and Enclosure 26

the group of penannular enclosures constructed around the central space in the southern part of the settlement during the Middle Iron Age.

Roundhouse 19 and Enclosure 26
Another pair of pennanular gullies lay *c* 55 m further west (Fig. 4.22). Roundhouse 19 comprised gully segments forming an enclosure *c* 13 m in diameter with a south-east facing entrance 1.9 m wide. Although the extant wide gap on the south-west side of Roundhouse 19 was the product of truncation, it may have masked a genuine gap that linked to the north-east entrance of Enclosure 26, producing a double compound for living and/or working. The gully surrounding Roundhouse 19 was unusually wide at up to 1 m (Plate 4.4), in contrast to the more generally preserved width of about half that figure, perhaps reflecting an uncommon function or simply better preservation. The enclosure also had an unusual entrance feature (577024). A beam slot 2 m long containing the poorly preserved charred remains of a beam with a right-angle inner return was found *in situ*. A similar beam slot was found associated with a Middle Iron Age enclosure at Oxley Park in Milton Keynes (Brown *et. al.* 2009). The south-east sector of the gully was severely truncated, destroying any associated evidence, apart from the southern gully terminal, which was filled with burnt material relating to the same burning event.

Although critical evidence is lacking, this was probably a roundhouse of similar dimensions to Roundhouse 17, also used to house an oven or hearth complex. A subrectangular pit (539450) and associated flue or stokehole (539452) contained burnt flints, fuel ash slag and charcoal (Plate 4.5), the debris of light industrial or domestic activity taking place in the area and subsequently discarded. A charred grain from the fill was radiocarbon dated to 360–50 cal BC (WK19334). The pit resembled that in Roundhouse 17 and probably served the same function. At around 2 m long and under 0.85 m wide, these features are similar to bread ovens of the Roman period commonly found on villa and


Plate 4.5: Pit 539450 in Roundhouse 19

farmstead sites, but the presence of fuel ash slag indicates activity that requires a higher temperature than baking—perhaps metalworking.

Immediately to the south-west was Enclosure 26, which was 12 m in diameter. It clearly did not have a south-east facing entrance and an apparent north-east facing gap corresponded with a south-west facing gap in the gully surrounding Roundhouse 19. The two enclosures may have been linked, designed for different and/or complementary functions. There was no firm evidence of a structure within the enclosure, but a small feature (680099) containing charcoal, burnt flint and fired clay may have been the remains of a hearth, oven or an outdoor bonfire. A wide, shallow hollowed area (641059/641061) could be attributed to intensive human or livestock movement within the enclosed area.

Roundhouses 21 and 24 and Enclosure 22

Two roundhouses and a circular enclosure lay together on the western periphery of the settlement (Fig. 4.20). Roundhouse 21 was one of few that showed evidence of modification—a recut along its north-east side. The diameter of the original enclosure was 11 m and the recut version 11.6 m. The southern terminal of the 2–2.5 m wide south-east facing entrance gap may also have been modified. A posthole and a nearby unexcavated feature in the enclosed space may have supported the upright posts of a roundhouse. A wide shallow hollow formed as a result of activity within the building. Based on its fill, which contained charcoal and fired clay, this feature was probably the remains of a hearth contemporary with the structure, but a set of Roman copper alloy tweezers (SF 27121) was found in the upper fill.

Immediately north was Roundhouse 24, which comprised gullies enclosing an area 13 m in diameter. Although the north terminal of a south-east facing entrance was preserved, the south terminal was not, so the width of the entrance could not be determined. The gully enclosed a post ring built roundhouse of *c* 10 m diameter.

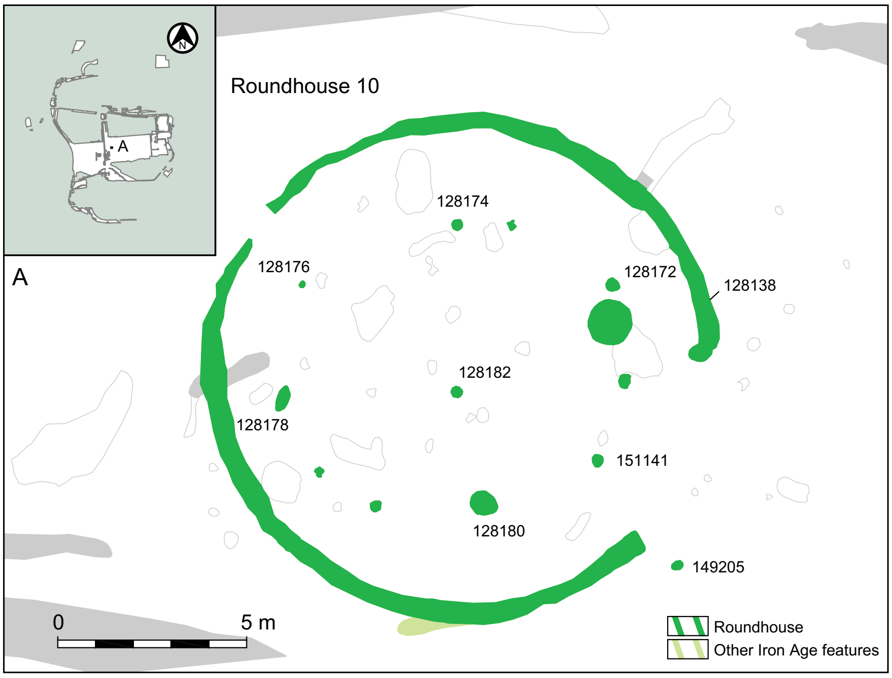


Figure 4.23: Roundhouse 10

To the south of both roundhouses was Enclosure 22, of which only the northern stretch of gully and a southern entrance terminal survived truncation. However, a diameter of *c* 9.5 m for this enclosure could be inferred. A shallow posthole which lay just inside the western side of the gully may have been related but no other structural evidence was found.

Roundhouse 5

Roundhouse 5 lay around the northern perimeter of the 'open space' and was 12 m in diameter with a south-east facing entrance (Fig 4.20). The western stretch of the gully had been recut. One posthole may have supported a gateway into the enclosure, and a second was probably a door post for a *c* 9 m diameter roundhouse. Two internal postholes may have held roof support timbers.

Roundhouse 10

Roundhouse 10 lay on the north-east periphery of the 'open space' with the Iron Age settlement (Fig. 4.23 & Plate 4.6). It lay in an area of relatively low truncation and was well-preserved, but a 1 m wide gap on the western side of the enclosure can be attributed to later disturbance. The gully (128138) had a diameter of 12.4 m and a south-east facing entrance *c* 4 m wide. A concentration of small features, including posthole 149205, outside the enclosure entrance, may represent a gateway. The gully enclosed a roundhouse *c* 9 m in diameter, based on a post-ring construction. A set of postholes formed a 2 m wide entrance to the structure, set 2 m inside the gully. Posthole 151141 represents the southern door post and an unexcavated feature the northern post. A nearby unexcavated posthole was probably also part of the door structure. The postholes of the post ring were 0.30–0.40 m in diameter and the oval shape of 128178 suggests that this post was replaced. Although the post ring would have provided the main support for the roof, the walls could have been constructed of cob or daubed wattle panels supported by stakes that left no subsoil trace. A central feature (128182) could have held a roof support post but equally may have been the remains of a hearth bed.

Enclosure 31

The fragmentary remains of an enclosure (31) were located on the eastern periphery of the 'open space'. It comprised a curvilinear gully forming a 13 m enclosure, which was severely truncated and the fills produced only a small quantity of burnt flint. Its function, whether as a roundhouse gully or stock enclosure, remains uncertain. At some stage, still within the Middle Iron Age, it was cut by Enclosure 12 and by

Plate 4.6: Roundhouse 10

subrectangular enclosure EC5, both of which are likely to be non-domestic.

Enclosures 6, 4 and 25 and four-post structure 9

To the north of the main concentration of Phase 1 roundhouses lay a number of likely non-domestic features—three enclosures and a four-post structure. The furthest north, Enclosure 6, was a poorly preserved gully bounding an enclosure with a projected diameter of *c* 11 m. An unexcavated internal feature 1 m across may have been the remains of a central post or hearth but was insufficient evidence to classify this as the site of a roundhouse. Enclosures 6 and 13 (see below) would have overlapped, allowing us rare stratigraphic evidence of one penannular gully superseding another. They are presented on the Phase 1 (Fig. 4.20) and Phase 2 (Fig. 4.26) plans respectively, but the sequence is uncertain.

Further south-west, Enclosure 4 was 9 m in diameter with a south-east facing entrance gap. The small size and absence of internal features in an area of relatively low truncation suggest that it was a stock pen or activity arena that required no earth-fast superstructure. Enclosure 25, represented by two short lengths of gully, was even smaller, with a projected diameter of 7.5 m. No internal features were identified and no function could be confidently assigned to the enclosure, but the dimensions would rule it out as a typical roundhouse. The gully fills produced a remarkable 3 kg of burnt flint, perhaps derived from Bronze Age activity in the area.

To the east of both of these enclosures was a discontinuous gully (172032) forming a 9 m diameter enclosure surrounding a four-post structure (9), represented by postholes 151145,

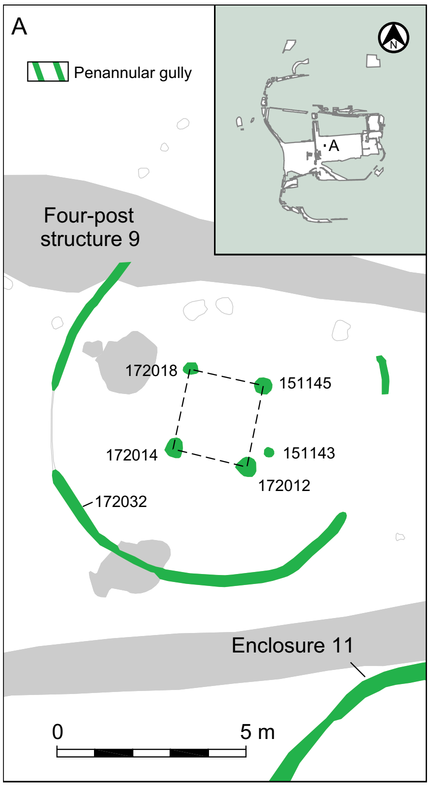


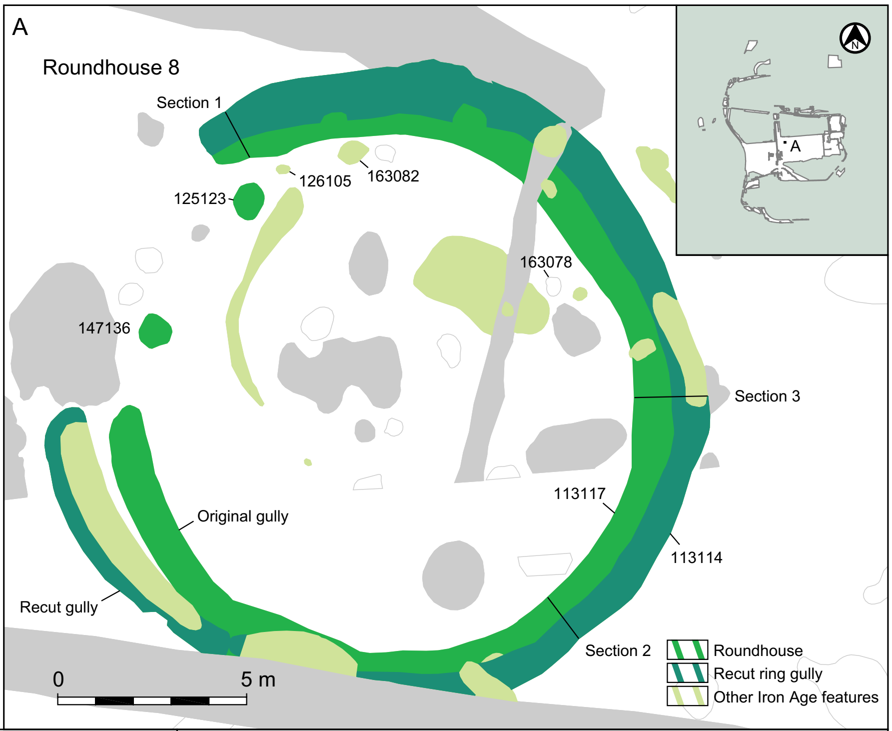
Figure 4.24: Four-post structure 9

172012, 172014 and 172018 (Fig. 4.24). A much smaller posthole (151143), sited adjacent to the south-eastern of the four postholes, may have supported one side of a ladder (the main post forming the other side) or held a hoist mechanism for raising materials on to the raised floor of the structure, either to the side or through a hole in the floor. This posthole arrangement has

Plate 4.7: Artist's reconstruction of possible superstructure of Four-post structure 9

been recorded at other Iron Age sites (Powell *et. al.* 2009). The structure would probably have been multi-functional, used, for example, to store foodstuffs or other material above and shelter for livestock, wagons and tools below.

Because the gullies surrounding the roundhouses can be interpreted as eaves drip gullies, it seems worth considering whether the very similar gully around Four-post structure 9 might have served the same function. If so, the roof would have had to resemble the conical arrangement seen on roundhouses (see possible reconstruction on Plate 4.7). The structural support for such a roof would have had to be tied in to the simple four-square pattern of the building, resulting, no doubt, in a very unstable



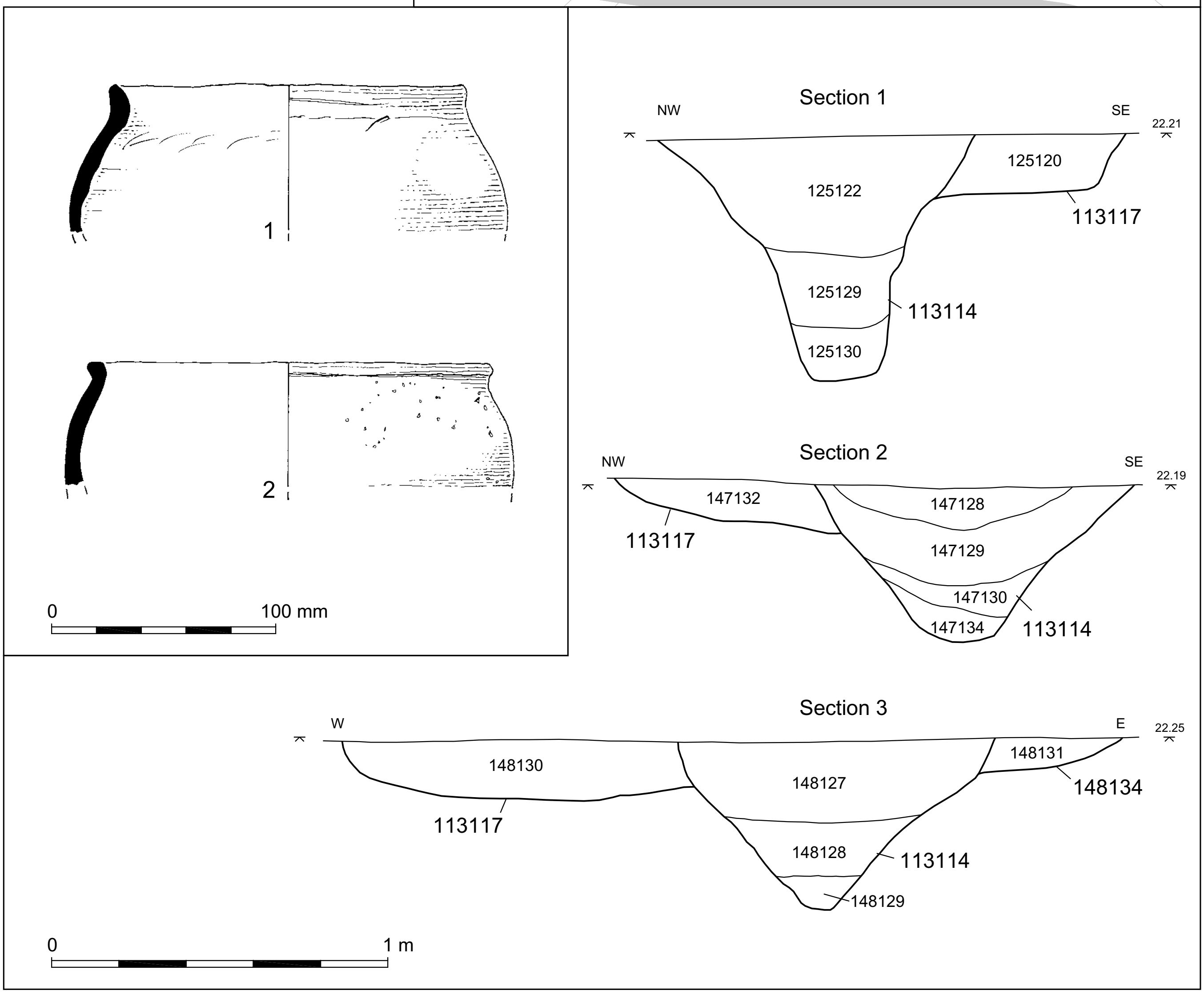


Figure 4.25: Roundhouse 8

Plate 4.8: Roundhouse 8

structure. More likely the gully was dug to drain the enclosed area.

Roundhouse 8

Roundhouse 8 was the northernmost structure assigned to Phase 1 and is represented by two phases. An original shallow gully (113117) was recut as ditch 113114. The original gully enclosed an area *c* 13 m in diameter and the recut extended this to 15 m, allowing for a structure of 10–12 m diameter. The profile of the deep (at least 1 m) recut ditch varied from V-shaped to U-shaped and the depth was also variable (Fig. 4.25 & Plate 4.8). A terminal examined in one of the deep sections on the western side of the ditch indicated that it was dug in segments. The sequence of fills was similar throughout the ditch, suggesting that the segments filled contemporaneously. Two typically Middle Iron Age jars (Fig. 4.25, nos. 1 and 2) were amongst a substantial collection of sherds recovered from the fill of the northern terminus of the ditch in association with large quantities of animal bone and burnt flint. In fact, the number and variety of finds recovered from the recut ditch fills were on a different scale to those associated with the other penannular gullies, only in part because the ditch was deeper. The collection appeared to indicate specialised activity within or around the structure.

The large collection of animal bone recovered from the recut ditch included cattle, along with smaller quantities of dog, young pig and sheep *(Knight and Grimm CD Section 13)*. The distribution of the animal bone from the ditch, however, showed no significant pattern and there was no evidence of deliberate burial, articulation, or of the association of animal bones with other artefacts.

The entrance to one or both phases of the roundhouse was represented by postholes (some unexcavated) clustered within the north-west facing gap in the gully and later ditch. Two wide, shallow features (147136 and 125123) were the bases of large postholes designed to hold porch or door posts. They produced no datable finds but their position and size are comparable to large roundhouses excavated elsewhere such as Pimperne (Harding *et. al.* 1993), Longbridge Deverill (Hawkes 1994) and Flint Farm (Cunliffe and Poole 2008). Various internal features which produced Middle Iron Age pottery represented internal divisions and worn hollows in the floor area. Three postholes (126105, 163082 and 163078) excavated along the north side of the enclosed space would have been located too close to the first phase gully (113117) to have been contemporary, but may have represented a wall line for the second phase building. They were, however, undated and could equally well have been associated with another set of postholes and/or small pits that later cut the backfilled ditch enclosing the roundhouse.

Although we cannot be certain of the precise role of the roundhouse in either phase, it may have influenced the development of the settlement. The north-west facing entrance sets it apart from the other roundhouses, although this orientation is not uncommon in Iron Age settlements generally. It endured during two or more phases of settlement, forming either a focus or a deliberately remote setting, depending on how the sequence of settlement construction is construed. The fact that the nearest other roundhouses from both Phase 1 and Phase 2 (2, 5, 10, 15, 16) lay a considerable and roughly consistent distance away (70–80 m, measured from centre to centre of the houses) adds some weight to the argument that Roundhouse 8 was an important place in the Middle Iron Age landscape.

Phase 2

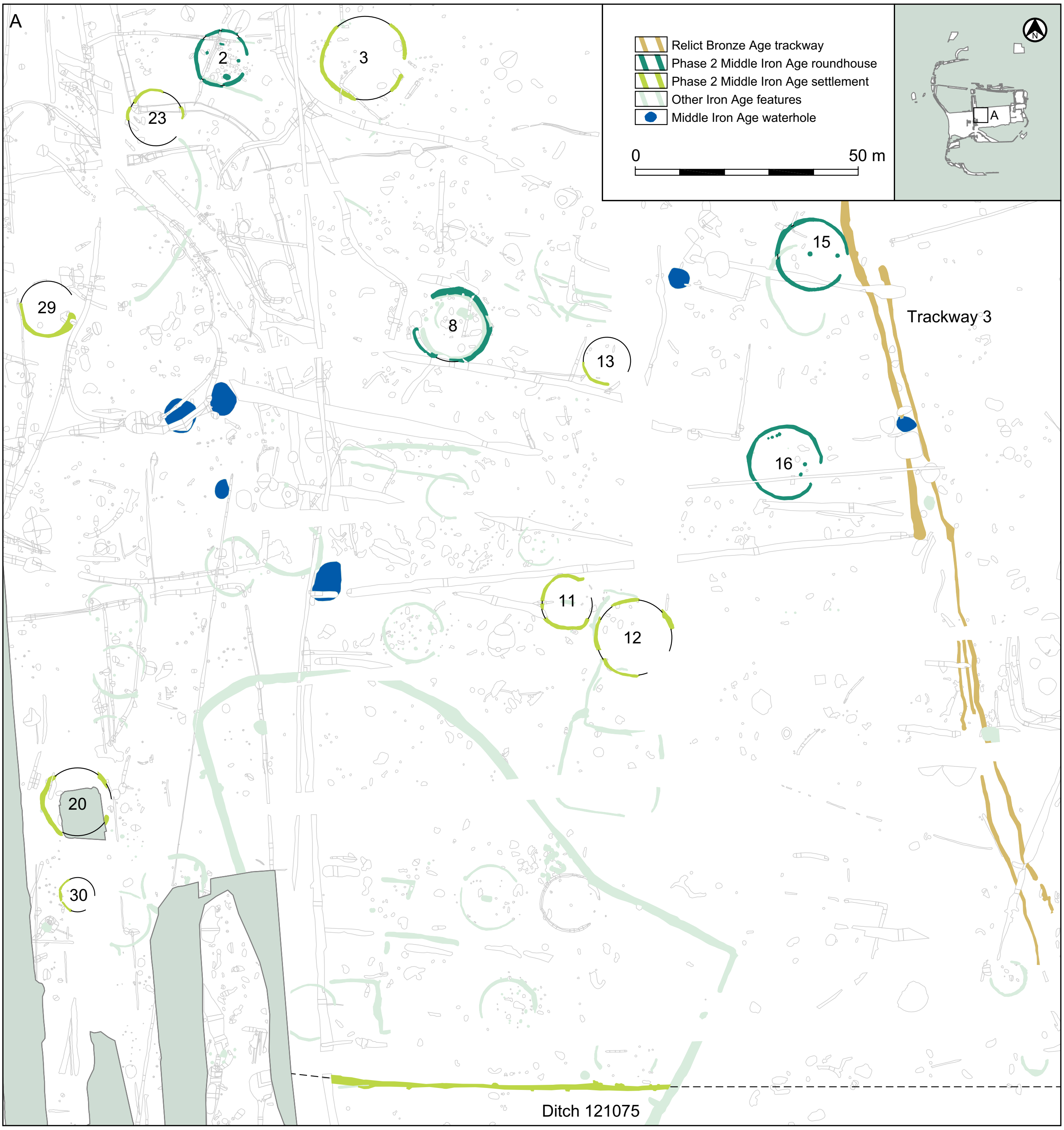
The parts of the settlement assigned to Phase 2 lie mostly to the north of those in Phase 1 (Fig. 4.26), though some, such as Roundhouse 8, are likely to span both phases. The individual enclosures and roundhouses are summarised below, from north to south.

Figure 4.26:
Middle Iron Age settlement (Phase 2)

Roundhouse 2 and Enclosures 23 and 3

Roundhouse 2 represents the most northerly domestic building within the excavated area. The gully surrounding Roundhouse 2 marked an enclosed space 12 m in diameter with a south-east facing entrance gap 4 m wide. Small features (most unexcavated) pitting the internal area included a door post and a back wall post, suggesting an estimated diameter of 8 m for the roundhouse. A shallow hollow containing fired clay and burnt flint was the site of a hearth. Although scraps of Late Iron Age or early Roman pottery were present in the secondary fills of the gully, they no doubt derived from the intensive activity of that date in the area after the roundhouse was abandoned.

Two enclosures lay either side of Roundhouse 2, the closest (23) *c* 8 m to the south-west. This was severely truncated but appeared to be *c* 12 m in diameter with some evidence of recutting. Gaps in both the south-east and north-west sides could not be



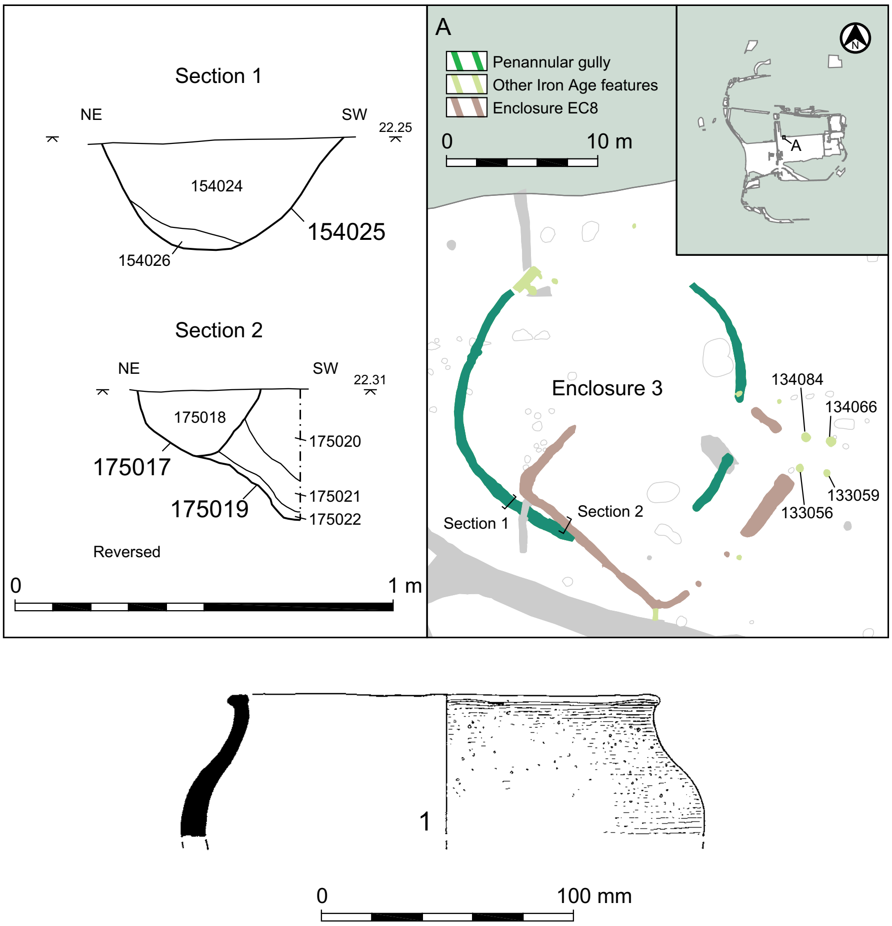


Figure 4.27: Enclosure 3

Plate 4.9: Enclosure 3, looking south-east

confirmed as definite entrances due to the levels of disturbance. No contemporary internal features were recorded and the function of the enclosure was not clear.

Located 16 m east of Roundhouse 2 was the unusually large Enclosure 3, which was 16 m diameter (Fig. 4.27 and Plate 4.9). It may have had a double entrance, with both gaps on the south-east side. No internal structural features were identified, possibly due to truncation, and the enclosure is likely to have been a stockade. The fact that the penannular enclosure was superseded by a rectilinear one, as was the case with other possible stockades (see Enclosure 31), and its relatively large diameter, also suggest a non-domestic function.

Roundhouses 15 and 16

Roundhouses 15 and 16 were located in the eastern part of the settlement, the former lying immediately adjacent to Bronze Age Trackway 3. The roundhouse was surrounded by a well-preserved penannular gully which enclosed an area 15.4 m in diameter with a 4.75 m wide south-east facing entrance. The roundhouse would have

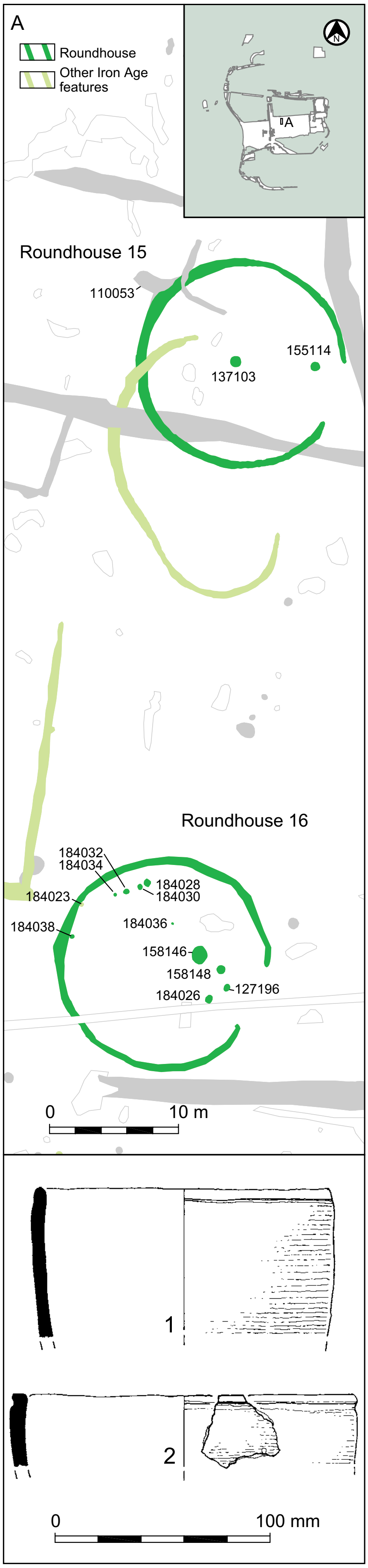


Figure 4.28: Roundhouses 15 and 16

been *c* 10–11 m in diameter, but the only internal features were a northern door posthole (155114) set *c* 2 m back from the enclosure terminal, and a central hearth (137103), represented by a shallow circular hollow containing a charcoal rich fill incorporating burnt flint and fragments of fired clay. The clay may have been the remains of a flat clay hearth base. The upper parts of two saucepan pots in sandy fabrics (Fig. 4.28, nos 1 and 2) came from the secondary fill of the penannular gully. These vessels probably fall into the later part of the Middle Iron Age at Heathrow, and suggest the roundhouse was erected late in the settlement sequence.

Lying 31 m further south was Roundhouse 16, which was of almost identical proportions (15.4 m in diameter with a 5 m wide south-east facing entrance). Two postholes (158148 and 184026) would have supported the 2 m wide door to a roundhouse of *c* 10–11m. A smaller feature (127196) marked an area of wear outside the door and a wide, shallow hollow (158146) was probably a product of constant footfall inside the doorway. Otherwise, only a string of postholes clustered inside the western (inner) side of the enclosure attest to an internal structure, along with the truncated remnant of a possible hearth base (184036), filled with a charcoal rich soil flecked with fired clay.

Enclosures 13 and 29

Two widely spaced penannular gullies in the central part of the settlement probably represent non-domestic enclosures, though there is no certainty of this. Enclosure 13 had a projected diameter of 11 m, and would have intersected Enclosure 6 (see above). A shallow irregular hollow and a small posthole that lay along or just within the projected curve of the gully may have been related features or truncated remnants of the gully itself. There was no evidence that the gully enclosed a structure.

Enclosure 29 lay at the western limits of the settlement. It was 12 m in diameter with a south-east facing entrance, of which only the southern terminal was preserved. The northern curve of the gully may have extended eastwards and westwards, linking it into the EC3 enclosure complex (see below), perhaps at a late stage in the settlement development. There were no internal features to suggest the presence of a structure.

Enclosures 11 and 12

Two enclosures (11 and 12) in the south-east of the settlement were probably linked and associated with livestock (Fig. 4.29). Enclosure 11 was 11.25 m in diameter, and if it had been enhanced by an inner or outer bank there was no trace of this in the gully fill. The east-facing entrance terminals kinked northwards to form an ingress/egress point connecting to the entrance complex of Enclosure 12 (see below). No contemporary features were identified within the enclosed space but a relatively large collection of Middle Iron Age pottery and burnt flint from the top fills of the gully indicates that some activity had taken place in the near vicinity, even if only disposal of domestic debris.

Enclosure 12 was 16 m in diameter with a north-west facing gap 4 m wide that fed into an entrance/exit complex represented by gullies 107106 and 107107. The latter was a very narrow, shallow feature that may have been the footing for a fence or palisade. This arrangement may have been used to channel livestock into Enclosure 11 or out into the settlement and open fields. A series of shallow irregular features near the entrance recorded as 'tree throws' are likely to represent the sort of hollowing and muddying of the ground caused by clustering of animals in constricted spaces, such as gateways and troughs, as is commonly observed in modern livestock pens. No other internal features were exposed. Enclosure 12 cut gully 107098, which formed Enclosure 31 (see above).

Enclosures 20 and 30

In the far south-west of the settlement were two ephemeral enclosures that could easily have belonged to either Phase 1 or 2. Although badly disturbed, sufficient survived of Enclosure 20 to indicate that it enclosed a space

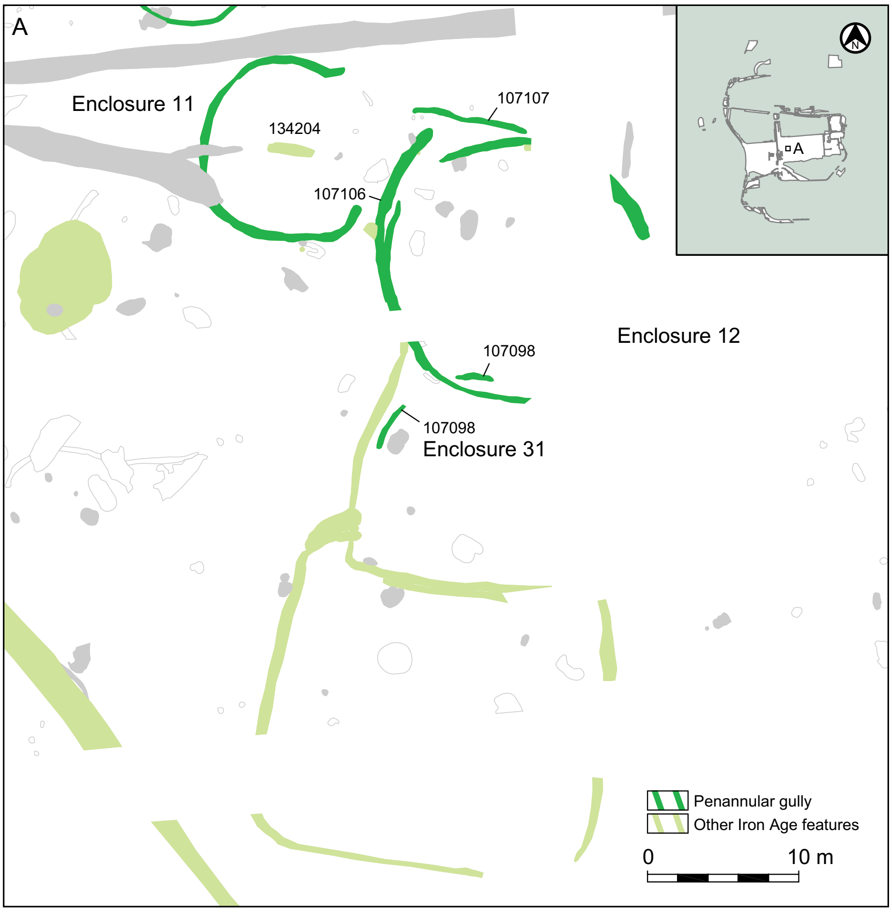


Figure 4.29: Enclosures 11 and 12

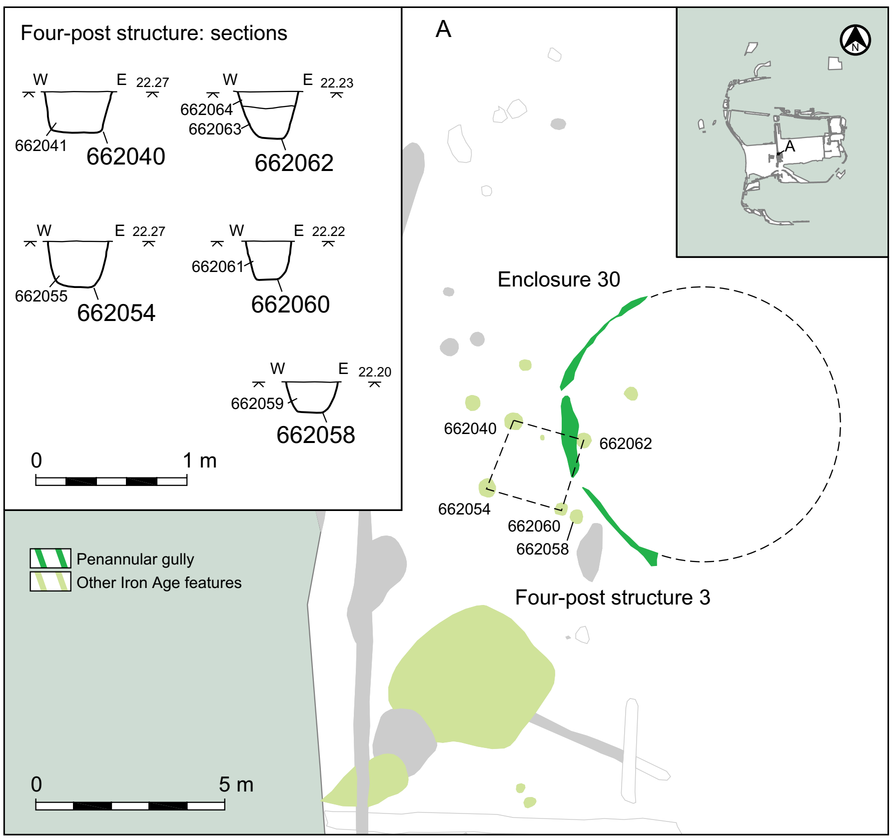


Figure 4.30: Enclosure 31 and four-post structure

13 m in diameter with a south-east facing entrance. The northern stretch of the gully was recut at some stage. The western side of the enclosure cut a Late Bronze Age pit (663118), accounting for the presence of post-Deverel-Rimbury pottey in the fill. The pottery from the gully terminal, in contrast, was Middle Iron Age. The function of the enclosure was obscured by later disturbance and the lack of excavated structural features.

Enclosure 30 was defined by the western side of a poorly preserved 7 m diameter gully, at the extreme western side of the settlement (Fig. 4.30). It impinged on four-post structure FP3, but the sequence of the two was not clear. This small enclosure produced no finds and could belong to an earlier phase, but could not be discounted as part of the Middle Iron Age settlement.

The changing settlement

The roundhouses, enclosures and ancillary buildings described above were clearly not all strictly contemporary. In the absence of an extensive suite of absolute dates and of closely dateable artefacts from relevant deposits we are largely reliant on the stratigraphic evidence to demonstrate a chronological sequence for the settlement.

We know from the recutting of gullies and replacement of structural posts that maintenance and renovation of enclosures and buildings took place. In at least one case it is clear that two stock pens, Enclosures 6 and 13, could not have been contemporary. If the diameters of the poorly preserved gullies surrounding them were projected, they would have intersected, showing that in this case at least there was a phase of abandonment or relocation. The recutting of the gully of Roundhouse 8 from a feature only 0.2 m deep to a ditch of a respectable 0.7 m depth is another case in point. Furthermore, although there is at least one example of a possible linked Roundhouse 19 and Enclosure 26, some of the others, for example Enclosures 20 and 22, might have been sited inconveniently close to one another had they been contemporary.

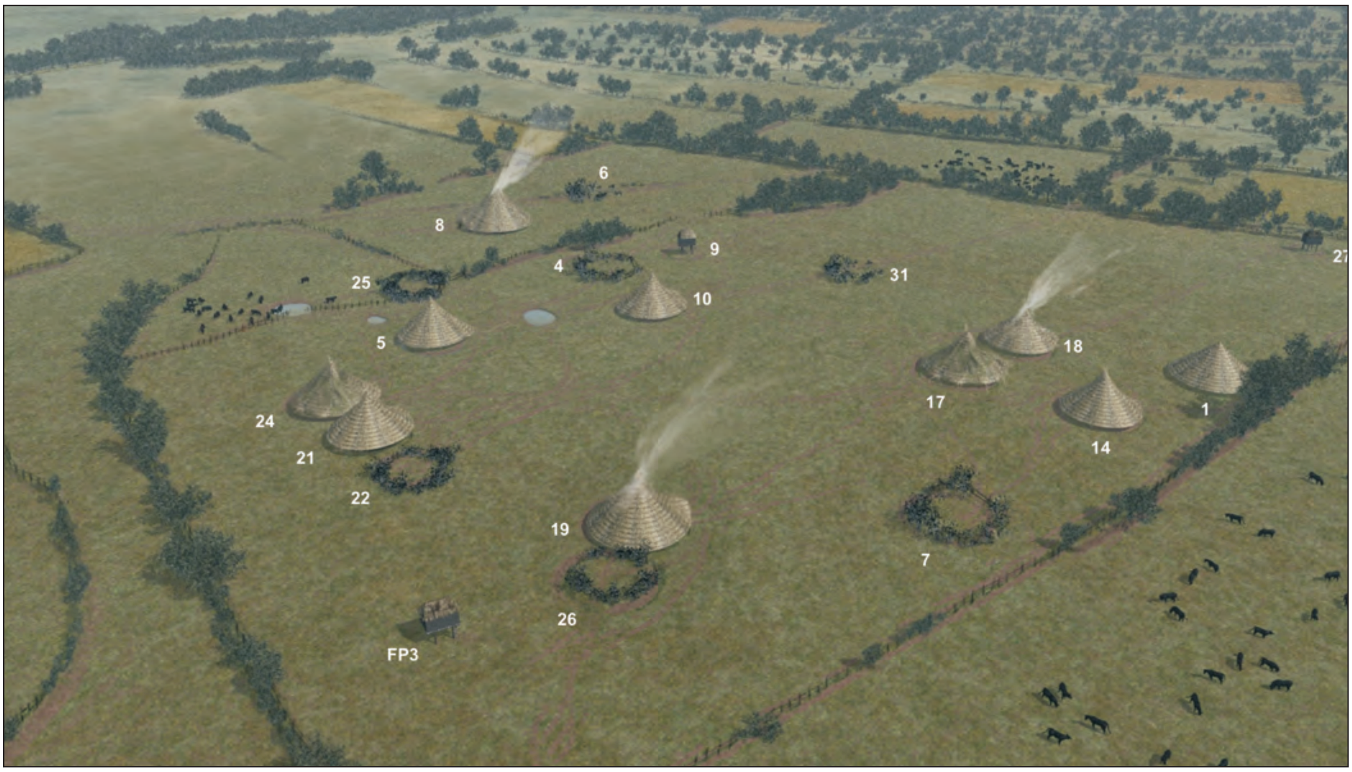


Plate 4.10: Artist's reconstruction of Phase 1 Middle Iron Age settlement

Although we cannot be absolutely certain that occupation was continuous rather than intermittent throughout the Middle Iron Age and into the Late Iron Age, the evidence indicates that the settlement was not particularly short lived. In the next section we will explore in more detail the evidence for the chronological and structural sequence of the settlement and its evolving configuration within the Heathrow landscape.

Evolution of the settlement

The Phase 1 Settlement

During the first phase of Middle Iron Age settlement, roundhouses and other buildings, including at least one four-post structure, were clustered in a circular arrangement around an open space approximately 65 m by 85 m, referred to during excavation of the site as the 'village green' (see Fig. 4.20 and Plate 4.10). This would have served as a common, a place where people moved between the houses, yards and livestock pens, grazing their animals in small groups and carrying out daily domestic routines best suited to full daylight and open air when the weather was clement, such as leather-workng and food preparation. There was a very low density of contemporary features within this common space. A concentration of postholes clustering along its western side may have marked the position of ancillary structures such as drying racks and tethers, or may even have been the remains of earlier buildings (see Fig. 4.32 below).

Roundhouses 1, 5, 10, 14, 17, 18, 19, 21, 24, and the first version of 8 were probably constructed during Phase 1, and Enclosures 4, 6, 7, 22, 25, 26 and 31 may have been contemporary livestock pens (Plate 4.10). Two small penannular enclosures or ring ditches (27 and 28), in the south-east corner of the settlement, may have been small ancillary structures aligned with the eastern boundary, although their date is in doubt. An unenclosed four-post structure (FP3) in the south-west part of the settlement, together with the four-poster in Enclosure 9 provided the settlement with elevated storage facilities as well as protection from the weather for animals or equipment below. Roundhouses 17 and 19 housed distinctive ovens and/or hearths, backfilled with burnt debris, the residue of cooking or perhaps potting or metalworking.

The roundhouses, ancillary buildings and livestock pens served a community involved in a communal subsistence lifestyle, combining some level of arable and pastoral farming, with the emphasis increasingly on raising cattle and sheep. The community apparently did little in the way of modifying or enhancing the complex of Bronze Age field systems they inhabited, allowing ditches to remain silted up and possibly ceasing to maintain many of the hedges, relying on the ancient field banks to frame their agrarian regime. Water was acquired by digging waterholes close to the setting of houses and pens and by walking westwards (*c* 1 km) to the river with buckets or leather carriers (see below for discussion of water sources).

If the lives of the inhabitants of the Middle Iron Age settlement had a ritual focus, as doubtless they had, there is little incontrovertible evidence for any belief systems or ceremonies (see below). However, the original version of Roundhouse 8 sat in apparent isolation some distance to the north of the other Phase 1 roundhouses. This west-facing structure, within the only penannular enclosure to have been substantially enhanced over a long

Plate 4.11: Artist's reconstruction of Phase 2 Middle Iron Age settlement

period, was clearly of some importance to the inhabitants, perhaps as an arena for communal gatherings such as seasonal feasting.

The Phase 2 Settlement

In the second phase, the settlement dispersed and occupation expanded northwards (Fig. 4.26 & Plate 4.11). Roundhouse 8 became central to the settlement rather than the remote, albeit perhaps important, structure that it had been during Phase 1. There were clearly major modifications to the roundhouse at this point, included the digging of a very substantial surrounding ditch (see above), although evidence for modification of the structure itself was poor. The surviving depth of the ditch was no doubt the prime factor in the abundance of material (especially pottery and animal bone) recovered from it. Had the other roundhouse gullies been recut in the same way they may have produced similar quantities. But despite the prosaic finds signature of the ditch assemblage, the fact remains that only Roundhouse 8 was altered in this way, and this, more than the quantity and nature of the finds, sets it apart from contemporary structures of the settlement. The evidence of a small number of Late Iron Age sherds allows us to date the filling of this final recutting activity to the Late Iron Age, when the roundhouse location was incorporated within a large enclosure (E3). The persistence of place demonstrated by this sequence must signify that Roundhouse 8 represented an exceptional place to the inhabitants of the Middle and Late Iron Age settlements, whatever its function.

Roundhouses 15, 16 and possibly 2 were constructed during this second phase, situated northwards and eastwards at a uniform distance of approximately 80 m from the focal point of Roundhouse 8. Other roundhouses that may have occupied the space between 2 and 15 would have lain outside of the excavated area. A number of the earlier buildings may also have remained in use during this period. Roundhouses 5, 14, 18 and 21 all showed signs of modification, albeit only recutting of the surrounding gullies, making them possible candidates for continuity of use.

Roundhouses 15 and 16 were constructed in the eastern part of the settlement, close to the old Trackway 3. The northern part of this boundary at least, must have been physically breached by this time, as the entrance to Roundhouse 15 impinged on it. However, the persistent absence of any significant evidence for Middle Iron Age activity beyond this point suggests that it continued to represent at least a notional divide between the settlement and the landscape beyond.

Enclosures 3, 11, 12, 13, 20, 23, 29 and 30 may have been contemporary with the second phase of roundhouse occupation. Enclosures 12 and 20 in the southern area and 3 to the north were distinctly larger than the Phase 1 stockades, perhaps indicating that the livestock population had expanded. Enclosure 12 linked to a smaller Enclosure 11 as a corral complex with a distinctive herd control arrangement on the north side. Enclosure 3 lay in an area of high truncation, but nonetheless enclosed no structural features suggestive of an above-ground structure, as was the case with Enclosure 20 in the south-west part of the settlement.

Two smaller enclosures were constructed on the north-west side of the settlement. Enclosure 23 may have

Plate 4.12: Ditch of Enclosure EC1

been a stock compound belonging to the residents of the putative Roundhouse 2. Enclosure 29 to the south-west may have been contemporary with the Phase 2 settlement.

In summary, the Phase 2 settlement was characterised by an expansion northwards and a dispersal of what had been a tight cluster of buildings and enclosures. There was a trend towards slightly larger roundhouses and stock enclosures, although some of the original ones may have continued in use. This could be indicative of a small increase in population of both the human and animal inhabitants or of a change in domestic arrangements and stock management practices. However, the likelihood that the entire settlement was not exposed in excavation makes attempt at calculating the local demographics entirely speculative.

The apparent shift to Roundhouse 8 as the focus of another roughly annular arrangement of houses and pens, more widely spaced than those of Phase 1 suggested that there was a requirement for greater space for family groups and their animals and/or the community in general. Changes in the social structure of the settlement, with a somewhat greater degree of atomisation, may have had some part to play, but such a tendency has been impossible to detect within the available evidence.

It seems reasonably clear, however, that there may have been a change in the pastoral regime as a consequence of the acquisition of greater numbers of stock, requiring more grazing space. An increase in the livestock population would have created a corresponding requirement for access to an enhanced water supply. This is somewhat problematic, as the number of waterholes within the settlement area were few from the outset, and did not appear to increase during this phase of occupation. We will examine this in a later section (see below - Water for the settlement).

Phase 3—The landscape of the southern enclosure

During the later part of the Middle Iron Age the settlement was reordered again (Fig. 4.31). There is insufficient ceramic or other evidence to define this date with any precision, but the intercutting of several Iron Age features and the reconfiguring of Roundhouse 8 in particular testifies to Middle Iron Age occupation of sufficient duration to accommodate at least one phase of reorganisation. This reshaping involved the abandonment of some of the small penannular animal pounds for larger enclosures, some built on the site of or incorporating earlier ones. Some of the roundhouses, including Roundhouse 8, no doubt continued to be occupied or rebuilt but the evidence for this is inconclusive. Construction techniques may have changed during this period, as Late Iron Age domestic structures are notoriously elusive, with roundhouse design based on substantial earth-fast doorposts but with stake built or mass walls, meaning that they are virtually invisible archaeologically. Numerous double postholes set at an appropriate distance apart (*c* 2 m) for roundhouse door posts were found scattered within the settlement area (Fig. 4.32 below).

Enclosure EC1

The most imposing new settlement feature of this period was a large ditched enclosure of irregular shape, EC1, constructed during the later part of the Middle Iron Age and certainly after the abandonment of Roundhouse 18, the enclosure gully of which was cut by the EC1 ditch (Fig. 4.31). A number of smaller curvilinear and subrectangular enclosures were also built at this time (see below), roughly encircling the possibly still extant Roundhouse 8.

The ditch of EC1 enclosed a massive space 135 m long and 120 m wide. The unusual shape of the enclosure was obviously influenced by the earlier settlement layout. Its north-western end bulged northwards to fill the space that was once the common area of the Phase 1 settlement, not over-writing it but, in fact, securing the integrity of that space through an impressive effort of construction. The north-eastern ditch of the EC1 enclosure turned inwards to respect the position of a set of nested subrectangular livestock pens (EC4 and EC5) that were either associated with or superseded Enclosure 12. These small enclosures were probably constructed before EC1 but it is equally possible that the whole complex was laid out at the same time. The southern part of the EC1 enclosure breached the southern boundary of the earlier settlement, encroaching some 40 m onto land previously not built on (and possibly even unused) by the Middle Iron Age settlers.

A gap in the ditch of the EC1 enclosure suggests that there was an entrance on the eastern side (Fig. 4.31). This may have been purely a product of later disturbance, although the possibility of an entrance in this position cannot be discounted. Truncation has removed much of the western side of the enclosure but a curving linear arrangement

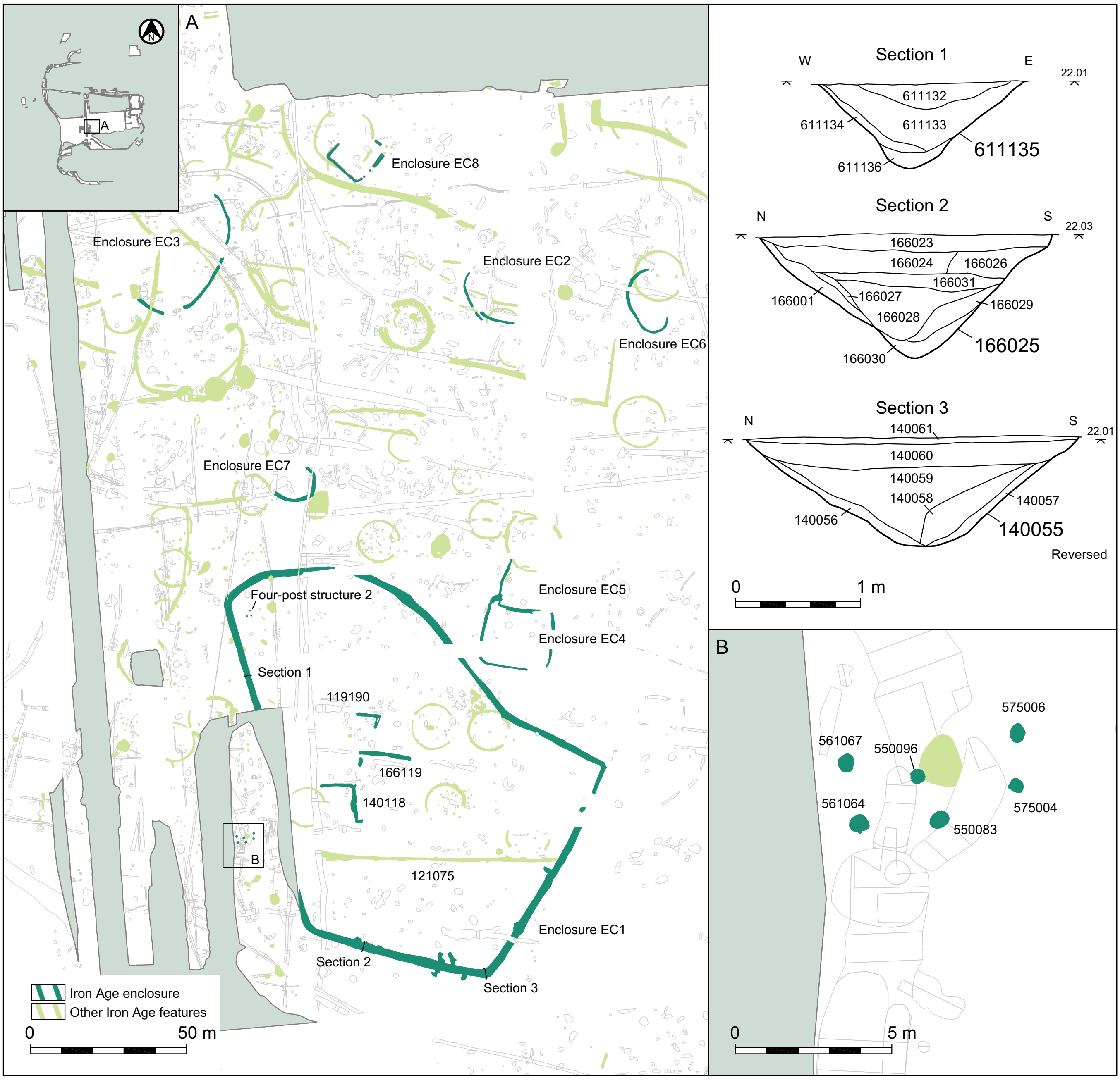


Figure 4.31: Landscape of the southern enclosure

of six postholes (561067; 561064; 550096; 550083; 575006; 575004) may have supported a fenced funnel arrangement designed to control movement of livestock or people into and out of the enclosure (Fig. 4.31).

The enclosure ditch, which may have had an external bank, is unlikely to have been defensive, although the depth of the ditch, which survived to *c* 1 m, in conjunction with a bank, would have formed a sufficiently formidable barrier to keep animals in or out or to clearly designate a site of special purpose (see Plate 4.12 for section). The obstacle would have been even greater if enhanced with a palisade or hedge, the latter suggested by woody taxa found in the environmental samples.

It would be surprising if an enclosure of this scale had had no internal divisions. It is possible that a number of linear features (140118, 166119, 119190 and some unexcavated features) formed a way through from the western entrance into either the northern or southern part of the enclosure, which may have been designed for different animals or different activities.

As we have seen, the environmental evidence shows that the immediate landscape of the EC1 Enclosure was predominantly pasture with encroaching bracken in places. The ditches held standing water and provided a protected habitat for plants such as ferns (Wiltshire in Framework Archaeology 2006). The position of the EC1 enclosure in the Middle Iron Age settlement sequence is uncertain, but it superseded the roundhouse settlement that had developed in this area and so it must have been constructed during a late phase of Middle Iron Age occupation. Finds from the northern and western stretches of the ditch were relatively prolific, and included Middle Iron Age sandy ware pottery, amongst them a number of proto-bead rim jars, which suggest that the ditch was filling before the Late Iron Age. Burnt flint, daub, fuel ash slag and a triangular clay loom weight or oven-brick were amongst the finds. One of the most prolific animal bone assemblages came from the fills of the north-west corner of the ditch. This included cattle, sheep/goat and horse.

...Bone was recovered from several deposits within this feature, and was thought to have originated from both erosion and waste dumping. The first of the secondary deposits in one intersection contained just three unidentified large mammal fragments, but the second in the sequence contained poorly preserved cattle metatarsal and four burnt bones in one intervention, and other large and medium-mammal bones were seen in another three interventions. The third fill contained sheep/goat teeth..., burnt large mammal long bone and calcined medium mammal fragments...In the fourth were cattle tooth and sheep/goat bones, and cattle and other tooth fragments. Most of the bones... were probably accidental inclusions from erosion and not directly reflecting activity in this period, although hearth/floor sweepings may be present in the second and third fills.

(Knight and Grimm, CD Section 13)

Much of the material in the fill of the EC1 enclosure ditch would certainly have derived from domestic debris relating to the previous roundhouse settlement and any earlier occupation phases, as we cannot assume that these areas were swept clean and levelled prior to building the enclosure. A settlement of even relatively small size would have generated a mass of detritus, much of which, on this heavily truncated site, was preserved in this ditch—a relatively substantial and undisturbed catchment feature.

That the density of surviving features was low within the space enclosed by the EC1 ditch indicated that it was used for activities that left no below-ground trace, but also reinforced the lack of construction within that area during earlier phases of the settlement. It is reasonable to assume then that this space was traditionally reserved over several centuries for the same function, whether this was grazing and stock-rearing or some form of human assembly. Whatever its role the size, scale and setting of the enclosure suggests communal activity, as it was too large to have served a single household. Whether it was a protected pasture for collective herds of cattle, sheep or horses or—less credibly—a ceremonial venue, there is insufficient evidence to be certain. It was not possible to correlate the detritus captured within the EC1 ditch to any obvious activity that might have taken place within the enclosure, despite the size and nature of the assemblages.

It is difficult to find parallels for the EC1 Enclosure. A large oval palisaded enclosure found at Horcott Pit (Lamdin-Whymark *et al.* forthcoming), probably of Early Iron Age date, may have been connected with stock rearing. In common with EC1, it had two narrow opposing entrances but, in apparent contrast, was surrounded by a palisade, whilst EC1 was ditched and possibly hedged. Both contained virtually no evidence of internal domestic activity and the entrances of both enclosures were arguably too narrow to accommodate large herds. The western entrance of EC1 was a funnel shape that would have allowed livestock to be moved in single file and the entrances to the Horcott Pit enclosure may have had moveable hurdles for a similar purpose. If the EC1 enclosure were used for stock rearing, only a few animals at a time need have been led into and out of the space. The training of horses or draught oxen within the enclosure has been proposed for the Horcott site (Lambrick 2009). However, the scales of the two enclosures are very different, EC1 nearly triple the size, so it may be injudicious to compare the two.

Other enclosures

Across the remaining settlement area were at least seven other enclosures (EC2–8; Fig. 4.31). A poorly preserved curvilinear ditch (EC2) sited just to the east of the site of Roundhouse 8 enclosed an area at least 21 m long. It cut the gully of Enclosure 6, possibly replacing it as a larger stockade. A small collection of Middle Iron Age pottery, burnt flint, FAS and animal bone from the ditch fills may have derived from activity relating to Roundhouse 8.

The eastern side of another oval ditch (EC3) enclosed an area 40 m long. It seems to have been linked to Enclosure 29, on the north-west side of the settlement, and the two may have been contemporary. The ditch fills contained a little Middle Iron Age pottery but also numerous sherds of Late Bronze Age pottery, doubtless derived from the Bronze Age waterhole that was bisected by the ditch. There were no obvious contemporary internal features.

One of a pair of nested, possibly contemporary, subrectangular enclosures was represented by a truncated shallow ditch (EC4). It enclosed an area *c* 440 m square and may have had an entrance on the eastern side. There were no internal features apart from some shallow hollows, probably produced by livestock trampling. The ditch fills contained Middle Iron Age pottery, fired clay and a few burnt flints.

EC5 was nested within the northern side of EC4 and superseded the earlier circular Enclosure 31. It was smaller than EC4 and less well-preserved, the eastern and northern sides lost to truncation. It would have enclosed an area of at least 170 m square and probably slightly more. The ditch fills produced a relatively large number of Middle Iron Age sherds and fired clay fragments, probably mostly residual material from Enclosure 31. This enclosure may have co-existed with Enclosure 12, at least for a time.

Another oval enclosure (EC6) was about 18 m long and open on the east side, not necessarily as a result of truncation as the terminals appeared genuine. The stratigraphic relationship with Roundhouse 15 was clear—the enclosure was later. Substantial groups of Middle Iron Age (and residual

Bronze Age) pottery and unusually large quantities of fired clay in the *c* 1 m deep ditch fill derived largely from the former roundhouse. No internal features were excavated.

A small oval enclosure (EC7) 13 m across may have been an animal pen linked to Roundhouse 5. The northern side of the enclosure was destroyed by truncation and there was no apparent entrance surviving on the eastern or southern side. The feature may have been contemporary with the Phase 1 or 2 settlements but may also have continued in use later. Two large waterholes, 132310 and 615138 (see below) were located, perhaps significantly, adjacent to the enclosure.

When Enclosure 3 (see above) fell into disuse, rectilinear feature, EC8, was built on the same site. It was represented by a shallow gully, which may have incorporated a timber slot, defining an enclosure measuring *c* 14 m by 13 m. The rectilinear feature coincidentally lay within the entrance gaps of the earlier penannular gully, the north-eastern and south-western sides corresponding with the terminals of the entrances. The north-eastern side had been recut on at least one occasion.

The enclosure appears to have had two entrances, one opening out at the east corner, the other facing south-east. The latter entrance was marked by two postholes and their position suggests that the slot probably marked the line of the wall, possibly a sill beam. Alternatively, they may have represented the gateposts to an enclosure. The eastern entrance opened onto a four-post structure, conceivably a porch, although the two may have been unrelated. Pottery from three of the postholes indicated a date of Middle to Late Iron Age, but the slot produced only prehistoric sherds of indeterminate date.

Similar rectangular structures of Iron Age date have been recorded across southern Britain, notably at Caesar's Camp at the eastern end of Heathrow Airport (Grimes and Close-Brooks 1993), Little Waltham (Drury 1978), Danebury (Cunliffe 1995), and Stansted (Havis and Brooks 2004). They are sometimes interpreted as shrines, although in most cases the evidence is inconclusive and the evidence for specialised religious structures in Iron Age Britain remains slight overall (Smith 2001, 67). EC8 shares some common features with a number of the structures mentioned above, including its wall trench construction and the easterly or south-easterly orientation of the entrance. It may have been a direct replacement for Enclosure 3 and possibly served a similar function as a stockade. Nonetheless, the possibility that this location, close to Roundhouse 8 was part of a focal point for the spiritual life of the Iron Age community cannot be entirely dismissed.

Drivers and inhibitors of settlement modification

Population dynamics

Analysis of populations living in the Middle Iron Age is hampered by a dearth of the dead. No Iron Age burials were found at Terminal 5, and this is common to most excavated sites of the period. Although the number of excavated inhumation cemeteries is increasing (Hey forthcoming; Cunliffe and Poole 2000, 152–7; Sharples pers. comm.) burials are rare. Fragments of human bone and body parts, however, are not uncommon on settlement sites, leading to speculation about alternative methods of disposing of the dead, such as excarnation (Carr 2007, 444–53).

Furthermore, the absence of above-ground preservation of domestic structures in a region where wooden timbers, stakes or cob mass-wall construction, rather than stone, formed the basis of domestic architecture, leaves us uncertain as to the potential living space in a typical roundhouse of 7–10 m diameter. Post-ring construction, for which there is reasonable evidence at the Terminal 5 settlement, allows for the construction of an upper floor for sleeping and storage, leaving only a small roof space, which could be used for additional hanging storage (Pope 2007, 220). In a double level roundhouse, livestock would probably have been brought in overnight, occupying partitioned spaces on the ground level—a dual function of protection of the animal resource and heating for the occupants of the house.

On the assumption that 10 roundhouses, including the anomalous Roundhouse 8, were extant during Phase 1, and that most accommodated no more than one or two families—up to eight or ten people—a maximum population for the settlement of just under 100 may be realistic. However, taking into account that one or two houses would have been under construction, in disrepair or occupied by a smaller group at any given point, a population of 70–80 is probably a more accurate estimate. Whether the population of the Phase 2 settlement was similar is uncertain, as we have mentioned above.

Recent demographic analysis of prehistoric populations in the Upper and Middle Thames Valley (Lambrick 2009) indicated a significant slowing to a modest rate of population growth in the Middle Thames Valley after the Late Bronze Age, compared with rapid growth during the Bronze Age. If population was falling in the Iron Age in this region, it could help to explain the differences in settlement patterns seen here in contrast to the Upper Thames. Even a slowed rate of population growth, without a decline, would have had a significant effect on settlement and agricultural practices. The slowing in population growth could have been due to any number of factors, including soil exhaustion, disease, famine, migration or hostilities. Needham's (2007) proposed 'Great Divide' at around 800 BC, which involved a collapse of an over-inflated economic standard of prestige goods, with a concommitant change in social behaviour, could also have played a part in population decline after this time.

Agricultural practices

The basis of the late prehistoric economy in the Middle Thames Valley, in common with most of southern Britain, was mixed farming. Domestic animals were a significant component of the system as—even within a mainly arable regime—they were required for traction (Reynolds 1995) and secondary products such as milk, cheese, leather and wool. Within this very general system the balance between pastoralism and mixed farming showed a great deal of chronological and geographical variation, but pastoralism may have been a key factor in how agricultural systems developed during the Iron Age at Terminal 5 (see Plate 4.13). The very small quantities of carbonised grain from the site indicates perhaps only insignificant growth in arable production during the Middle Iron Age, with no apparent upsurge until the Late Iron Age and Roman period (Wiltshire in Framework Archaeology 2006; see below). In tandem with a corresponding slowing of population growth, a reduction in arable cultivation (due to soil nutrient depletion or other factors), stagnation, and even decline, may have been typical for the immediate and wider Middle Thames Valley region in general and the Terminal 5 site in particular. In short, the region may have ceased to be economically important and the apparent low status of the Heathrow settlement reflects this.

The coalescing of settlement during the 1st millennium BC, culminating in the nucleated arrangement of the Middle Iron Age may have reflected the need for larger scale and perhaps more communally based management of land and herds. A pooling of resources would have required communal management and a system for negotiating this, perhaps here reflected in the unique setting of Roundhouse 8 and the enigmatic southern EC1 enclosure. Smaller stockades and enclosures created amongst and around the Middle Iron Age settlement were used to separate groups of domestic animals where necessary and perhaps also to grow non-cereal crops, although we have no environmental evidence to support the latter. Larger areas of pasture would have occupied larger blocks of land on the gravel terraces and, during some seasons, on the floodplain, by this time divided by unditched banks, fences and hedges.

Local and regional setting of the Middle Iron Age settlement

Despite the relatively poor evidence for settlement and agricultural patterns in the Middle Thames Valley, in contrast to the Upper Thames and the Hampshire downlands, some patterns of settlement development from the earlier prehistoric period have been observed (see Fig. 4.12 above for distribution of sites). Substantial Late Bronze Age settlements have been investigated at Runnymede Bridge (Longley 1980; Needham 1991; Needham and Spence 1996) and Petters Sports Field (O'Connell 1986) along with a multi-period settlement at Brentford (Bell 1996) and Mayfield Farm south-east of Heathrow (Merriman 1990). Late Bronze Age occupation sites were relatively common in the greater London area, including Hillingdon, and in Surrey (Cotton 1991; 2000; Cotton *et al.* 1986; Needham 1987). Many of these were associated with field systems, as at Stanwell (O'Connell 1990) and Imperial Sports Ground (Crockett 2001; Framework Archaeology 2006).

At Terminal 5—as for several of the sites cited above—these settlements continued, many of them with little alteration, into the Early or later Iron Age. As at Terminal 5, ancient field boundaries and enclosures were not renewed and in some cases, for example at Horton (Wessex Archaeology 2009), sites were largely or wholly abandoned as settlements were forced by climatic change or other factors to shift location. In the Middle Iron Age small open settlements set amongst Bronze Age field systems both respected and superseded the earlier patterns. At Thorpe Lea Nurseries (Hayman forthcoming a) and at Brooklands (Hanworth and Tomalin 1977; Hayman 1991 and forthcoming c), long sequences of Iron Age occupation were recorded.

South of the river, away from the gravel terraces, there is less evidence for open Iron Age settlements set amongst pre-existing field systems. Rather, a number of enclosed Middle and Late Iron Age settlements with few traces of earlier activity have been recorded recently. These include Pirbright on the Surrey heath (Poulton 2004, 58–60) and the enclosed settlements at Runfold Farm and Tongham Nurseries near Farnham in Surrey. Limited evidence of Iron Age activity on the London Clay has also been recorded (Poulton 2004).

Middle Iron Age settlements characterised by penannular gullies have been investigated at Caesar's Camp, where a complex of penannular gullies and enclosures may have been constructed adjacent to a 'shrine' within a sub-rectangular banked enclosure (Grimes and Close-Brooks 1993). However, the enclosures may have originally been part of an unenclosed settlement similar to that at Terminal 5, and only later enclosed by the bank. The relationship of the settlement to the so-called shrine is still uncertain.

At Hengrove Farm Iron Age penannular gullies—along with pits, postholes and a large waterhole—occupied an unenclosed area *c* 200 m long and 30 m wide, built within a pre-existing Middle Bronze Age coaxial field system (Hayman forthcoming d). Some of the gullies probably enclosed roundhouses and other smaller ones may have been livestock pens. As at Terminal 5, one at least enclosed a four-poster. Here occupation continued into the Roman period without a break, and a complex of Late Iron Age and Roman ditched enclosures emerged from the Middle Iron Age settlement. At nearby Ashford Prison (Carew *et al.* 2006) a group of penannular enclosures, pits groups and four-posters lay on a raised area between the River Ash and a palaeochannel. The gullies apparently respected a Bronze Age ring ditch, which could have survived as a low earthwork during this period. There is less evidence at Ashford than at Terminal 5 for continuity from the beginning of the 1st millennium BC into the Late Iron Age.

At Thorpe Lea Nurseries near Staines a Middle to Late Iron Age settlement succeeded a Middle Bronze Age field system, but with only limited evidence of Early Iron Age activity, as at

Terminal 5 (Hayman forthcoming a). But here there were no penannular gullies found, rather clusters of pits, postholes, four-posters, irregular gullies and two waterholes, and finds were very few. Only a part of this area survived in use through the Late Iron Age and Roman period. Like some other Middle Iron Age settlements that evolved within the relict Bronze Age field systems on the West London and Surrey gravels, the Thorpe Lea Nurseries site produced no carbonised crop remains, querns or other evidence for cultivation from Middle Iron Age deposits. In contrast to Terminal 5, however, the site produced significant evidence for iron-working and also for spinning and weaving, including 156 loomweight fragments.

In the next section we will consider how the Middle Iron Age inhabitants of the Heathrow area carried out their daily lives.

Farming and living in the Middle Iron Age at Heathrow

Farming in the Middle Iron Age at Heathrow: the economic basis

The economy of the Middle Iron Age settlement at Terminal 5 was based on mixed farming, as was the case for most later prehistoric sites in the Thames Valley (see above). The evidence for these practices takes the form of animal bones (where preservation is good), structural evidence for grain/fodder storage facilities and livestock enclosures, but also environmental evidence for cultivation, manuring and water resources. The broad scheme of a mixed arable economy, however, allowed for significant variation from region to region and site to site. At Terminal 5 the Middle Iron Age balance between pastoralism and cultivation appeared to be biased towards the former. The period spanning the Middle Bronze Age to the Late Iron Age saw an evolution on the Thames gravels from a landscape of perhaps lightly grazed rough pasture with some thorn scrub to a fully organised agricultural landscape. However, by the end of the Iron Age in the Middle Thames Valley the total area under cultivation was much less than in the Upper Thames region, partly because of poorer soils for arable, but perhaps also for more complex social and economic reasons.

Investigation of the Middle Iron Age settlement and surrounding landscape produced a remarkable dearth of the material evidence typically used to characterise prehistoric economies. These can include artefacts linked to husbandry (ploughshares, reaping hooks, harness fittings), to craft and industry (metalworking debris, weaving combs, loomweights), potting (wasters, tempering material, burnishers) and food processing (quernstones, threshing floors), to transport, import and exchange (horsegear, exotic ornaments and jewellery, non-local stone), and so on. At Terminal 5 the Middle Iron Age artefact repertoire, apart from pottery, consisted of a single quern fragment, a single spindlewhorl, and a few loomweight or oven brick fragments.

The combined evidence for Middle Iron Age economic activity and status can be summarised as follows:

- Few artefacts other than pottery and structural clay were recovered.

- No exotic ceramics or other artefacts were present in the assemblage.

- There was evidence for cereal production and processing on a small scale—a few charred grains, a single quern and five or six four-post structures.

- No obvious modification or maintenance of the Middle-Late Bronze Age field system was identified.

- There was more substantial evidence for pastoral agriculture—waterholes, a small animal bone assemblage and numerous livestock enclosures.

- Evidence for craft activity comprised the following: weaving (loomweight fragments and a spindle whorl); metalworking (slag from waterhole 148303 and by-products of high temperature activity in pits 183030 and 539450); construction (postholes and beam slots).

Specialisation and Intensification?

We have seen that the Middle Iron Age artefact assemblage from Terminal 5 provided no evidence for intensification of manufacturing, trade, exchange or social or political connections seen at some other sites of this period. Jones' (1985) interpretation of later prehistoric settlements as either predominantly producers or consumers of arable produce has been much debated (Hambledon 1999) and the development of farming in later prehistory may be best seen as a social rather than purely economic phenomenon. This would have been based mainly on subsistence living, with production occasionally increasing in response to population pressures or economic/political developments. If the population increased, a higher crop yield would have been needed, but contingency supplies would always have been required at a subsistence settlement to avert famine in times of failing harvests or low births in livestock resulting from disease or bad weather. Intensification in terms of higher arable or animal yields would have been required to sustain communal activities or construction work or to provide the mainstay for trade and exchange. However, the Terminal 5 Middle Iron Age settlement produced no evidence whatsoever for the latter.

Arable agriculture

Our evidence for the Middle Iron Age economy suggests that arable cultivation was practised on a very small scale at Terminal 5 as at many other sites in the Middle Thames Valley. Truncation levels at Terminal 5 would, in any case, have removed any surviving ard marks. Remains representing cereal cultivation were few, only partly due to truncation and poor preservation conditions. A small group of charred grains of emmer/spelt and barley was recovered from a feature relating to an oven or hearth in Roundhouse 19. The weeds from this charred assemblage indicate that the soils of the cultivated fields surrounding the settlement were poor and damp. A single charred barley grain recovered from pit 529306 in the western fields, radiocarbon dated to between the late 4th and early 3rd centuries BC, provided a small but significant indicator that a specific crop was being grown at a certain time during the Middle Iron Age.

The paucity of charred grain from Terminal 5 Middle Iron Age deposits corresponds to a total lack of such material at Thorpe Lea Nurseries near Staines and a dearth at other Middle Iron Age sites that evolved within relict Bronze Age field systems of the West London and Surrey gravels (Hayman forthcoming a). By contrast, environmental and structural evidence from sites in the Upper Thames Valley suggest that Iron Age settlements sited on high terraces and associated with storage pits, such as Ashville (Parrington 1978) and Gravelly Guy (Lambrick and Allen 2004), were undertaking cereal production on a much larger scale. The Hampshire chalklands seem to have been even more prolific cereal producers. Lower lying Middle Iron Age settlements in the Upper Thames produced more evidence for pastoral than arable activity, but may have produced just sufficient grain to provide for their own community. This may also have been the case at Terminal 5 and in the Middle Thames Valley generally during this period.

Attempting to present a picture of the development of arable agriculture in the Middle Thames Valley is difficult due to such low levels of evidence. However, emmer, spelt, rye and six-row hulled barley were present in Late Bronze Age/Early Iron Age deposits at Thorpe Lea Nurseries, Egham (Robinson in Hayman forthcoming a) and a barley rachis and an unidentified cereal grain were recovered from the 7th century BC settlement at Dunston Park in the Kennet Valley (Clapham in Barnes *et al.* 1995, 84–5). Much larger quantities of spelt glumes, and some emmer glumes and six-row hulled barley and wheat came from Early Iron Age features at Wickhams Field, Reading (Scaife in Crockett 1996). The available evidence indicates that in the Middle Iron Age spelt and six-row hulled barley continued to dominate the arable economy in both the Upper and Middle Thames Valley. Emmer wheat still appeared in Middle Iron Age samples but as only minor components of assemblages dominated by spelt. Some rye was found at Mingies Ditch (Jones in Allen and Robinson 1993) and oats sometimes occur in small quantities during this period, but perhaps as a wild weed species rather than a deliberately cultivated crop.

Regional variations in cereal crops were typical in Middle Iron Age Britain (van der Veen 1992). Spelt and six-row hulled barley predominated throughout most of southern England and the Midlands, but in the south-west wheat seems to have been less important. In East Surrey and Kent emmer continued as an important crop from the Bronze Age onward. Concentrations of cereal remains found on settlement sites also vary greatly. More cereals occur on Upper Thames Valley sites, excluding the floodplain, than on sites in the Middle Thames Valley but not as high as on settlements on the Hampshire Chalk.

Evidence for storage of crops

The topographic conditions of the Terminal 5 Middle Iron Age site would have been generally unsuitable for the storage of grain in pits cut through the subsoil, as even the shallowest of hollows would have filled with water during some seasons, in contrast to the chalk downlands where pits of up to three metres deep provided storage facilities for tons of grain. Few above-ground four-post structures of the type generally interpreted as granaries were found at Terminal 5, but we cannot rule out the possibility of storage of foodstuffs and other perishable materials on the upper floors of roundhouses (Pope 2007). In fact there is little indisputable evidence from Thames Valley sites of four-posters associated with grain or other stored produce, and they may have been mainly connected with pastoral farming. They are common features of Bronze Age and Iron Age pastoral settlements in both the Upper and Middle Thames Valley, recorded at the Middle Iron Age sites at Eton Rowing Lake, Dorney and Ashford Prison. They were also present at somewhat earlier low-lying Middle Iron Age grazing settlements at in the Upper Thames at Claydon Pike (Miles *et al.* 2007), Mingies Ditch (Allen and Robinson 1993) and Port Meadow (Lambrick and McDonald 1985.

Within the Middle Iron Age settlement at Terminal 5, a four-post structure (9), surrounded by a drainage gully (172032), was constructed close to the roundhouses and animal pens of the Phase 1 Middle Iron Age settlement (Figs. 4.20 and 4.24). Another four-poster (FP3), measuring 1.9 m x 1.9 m, lay equally close to this agglomeration in the south-west part of the settlement, either pre-dating or superseding Enclosure 30 (Fig. 4.30). Another group of three postholes immediately adjacent to FP3 may also have been a four-poster. Within the area encompassed by the large EC1 enclosure three posts of another four-poster (FP2) would have formed a structure of 1.8 x 1.4 m, but it was probably not contemporary with the enclosure (Fig. 4.31).

At Green Park near Reading there was a similar pattern of some four-post structures closely associated with roundhouses and others concentrated some distance from the domestic site in work or storage areas (Brossler 2004), whilst at Horton in Berkshire two four-posters lay close together immediately adjacent to a roundhouse gully (Wessex Archaeology 2009).

Although the plethora of other post-holes, excavated and unexcavated, in the settlement area at Terminal 5 may have also supported four-post or other storage structures (Fig. 4.32), there were no extensive rows or stands of such structures as are seen on some Middle Iron Age settlement sites. If the population of the settlement was relatively small and arable cultivation was on a small scale, as suggested by the, albeit limited, environmental evidence, there would have been little need of extensive storage facilities—two or three four-post structures could have sufficed to store a small seasonal harvest over a winter.

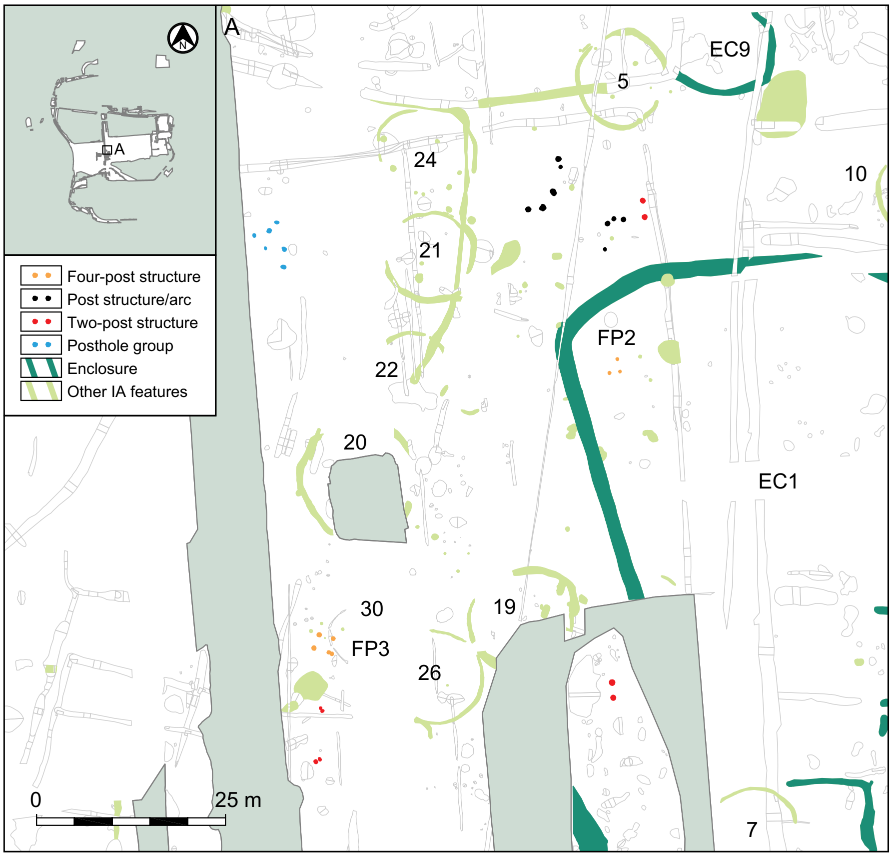


Figure 4.32: Posthole structures in the Middle Iron Age settlement

Crop processing and preparation

Few querns were recovered from the Terminal 5 excavations, and only one from a secure Middle Iron Age context. This nonetheless corroborated the more general evidence for the region that sarsen was a stone of choice for saddle querns during the Iron Age.

... the indications are that by the Early to Middle Iron Age traditions were unchanged. Sarsen was still in use as a saddle quern material, as evidenced by a piece with a pecked, concave grinding surface (688003)..., while further large pieces of burnt sarsen, perhaps also quern fragments, came from the same pit. Sarsen was used elsewhere in the area for Iron Age saddle querns, as for instance at Lower Mill Farm, Stanwell (Jones & Poulton 1987, 7).

(Roe, CD Section 7)

The presence of this single saddle quern fragment from a poorly dated pit (688003) almost half a kilometre to the east of the settlement in Area 91 compares to a complete absence of querns at the Thorpe Lea Nurseries site (Hayman forthcoming a).

Livestock production

The poor condition and small size of the Middle Iron Age animal bone assemblage is due largely to poor preservation conditions, but a few well-preserved assemblages recovered from three or four waterholes are an indication of what has been lost to us through truncation of deposits and deterioration. Poor preservation of bone precluded a sound reconstruction of the local pastoral economy, but there is little doubt that a number of the truncated penannular enclosures that shared the settlement area with round-houses and waterholes were stock pens. Some of the unmodified embanked or hedged Bronze Age fields to the east of the settlement also no doubt provided pasture for sheep, cattle and horses.

This dearth of reasonable sized animal bone assemblages is reflected more widely in the Middle Thames Valley, with few assemblages of any size, virtually none large enough for detailed analysis beyond species representation (Hayman 1991 and forthcoming c). What evidence we have, from, for example Cippenham (Ford *et al.* 2003) and Fairylands, Laleham (Taylor Wilson 1996) displays a similar variation in species proportions to Middle Iron Age settlements in the Upper Thames Valley.

The collective evidence that the inhabitants of the settlement were engaging in pastoral agriculture, perhaps to a greater degree than arable, is substantial, particularly towards the end of the Middle Iron Age. The original small penannular stock pens attached to Middle Iron Age domestic dwellings were replaced at this time by larger (but still curvilinear) and more remotely sited enclosures that would accommodate much larger numbers of beasts. If the EC1 southern enclosure were a stockade it would have held huge numbers of animals (but perhaps too many to justify such an interpretation). We know from the surviving animal bone that the Heathrow inhabitants were keeping cattle, sheep and horses; pigs were rare and need woodland, by this time apparently in relatively short supply, to forage. Horses were not uncommon within the Terminal 5 Middle Iron Age assemblage. The inhabitants of the settlement may well have engaged in horse rearing—a major economic activity in some Middle Iron Age communities. There was no evidence to suggest that the horses were butchered for consumption, as was found for the Late Bronze Age at Runnymede (Done 1991).

There is little evidence that the Bronze Age fields were much used for arable during the Middle Iron Age. A thin scatter of pottery was detected, but no signs of boundary maintenance and barely a visible imprint on the vast stretches of land to east, west and north of the settlement. Whilst this may merely reflect the lack of any need to do anything other than utilise the ancient trackways and tracts as they stood, the Iron Age community may have been maximising the pastoral elements of their landscape, using the old Bronze Age arable fields to

Plate 4.13: Artist's reconstruction of Middle Iron Age pastoral landscape

produce foggage instead of cereals on a large scale. We have seen how the Bronze Age inhabitants maintained their field ditches, redigging and cleaning them on a regular basis, as is the tradition of arable farmers, their fields advancing forward across the landscape over the generations. By contrast, the Middle Iron Age inhabitants put their energy into building, rebuilding, and rebuilding again complexes of stock pens, first small and penannular, then larger and curvilinear, and finally during the early Roman period as rectilinear compounds—and all in the same spot for centuries (see Plate 4.13).

Water for the Middle Iron Age settlement

In comparison with the Middle and Late Bronze Age, relatively few Iron Age waterholes, wells and ponds have been found anywhere in the Thames Valley (Lambrick 2009). Where they do occur they seemed to be typically associated with pre-existing field systems, apparently continuing previous practices, as was the case at Terminal 5. This does suggest some continued use of the field system into the Iron Age, but most of the waterholes that were extant during the Middle Iron Age at Terminal 5 lay within the settlement area rather than the surrounding fields. It is possible that changes in social behaviour and economic circumstances meant that artificial water supplies were less a mainstay of the economy than previously. Interestingly, ramped waterholes, wells and ponds became more common again in the Roman period.

Although far fewer such features were newly created by the Middle Iron Age inhabitants of Terminal 5 than by their Bronze Age predecessors, immediate access to water would have been essential in the agricultural landscape of this period, and pits dug to no great depth in this relatively low-lying environment would have readily secured this resource. The Middle Iron Age inhabitants would have relied on waterholes for a range of needs, including watering their livestock and various domestic activities. Middle and Late Bronze Age wells and waterholes that had been left open continued to fill and to be used during the Middle Iron Age, at least for rubbish disposal, and some of these ancient features were recut on several occasions to reclaim access to groundwater, although many would have been unsuitable as sources of clean drinking water.

In contrast to the Bronze Age inhabitants of Terminal 5, the Middle Iron Age farmers did not dig new wells, within the definition of a pit that was compact in plan with a vertical shaft, sometimes lined with timber or wattle, and designed for drawing water in a container or for access via a log ladder. The pits designed for access to water that were newly constructed during the Middle Iron Age fall more properly within the category of 'waterhole' or even pond. Some, in fact, may have been dug as simple pits designed for a multitude of functions but, fortuitously sometimes penetrated ground water or collected rainfall at intervals.

How did the Middle Iron Age farmers acquire fresh water?

The economic or social reasons for the cessation during the Iron Age of well construction, especially of the timber and wattle-revetted variety, are not entirely clear. These people would have seen the evidence of preserved wooden linings and log ladders during their recutting operations and would have been entirely capable of the technical requirements, as their timber framed roundhouses testify.

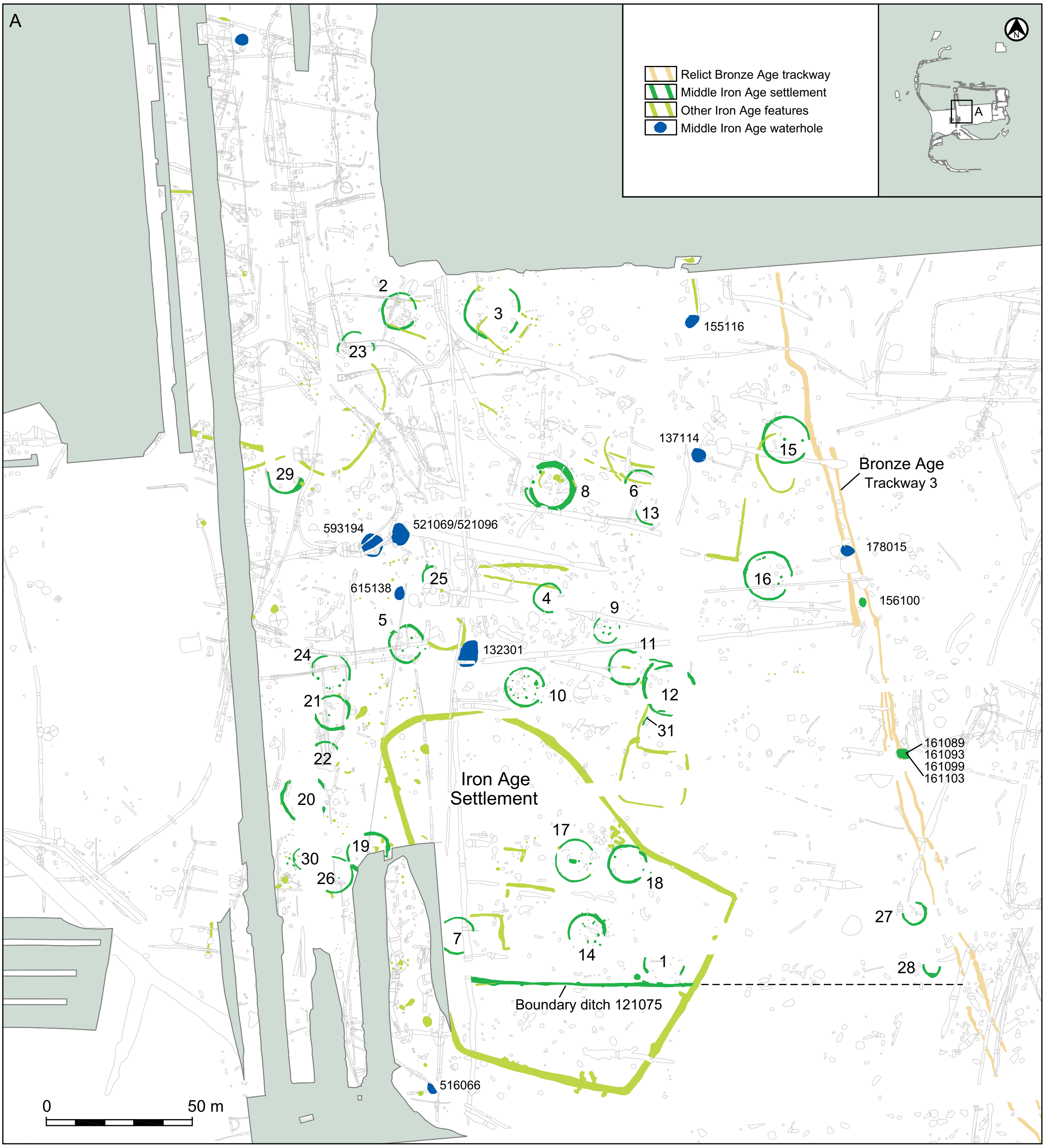
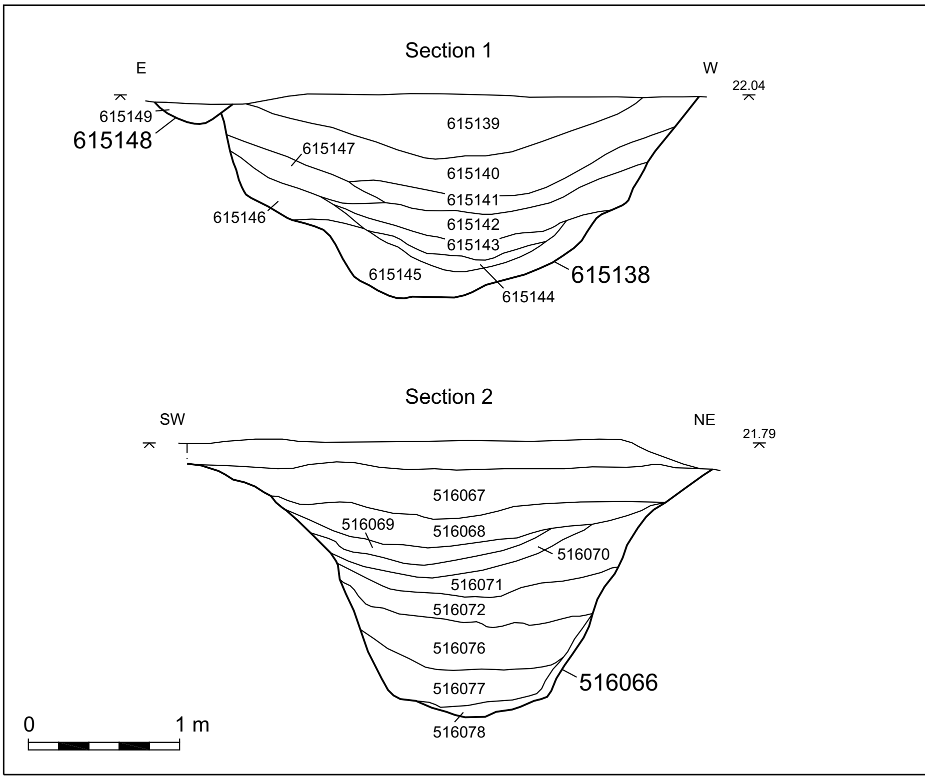


Figure 4.33: Distribution of waterholes within the Middle Iron Age settlement

We must assume that, in the absence of wells *per se* the inhabitants of the Middle Iron Age community collected much of their drinking water from roof run-off into eaves-drip gullies and sumps, wooden drums, leather sacks and ceramic vessels. It is also very likely that they made the relatively short journey of just over a kilometre to the river Colne—the nearest natural source of water—on a frequent, probably daily, basis to fetch clean water and perhaps even to take their herds to drink. The relict Bronze Age field boundaries clearly would have continued to present a hindrance both to humans and animals crossing the western fields. But in picturing the Bronze Age landscape, constrained as it was by the obstacles of open ditches, consolidated banks and maintained hedges, it is also worth considering just how much that same landscape would have altered given a few generations of neglect. We have very little evidence that the inhabitants of the Middle Iron Age settlement actively maintained or enhanced the western field system. How onerous would the short journey to the river across a landscape of infilled ditches, abandoned trackways, eroding banks and breached hedgerows have been to



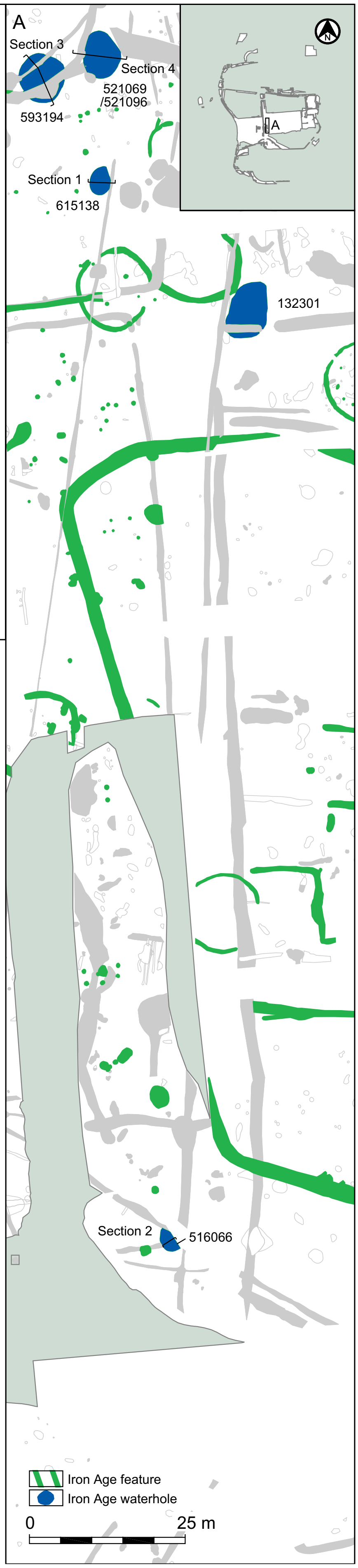


Figure 4.34: Plan and sections of waterholes 615138 and 516066

farmers accustomed to the hardship of a basic subsistence lifestyle?

For the sake of convenience, and because the morphological boundaries are blurred, we will refer to all non-well type pits dug for access to water as ‘waterholes’. We will consider first the distribution of waterholes and ponds within the Middle Iron Age settlement and its immediate surrounding landscape and then describe some of these features and their associated artefactual and palaeoenvironmental evidence.

Distribution of Middle Iron Age waterholes

Waterholes were newly cut or reused both within the confines of the settlement and in the Bronze Age field systems to the east and west of the settlement. Six waterholes were constructed in the heart of the Middle Iron Age settlement, amongst the roundhouses and animal pens (see Fig. 4.33). Another (155116) was dug in the north-east part of the known settlement area, just within the excavated area. Only a single Middle Iron Age waterhole was cut in the fields to the east of the settlement, and the three waterholes in the western fields that contained Middle Iron Age material were all probably reused Bronze Age features (see above). This western sector of the Bronze Age field system seemed to attract far more activity during the Middle Iron Age than the eastern fields, including reuse of the HE1 monument, as we have discussed earlier. This is hardly surprising since the route to the river led across these floodplain tracts. The recut Bronze Age waterholes would have provided convenient watering places for herds put out to pasture in this area.

We will deal first with the waterholes excavated in the settlement area and then discuss those within the eastern and western Bronze Age fields.

Waterhole 132301

A large tear-shaped waterhole (132301) constructed within the annular Phase 1 Middle Iron Age settlement group, between Roundhouse 5 and Roundhouse 10, may have been the earliest of the newly constructed waterholes of this period (Fig. 4.33). It clearly had no Bronze Age precursor as it cut across the line of Bronze Age Trackway 2 and the southern boundary of Farmstead 4. There was only a single post-Deverel-Rimbury sherd in a secondary fill to attest to earlier activity in the area. The waterhole was 9.5 m long, 6 m wide and fills eroded from the top and sides of the feature indicate that its original profile was fairly vertical. A deposit in the middle of the fill sequence contained sherds of Middle Iron Age proto-bead rim jars, along with 51 fragments of cattle, horse and sheep/goat bone.

Waterhole 615138

A smaller tear-shaped waterhole (615138) lay just 25 m north-west of 132301 beside two Bronze Age waterholes in Bronze Age Farmstead 3 (Fig. 4.34). It was 4.5 m long and 1.4 m deep with a stepped but not deliberately ramped profile. Over 20 sherds of Middle Iron Age pottery recovered from an eroded gravel deposit (615142) in the lower part of the feature provided a secure date, whilst a dozen sherds of post-Deverel-Rimbury ware, flint flakes and debitage and a lump of fuel ash slag from the uppermost fills (615139 and 615140) had clearly originated from more ancient deposits dumped into the top of the waterhole at a later stage to level it off.

Waterhole 593194/593190

Waterhole 593194 also lay within the north-west part of the settlement. It was very large, 7.2 m cross and over 1.5 m deep. It had a complex history of construction, use and backfilling starting in the Middle Iron Age and ending in the Late Iron Age or early Roman period. (Figs 4.34 and 4.35). The date of the original wide cut (593194) may have been contemporary with the earliest phase of the settlement, or even earlier, as Middle Iron Age pottery was present in some of the lower fills. Subsequently, and still within the Middle Iron Age the waterhole was recut as 593190.

The animal bone assemblage from the fill sequence of this first recut was one of the best Iron Age groups from the site, providing evidence of butchery of cattle and removal of horn cores, activities that possibly took place close to the waterhole.

... All deposits in this feature that contained bone were thought...to have originated from the erosion of surrounding upcast or topsoil. The third deposit contained mostly horse with cattle and sheep/goat, several nearly complete bones and in good condition. With the exception of a loose tooth and a possibly gnawed pelvis fragment, they appear to have been directly deposited...The sixth contains two articulated medium mammal vertebrae and large pieces of cattle humerus and scapula, all in good condition, suggesting fairly direct deposition after butchery (including the removal of horn cores or casing), but again some evidence of gnawing indicates exposure of some bone waste. The eighth deposit also contained mineralised bone in fair condition, and horse teeth probably from a single individual...

(Knight and Grimm, CD Section 13)

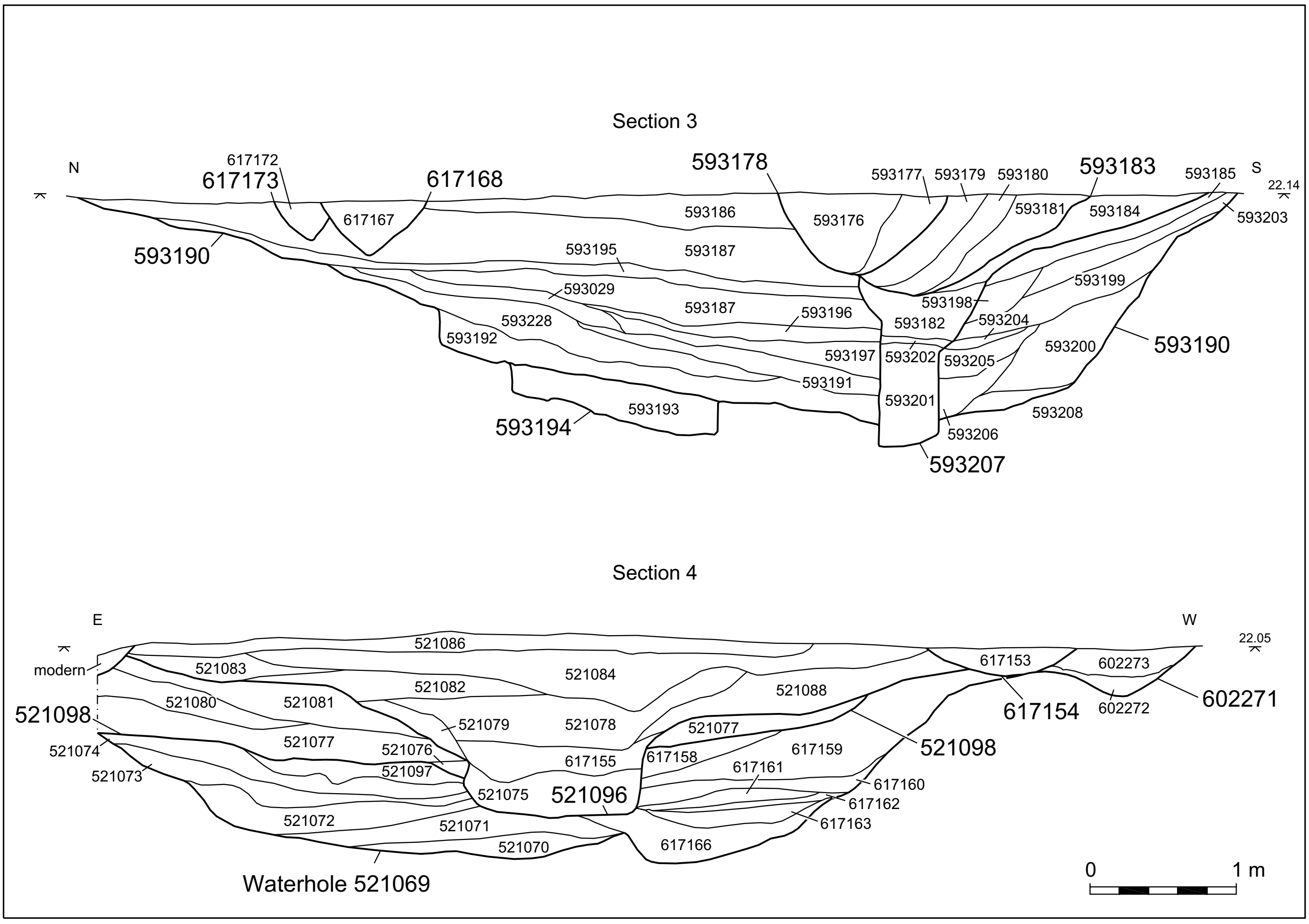


Figure 4.35: Sections of waterholes 521069 and 593194/593190

The size and condition of the animal bone assemblage from waterhole 593190 may reflect its proximity and contemporaneity to Roundhouse 8 which, during its second phase of use, saw the disposal of large quantities of animal bone in its surrounding ditch (see above).

During the Late Iron Age/early Roman period the waterhole was recut as a well (593207) with a ramped side for livestock access. Two complete bead rim jars were either placed, or as likely, dropped into the void during this latest stage of use (see below).

Waterhole 521069/521098
Waterhole 521069 lay immediately adjacent to 593190 (Figs 4.34 and 4.35). It also had a history of modification, recut sometime during the Iron Age as 521098 and in the Late Iron Age/early Roman period as a narrower, shallow, shaft-like feature, 521096 (see below). The waterhole was not well-dated, but an Early Iron Age bowl fragment was found in a lower fill (617166) of 521069 and a few sherds of Middle Iron Age sandy ware slightly higher up in the sequence. In contrast to waterhole 593190, there were only a few small scraps of cattle and horse bone.

Waterhole 137114
This wide basin shaped feature is possibly better described as a deep pit on the basis of its shape and size (Fig. 4.33). It was 4.6 m in diameter but, at just over 1 m deep, it may have barely impinged on the groundwater level, although the lowest of the fills collected in at least partially waterlogged conditions. The pit lay 20 m to the west of Roundhouse 15. The lower fills contained Middle Iron Age pottery, along with a clay loomweight or oven brick fragment and a few cattle, sheep and horse bones, but the fills appeared to have accumulated slowly through erosion and silting, with no great amount of discarded material thrown in. A subsidence hollow in the top of the pit, however, was clearly used as a rubbish tip, collecting large quantities of fragmented Late Iron Age/early Roman pottery and a sizeable animal bone assemblage that included possible red and roe deer.

Plate 4.14: Waterhole 516066

Waterhole 155116
An oval shaped ramped waterhole (155116) (Fig. 4.33) lay on the eastern edge of the settlement, to the north of the main distribution of roundhouses, in what had been the south-east corner of Farmstead 4. Its location, some distance from the main settlement nucleus, may explain the absence of finds, apart from burnt flint and a few scraps of fuel ash slag. Although undated it would have been conveniently sited for use by the occupants of the Middle Iron Age settlement. The south side of the feature was steep but a shallow slope down to the northern side could have provided access to livestock.

Waterhole 516066
The position of this waterhole, just beside the south-east corner of the large southern enclosure (EC1), suggests that it was constructed for the purpose of watering animals being herded into and out of the enclosure, using the western entrance (Fig. 4.34). This is entirely speculative, but no other Iron Age waterholes were found in this vicinity. The feature was 2 m deep and *c* 3 m wide, and slightly ramped on the southern side It was securely dated by ceramics to the Middle Iron Age, but a single shell-tempered sherd, dated to the Late Iron Age, from half way down in the fill may indicate that it was still filling during this time. A small waterlogged fragment of oak with a saw mark was recovered from a basal fill, 516079 (Plate 4.14).

Waterhole/pit 105027
A shallow feature (105027) possibly a waterhole, lay within the eastern field system, some *c* 200 m from the settlement (Fig. 4.36). It was dug directly across a ditch associated with Bronze Age Farmstead 6. The pit was roughly circular in plan, 3.6 m in diameter and 0.8 m deep. The southern edge formed a shallow slope, suitable for access by livestock, whilst the northern edge was steeper. The feature contained a classic silting sequence, with gravel-rich

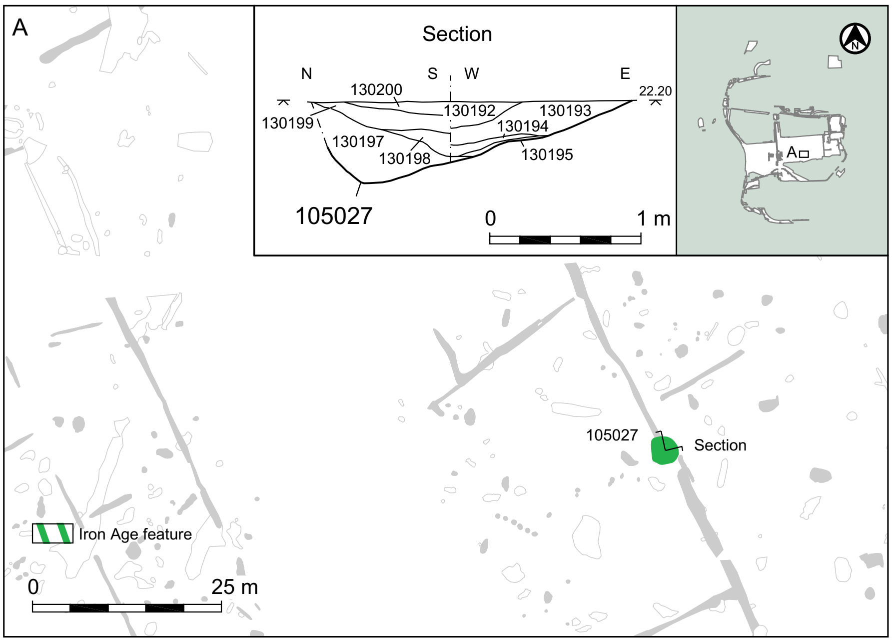
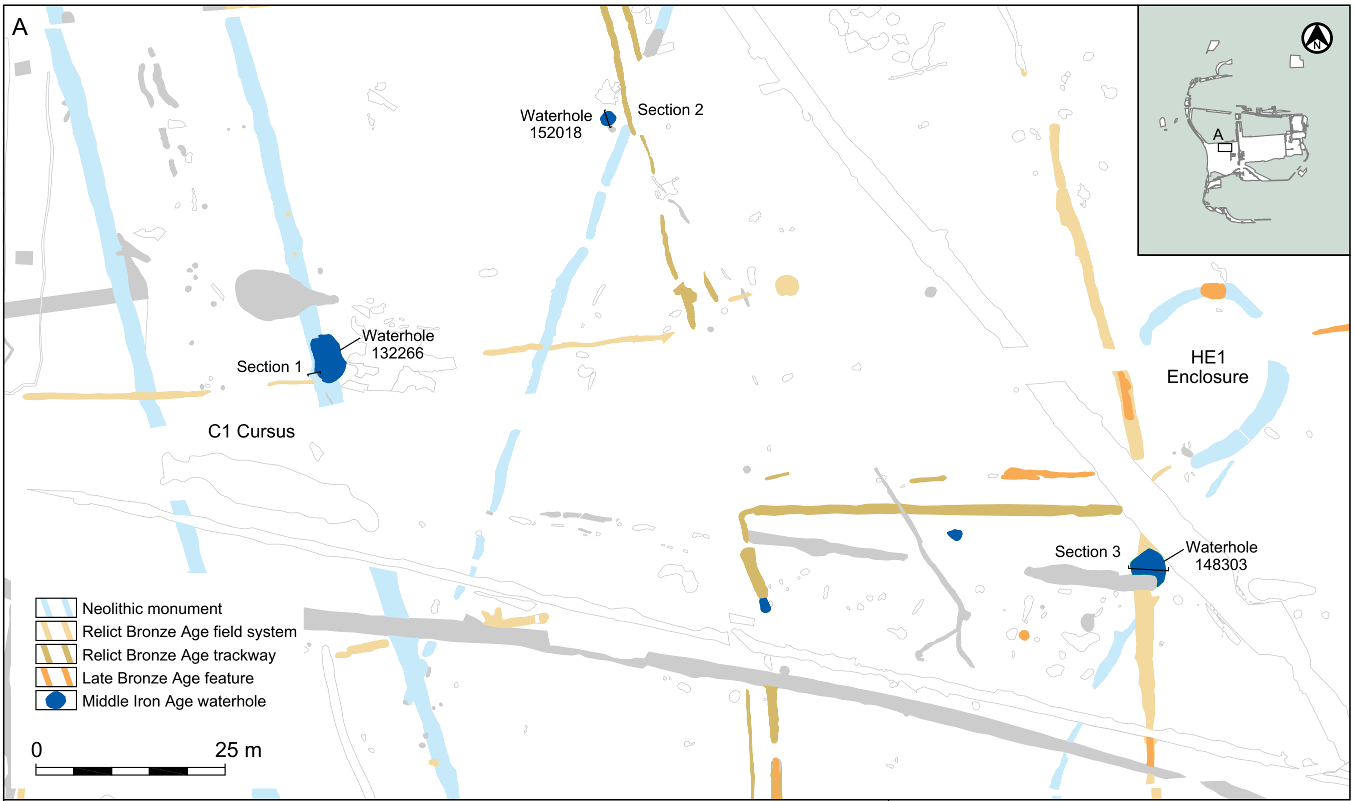


Figure 4.36: Section of waterhole/pit 105027



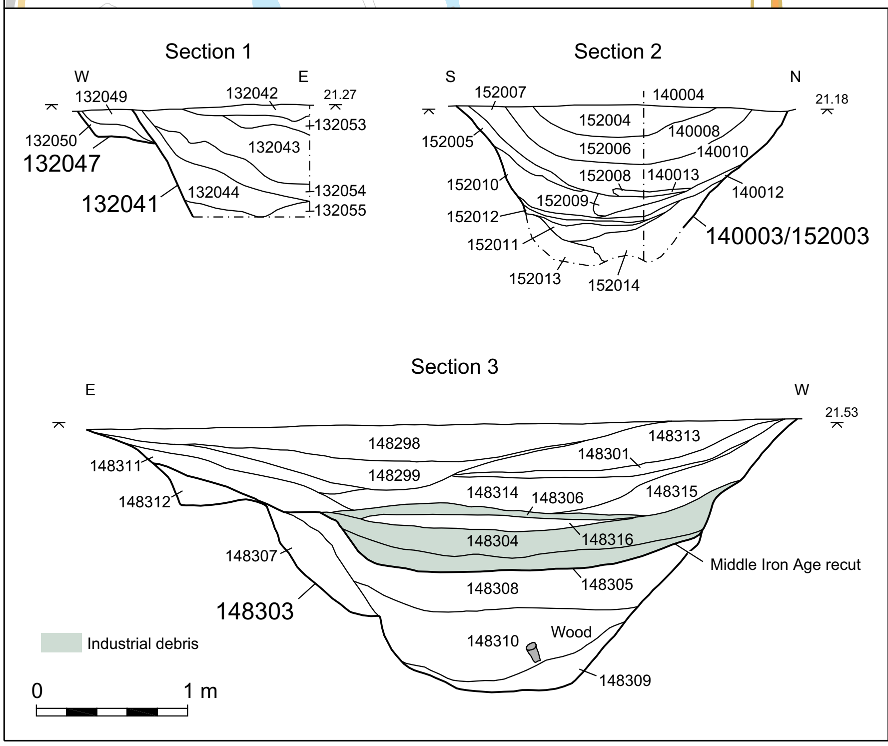


Figure 4.37: Waterholes 132266, 148303 and 152018

primary fills (130195) sealed by two successive layers which formed in standing water. The upper fill formed gradually over a long period. Half a dozen small sandy ware sherds of probable Middle Iron Age date, were recovered from the lower fill but otherwise only a few residual struck flints and some fired clay fragments were present.

Waterhole 132266

A teardrop-shaped waterhole (132266), 6.3 m long and 1.3 m deep, was cut into the fill of the eastern ditch of Stanwell Cursus C1, probably during the Late Bronze Age (see above; Fig. 4.37). The lower fill (132271) contained only post-Deverel-Rimbury pottery and, although no recuts were recorded, the section drawing suggests that the feature was recut at some stage. A small collection of Middle Iron Age body sherds was found in the fill of the recut (132256). The use of this waterhole in the Middle Iron Age may have been contemporary with that of waterhole 148303 (below).

Waterhole 148303

Waterhole 148303, located at the edge of a Bronze Age field to the west of the Middle Iron Age settlement, may also have been Bronze Age in origin, recut during the Middle Iron Age (Fig. 4.37). In its final form it was some 1.77 m deep, the earliest fill (148309) representing the rapid collapse of the gravelly sides shortly after it was dug. This deposit contained only a few fragments of animal bone. From fill 148305 upwards a significant quantity of Iron Age pottery, metalworking material and fired clay had accumulated in the waterhole. These deposits were sealed by a sequence of gravel-rich secondary fills and tertiary fills.

The 348 sherds (over 2 kg) of pottery along with over 1 kg of fired clay, 1.3 kg of animal bone, over 1.5 kg of slag and 5 kg of burnt flint are distinctively large

Middle Iron Age material assemblages for the site. Most of the slag was recovered from deposits 148305, 148304 and 148306, along with over 850 g of the fired clay and 2.8 kg of the burnt flint. Amongst the fired clay were fragments of two loomweights (or oven bricks), and a partially vitrified fragment of a tuyere of typical Middle Iron Age design. The slag was identified as waste from iron smithing with some possible smelting waste. The tertiary fills of the waterhole also produced large quantities of burnt flint and fired clay, and a single piece of slag, debris perhaps derived from middens associated with this industrial activity. The artefacts in these upper fills may represent material deposited by a re-introduction of ploughing. If this were the case, it highlights a (localised?) shift from pasture to increased cereal cultivation.

Waterhole 152018

This feature was apparently sited with reference to the Bronze Age field system, close up against Trackway 1, which defined the eastern side of Bronze Age Farmstead 3 (Fig. 4.37). It was poorly dated by four Middle Iron Age body sherds in one of the upper fills (140008). A possible pre- Middle Iron Age origin was suggested by the fill profile, which showed evidence of either an episode of recutting or collapse of a shaft, but this was uncertain and only insubstantial fragments of wood were present.

What can the waterholes tell us about the Terminal 5 Middle Iron Age settlement and landscape?

Altogether 11 waterholes either constructed or recut during the Middle Iron Age were excavated and environmental samples taken from most of them. Unfortunately, several waterholes attributed to this date, and which contained the most suitable material for environmental analysis, were subsequently rephased through radiocarbon dating or other means. A pit or waterhole, 178015 (see Fig. 4.16 above) excavated as part of the Perry Oaks project and reported on in Volume 1 (Framework 2006) still, therefore, provides us with the best evidence for what the Middle Iron Age landscape looked like and how the land was managed. The feature is described above in the discussion of the settlement lay-out and the environmental results.

It is possible to say more about construction techniques and social and economic practices from the artefact and animal bone evidence recovered from the waterholes. The Middle Iron Age inhabitants did not cut new wells either inside or outside the settlement area, although they reused Bronze Age ones. Despite possessing the sophisticated carpentry skills required for building roundhouses and four-post buildings, there is no evidence that they devised retaining structures to support their waterholes or filter the water, as the Bronze Age inhabitants had.

Cattle, sheep/goat and horses were the most common animals represented in the waterhole assemblages, cattle dominating the group. Cattle at least were being butchered and horn cores removed in the vicinity of waterhole 593194/593190, an activity perhaps associated with the use of Roundhouse 8. Pottery seems never to have been placed as an offering or closing deposit in these features during the Middle Iron Age, nor was any other class of artefact, but this practice was in any case not so common in the Middle Thames as the Upper Thames region. Little evidence of industrial or craft activity was reflected in the material assemblages. Slag (as opposed to FAS) was recovered from only one waterhole (148303), testifying to ironworking on a small scale. This waterhole also produced one of the few indicators of Middle Iron Age weaving activity from the site, a single fragment of a possible clay loomweight. Despite the evidence for removal of horn cores no examples of worked horn artefacts were recovered from the site.

Waterholes were used as receptacles for domestic and agricultural detritus, particularly pottery and animal bone, although in many cases this material seems to have entered the waterholes as a result of fortuitous rather than deliberate events. Much of this 'rubbish' derived from earlier Late Bronze Age/early Iron Age activity and became mixed with Middle Iron Age detritus before deposition.

Living in the Middle Iron Age at Heathrow: the social basis

Few Middle Iron Age artefacts that could reflect even a simple subsistence lifestyle and routine, such as iron tools, whetstones, knives and weaving equipment, were recovered at Terminal 5 so we must rely on structural and environmental evidence to fill in the picture. The lack of items of personal or household embellishment, such as jewellery and fineware pottery, much less more exotic items, suggested that communication of any sort beyond the immediate locality was very limited. Although we must bear in mind that the soil conditions of the Terminal 5 site are not particularly favourable (except in waterlogged deposits) for the preservation of materials such as bone and metal, the lack of Middle Iron Age metalwork on a site where Bronze Age, Roman and Saxon metalwork has survived, can be assumed to represent a true absence.

Most domestic and craft or light industrial work would have taken place in the roundhouses or out in the open air close by, and would not necessarily have required the construction of specialised workshops, although some of the penannular enclosures may have accommodated certain activities. Nor need they have left any archaeological trace, especially in the areas of highest truncation. Although most of the Terminal 5 circular structures were probably houses, they would also have been used for sewing, weaving, leatherworking and mending. Some of the linked or proximate penannular gullies, however, may have represented a house with an ancillary workshop, storage building or outdoor activity area, as well as the obvious function as livestock pounds. But, in most cases it was not possible to prove what specific function the buildings and enclosures served.

Evidence for metalworking on a small scale came from the iron slag in waterhole 148303, to the west of the settlement. This type of activity may have been deliberately sited beyond the limits of the domestic space as it produces noise, smoke and strong smells, although possible smithing hearths were located within Roundhouses 17 and 19, their by-products swept into pits 183030 and 539450. Weaving was attested to by a single spindle whorl and some fragments of clay loomweights, although the latter are sometimes interpreted as oven bricks (Poole 1991). There was no evidence at all for bone working, apart from the removal of horncores described above, or potting, although these cannot be ruled out.

The diet of the Middle Iron Age inhabitants would have been based on a restricted variety of cereals, mainly emmer/spelt, which seem to have been in limited supply during this period. The surviving hedgerows would have provided berries and fruits, but evidence for their consumption has not survived well in the environmental record. Meat from cattle and sheep and dairy products would have formed a key element of the Middle Iron Age diet. The animal bone data was insufficient to provide much information about the seasonality of slaughter, but there is evidence of butchery of cattle. The problem of winter food for a community largely dependent on animal products is an obvious one. Meat must be eaten within days if it is not preserved, as must milk, soft cheeses and yoghurt. Salt provides the capability to produce long-lasting hard cheese and cured meat but no briquetage at all was recovered from the site. In fact very few finds of briquetage have been recorded in the Middle Thames Valley altogether, but salt could have been brought from the south coast over the Chalk and Weald, or up the Thames estuary from the Essex and Kent coasts. Supplies of salt, transported in rucksacks and baskets, would leave no trace in the archaeological record (Kinory pers. comm.).

Bracken, which increasingly colonised the pastures during the Middle Iron Age (Wiltshire in Framework Archaeology 2006), may have been used for bedding and insulation in houses. We have discussed the levels of woodland and/or hedges required to provide sufficient timber to construct houses, stake- or wattle-built palisades and fences. There would also have been a constant demand for firewood. Challinor (in Framework Archaeology 2006) found that by the Iron Age at Heathrow the use of oak for firewood had increased from 50% of fragments in the Bronze Age to 70%, while field maple increased from 1% to 6% and pine appeared at 2%. This suggested an increasing reliance on woodland rather than hedges or scrub, but must take into account the probability that some of the wood preserved in charred form was off-cuts from structural timbers.

Pits: rubbish, recycling and propitiation

A number of pit-like features were found within the Middle Iron Age settlement and in the surrounding fields. These were unlikely to have been constructed as waterholes as they would have been too shallow, too narrow or too undercut to have served this role. However, some of them may have been used incidentally to accumulate water at times when the water levels were particularly high. What is certain is that pits dug into even the higher parts of the Heathrow terrace, prone as it would have been to at least minor or seasonal flooding, would not have been suitable for dry storage for cereals or other perishable materials.

Pits were generally a less common feature of Middle Thames Valley and Surrey settlements than in the Upper Thames. Most pits in this region were either small or very large and broad like waterholes, unsuitable for grain storage. Generally high water tables would have been one factor in preventing pit storage. This provides further evidence that arable cultivation and grain storage formed a smaller component of mixed farming regimes during the Middle Iron Age in the Middle Thames than in some other parts of Britain. However, the shallower smaller pits seen on sites in the Middle Thames could have been used for short term damp, cool storage of meat, cheese and other foodstuffs. Some deposits of articulated meat-bearing animal joints might reflect such storage rather than being votive deposits. Fenton (1983) suggests that shallow pits could have been used to store hay or fodder for short periods, the damp environment appropriate for these materials. They could also have been used for storing clay, which is best left to 'mature' before it is used for daubing or potting.

Underground storage in this sense could have represented a form of safe-keeping in suitable conditions of valuable commodities, in the same sense that burying of more obvious hoards of metalwork may be. This would have been a different activity from votive deposition but not necessarily less symbolic in that the intent was to recover the material.

Archaeologists employing a typological approach to social archaeology have traditionally been tempted to interpret the function of features based on their contents. Some of the Middle Iron Age pits at Terminal 5 contained material that could be interpreted as 'rubbish'—animal bone fragments, broken pots and sherds of abraded pottery, bunt flint and hearth contents, fuel ash slag or organic matter—and some may indeed may have been designed for the disposal of material that was foul-smelling, surplus to requirement or with no apparent recycling value.

There need have been no clear distinction at the time between what is actually useful and what is utterly discarded as 'rubbish.' There are several stages between use, reuse, recycling, modification and final abandonment, whether in a corner of a cupboard, in a rubbish pit or on a bonfire. And, even when it is finally disposed of, waste material is not static, as seen in the redeposition of early 1st millennium BC pottery and slag found in Middle Iron Age features. Needham has discussed this issue in relation to the formation of the Bronze Age midden at Runnymede (Needham and Spence 1996) and it is no less apt for Middle Iron Age societies.

However, identifying material remains as rubbish in the context of a prehistoric or even contemporary subsistence economy is problematic, and it could be argued that the concept of 'rubbish' did not exist as such in Middle Iron Age Britain. Some Iron Age communities were clearly inclined to store the detritus and by-products of their daily life above-ground, sometimes as conspicuous middens, which represented—depending on their size—lesser or greater wealth or status. Midden contents subsequently used to backfill inconvenient holes in the ground, including decommissioned storage pits (McOmish 1996; Needham and Spence 1996; Brown 2000, 83–4), can easily be misconstrued as the product of primary rather than secondary or tertiary deposition—ie as 'rubbish' deliberately discarded within a purpose-made or conveniently placed deposit.

A clear understanding of the processes of erosion, silting and structural collapse within the context of small scale features such as pits, along with meticulous recording of their fill sequences, can help us understand how and why they came to be filled but not necessarily why they were dug in the first place. This is especially true of some of the ambiguous or amorphous Iron Age features discovered at Terminal 5 which had none of the distinguishing structural features of the more obvious Bronze Age and Iron Age waterholes and wells, such as deliberately constructed ramps, timber or wattle revetments and log ladders.

Disposal or deliberate deposition of the apparently mundane detritus of everyday domestic and agricultural activity in pits and other features may appear to have no significant motivation beyond the obvious removal of rubbish from living and working areas. However, such acts can be interpreted as having a wider significance in the lives of Iron Age people, for whom every aspect of their daily routines may have been imbued with a sense of ritual and profound purpose (Hill 1995). However contentious this perspective, it remains a possibility that the apparently prosaic contents of

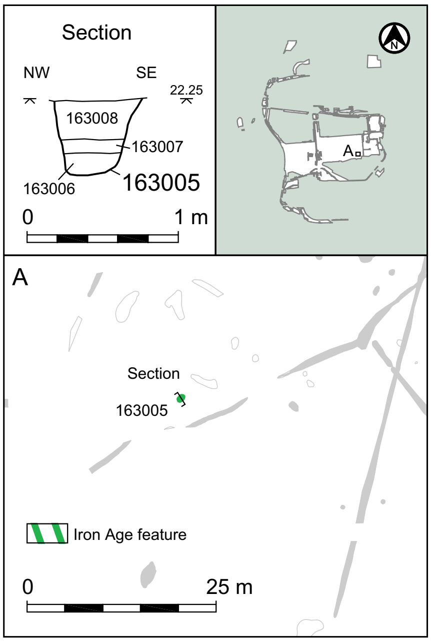


Figure 4.38: Pit 163005

the Middle Iron Age pits at Heathrow reflected some element of a belief system. In the absence of more obvious Middle Iron Age special deposits from the site, such as complete pottery vessels, metalwork or other notable artefacts, organic and inorganic, the fragments of pottery and animal bone, hearth scrapings and daub, require such consideration, not least because deposition of artefacts in pits, ditches and even postholes was a typical practice in so many parts of Middle Iron Age Britain.

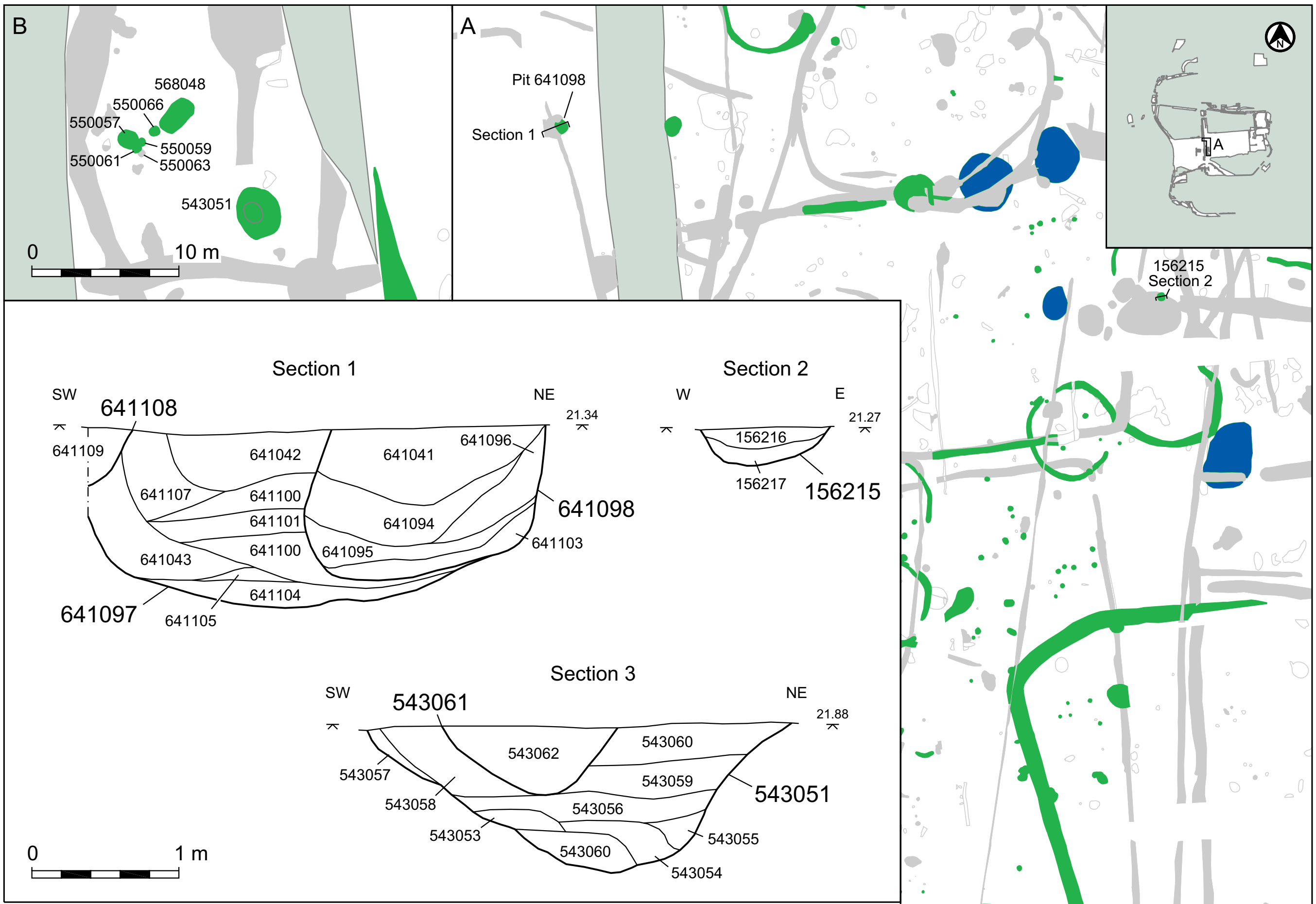
A number of the Middle Iron Age pits excavated at Terminal 5 are described below.

Pit 529306 was dug into the backfill of the east ditch of the C1 Cursus, some 250 m to the west of the settlement and a radiocarbon date of 386–203 BC (WK 19335) was obtained on charred grain from its contents. This pit has been described in some detail above (Fig. 4.14). A similar feature, a small, steep-sided oval pit (163005), measuring 1 m by 0.7 m across and 0.8 m deep, was one of a very small number of features dug in the eastern fields, in a position quite remote from the settlement (300 m) and apparently isolated from other Middle Iron Age activity (Fig. 4.38). The primary fill contained only a single Early Iron Age sherd, but this was sealed by a charcoal rich dump including animal bone, burnt flint and a sufficiently sizeable collection of Middle Iron Age pottery (19 sherds) to provide a date for its main filling event. It may have been dug simply to dispose of the remains of food preparation or some other short-term activity that took place in the middle of a field, but a more complex scenario cannot be ruled out.

Pit 156215 (Fig. 4.39) was insecurely dated but it was cut through the fill of Middle Bronze Age waterhole 103040 close to Middle Iron Age waterhole 615138. It was a small feature, measuring 0.9 m in diameter and *c* 0.3 m deep, and contained a Middle Iron Age sherd, fired clay and a few pieces of burnt flint from a secondary fill (156216). There is no clear indication of function.

A group of equally insecurely dated pit-like features were concentrated at the south-west corner of the southern enclosure (EC1), close to waterhole 516066, just outside the main Middle Iron Age settlement area (Fig. 4.39). Although they did not form a coherent group morphologically they may have been associated in some way with the enclosure or the waterhole or both.

Pit 543051, located *c* 7 m from the south-west corner of the EC1 enclosure, was a shallow hollow, over 3 m wide and about 1 m deep (Fig. 4.39). It may have served as a waterhole, at least at some stage, as some of the fills had accumulated in a watery environment. Finds amounted only to a few burnt flints and fragments of fired clay, along with a small group of Middle Iron Age sherds from fill 543056, about halfway up the sequence. Pit 525043 lay 22 m further south, close to waterhole 516066 on the west side of the EC1 enclosure. At 1.5 m across and just over 1 m deep, it was a different shape and probably served a different function. The lower fill contained Neolithic or Early Bronze Age worked flints and debitage and was sealed by a deliberate dump of gravelly soil which contained no artefacts, so it is entirely possible this was a Bronze Age or earlier feature, perhaps levelled within this period or somewhat later.



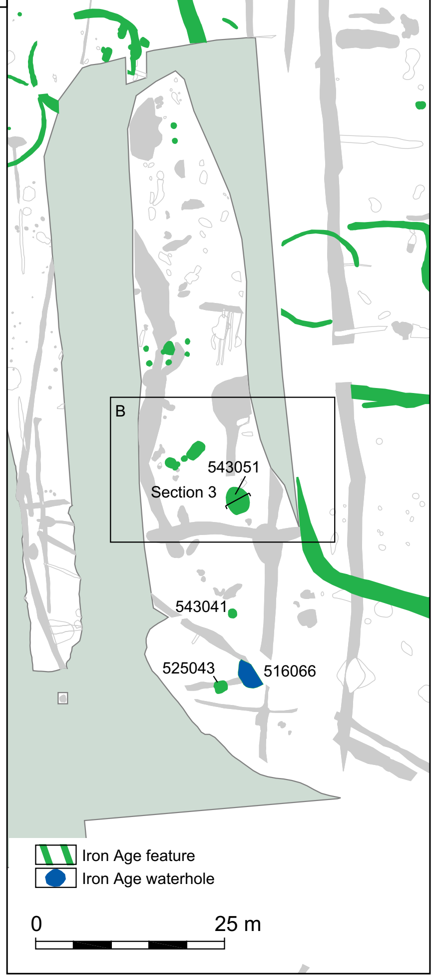


Figure 4.39: Pits in the Middle Iron Age settlement

Pit 543041 was a small bell-shaped pit with a flat base sited between 543051 and 525043 (Fig. 4.39). The basal fill lay below the modern water table but no organic material, apart from sparse charcoal was observed. Two sherds of post-Deverel-Rimbury pottery and a significant collection (702 g) of burnt flint, along with burnt, cracked pebble point to activity linked to burning, with a possible Late Bronze Age/Early Iron Age date.

A small cluster of features, comprising an oval pit (568048), a small circular pit (550057) and three postholes (550066, 550063, 550057) lay close by, just to the north of pit 542051. No finds were recovered from any of these features, but their proximity to the enclosure could suggest associated activity.

Values and beliefs

The question of ritual or religious activity has been discussed in relation to the possible role of Roundhouse 8. It may have been a venue for communal or, alternatively, elitist activities. Other than that, the only artefactual evidence we have to attest to a ritual event is a complete 'saucepan' pot deliberately placed in the small ditch (136046) dug at the entrance of the ancient HE1 enclosure (see above; Fig. 4.15). No other structures with an apparent ritual, spiritual or communal purpose were identified of the type excavated at Caesar's Camp, although the rectilinear structure that succeeded penannular Enclosure 3 at Terminal 5 was considered a potential shrine during excavation and in the early stages of analysis.

Nevertheless, the Terminal 5 inhabitants would have had a complex relationship with both their natural and their adapted environment, which at some level would have integrated spiritual motivations. The day-to-day relationship between people and the land which provided their means of survival would have been more than just a functional cycle of rural living. The reliance on the land, water, woodland and viable pasture would have

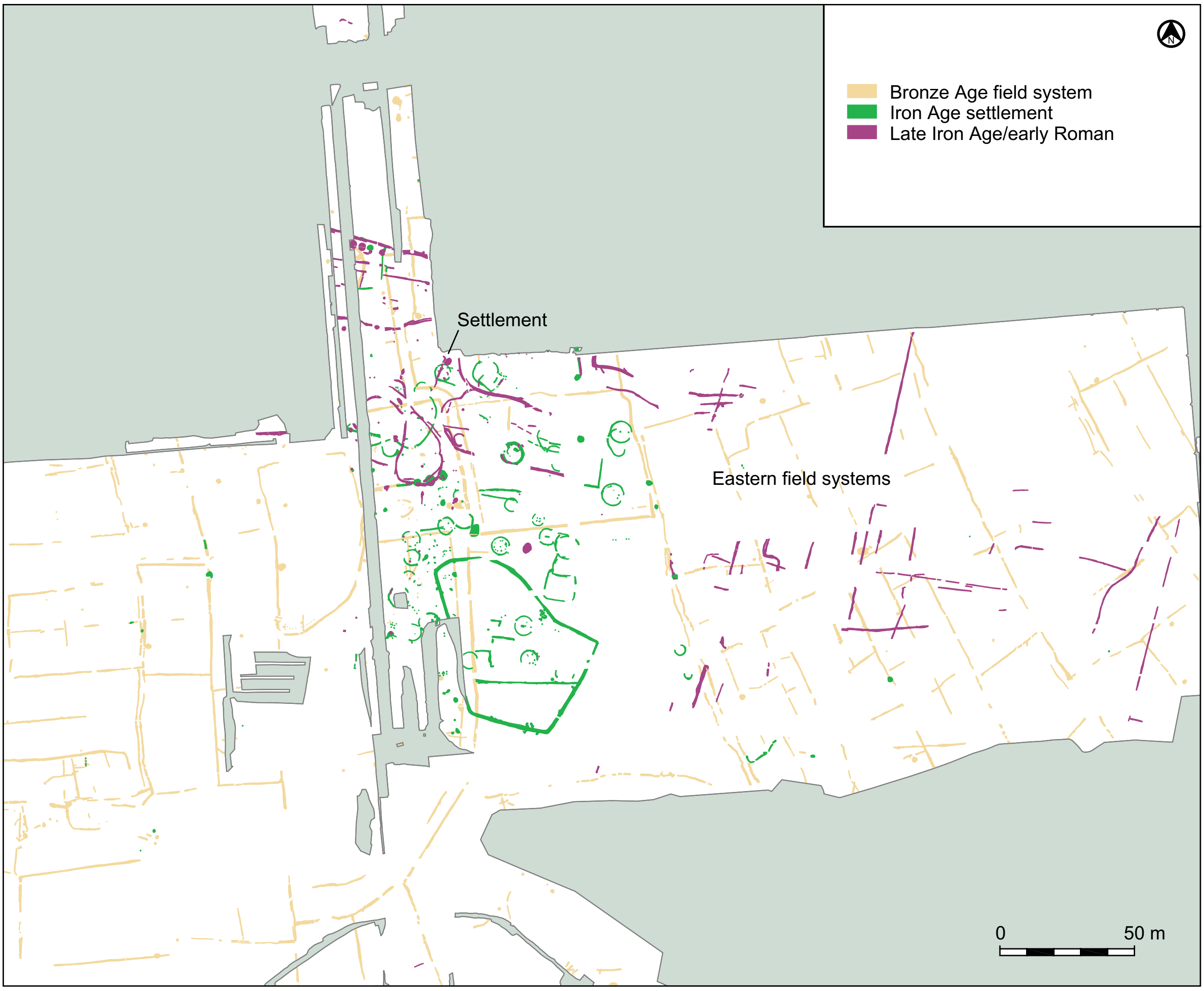


Figure 4.40: Late Iron Age/early Roman landscape

meant that the basic elements of earth, water, animals and fire would have been highly valuable assets, the safe-keeping of which would have been paramount. Just how this notion was translated into process during the Middle Iron Age at Terminal 5 is all but invisible to us. For the pre-Iron Age periods we saw that the placing of closing deposits in waterholes and wells may have served such a role, and the placing of the pot in ditch 136046 made have been a faint reflection of this behaviour. The resources themselves may have been seen as spiritual repositories and their routine use and maintenance as acts of affirmation and veneration, a taking from the land with a concomitant renewal and restoration. The deposition of objects within watery environments is seen to have resumed during the Late Iron Age.

Transforming the landscape—Late Iron Age / early Roman re-organisation

By the Late Iron Age (1st century BC) the intricate pattern of the Bronze Age co-axial fields had characterised the Terminal 5 landscape for almost two thousand years. The dispersed pattern of Bronze Age settlement may have been replaced by a single larger settlement during the Middle Iron Age, but the basic organisation of field systems remained a visible landscape feature, albeit probably denuded of hedgerows and largely reduced to grassy lumps and hollows.

The later Iron Age was a time of widespread settlement and landscape reorganisation across the Thames Valley and further afield, no doubt associated to some degree with the wider socio-political upheavals of the south-east (eg see Creighton 2000; Booth *et al.* 2007, 365). The incorporation of Britain into the Roman Empire in AD 43 must also have provided a tremendous stimulus upon all aspects of society and economy, though interestingly many settlements in and around the Thames Valley show little signs of significant change until at least the end of the 1st century AD (Booth *et al.* 2007, 36).

The Late Iron Age saw the onset of many changes at the Terminal 5 settlement, albeit probably occurring on a piecemeal basis over many years (Fig. 4.40). These developments continued into the early Roman period, though the effects of the Roman conquest, and in particular the emergence of the nearby towns at Staines and especially London are difficult to determine (see below). The focus of the community remained in the area of Middle Iron Age occupation, but the extent, nature and form of the settlement altered significantly from the Late Iron Age onwards. The eastern and southern fields also began to be reorganised at this time, though the exact chronology of this is less certain (see below). They constructed in place of the ancient and now somewhat ephemeral Bronze Age fields new boundaries on a NNE-SSW alignment (Fig. 4.40), and a number of distinct zones have been identified.

Although the evidence for alteration in the shape and orientation of the fields was restricted to a few shallow ditches, it still marked an important shift in the landscape organisation, which was further developed right through into the 3rd and 4th centuries AD. This was no wholesale cut with the past, however, as there was no evidence for any change to the Bronze Age fields located on the lower floodplain to the west, where most elements of the system were probably left unchanged into the late Roman period. Nevertheless, this is not to say that these field boundaries were all actively used and maintained at this time, as environmental indicators (see below) suggest wetter, open conditions, with the lower lying areas nearer the river probably left as pastureland, much the same as in the Middle Iron Age.

Environmental conditions

The environmental evidence from the Late Iron Age and early Roman period is quite different to that of the Middle Iron Age, but the charred and waterlogged plant samples were remarkably similar to each other in terms of the range of taxa they contained. The data came from samples within nine features located in the general area of the main settlement (Fig. 4.41). The features had a wide range of functions, including pits, waterholes and ditches and span the Middle-Late Iron Age and the Late Iron Age/early Roman periods, so reflecting a relatively lengthy chronological span.

The results indicated that the landscape and economy were comprehensively transformed during this time from the last period for which there was good environmental evidence—the Late Bronze Age. In addition, because of the range of features sampled, they are unlikely to be minor, localised variations.

As with the MIA samples, woodland taxa were scarce... Seeds from woody taxa only came from elderberry (Sambucus nigra) and blackberry/raspberry (Rubus sect. Glandulosus and R. cf. idaeus), two ruderal invasive species typical of wastegrounds. In previous periods these particular taxa had often been so abundant that the numbers had to be estimated. It is obvious that the landscape was very much more open from the Middle Iron Age onwards, due to the clearance of remaining areas of woodland and scrub, and possibly also some grubbing out of hedgerows. Since no alder remains were present in the features, alder carr that had survived up to the LBA along the palaeochannel must also have been cleared by the LIA.

Widespread woodland clearances, particularly the clearance of alder carr on the floodplain, would have affected the soil hydrology, causing the leaching of nutrients from these already poor soils and leading to the establishment of heaths and bogs. Flooding episodes are likely to have become more frequent and severe. Charred and waterlogged Ericaceous plant remains were recovered from eight of the ten LIA/ERB features… it appears that heather was being gathered to be used as fuel, and perhaps for fodder and building materials… Since the samples that contained the most charred ericaceous remains also produced the largest quantities of charred cereal processing waste, it would appear that, either heathland vegetation was being used for fuel in the parching of cereals during processing, or that arable crops were growing close enough to heathland for ericaceous remains to become mixed with the crop. An alternative explanation could be that part processed spikelets were being stored in a structure that was thatched using heather…

Climatic changes may also have played a part in some of the changes seen in the vegetation, since increased wetness on some LIA sites in southern England such as Mingies

Figure 4.41: Environmental samples from late Iron Age/early Roman features

Ditch (Robinson 1993) lead to periods of abandonment… This change to wetter conditions appears to have occurred between the LIA and MRB periods at Heathrow.

(Carruthers, CD Section 14)

The only pollen evidence for this period also came from the settlement area, from two waterholes (593207 and 649010) located less than 200 m from each other, the former dating from the Mid to Late Iron Age (Fig. 4.42) The samples from these features were quite consistent, and

...provided evidence of grasslands, pastures and meadows predominating during this period. There appears to have been a little cereal production, and the hedgerows, which seem to have been so characteristic of the Bronze Age had more or less disappeared. The landscape was very open with very little evidence of trees and shrubs.

(Peglar et al., CD Section 16)

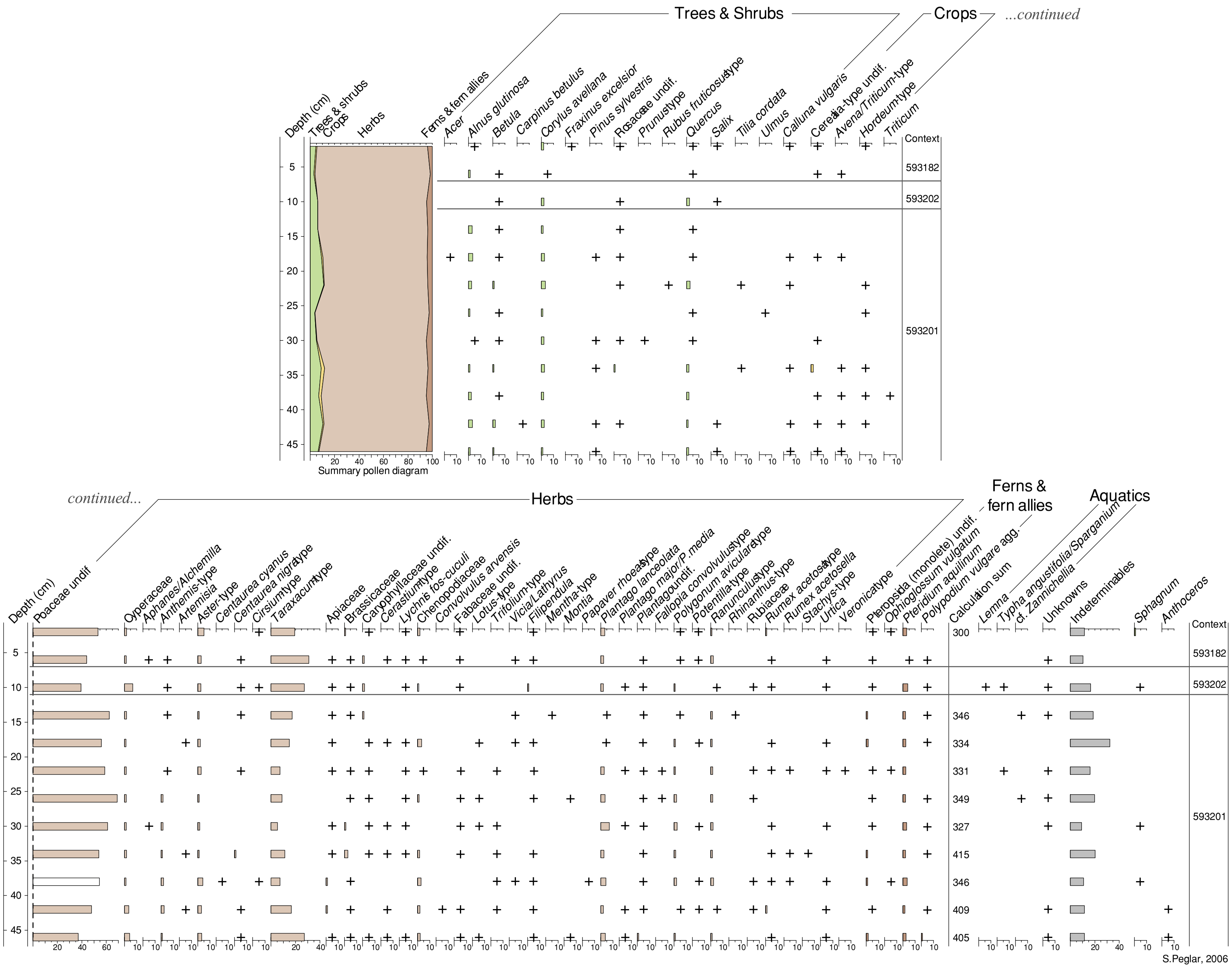


Figure 4.42: Pollen percentage diagram (Sample 18364, the fill of late Iron Age/early Roman waterhole 593207)

Insect evidence from waterhole 593207 provided a similar picture.

[The waterhole] lies in the very heart of later Iron Age activity...The land around this feature is clearly being used for the grazing of large herbivores... Aquatic insects are limited to those of muddy, ephemeral pools and water bodies, no aquatic taxa associated with deeper, more permanent pools were recovered...The insect assemblage associated with domestic waste and human activity is absent which suggests material was not being dumped in the waterhole... The volume of dung beetles in this assemblage and certainly those associated with accumulated rotting organic matter and dung would infer that animals also used this waterhole...after the feature fell into disuse.

(Tetlow, CD Section 17)

The overall environmental evidence from this period then indicates a very open landscape with large tracts of damp ground used for grazing along with increasing cereal cultivation nearby. This probably reflects the settlement's position on the edge of the Taplow terrace, with lower lying wetter ground lying to the west towards the river and slightly drier higher ground continuing to the east in the area of the re-aligned field system. As with the Middle Iron Age, the settlement was probably well positioned to exploit the agricultural potential of these two zones.

Extent and nature of the Late Iron Age –early Roman settlement

It was apparent that intensive occupation continued during the Late Iron Age and early Roman period on the site previously occupied by the Middle Iron Age settlement, despite the paucity of evidence for structures. The difficulty in identifying structures of this date is well recognised and may be due to a change in architectural design, with the possible use of mass-walling construction techniques (Lambrick 2009). At a nearby settlement at Cippenham in Slough, two ephemeral structures of early Roman date were recognised, with slightly sunken-floors, the better defined being a rectangular building measuring 15 x 8 m (Ford *et al.* 2003, 53). The levels of truncation at Terminal 5 would probably ensure that any structures of a similar nature would be unlikely to survive in the archaeological record here. The only possible evidence we have for a domestic structure from this phase is shallow penannular gully 126155 within Enclosure 3 (Fig. 4.43), *c* 7.5 x 8 m across and open to the east (see Framework Archaeology 2006, 203). Middle and Late Iron Age pottery was recovered from its fill, along with quantities of fired clay and a small amount of animal bone. A roundhouse gully remains the most likely explanation, and although generally unusual for this date, other contemporary examples certainly exist, such as Ashton Keynes and Cotswold Community in the Upper Thames Valley (Powell *et al.* 2008; Powell *et al.* forthcoming). Much closer to Terminal 5, at least three roundhouses of possible Middle to Late Iron Age date were revealed during excavations at Imperial College Sports Ground (Crockett 2002, 341), while four further roundhouses of this date were excavated at Ashford Prison near Staines (Carew *et al.* 2006). Furthermore, two small roundhouses (4.46–5.2 m diameter) were excavated at Horton on the Colne floodplain to the west and dated to the early Roman period (WA 2009). Perhaps the largest number of circular gullies comes from Hengrove Farm, just 1.5 km east of Staines, where seventeen complete and partial ring gullies were revealed, associated mainly with Late Iron Age pottery (Hayman forthcoming d). It is thought that at least some of these defined roundhouses, while others may have been smaller storage structures (ibid.). The persistence of traditional architectural style at these sites, even to a small extent, may hint at the inherent conservatism in the local agricultural communities.

Although for the most part we have not recognised their domestic structures, we can see that the inhabitants of the Late Iron Age/early Roman landscape made major changes to the northern sector of the old settlement. Here the small enclosures and penannular gullies of the Middle Iron Age settlement were subsumed within a complex of larger enclosures concentrated in an area approximately 200 m square (Fig. 4.43). Although there are clearly major parts of the settlement that were not revealed by the current excavations (notably to the north-east and north-west), the approximate overall limits have probably been demonstrated. To the north was a succession of east-west boundaries, with the most northerly defined by ditch 636041, while to the west it was probably the break of slope down to the floodplain that marked the settlement's limits, as observed on another Late Iron Age-early Roman settlement at Mayfield Farm, *c* 2 km to the south-east (Jefferson 2003, 17). To the south and east the limits are more obscure, with no obvious boundaries, and it was in these directions that the settlement appeared to expand over time. Further north and east were elements of substantial enclosures that may have represented other settlement foci (E13 and E14), lying largely beyond the excavated area (see Figs 4.51 and 4.58 below), though too little was revealed to be sure of this, and E14 at least probably belongs to a later Roman phase of activity.

In describing the enclosure complexes that transformed the former Middle Iron Age settlement it is important to bear in mind that continual reshaping of boundaries in an area with an already extensive history of Neolithic tree clearance and agricultural and domestic activity from the Middle Bronze Age presents us with difficulties in determining the precise developmental history and chronological sequence. The potential was high for admixture of materials, including pottery, in the fills of the enclosure ditches, due to contemporary and later Roman activity here, and modern truncation confused the picture further. Nevertheless, an approximate sequence can be discerned which helps to provide an overall picture of the development of the settlement, which continued into the middle and later Roman period (see below).

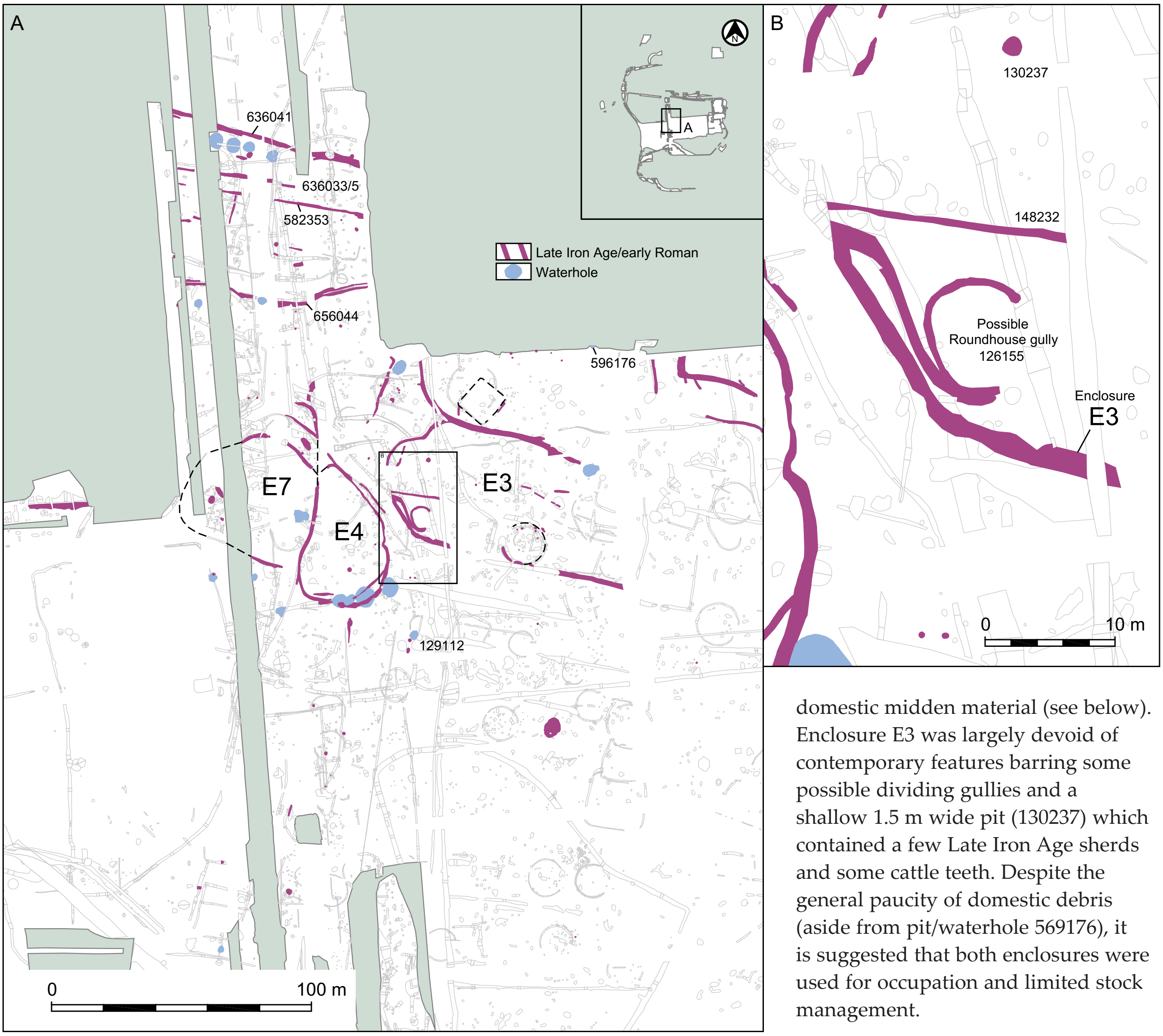


Figure 4.43: Late Iron Age/early Roman settlement

Late Iron Age-early Roman enclosures

The earliest elements of the transformation within the settlement can be dated fairly confidently to the Late Iron Age, continuing through into the early Roman period (Fig. 4.43). They comprise a number of irregular enclosures (E3, E4, E7), defined to the north by a succession of ditched boundaries (656044, 582353, 636033/5, 636041).

The largest enclosure, E3, was at least 95 m long and 50 m wide and incorporated the potentially contemporary roundhouse described above, which was bounded to the north by narrow ditch 148232, traced for *c* 18 m. Former Roundhouse 8 within Enclosure 3 was recut again at this stage, possibly as a stockade, as the superstructure was probably by now no longer standing, although a continued 'ritual' association cannot be ruled out (see above and Framework Archaeology 2006, 203). The northern ditch of this enclosure respected the position of Middle Iron Age Enclosure 3 and may, in fact, have formed the southern line of a similar enclosure that lay largely outside of the excavated area. A deep (1.18 m) vertical sided pit (569176) that may have functioned as a waterhole was located in the far north-east of this enclosure, just within the excavation area, and contained large dumps of domestic midden material (see below). Enclosure E3 was largely devoid of contemporary features barring some possible dividing gullies and a shallow 1.5 m wide pit (130237) which contained a few Late Iron Age sherds and some cattle teeth. Despite the general paucity of domestic debris (aside from pit/waterhole 569176), it is suggested that both enclosures were used for occupation and limited stock management.

Just 7.5 m to the south-west of Enclosure 3 was a smaller teardrop-shaped ditched enclosure (E4) that is likely to have been approximately contemporary (Fig. 4.44). In its earliest phase E4 was 55 m long and 35 m across at its widest point. The southern, wide end of this stockade was defined by the position of three backfilled waterholes (see below), a location which had served as a significant water source from at least the Middle Iron Age and possibly earlier (see above). Recutting of the southern end of the enclosure at this point produced a complex stratigraphic sequence.

The first phase southern ditch (593234) cut through three large waterholes (521069, 593207/593190, 312048), all of which are likely to have originated in

Figure 4.44: Enclosures E4 and E7

the Middle Iron Age (see below). The second phase ditch (593231) cut these same waterholes, terminating in the top of 312048. The expanded terminal (312047) may have acted as a sump or small waterhole, representing the eastern side of a 2.5 m entrance, with the terminal of ditch 636100 forming the other side. Charred plant remains (cereal chaff and grain) from ditch 636100 (sample 27039) represented burnt domestic waste that had become redeposited amongst other types of waste including animal bone and over 3 kg of pottery. The pottery was primarily Late Iron Age and un-diagnostic Roman in date, but included 19 sherds of 2nd century AD mortaria, probably dumped in the ditch when the enclosure system was modified.

The interior of E4 was void of contemporary features apart from a scatter of shallow hollows, probably created by livestock. A small pit (615130) in the southern part of the enclosure which contained 1st century AD pottery may have been contemporary with the latest phase of the enclosure, when the south-eastern stretch of the ditch was recut 2–3 m inside the original boundary as 617182. This recut ditch also terminated in a large oval waterhole or sump (593129/593173), *c* 1.5 m deep, maintaining a similar but wider entrance arrangement as in the first phase.

As with Enclosure E3, it appears that the western ditch of E4 was utilised to form a double enclosure arrangement, adjoining with E7 (Fig. 4.44). This was approximately 44 m by 47 m across, though the western side had been largely truncated, and had a *c* 6.5 m entrance to the north. A mid to late Roman waterhole (644006) truncated the eastern terminal of the entrance, while just inside the western terminal was a small (0.54 m across) pit (630108) which may have originally been part of an entrance structure. Late Iron Age/early Roman pottery and charred plant remains were recovered from the fill.

The small flot from this single pit fill produced a few cereal remains (barley, oat and emmer/spelt chaff), ericaceous fruits, disturbed ground weed seeds and relatively frequent spike-rush nutlets. Apart from the frequency of this latter taxon, the other remains were similar to (though more sparse than) most of the other charred assemblages from this period. From the evidence of the spike-rush nutlets, the burnt waste deposited in the pit had probably contained marsh hay used for bedding, thatch or fodder.

(Carruthers, CD Section 14)

Another small (0.69 m dia, 0.27 m deep) Late Iron Age pit (678001) lay immediately north of Enclosure E7, possibly within an annexe formed by curving ditch 636156, which dated to this phase on stratigraphic and ceramic grounds. The pit contained further quantities of charred grain that probably derived from domestic waste.

The charred assemblage primarily contained well preserved emmer/spelt wheat grains with a few possible bread-type wheat grains… Oats were relatively frequent (c. 8% of identifiable grain), although it was not possible to determine whether these were a cultivated crop or weed contaminants. This was the only grain-rich assemblage recovered from the LIA/ERB samples…. Most of the other charred assemblages (in particular the waterhole samples) consisted of cereal processing waste, but this pit sample had the character of burnt domestic waste, i.e. accidental charring of processed grain during the preparation of food.

(Carruthers, CD Section 14)

Very few features within the enclosure were demonstrably contemporary, but these did include a substantial waterhole (658134), which seems to have been kept relatively clear, having minimal finds from its lower fills. Significant quantities of refuse came from upper fills, probably not long before it was cut by mid/late Roman waterhole 678025 (see below). A short (4.5 m) shallow length of ditch (659085) dating to this period hints at subdivisions within the enclosure, but it was badly truncated. The only other internal feature likely to belong to this phase was small pit/posthole 677010, located 17 m directly south of the northern entrance. A single sherd of Late Iron Age pottery and fragments of fired clay provide no clues as to its function, though if it was a posthole, then perhaps it was a tethering post in the middle of the enclosure.

The enclosure may have encompassed a variety of functions, including limited domestic activity and stock control. Charred plant remains from a northern section of the enclosure ditch (636073) also suggest crop processing in the vicinity.

The silty, charred flot produced an assemblage characteristic of redeposited cereal processing waste, i.e. rich in poorly preserved emmer/spelt (with only the spelt identification confirmed) glume bases and spikelet forks with occasional wheat grains and weeds of cultivated soils…. As with all of the LIA and later samples a few charred ericaceous fruits were present in the sample, perhaps indicating the type of vegetation bordering the fields, or maybe fuel used to parch the crop during processing. The presence of sheep's sorrel seeds (Rumex acetosella) and seeds from damp ground plants such as blinks (Montia fontana ssp. chondrosperma) and spike-rush (Eleocharis subg. Palustres) in almost all of the features demonstrates that poor, acidic and damp soils were widespread during this period. Good cereal yields are unlikely to have been obtained from such poor land. An alternative explanation is that these remains might not have been directly associated with the crop, but may have become mixed with the chaff because heather and marsh hay was being used for tinder and/or fuel to parch the cereals… Widespread use of this type of fuel suggests that wood was probably scarce locally by the LIA/ERB.

(Carruthers, CD Section 14)

Water for the Late Iron Age-early Roman settlement

Significant numbers of waterholes within and around the area of settlement were undoubtedly used both for domestic use and in the management of livestock. Certain areas of the settlement were clearly favoured locations for access to water, as there were a number of concentrations or successive recuttings of waterholes, often extending their use for some considerable time. As discussed above, a line of waterholes lay along the southern boundary of Enclosure 4, most clearly in use before the cutting of the enclosure ditches. The largest waterhole, 521069 (*c* 7.5 x 6 m across, 1.55 m deep) was dug in the Middle Iron Age (see Fig. 4.35 above), but was recut twice on a much smaller scale in both the Middle Iron Age (521098) and the Late Iron Age/early Roman period (521096). The latest cut (521096) lay just outside Enclosure 4 and was probably open for some time, as it contained a mixed assemblage including late Roman ceramics and a coin of Gratian (AD 367–75).

Just 5 m to the south-west was another larger Middle Iron Age waterhole (593190), which was recut in the later Iron Age by 593207, a waterhole that sloped down gradually from the south before dropping almost vertically to a depth of 1.15 m (Fig. 4.46). Two complete Late Iron Age bead rim jars were deposited in the lower fill of the waterhole (Fig. 4.46, 1–2). The environmental material from this feature (discussed above), indicated that the land around it was used for grazing, with little evidence for immediate human activity, and also suggested that the waterhole was actually drying up. In fact, Tetlow has even argued that this may be connected with the pottery deposits.

A proposed hypothesis is that the intact (jars) placed within the feature are due to the water source drying up and the lack of aquatic taxa would certainly support this hypothesis. It is also suggested that the waterhole may have either been used specifically for ritual purposes or possible human water consumption.

(Tetlow, CD Section 17)

In addition to the deposition of two jars, a ritual aspect is also suggested by the large number of cotton thistle seeds (*Onopordum acanthium*; 116 achenes) found in samples within waterhole 593207.

This tall, fiercely spiny and densly-haired biennial thistle (also known as Scottish thistle and adopted as the emblem of Scotland) is thought to have been introduced from Europe but is possibly native in East Anglia (Stace 1997). The complete covering of woolly hairs gives it a silver appearance which would have been very usual to Iron Age people, since this type of adaptation to hot, dry European summers is not often found in the British native flora. It is understandable how the silvery appearance may have given it some association with water in the minds of Iron Age people. In addition, it has great economic value since different parts of the plant can be used in a variety of ways; the stems can be boiled, peeled and eaten, the large seeds provide oil that can be used for cooking and lighting (roughly 1.5 litres of oil from 10 plants); downy fibres from the plant have been used to stuff pillows and mattresses in the past; Pliny (AD 23-79), Dioscorides (c.40-c.90 BC) and Theophrastus (372 BCE – 286 BCE) mention cures ranging from baldness and a crick in the neck to curing ulcers and cancer. Some of these qualities and its impressive two metre plus height may well have given cotton thistle a special status.

(Carruthers, CD Section 14)

It is probable that waterhole 593207 was not in use for any great period of time before it was backfilled and cut by the ditches of Enclosure E4. The final large waterhole in this alignment, also cut by E4, was 312048, though no pottery was recovered to provide any secure dating.

Aside from the latest recut of waterhole 521069 (521096), none of the water sources described above were contemporary with use of Enclosure 4. However, a consistent arrangement of both phases of enclosure entrance comprised substantial sumps (312047, 593129/593173) over 1 m deep, which probably served as waterholes.

An additional waterhole (129112) located 19 m to the south-east (Fig. 4.45) also contained two near complete Late Iron Age bead-rim jars, along with other pottery fragments, oak chippings, a willow withy tie and a deposit of animal bone, one fragment of which produced a radiocarbon date of cal 170 BC–AD 220 (Wk-19367) (Plate 4.15).

Plate 4.15: Deposits at the base of waterhole 129112

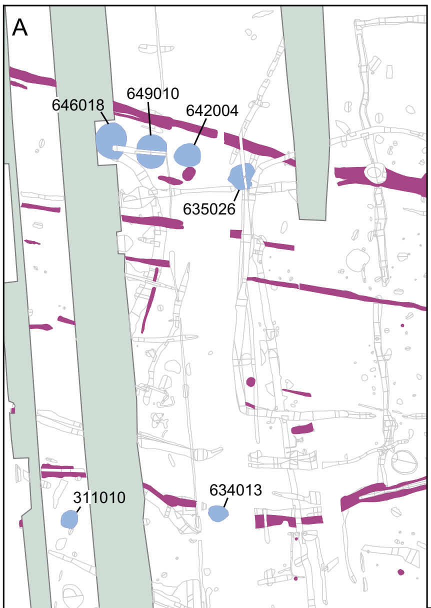
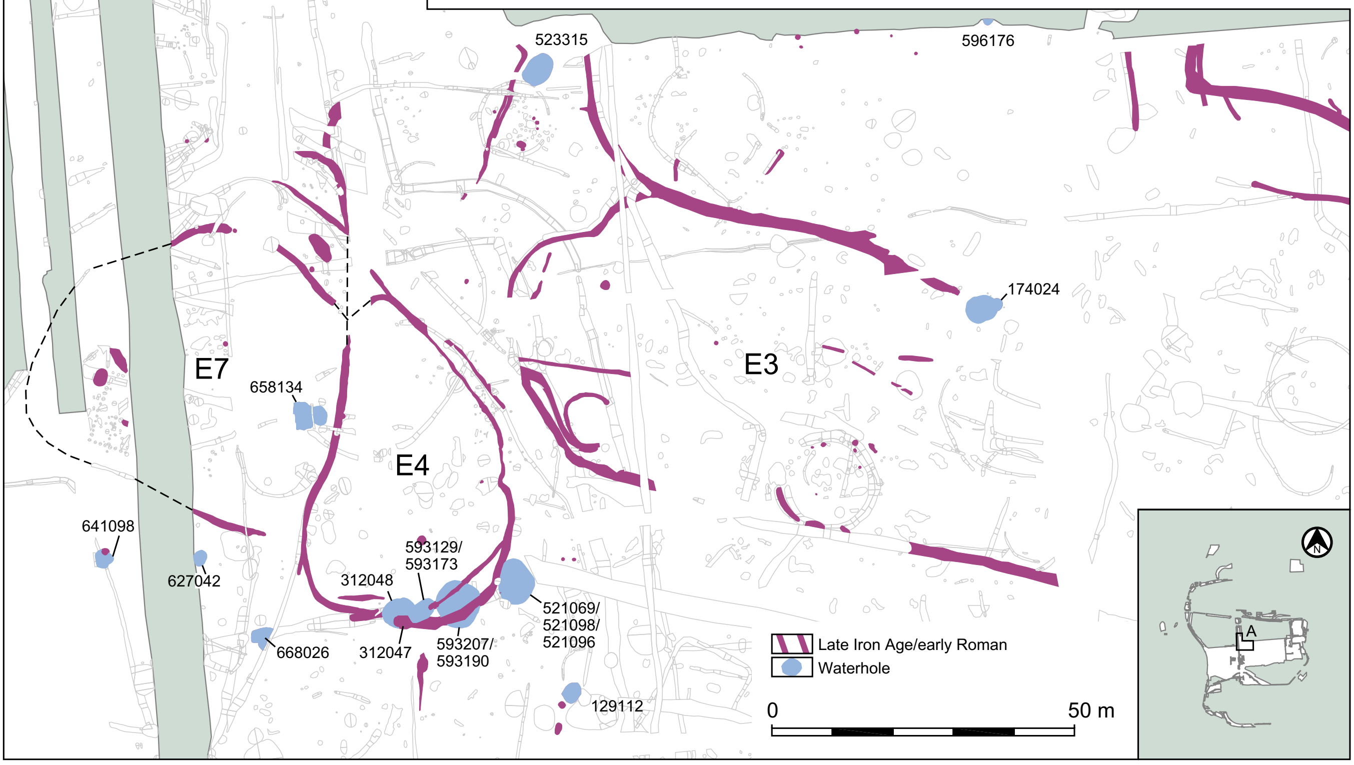



Figure 4.45: Late Iron Age/early Roman waterholes

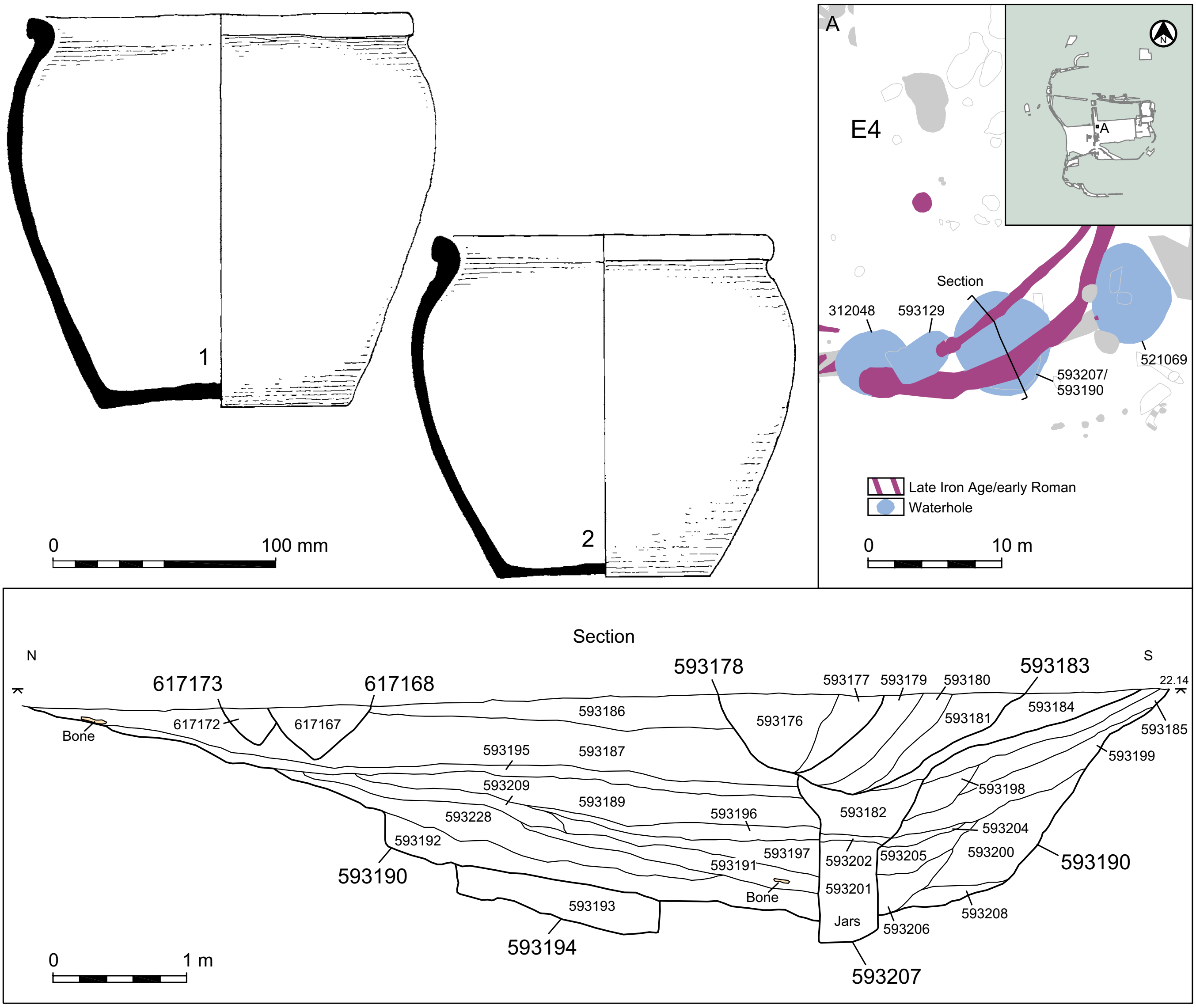


Figure 4.46: Section of waterhole 593207 with deposits of Late Iron Age bead rim jars

... Although the sample [for radiocarbon] may have been bulked, disarticulated, or both, the fact it was one of 7 fragments/169 g of animal bone in a layer where there were two at least semi-complete pots and a wooden object suggests that the bone may have formed part of a deliberate deposit.

(Healy, CD Section 20)

Another grouping of four aligned waterholes from this period lay *c* 180 m further north, just inside the boundary of the settlement. The earliest and smallest (4.36 x 3.68 m across, 0.9 m deep) was 642004 (Fig. 4.47; Plate 4.16), which may have been dug in the Middle to Late Iron Age, while 649010 and 646018 to the west were dug in the Late Iron Age/early Roman period. Compared to features further south,

Plate 4.16: Waterhole 642004

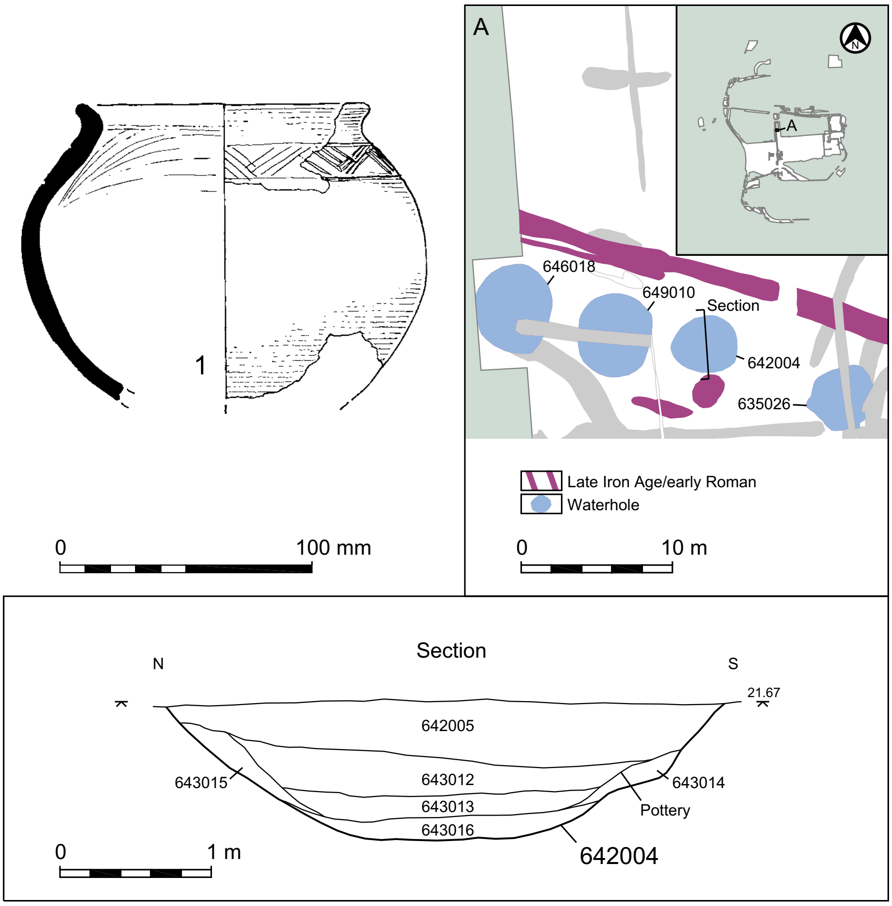


Figure 4.47: Waterhole 642004 and decorated Late Iron Age jar

relatively few objects were found within these waterholes, reflecting their location further away from the heart of the settlement, though a possible leather shoe was recovered from a lower fill of 646018 and most of a decorated Late Iron Age bowl was recovered from a lower fill of 642004 (Fig. 4.47). Pollen samples from the lower fill of 649010 indicate that,

> *…the environment surrounding the feature during the Late Iron Age/early Roman period consisted of very open grassland, possibly pasture, with very little evidence for trees or shrubs. Limited cereal cultivation was also taking place in the area, especially during the earlier phase of infilling.*
>
> *(Peglar et al., CD Section 16)*

As the waterhole was positioned so close to the northern boundary ditch, it suggests that this was not accompanied by a hedgerow. The final waterhole (653026) lay 5.5 m to the east of the other three and contained a greater number of finds, though mostly consisting of small abraded pottery sherds, fired clay and animal bone. It was cut by mid Roman enclosure E9. None of these waterholes showed any sign of timber revetting and it remains uncertain whether any or all were directly contemporary. Most were quite irregular in profile and perhaps used as animal watering holes, though 646018 was much steeper in places and may have been unsuitable for such a purpose, possibly instead being for domestic use. Unworked timber from this waterhole may have been used to create some form of platform.

Up to a possible seven further waterholes of this date were revealed distributed around the settlement (Fig. 4.45), though none were located within the main enclosure (E3). As noted above, however, a pit (569176) within the possible enclosure north of E3 was relatively deep (1.18 m) and vertically sided, and could possibly have been used as a water source for the settlement (Fig. 4.48; Plate 4.17). This may have been only for a brief period as it was soon filled in with a series of dumped deposits including fired clay, an iron nail and large amounts of Late Iron Age-early Roman pottery and animal bone.

> *The main bone-containing deposits were the middle and upper layers, especially the fourth fill in the sequence, presumably after the waterhole had fallen into disuse. Pottery was common in those contexts with the most bone, as well as some burnt flint and fired clay, indicating general domestic waste. All bones were of medium or small mammal, despite bone preservation being worse than for example waterhole 521096. This suggests that spatial variation may have determined what was deposited in a feature…The fact that much*

Plate 4.17: Pit/waterhole 569176

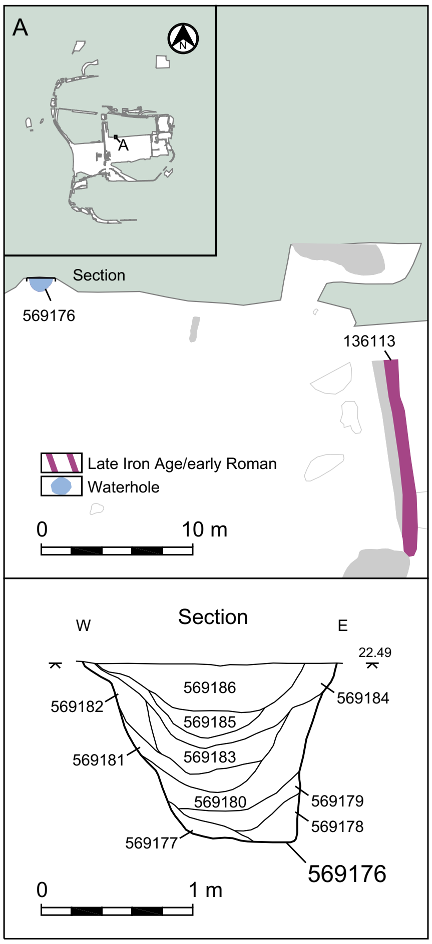


Figure 4.48: Pit/waterhole pit 569176

of this is burnt (and the presence of charcoal) suggests hearth debris, and this could indicate a proximity to the centre of occupation, which together with the bias towards certain size categories, concurs with Wilson's (1985) theory. His premise was that smaller animals could be butchered and deposited in the centre of settlements with less difficulty than that of larger animals, which would have been cumbersome and deposited at the outskirts. Standing water at the base probably dates to the use of this feature as a waterhole, but subsequent deposits may indicate the abandonment of this feature and it's re-use for waste, perhaps when settlement or activity in the area became more intense.

(Knight and Grimm, CD Section 13)

The only other waterhole in the general vicinity of the E3 enclosure was a substantial feature (523315) located *c* 20 m to the north-west (Fig. 4.45), which seems to have been in use for quite some time, perhaps only finally silting up in the mid to late Roman period. It contained substantial quantities of pottery (7.8 kg), along with animal bone, a 1st century AD Colchester brooch, a glass bead, ceramic tile and fired clay. Two other waterholes (634013, 311010) lay 60 and 78 m further to the north-west, both containing far fewer finds.

Aside from 569176, the only other waterhole within an enclosure was 658134, a large and quite steep feature within E7 (Fig. 4.45). It contained very few finds in the lower fills though was later used to dump midden material including much animal bone and a fired clay loom weight, probably in the middle Roman period. Further south of this beyond the enclosure boundary were three further waterholes, one of which (627042) was quite deep (1.7 m) and vertically sided, so presumably not used for animals (Fig. 4.49). A complete Iron Age bead rim jar came from the lowest fill, while most other finds (animal bone, pottery fragments and a fired clay loom weight) came from the upper fills. The deposit of the bead rimed jar is reminiscent of the two complete jars found at the base of waterhole 593207 (see above), and presumably represents an established ritual act (see below). Charred and waterlogged plant remains from this waterhole were most likely derived from a mixture of cereal processing waste (mainly emmer and spelt wheat) and normal domestic waste.

A similar steep sided, though much shallower (1.04 m) feature lay 13 m to the west (Fig. 4.49), beyond the main area of settlement (641098). It is presumed to have been used as a water supply as it was located on lower lying ground and may even have replaced late Bronze Age waterhole 641097, which could still have been visible as a hollow. Many domestic objects were recovered from this feature including animal bone, slag, Late Iron Age pottery and a spindle whorl (see Fig. 4.52 below). Charred and waterlogged plant remains were also recovered:

The pit contained large amounts of pottery but a fairly low concentration of charred plant remains. An oat grain, a few emmer/spelt chaff fragments, barley rachis fragments and a few weed seeds (chess and scentless mayweed) all indicate the presence of burnt domestic waste from small-scale grain cleaning prior to cooking.

(Carruthers, CD Section 14)

The lack of any Roman pottery suggests that it had entirely filled up by the end of the Iron Age, and was probably first dug during the Middle Iron Age. The finds almost certainly represent parts of a midden, perhaps removed from the main area of settlement to the east. The presence of oat, which tolerates poorer soils

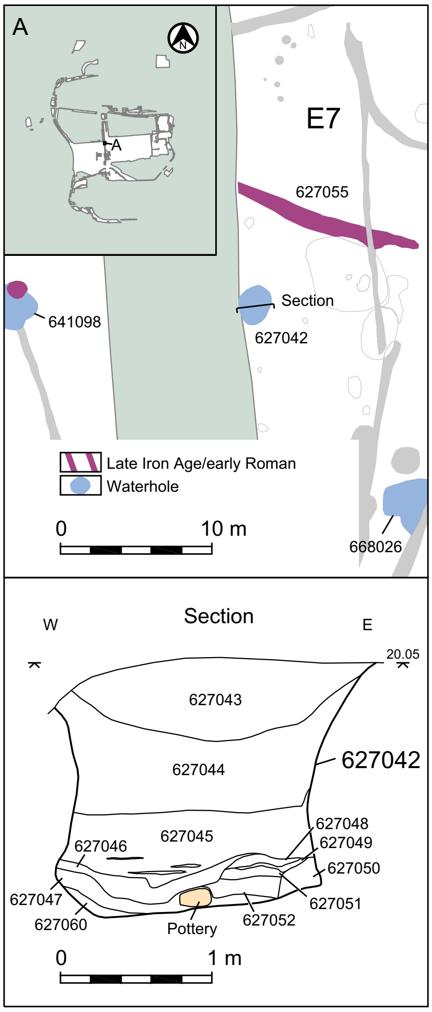


Figure 4.49: Section of waterhole 627042

than wheat, could indicate that by this period the soils were becoming too poorly drained and impoverished for large scale wheat cultivation (see below). The only other waterhole in this area (668026) was fairly shallow (1.2 m deep) and broad (3.6 m across), and presumably used for livestock.

Plate 4.18: Waterhole 583118

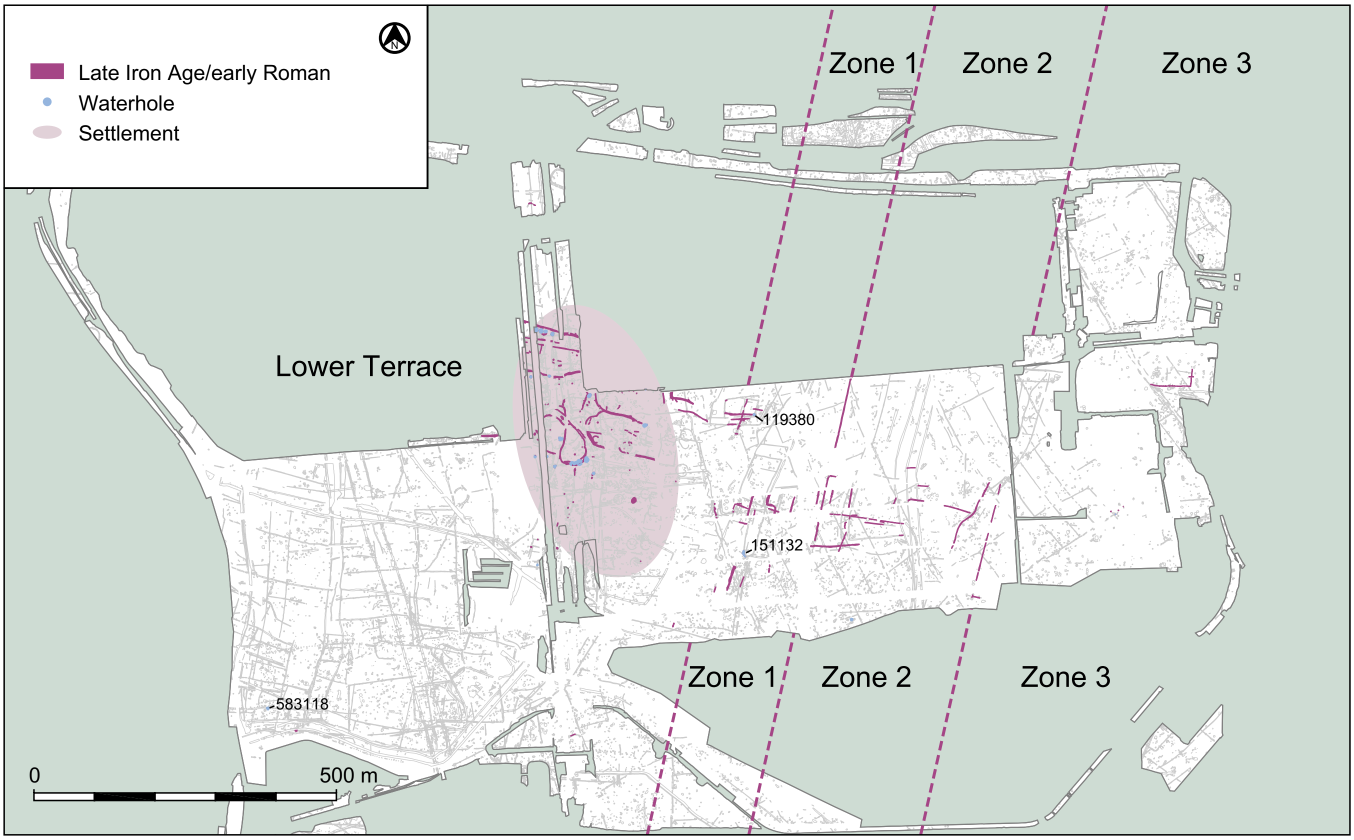


Figure 4.50: Late Iron Age/early Roman landscape zones

The remaining waterholes that date to this period lie far from the main settlement zone. Two (119380, 151132) were located in the eastern field system (Fig. 4.50), cut by the ditches of early-mid Roman Enclosures 1 and 12 (see Framework Archaeology 2006, 206). The other (583118) lay on the floodplain *c* 500 m to the south-west, approximately half way between the settlement and the river Colne (Fig. 4.50; Plate 4.18). It was a substantial feature (*c* 3 m across and 1.28 m deep), and contained only small amounts of Late Iron Age/early Roman pottery from the middle fills. The exact purpose of a waterhole in this location, within the area of the Bronze Age field systems, is uncertain, but its position cut into the top of a Bronze Age ditch is probably not fortuitous. It suggests that the field system was not only still visible, but parts may even have been actively utilised to segregate different areas of pastureland.

The shape of the wider Late Iron Age/early Roman landscape

In addition to developments observed within the settlement itself, we can see quite fundamental changes in certain parts of the wider landscape, particularly to the eastern field systems, which were completely realigned (Fig. 4.50). It was not possible to identify a coherent single system of fields within the pattern of the new boundaries and there was insufficient stratigraphic and dating evidence to establish a strict chronological sequence, but they clearly post-dated the Bronze Age field system and were cut by a late Roman 'ladder' enclosure. The changes have been placed in the Late Iron Age-early Roman period from limited ceramic evidence, and follow similar large-scale realignments seen at Imperial College Sports Ground *c* 3 km to the north-east, although the Late Iron Age date originally assigned there has recently been called into question (Crockett 2002, 343; A Powell pers comm.; see below). In the case of Terminal 5, it must be stated that the onset of changes cannot definitely be assigned to either pre- or post-conquest, and certainly cannot be ascribed to Roman landscape reform.

The realignment basically involved the digging of a number of linear ditches that divided the land up into long tracts to the east of the main settlement. In Volume 1 these tracts were defined as Zones 1–3, each of which encompassed a complex of subsidiary divisions (Framework Archaeology 2006, 207–8). Although it has been possible to maintain this basic model for interpretation, we must bear in mind that large stretches of shallow boundary ditches and gullies have been lost to truncation and the actual picture could have been quite different and far more complex. Furthermore, it is perhaps unlikely that all of the subdivisions belonged to a single phase of activity. Nonetheless, the evidence recovered from the recent stages of excavation appear to verify the broad picture (Fig. 4.50).

Zone 1 lay *c* 100 m east of the settlement, defined on the west only by a small (*c* 40 m) section of ditches in the area of a later enclosure (E1). Just three sherds of Late Iron Age pottery provide the only dating for this section, though Late Iron Age-early Roman pottery was recovered from the overlying ditches of E1. The ditches marking the main divisions between the remaining zones contained a similar paucity of artefacts, with just a few fragments of Roman pottery and ceramic building material. This probably reflects their location well away from the settlement, and strictly agricultural function (see below)

It does not seem that any particular zone was uniform in size, ranging from *c* 130 m (zone 1) to 322 m (zone 3) wide. At least some of them were sub-divided into much narrower zones, as seen by the regular system of boundaries which lay in the central strip across the site, especially clear in Zone 1 (Fig. 4.50). During the modern operation of the site as a sewage treatment plant, this central spine was not subject to the same level of disturbance as the drying beds to the north and south. The ditches and gullies that survived in this narrow strip shared an alignment and, if they belonged to a single phase of activity, may have been a series of enclosures of different sizes, with trackways providing access between them. However, the greatest likelihood is that they developed piecemeal over time.

Each of the zones may have been subdivided in a different way, as was the case with the Bronze Age field system. The surviving internal subdivisions of Zone 2, for example, were irregular and lacked coherence, perhaps indicating rapid modification in that area or subdivision into a number of small landholdings belonging to particular individuals or kin-groups. In the eastern part of zone 3 was a rectangular enclosure (E 13), ostensibly dating to the Late Iron Age, though the amount of pottery (part of a Late Iron Age necked bowl) was minimal (Fig. 4.51). It may have been associated with another settlement that lay beyond the excavated site to the east. Only the southern and eastern lengths of the enclosure ditch (813035) survived later truncation but it was at least 55 m long.

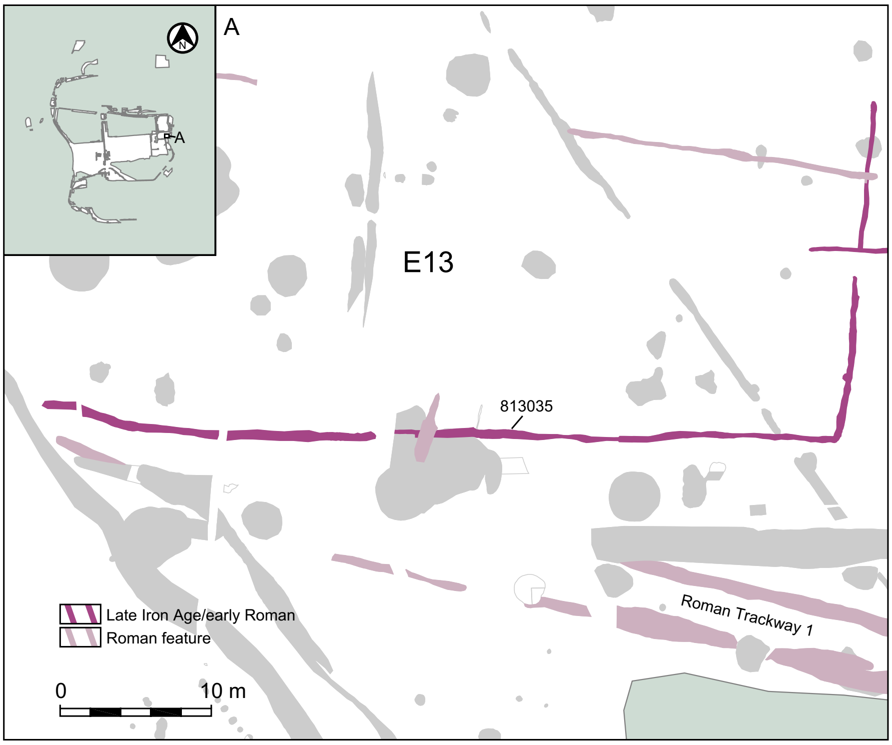


Figure 4.51: Enclosure E13

A Roman trackway (Trackway 1) lay just to the south, though a relationship to the enclosure was not established.

As noted in Volume 1, the exact organisation and function of these field systems remains uncertain, although an agricultural purpose is surely most likely (see below). Perhaps more significant is why these changes occurred at this time, and how widespread were they? On the Terminal 5 site, it has been shown that the western Bronze Age field systems were not altered in any significant way, though how far they were actively utilised is uncertain. Aside from a single waterhole cutting through one of the Bronze Age ditches (see above), there are few indications of use, although some remnant boundaries may have served to define different areas of pastureland.

The piecemeal changes to the landscape at Terminal 5 indicate that reorganisation was not wholesale, but probably tailored towards specific requirements—there was no complete replacement for the earlier Bronze Age field systems, which have been shown in areas to have persisted in some form.

Further, afield, this situation is equally varied, although there is no doubt that the Late Iron Age-early Roman period was one of significant development in terms of land use and reorganisation. There have been an increasing number of excavated sites in the local area containing features of this date; both on the gravels and the wide Colne Valley floodplain to the west (see Fig. 4.63 below). At Hengrove Farm and Ashford Prison just east of Staines and to the south of Heathrow, Middle and Late Iron Age settlements were established in parts of the Bronze Age field system, with the Bronze Age alignments continuing to be respected right respected right through into the Roman period (Hayman forthcoming d; Carew *et al.* 2006). At Thorpe Lea Nurseries south-west of Staines there is also evidence for some survival and maintenance of Bronze Age ditches into the Iron Age and Roman periods, although as with Terminal 5, the situation is mixed with some more radical changes also occurring (Hayman forthcoming a).

At Imperial College Sports Ground, *c* 3 km to the north-west, an Iron Age settlement was established in an area of previous Bronze Age activity, and, like Terminal 5, developed continuously into the late Roman period (Crockett 2002). Quite significantly, this settlement lay on a completely different alignment to the earlier prehistoric landscape, instead being focused upon a route through the area, which was fossilised in the Roman period by the digging of trackway ditches (ibid., 343). Unfortunately, the exact chronology of the earliest phase of settlement remains uncertain, and so the landscape realignment cannot be assigned specifically to the later Iron Age (A Powell pers. comm.). However, the intensity of activity does appear to increase at this time, continuing into the early Roman period.

Only very limited elements of any wider field system were encountered at Imperial College, comprising a ditch to the south of the settlement aligned at right angles to it, but this was also only loosely dated and probably belongs to the more extensive Roman occupation. Nevertheless, the general orientation of the field ditch, settlement and routeway does correspond with the Terminal 5 field ditches, and thus hints at quite widespread integration of the landscape in the Late Iron Age/early Roman period.

Further south-east of Terminal 5 at Mayfield Farm, on the edge of Taplow and Kempton Park terraces, was a 1st–2nd century AD settlement with ditches which appeared to follow the alignment of Middle Iron Age boundaries, but again were at some divergence with the Bronze Age field system (Jefferson 2003, 18; MoLAS forthcoming).

To the west of Terminal 5 on the Colne floodplain, excavations at Horton have revealed a similar situation (WA 2009). Here, there are vague traces of Early/Middle Iron Age ditched boundaries, which are aligned differently from the Bronze Age field systems, but which formed the basis of subsequent Late Iron Age/early Roman systems of land division. However, it must be emphasised that these later field systems did mark a clear change of landscape use at this time, cutting through a number of Iron Age roundhouses, and continually developing into the Roman period.

Overall, the impression is of quite a varied local landscape, generally developing in a piecemeal fashion throughout the Iron Age and into the Roman period. There were elements of the older Bronze Age field systems that no doubt continued in use (or were still at least visible parts of the landscape), while some new alignments of settlements and field boundaries were clearly laid out in the Early and Middle Iron Age. The later Iron Age and early Roman period saw renewed vigour in the creation and elaboration of field systems, perhaps responding to new economic or social stimuli. While some of these were expansions from earlier Iron Age landscape divisions, others, like the eastern field system at Terminal 5, appear to have been newly created at this time. The impetus may have come from a local shift in power relations during the Late Iron Age, when the substantial enclosed settlement at Caesar's Camp in the north-eastern side of Heathrow airport appears to have been abandoned (Grimes and Close-Brooks 1993, 334). In all cases, the agrarian landscapes then appeared to develop quite intensively until at least the 2nd century AD, and must have provided significant agricultural resources for the newly emerging towns at Staines and London (see below).

Lifestyle and economy in the Late Iron Age/ early Roman period

Although determination of status and wealth based purely on visible material culture can be somewhat misleading, the Late Iron Age and early Roman inhabitants of the Terminal 5 landscape do not show any signs that they belonged to a particularly high station in local society. Objects of any type other than local coarseware pottery were rare, and these (quernstones, spindlewhorls, loomweights and small number of brooches) indicate nothing other than a relatively small low status agricultural farmstead. Nevertheless, they do reveal something of the range of activities that could be expected within the settlement. Evidence of weaving during this period, for example, came from loomweight fragments and a fired clay spindle whorl found in pit/waterhole 641098 on the western edge of the settlement.

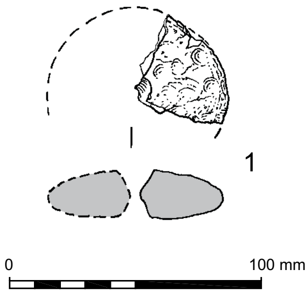


Figure 4.52: Fired clay spindlewhorl from pit/waterhole 641098

Other on-site activities include crop processing, as fragments of quernstone were recovered from two Late Iron Age and early Roman deposits. This may indicate some increase in the production of cereal crops during this period.

... two querns from Late Iron Age/early Roman contexts were quite different in character from the earlier ones... One of them (521086), a rotary quern fragment, was made of Lodsworth stone, a variety of Lower Greensand from Sussex (Peacock 1987) and there is another, burnt fragment of this stone (676003). The other rotary quern (623046) consists of Upper Old Red Sandstone from the Forest of Dean/Wye Valley area (Welch & Trotter 1961, 49). During the later part of the Iron Age... there had been a change from saddle to rotary querns, and for making these, the local quern materials, that had been in use for thousands of years, were abandoned in favour of imported varieties of stone. All finds...are fragmentary, but traces of worn concentric rings on the grinding surface indicate that they come from rotary querns. The choice of these two quern materials is in no way unusual, as they had begun to appear in the area during later prehistoric times (Roe in prep(b)). Finds of Lodsworth stone in particular are typical of Late Iron Age/early Roman sites along the Thames, as for instance at Thames Valley Park, Berkshire (Barnes et al 1997, 46).

(Roe, CD Section 7)

The environmental evidence also indicates that cereal crops were growing in the vicinity, seemingly much more so than in the Middle Iron Age, although the quantity and extent is still hard to gauge.

Of the arable crops being grown during the LIA/ERB period, spelt wheat was the most frequently represented in the charred assemblages… However, in contrast to chalkland sites in Wessex such as Danebury (Campbell 2000) where emmer had almost disappeared, emmer was still an important crop in the LIA at Heathrow. The presence of bread-type wheat was unconfirmed by the recovery of any rachis fragments, although 'swollen' aestivoid wheat grains were found in seven samples and one well-preserved possible bread-type wheat grain was identified…

The constant but fairly low occurrence of barley through the periods suggests that it was probably mainly used for fodder…Oats were only occasionally recovered as charred grain, though they may have been used as an early bite crop or used as fodder and not come into contact with fire. It is interesting to see how little change there appears to have been through the RB period, perhaps suggesting controls were in operation over which crops were being grown.

(Carruthers, CD Section 14)

Overall the evidence is sufficient to suggest that cereal crops were an increasingly important part of the site's economy from the Late Iron Age onwards, and it may have been that the expansion of arable production was in part responsible for the establishment of the new eastern field system at this time. However, pastoral agriculture also undoubtedly continued to have a big role to play, with environmental indicators suggesting extensive open grazing land (see above). Furthermore, the creation of the enclosures themselves is likely related to animal management. The inhabitants probably designed these enclosure complexes to control larger herds of livestock than their Middle Iron Age ancestors, or, at least, to manage them in a way that replaced the need for the small penannular pens of the past. Just as the growing of arable crops was expanding, so the pastoral regime was changing, probably in order to maximise the available economic output. The reasons for this are less clear, as the trend probably started before the conquest and therefore before the establishment of the towns at Staines and London, but may have been connected with general population increase.

The actual nature of Late Iron Age/early Roman pastoralism at Terminal 5 remains uncertain, as the faunal remains were generally in a very poor condition, a common occurrence on the acidic middle Thames gravels.

Species encountered in the Iron Age assemblages from Terminal 5 include horse, cattle, sheep/goat, pig, dog and red deer...The fragmentary nature of the material and the probable bias towards larger and older animals prevents the investigation of husbandry practices. However, it is interesting to note that one (waterhole) contained a predominance of large mammal and another medium and small mammal bone, with a high proportion of burnt fragments, suggestive of butchery and domestic processing/ consumption respectively. This could be related to the activity areas in which they were located (or the activities which took place around them after their original purpose had been discontinued). The partial remains of two sheep/goat in one context is typical of other Iron Age settlements such as Danebury (Knight 2002), where bones from different individuals appear to have been mingled but remained in pristine condition prior to deposition.. Carcass parts on the bone may have been distributed into family or other groups and therefore waste built up in individual areas (either above ground or within features), or communal waste been temporarily stored before deposition into open features...

(Knight and Grimm, CD Section 13)

On the basis of the evidence presented above, the economy of the Late Iron Age/early Roman settlement at Terminal 5 was based on mixed agricultural production, with the likelihood that animal manure was used to increase the yield of the cereal crops.

…some of the insects indicated accumulations of dung rather than dung in open fields (Tatlow, this volume, WH593207). If soil impoverishment was widespread, manuring may have become increasingly important in ensuring reasonable yields of cereals were obtained. When spread on the fields, seeds shed by the vegetation growing on and around the midden may have found a suitably disturbed habitat to become established for a while, and so become harvested and charred as arable weeds.

(Carruthers, CD Section 14)

The agrarian arrangement at Terminal 5 was probably similar to most other small scale farmsteads in the region (see Fig. 4.63 below). At Imperial College Sportsground to the north-east, the finds and environmental evidence indicate another small Iron Age/Roman farmstead operating a mixed economy based on the cultivation of emmer and spelt wheat, barley and the management of livestock (mainly cattle), mostly in an open environment (A Powell forthcoming). A similar picture emerges from the Late Iron Age/early Roman phase at Horton on the Colne floodplain, with quite limited quantities of charred cereal remains (spelt, emmer and barley) and animal bone dominated by cattle and with smaller proportions of sheep/goat and pig (WA 2009). At Cippenham, Slough, a likely pastoral emphasis was noted in the Middle/Late Iron Age settlement, but it was still a mixed economy with no real evidence of specialism (Ford *et al.* 2003, 159).

The general lack of economic specialism in this region was unlike the situation further west in the Upper Thames Valley at this time, where many gravel terrace settlements like Claydon Pike and Thornhill Farm were characterised by clusters of intensely recut enclosures associated with stock management, but with little evidence for any nearby arable production (Miles *et al.* 2007; Jennings *et al.* 2004). This variation in agricultural practices may have been environmentally determined, although could also have resulted from social and economic factors. Agricultural specialisation implies integration into an economic system

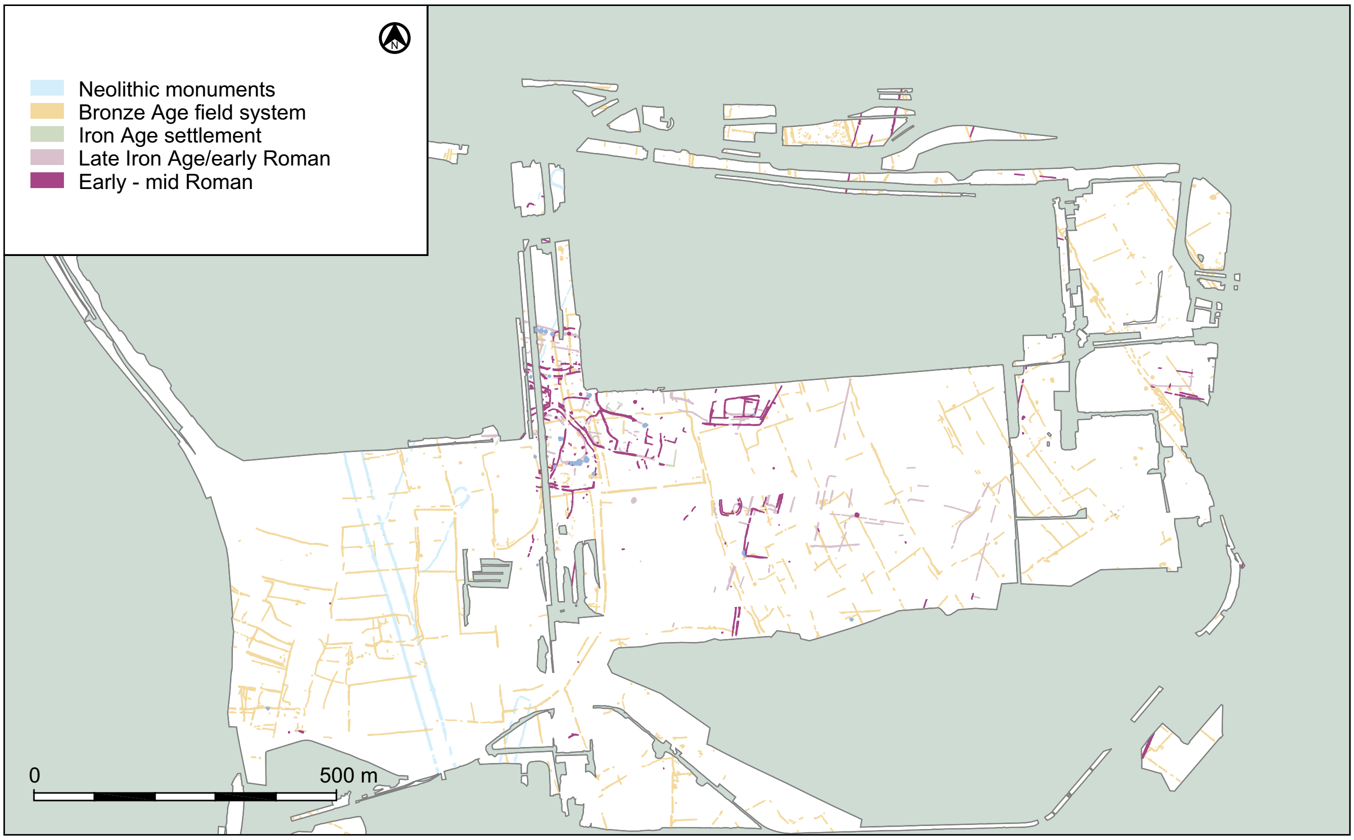


Figure 4.53: Early-mid Roman landscape

operating beyond the level of simple subsistence, although of course it is quite possible that other farmers not obviously engaged in specialisation were also operating at this level (Booth *et al.* 2007, 278).

There is little doubt that agricultural practices in the region continued to develop through the later Iron Age, and there is as yet little evidence that the Roman conquest of AD 43 marked any particular disruption. In fact it was not until the later 1st century AD at the earliest (and often much later) that any significant changes in settlement and landscape were noted, most likely influenced by proximity to the rapidly growing towns at Staines and especially London.

Development of the early-mid Roman settlement and landscape

The settlement and enclosure complex of the Late Iron Age appears to have been continually modified on a somewhat *ad hoc* basis right through into the early and middle Roman periods, although there are some elements which would appear to belong late in the stratigraphic sequence, and/or had ceramic dating placing them from the later 1st or 2nd century AD (Fig. 4.53). This was not a radical reoganisation of the settlement or landscape, but the outcome of continual redevelopment, albeit one which was probably affected by increased influence from the developing Roman economic system.

The early-mid Roman landscape

One of the few environmental indicators for the wider landscape came from pollen samples within successive waterholes in the northern part of the site (527374, 527388; see below), dating from the early to mid Roman period. The earliest sample (18236; Fig. 4.54), probably dating to the later 1st century AD, was

…dominated by grass pollen, clumps of which were found at most levels, together with many taxa indicative of grasslands, including tall herb-rich meadows with grasses, sedges, knapweed (Centaurea nigra-type), thistles (Cirsium/Carduus), vetches/peas (Vicia/Lathyrus), meadowsweet (Filipendula), buttercups, yellow rattle/eyebrights (Rhinanthus-type) and devil's-bit scabious (Succisa), much open disturbed and waste ground, and some cereal growth (emmer/spelt, barley, wheat and/or oats)… There is little evidence of woodland, tree and shrub pollen values being less than 8% throughout.

The landscape appears to have been very open and pastoral in character while this waterhole was in use, with very little extant woodland, some cereal growth, much grassland and meadows, and a lot of open, disturbed ground, trackways and habitation sites.

(Peglar et al., CD Section 16)

The general environmental picture does not appear to have changed when the latest waterhole in this sequence was open (*c* 2nd–3rd century AD), as pollen assemblages from sample (18269) in the lower fills of 527388 were,

…indicative of a pastoral landscape with meadows, pastures, and some arable fields with cereal crops. One grain of hemp/hops (Cannabis/Humulus) was found, but whether this is from a crop of hemp or

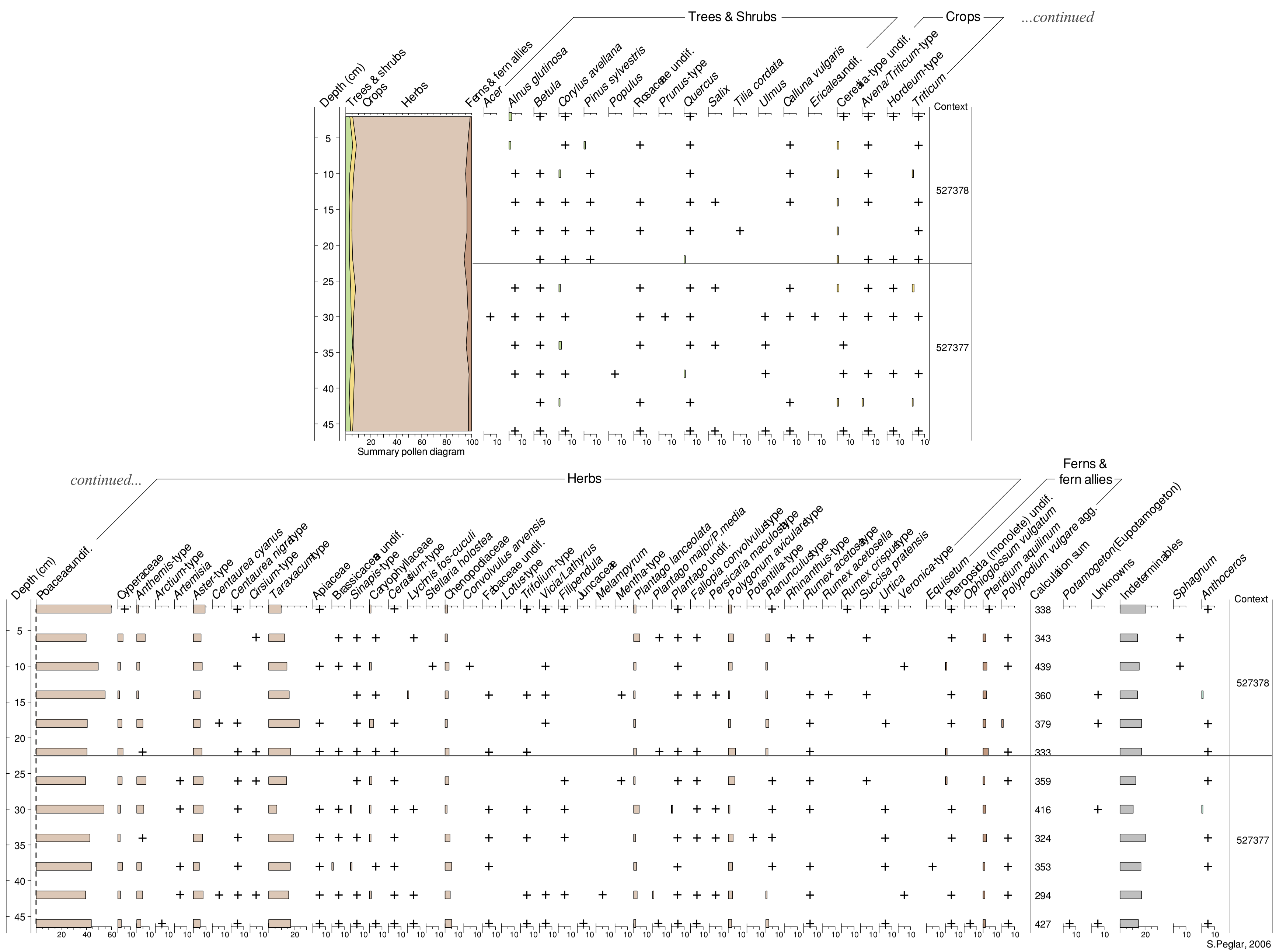


Figure 4.54: Pollen percentage diagram (Sample 18236, the fill of early Roman waterhole 627374)

from wild hops cannot be determined. However, tree and shrub pollen values were somewhat higher than in sample <18236>, especially from the lower context (527380) with particularly hazel and elm.

(Peglar et al., CD section 16)

This suggests some increase in woodland cover at this time, but probably only on a localised basis, maybe within the actual enclosure (E9) containing the waterhole. Overall, the evidence suggests a landscape very similar to that of the Late Iron Age, although there may have been rising water levels from the start of the Roman period, probably causing increased seasonal flooding and waterlogging in some areas of the site *(see Carruthers CD, Section 14)*. There were also indications that heathland was more scarce than in the previous phase.

This could indicate improvements to the land, or changes in the selection of materials for fuel. The latter explanation is perhaps more likely, since heather and bracken pollen were recovered from LRB deposits... Heathland remains in post-Roman features also demonstrated that, once degraded to heathland, areas of heath persisted in the area for many centuries.

(Carruthers, CD Section 14)

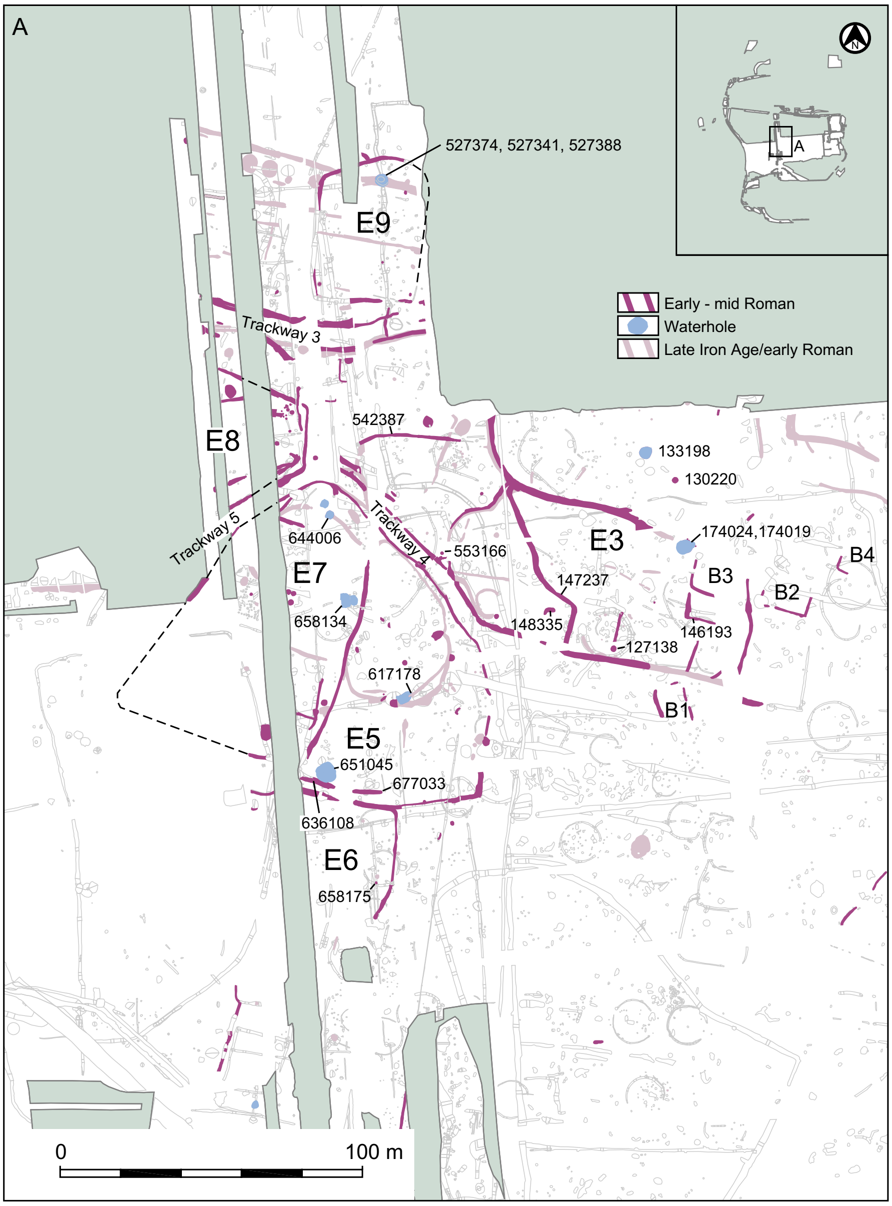


Figure 4.55: Early-mid Roman settlement

Settlement modification: the enclosures

The core of the Late Iron Age-early Roman settlement remained intact, but a number of enclosures were modified, while others were newly created, which served to expand activity to the south and east (Fig. 4.55). Some ditches of the main 'domestic' enclosure (E3) were recut and one (147237) appeared to divide it in two, though seemingly in quite an irregular manner. One possible clue to this is a large tree-throw (148335) that the ditch appears to respect and which could possibly have represented a significant visual landmark in the settlement. The ditch appears to have continued north of E3, before turning west (ditch 542387) and potentially creating another 'annexe' enclosure with trackway 4 ditch (see below). Ditch 542387 contained significant quantities of pottery (see Fig. 4.64), two loomweight fragments and well-preserved charred and waterlogged plant remains, indicative of nearby domestic activity.

The waterlogged assemblage was restricted to a few tough-coated taxa, most of which were common weeds of disturbed or cultivated places (e.g. orache (Atriplex patula/prostrata), fumitory (Fumaria sp.)). The only taxon of note was possible raspberry (Rubus cf. idaeus). The 8 seeds could represent sewage spreading into the top of the ditch. If so, raspberry may have been newly introduced into the area as a garden plant, although it is native to the British Isles.

The charred assemblage was different to most of the other samples as cereal grains were more numerous than chaff fragments, in contrast with the chaff-rich cereal processing waste recovered from most of the LIA/ERB waterholes… Since hulled barley grains were almost as frequent as emmer/spelt grains (unlike the other samples where barley grains were scarce or absent), burnt waste fodder may also have been deposited. The few weed seeds were all common weeds of cultivated land.

(Carruthers, CD Section 14)

Further evidence for domestic debris came from pit 553166 in the south of this 'annexe' enclosure, which contained charred plant material (sample 19155) that...

Plate 4.19: Withy rope from waterhole 644006

…had the character of domestic waste, comprising mainly the chaff from dehusking emmer/spelt wheat, with a few wheat grains and small weed seeds. Spelt (Triticum spelta) was positively identified from four glume bases. A possible bread-type wheat grain, some oat awn fragments and a barley rachis fragment were the only remains from other crops being grown.

(Carruthers, CD Section 14)

There is little to suggest that roundhouse 126155, in the western part of E3 (see Fig. 4.43 above), continued much beyond the start of the Roman period, and it may be that the transition to rectangular buildings, which were revealed within and around the eastern part of the enclosure, occurred at this time (see below). That this enclosure, and the one adjoining to the north, continued to be the focus of domestic activity is not only indicated by the rectangular buildings, but also by wattle-lined waterholes (133198, 174024/174019; see below) and a couple of pits (127138, 130220) containing domestic refuse including animal bone, pottery (mostly general Roman, but including two sherds of central Gaulish samian), fired clay and parts of two rotary querns.

The double enclosure arrangement to the west (E4 and E7) appears to have been completely remodelled in the early to mid Roman period, becoming greatly enlarged to well over double their previous sizes. This is clearest with Enclosure 4, which expanded to form a D-shape, up to *c* 90 by 56 m at

Figure 4.56: Enclosure 8

its greatest extent (now termed Enclosure 5). A possible 6 m wide entrance on the southern side may have been elaborated by short lengths of parallel ditch (677033, 636108) just 3 m apart. The entrance led into what may have been another enclosure (E6) to the south, though this was very poorly understood, with just the eastern ditch remaining. The only notable feature was a rectangular shallow pit (658175) containing charred plant material (sample 26050) which included a single grape pip (see below).

As with E4, very few contemporary features were found within Enclosure 5, although a wattle-lined waterhole (651045) lay in its south-west corner (see below). Further north, a deep narrow pit/waterhole (617178) which cut through part of the E4 southern boundary ditch contained a reasonable assemblage of pottery (early and mid Roman; see Fig. 4.64 below) along with roundwood fragments and part of a rotary quern. The insect evidence from this pit indicated,

...open pasture; taxa found with dung and accumulations of foul, rotting material or domestic waste are sometimes lower than in the earlier features.... A range of 'dung beetles' ... suggest that grazing land surrounded the feature [together with] rough grassland.

Species associated with human habitation, domestic or stable wastes are restricted. Woody remains were also found in these samples, which appear to have been infested by Anobium puntactum, the common woodworm. This taxon is associated with dry, seasoned and worked wood (Koch

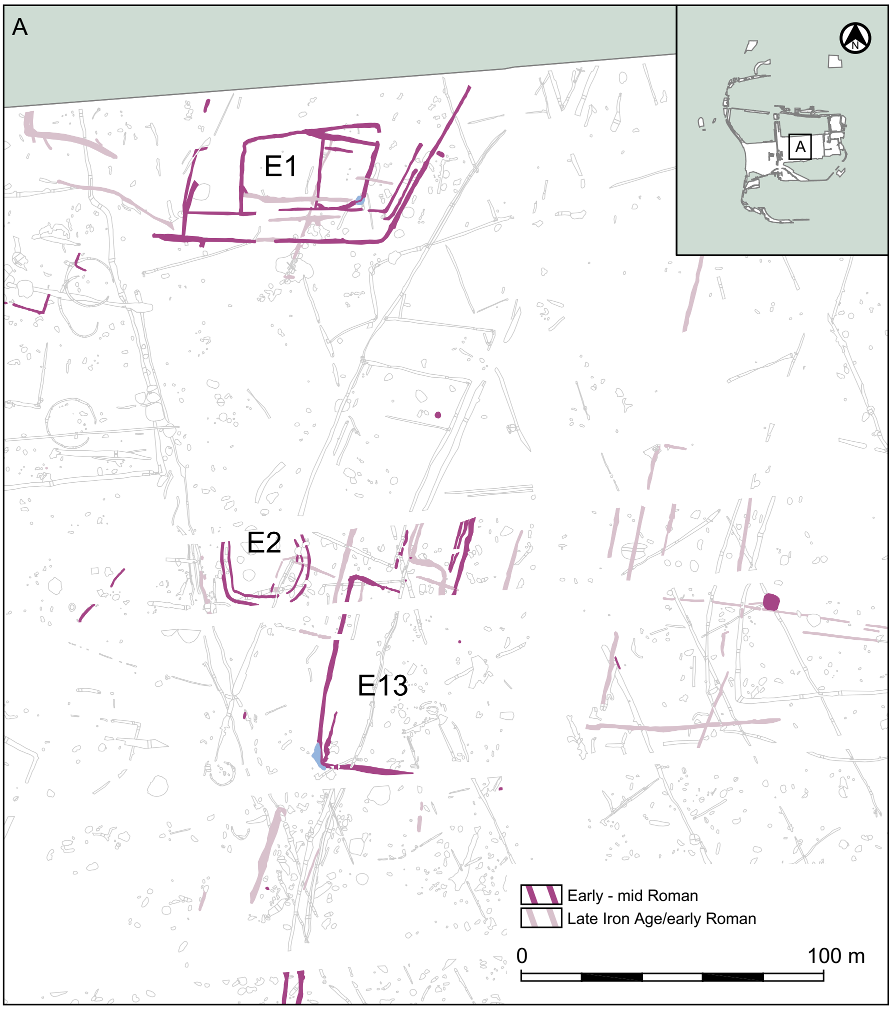


Figure 4.57: Enclosures to the east of the settlement

1989a) though it can occur in the country-side where it can infest dry deadwood on standing trees or in hedgerows.

(Tetlow, CD Section 17)

The evidence overall suggests that this enclosure was fairly open and not used for domestic activity, though domestic waste was clearly being dumped here at some point. Well preserved water-logged and charred plant remains indicated the usual range of grassland, disturbed ground and damp ground taxa, along with emmer and spelt processing waste. Stock management remains the most likely function.

Adjoining E4 to the west was Enclosure 7, which also expanded, probably at the same time, although only traces of ditches could be discerned, to the north and south (Fig. 4.55). It was *c* 94 m north-south, with the western extent not realised, and no obvious entrance. As with E4, very few internal features were demonstrably contemporary, though waterhole 658134 may still have been in use and timber–lined waterhole 644006 was cut through the earlier enclosure ditch. The latter contained large amounts of pottery including central Gaulish samian and mortaria, along with two quernstone fragments and fragment of withy rope (Plate 4.19). A total of seven pits of variable form with mixed Roman pottery were found within the enclosed area, but these could relate to the late Roman posthole building B6 (see below).

Located just to the north-west was another enclosure (E8), which was probably constructed around the same time as developments elsewhere, in the early to mid Roman period (Fig. 4.56). Only the eastern part of this enclosure lay within the excavated area, but this appeared quite regular, aligned against one side of the newly modified E7. A cluster of postholes and pits in the north-east corner of this enclosure may represent at structure of some kind, though no discernable pattern could be observed, and no obvious function is indicated.

In the northern part of the settlement, and cutting the earlier boundary ditch 636041, were three sides of another enclosure (E9), *c* 46 m north-south by at least 36 m east-west (Fig. 4.55). Significant amounts of pottery, along with fired clay, animal bone, iron nails, CBM, and a copper alloy object (SF 26103) were recovered from the enclosure ditches. The only internal features of note were three intercutting waterholes 527374, 527341 and 527388, the last of which continued in use into the late Roman period, contemporary with the final use of the enclosure. Environmental samples from these features (see below) suggest they were used for livestock, although with the quantity of domestic debris in the immediate area, periods of occupation are also quite likely.

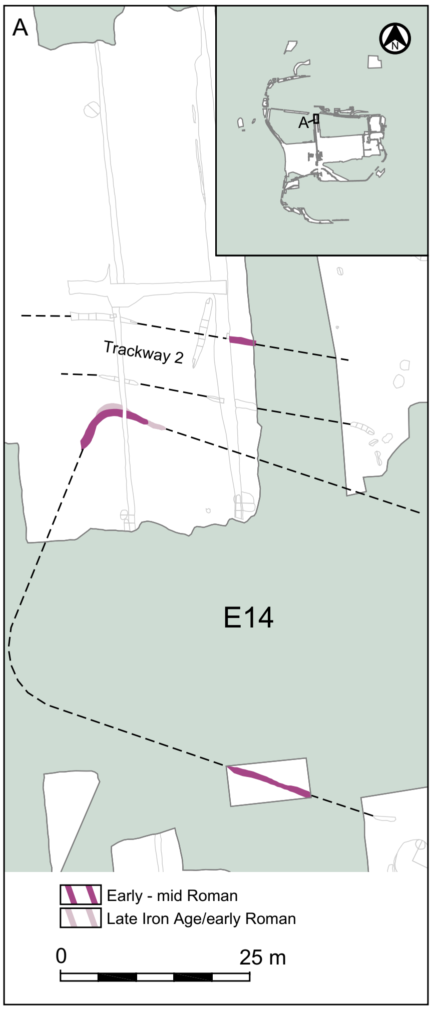


Figure 4.58: Northern Enclosure E 14

Plate 4.20: Artist's reconstruction of Roman settlement

A number of other enclosures of approximate early to middle Roman date were located outside of this core settlement zone. Enclosures 1 and 2 to the east (Fig. 4.57) have been described in volume 1, with E1 suggested as being an animal stockade along with enclosing agricultural outbuildings (Framework Archaeology 2006, 210). One notable find from the enclosure ditch was an iron reaping hook, which lends credence to an agricultural function. The enclosure was eventually integrated with the late Roman ladder enclosure. The double enclosure further south (E2) deviated in alignment from both early and late Roman field systems and was probably only in use for a limited period during later 2nd to early 3rd century AD. Just 15 m further east was another probable rectangular enclosure (E13) which did appear to be an integral part of the earlier Roman field system. It was 60 m by at least 30 m and open on the east side. Very few finds were recovered but these did include fragments of Oxfordshire mortarium and Nene Valley beaker suggesting that this was a mid to late Roman enclosure—probably one of the many developments to have taken place within the eastern field prior to the construction of the ladder enclosure (see below).

A final rectangular enclosure (E 14) was located *c* 120 m north of the settlement, on the same alignment as the eastern Roman field system (Fig. 4.58). No diagnostic finds were recovered, which suggests a purely agricultural function, and it is assumed to be Roman on the basis of its alignment. This enclosure may have been a northern outlier of the main complex but presented the possibility that there was a focus of similar activity within the unexcavated area to the north. A Roman trackway (2) ran just to the north (see below).

Trackways

The redevelopment of the enclosure system in the settlement corresponded with the creation of a network of trackways at the site. In the centre of the settlement Trackways 4 and 5 ran between a number of enclosures, converging into an area of open space north of E3 (Fig. 4.55; see reconstruction in Plate 4.20). Another trackway (3) ran east-west to the north of this open area, immediately south of Enclosure 9. Traces of further Roman trackways were found to the north by Enclosure 14 (Trackway 2; Fig. 4.58) and to the west by Enclosure 13 (Trackway 1; Fig. 4.51), and may have linked the settlement to others in the vicinity.

The dating of the trackways is problematic, with the usual mixed and undiagnostic Roman pottery, and it is uncertain if all were created at the same time. Defined trackways are certainly found in other sites in the vicinity such as Imperial College Sports Ground, and are generally dated from the early to mid Roman period, part of the wider scale changes seen as a result of economic integration with the Roman state (see below).

Roman buildings

A total of four or possibly five potential rectangular buildings belonging to the mid-late Roman period were revealed during the previous excavations and are described fully in volume 1 (Framework Archaeology 2006, 211–4). They were located in the eastern part of the main settlement, one of them (B3) lying within Enclosure 3, and the others just to the east and south (Fig. 4.59). An L-shaped gully (146193) 1.5 m south of B3 and of similar dimensions could have been the site of another potential building, or perhaps even part of B3 itself. Building 1 to the south was on a different alignment to the others and the finds and charred plant evidence suggest an agricultural function, possibly associated with crop processing. Its structure was difficult to determine, with the gullies originally interpreted as foundation trenches for a building. However, the size (8 x 17 m) and irregularity of the structure would argue against this, and instead is more likely to either represent a small enclosure, or perhaps a drip gully surrounding a rectangular building which has left no trace (quite typical for lower status Roman rural buildings) (see reconstruction in Plate 4.20). Substantial amounts (*c* 1.7 kg) of fired clay from the gullies may have derived from such a building.

The remaining structures (B2–4 and potentially 146193) were all far more fragmentary, though probably again formed either enclosures were or drip gullies surrounding buildings. The environmental evidence from nearby waterhole 174024/174019 does indicate that wooden buildings existed in the vicinity and these gullies perhaps represent the most likely candidates for the location of such structures. There is no specific indication as to whether they had a domestic or agricultural function, but judging from the nearby lined waterholes and domestic debris from pits (127138, 130220) in the vicinity, it is likely that at least some represented occupied buildings. There does not appear to have been any architectural pretension to any structures, probably constructed with timber and daub walls with thatched roofs. The minimal amount of ceramic roofing material from the site does not suggest use in these structures.

Figure 4.59: Potential Roman buildings 1–4

Waterholes

With the expansion of the settlement came the digging of further waterholes, while it is likely that many of those dug in the previous phase continued in use (see above; Fig. 4.55). In the area of the buildings were a number of waterholes (174024, 174019 and 133198) dated to the early–mid Roman (*c* 1st–3rd century) period, two of which had evidence for a wattle lining

Plate 4.21: Waterhole sequence 174024, 174019 and 174069

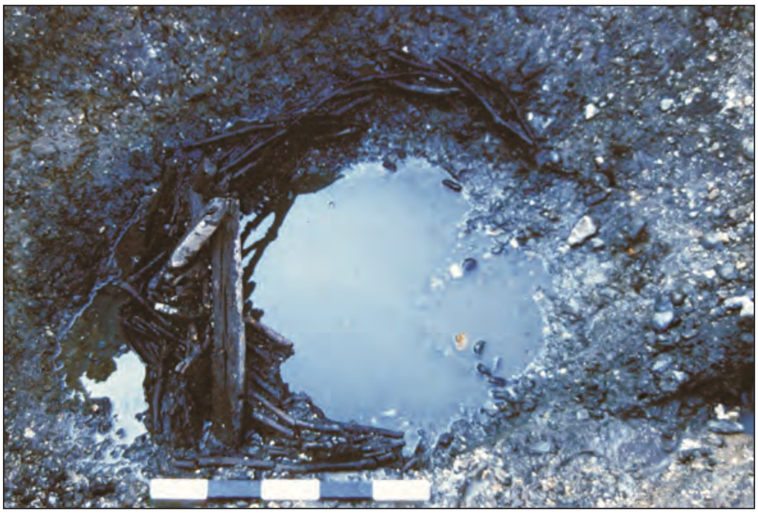
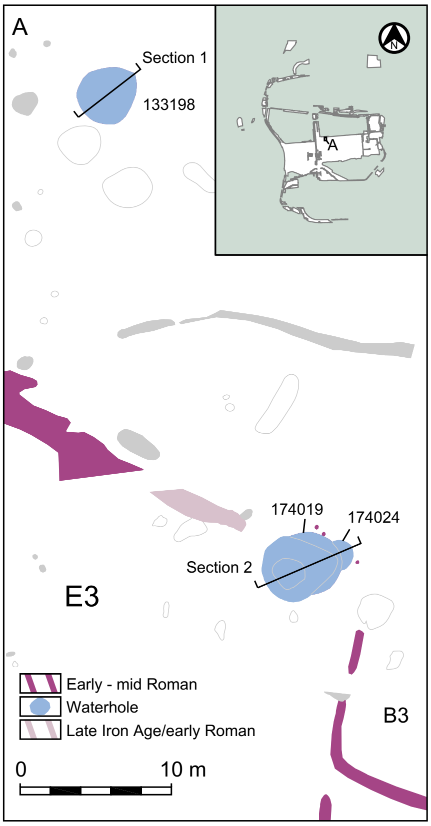
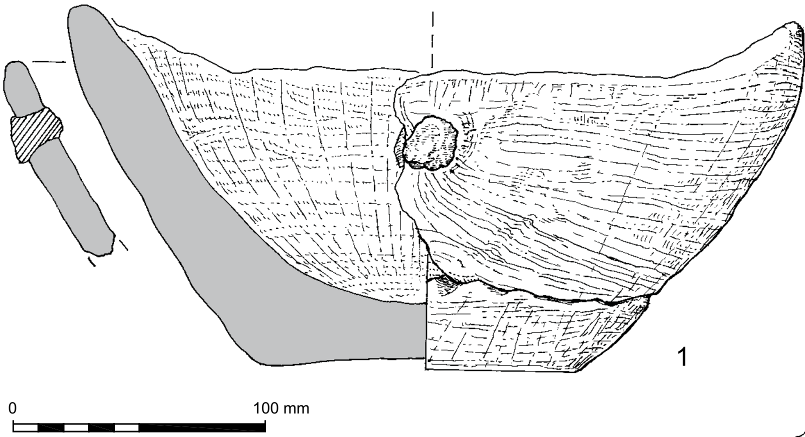
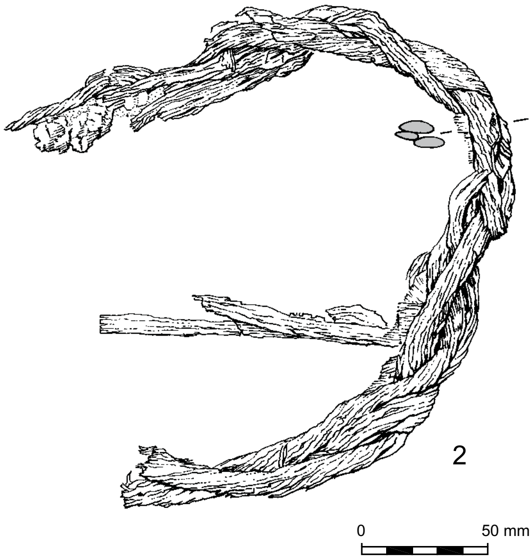
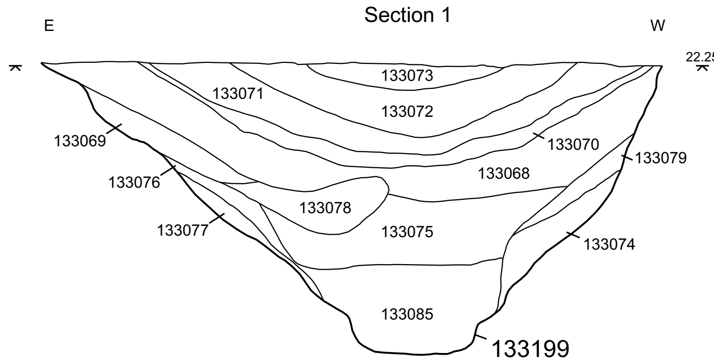


Plate 4.22: Close up of wattle inside well 133198









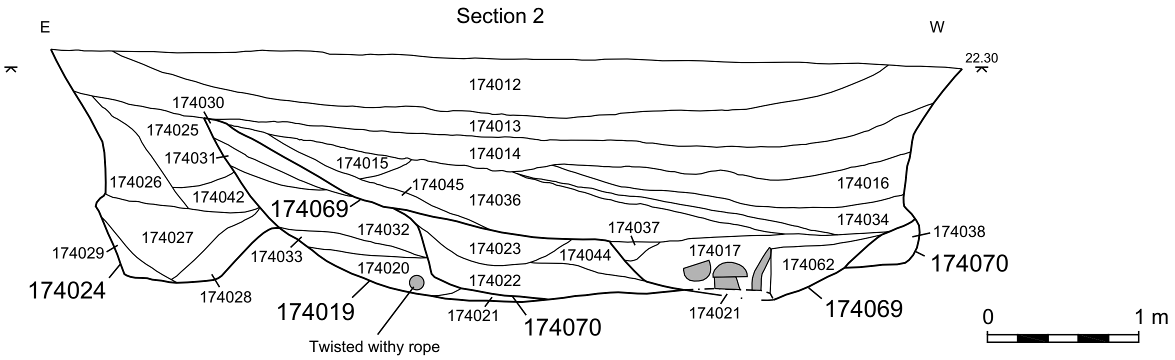


Figure 4.60: Waterholes 133198, 174024 and 174019 with withy tie and wooden bowl

Plate 4.23: Tweezers from waterhole 133198

(Framework Archaeology 2006, 215–7; Plates 4.21-2). Finds from these features included withy rope (wooden rope made from plaiting twisted strands of young roundwood), a possible leather shoe, tweezers (Plate 4.23), a 1st–2nd century coin and a wooden bowl, along with other more typical domestic debris (Fig. 4.60).

Further away from the main domestic zone, Enclosure 5 contained at least one waterhole (651045), which was largely truncated by late Roman waterhole 651136 (Fig. 4.55). No finds other than the possible remnants of wooden wattle revetments were recovered. A smaller (1 m diameter) but still quite deep (1.55 m) circular pit in the centre of this enclosure (617178) probably also functioned as a waterhole (see above).

In the adjacent enclosure (E7), a large circular waterhole (644006) contained evidence for a wooden revetment, with stakes and woven wattle rods (Fig. 4.61; Plate 4.24). The feature was also rich with finds including animal bone, CBM, fired clay, pottery (including central Gaulish Samian and Verulamium region mortaria), a withy rope (SF 28242) and two quern fragments, along with rich organic material.

Straw/hay and wood fragments were abundant in the flot, although waterlogged cereal chaff was quite scarce. Stinging nettle seeds were also abundant, making the assemblage similar to that recovered from E/MRB waterhole 527374 [see below]. The finds from the base of this feature included a large quernstone, so perhaps straw and/or hay had also been deposited for ritual purposes.

(Carruthers, CD Section 14)

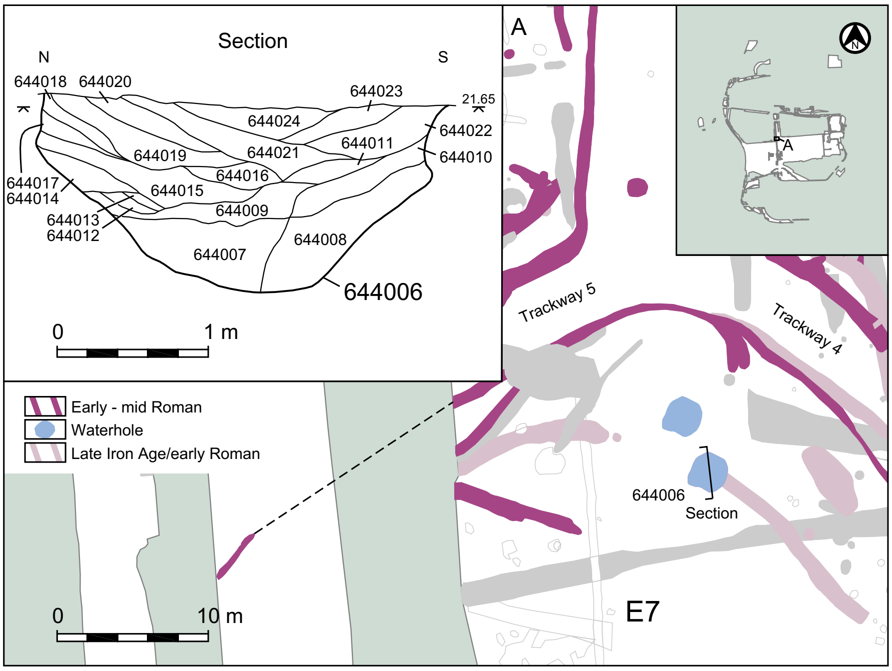


Figure 4.61: Mid Roman waterhole 644006

Plate 4.24: Waterhole 644006

The final three intercutting waterholes belonging to this phase lay in the northern part of Enclosure 9, cutting through Late Iron Age/early Roman boundary ditch 363041 (Fig. 4.62). The earliest cut (527374) was largely truncated by the later features and contained a limited quantity of animal bone (mainly cattle and horse), fired clay and Roman pottery. Subsequent waterhole 527341 was almost completely truncated by the final feature in the sequence, 527388, which was *c* 3.8 m diameter and 1.8 m deep. This waterhole was shored by the use of wooden timbers (Plate 4.25), with an oak beam wedged against a series of six stakes driven into the natural then been braced by a yew beam (*c* 2.5 m long). Many finds were recovered from the feature, including part of a possible leather shoe, hobnail (presumably from the shoe) and a withy rope cut from young roundwood shoots of *Fraxinus excelsior L* (ash) (SF 20052) from one of the lower fills (527347). The waterhole was open through into the later Roman period, with a sizable deposit of 23 4th century coins deposited in the upper fills (see below).

Environmental samples (charred and waterlogged plant remains and pollen) from the first two waterholes indicated that their likely use was for livestock.

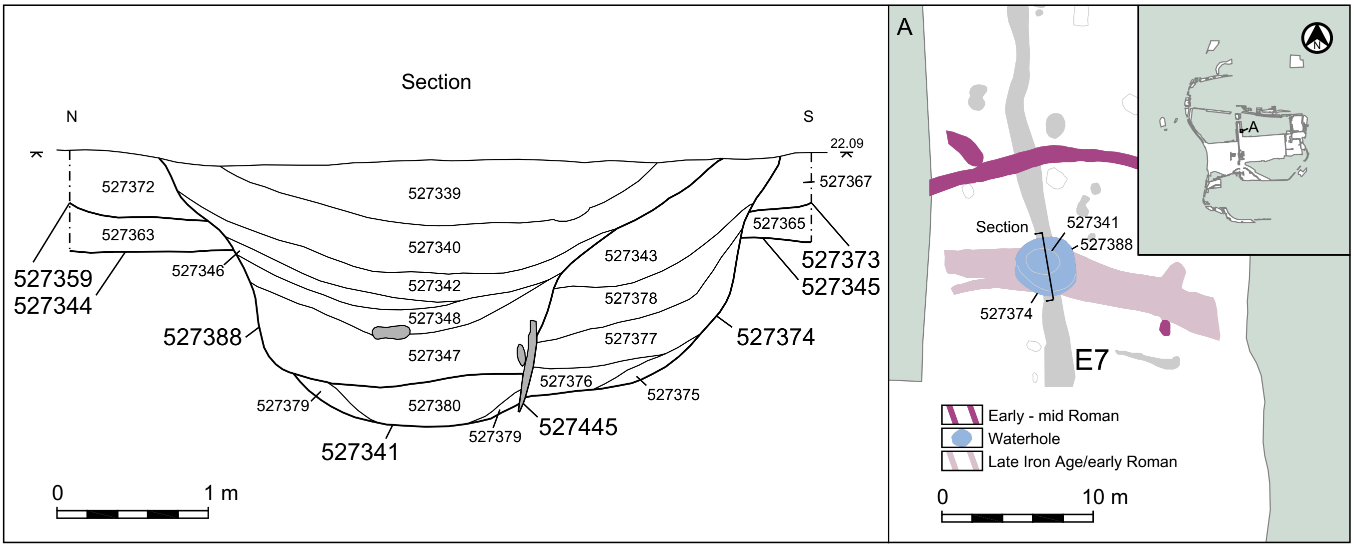


Figure 4.62: Waterhole sequence 527374, 527341 and 527388

Plate 4.25: Wood timbers from waterhole 527388

…in all cases weed species indicative of nutrient-rich soils were the main components of the assemblages, in particular the nettles, chenopods, docks and farmyard/midden type plants like henbane and woody nightshade. The waterhole, therefore, is likely to have been used for livestock, or for depositing organic, midden-type waste. Identifiable charred and waterlogged cereal remains were present (both emmer and spelt wheat chaff) but not frequent in all three deposits. However, the secondary fill 527376 (sample 19192) contained frequent small fragments of waterlogged straw and chaff, so animal dung or stable waste may have been deposited in this layer.

Notable taxa in this deposit [fill 527379 of waterhole 547341] were stinking chamomile (Anthemis cotula), hemlock (Conium maculatum) and mallow (Malva sp.). Apart from the single charred stinking chamomile seed in M/LIA pit 678001, this is the earliest record of this useful indicator of damp, clay soils.... Hemlock would have been well-suited to these damp conditions. It should be noted that this highly poisonous but medicinally useful plant was probably a Late Iron Age or Roman introduction, since it is not found in Britain *prior to this period… The few mallow seed and capsule fragments are a further possible indication of Roman influence, since even if it is a native species, this taxon becomes much more frequently associated with domestic waste deposits around the Roman period. Classical writers mention mallow as being an effective cure for a range of intestinal and respiratory complaints, and Pliny recommends the taking of a spoonful of juice from any of the mallows each day to guard against diseases in general (Culpepper 1826). The poet Martial used it as a cure for hangovers, but Cicero found that eating it as a vegetable gave him indigestion (Readers Digest 1981). A few mallow seeds were recovered from MBA T5 and Perry Oaks samples, suggesting that their properties were appreciated prior to the Roman invasion.*

(Carruthers, CD Section 14)

There is very little evidence of standing water in the hole [527374], but all levels contained high amounts of parasitic eggs indicative of the incorporation of faecal material, and fungi spores, suggesting that this was a waterhole for animals rather than for collecting water.

(Peglar et al., CD section 16)

Evidence from insect remains indicate that the latest waterhole (527388) continued to be used for grazing animals, also suggesting that the feature probably dried out periodically.

The limited nature of the aquatic assemblage suggests a seasonal or ephemeral water-body, subject to episodes of drying out. The land around the waterhole was clearly being used for grazing and it seems likely that the local animal population used the waterhole during the period of deposit formation.

(Tetlow, CD Section 17)

The economy and wider region in the early-mid Roman period

There are few specific indicators that the inhabitants of the settlement made any major changes in their economic practices during the early to mid Roman period, although there are signs of increasing diversification and expansion. It remained essentially a mixed agrarian regime, with herds of grazing animals and crops of mainly emmer and spelt wheat grown in the vicinity, possibly in the area of the eastern field systems, which were maintained throughout this period. Spelt is still likely to have been the main cereal grown, with emmer being a minor crop. Other minor crops under cultivation include small amounts of bread-type wheat, as well as barley, oats and rye, the latter three all probably used as fodder. Most of these fodder crops had a long history of cultivation in the area, but rye (recovered from the gullies of structure B1) appears to have been introduced during this period. There are indications that more marginal land was being cultivated, with an increasing use of damp clay soils, perhaps because of the increased use of manuring and the fact that spelt and bread-type wheat grow better on this terrain. However, the overall scale of cereal cultivation appears to have remained fairly minor, with no large concentrations of cereal processing waste. In fact it has been suggested that,

The small assemblages of primarily domestic, day-to-day spikelet processing waste were more characteristic of a small farmstead, or a small settlement with an economy more heavily based on livestock rearing than arable cultivation.

(Carruthers, CD Section 14)

Other plant crops were also fairly limited in range, with very little evidence for horticulture.

…no large legumes (peas, beans) or flax remains were recovered. Mallow may have been grown as a garden vegetable, and grapes or raisins may have been an occasional luxury food that was brought onto the site. Native fruits and nuts such as blackberry (Rubus sect. Glandulosus) , possible raspberry (R. cf. idaeus), elderberry (Sambucus nigra) and hazelnut (Corylus avellana) were probably gathered from woodland margins and hedgerows. There has, as yet, been no evidence for the importation of other fruits, spices or other flavourings such as opium poppy seeds, as have been found on some other RB sites. No cess pits have yet been found, so direct evidence of this type has not been available. However, if luxury goods were being consumed, it must have been on a very small scale for no evidence to be found in the large number of charred and waterlogged samples taken from the T5 and Perryoaks excavations.

(Carruthers, CD Section 14)

The inhabitants of the settlement then appear not to have engaged with many of the new food types (eg coriander, celery, dill etc) emerging during the Roman period, despite the town at Staines being less than 5 km to the south. The availability of such foods is shown by the presence of a coriander seed at an otherwise low status farmstead at Thorpe Lea, just south-west of Staines (Hayman forthcoming a).

However, there is environmental evidence at Terminal 5 for new or at least intensifying agricultural ventures, shown by the presence of hay from both dry (fairy flax (*Linum catharticum*); dry, calcareous soils) and damp (yellow rattle (*Rhinanthus* sp.; moist meadows and pastures) ground *(Carruthers, CD Section 14)*. This could suggest that the management of hay meadows on the floodplain and elsewhere became a significant economic activity at this time, as has been suggested for certain sites in the Upper Thames Valley such as Farmoor (Lambrick and Robinson 1979, 135) and Claydon Pike (Mile *et al*. 2007, 158). Haymaking only appears to have been undertaken on a widespread scale from the Roman period in Britain (although there is increasing evidence for haymaking in the Iron Age; see Hodgson *et al.* 1999), often appearing on early military sites (eg Greig 1988), and would have provided for the increasing demand for winter animal fodder, especially within larger population centres such as at Staines and especially London (see below). The management of such meadows at Terminal 5 may have become an important part of the agrarian economy, with the livestock from the farm being used to graze the meadows following their cutting.

Despite the cultivation of cereal crops and management of hay meadows,

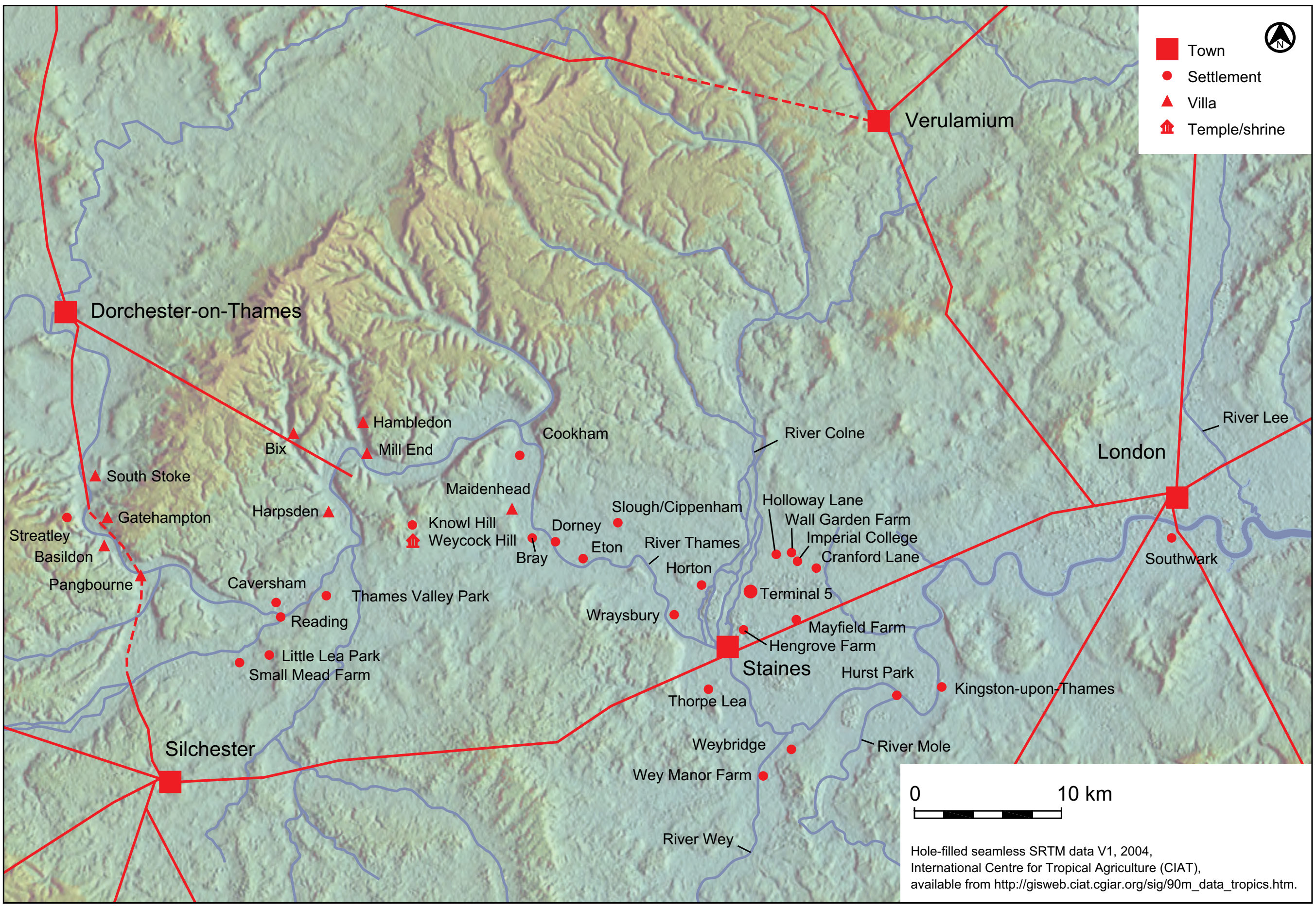


Figure 4.63: Roman settlement in the Middle Thames Valley

pastoral agriculture remained fundamental to the economy of the farmstead at Terminal 5. As previously, however, poor bone preservation means little can be said about animal husbandry practices.

Domestic animals were represented, with cattle, sheep/goat, equid and a lower than expected incidence of pig. However this is a small sample and because pigs are often killed young their bones are more fragile and less likely to be well represented. Mature and immature cattle (one of each) and one sheep between 18 and 42 months and another around 10 months of age were present. Cattle withers heights were calculated for animals of 1131 to 1320 mm, including one large male, and an equid at 1172 mm. Equid bones were substantially complete and the marrow and perhaps meat was probably not eaten; the same follows for some of the cattle bones too. A range of elements was identified, as would be expected from bones from a wide area and date range.

(Knight and Grimm, CD Section 13)

The increase in the size and quantity of enclosures within and around the main settlement suggests an intensification of stock management during the Roman period, which is also indicated at Imperial College Sports ground to the north-east (A Powell, forthcoming; Fig. 4.63). This site, which originated in the Iron Age, saw a system of enclosures develop around a trackway, possibly being used as animal holding pens. The enclosure system seems to have expanded throughout the Roman period, but only reached its fullest extent in the late Roman period, when it resembled the 3rd–4th century ladder enclosure seen at Terminal 5 (see below).

At Horton on the Colne floodplain to the west, the Late Iron Age field systems developed into an increasingly complex system of enclosures and waterholes during the Roman period, eventually forming a large agricultural estate over an area of *c* 1.9 ha (WA 2009). The function of the enclosures remains uncertain, though were presumably a mix of smaller stock pens and larger arable fields. As with Terminal 5, evidence for non-cereal crops is rare, with just a single indeterminate pulse recovered, though fruit trees may have been grown, including possibly plum (*Prunus domestica*).

At other sites in the vicinity, the environmental evidence is generally quite poor, but the overall impression is of an intensification of agricultural production during the 1st and 2nd centuries AD. At Hengrove Farm just north of Staines, a large number of ditches and waterholes were in use by the later 1st century (some of which had Late Iron Age origins), belonging to enclosures and field systems that spread across a large area during the Roman period (Hayman forthcoming d). A substantial posthole building similar to the late Roman building at Terminal 5 (B6) was also recovered here, dated to the 2nd century (see below).

At Holloway Lane and Wall Garden Farm, *c* 2 km north of Terminal 5, there is evidence for an organised and structured landscape from the mid 1st century AD, in the form of enclosures and field systems, with a corn drier at the latter site attesting to arable agriculture in the vicinity (MoLAS forthcoming). However, by the middle of the 2nd century, the field system ditches at these sites had started to silt up, perhaps hinting at a slight reduction in the agricultural capacity of the region from this period. To the south of Terminal 5 at Mayfield Farm was a similar situation, with ceramic evidence indicating that the settlement reached its peak during the late 1st to mid 2nd century, with subsequent decline (Jefferson 2003, 18). Further to the west at Cippenham, Slough, the landscape underwent considerable reorganisation in the early Roman period, with ditched enclosures, field systems and trackways, though these had largely been abandoned by the 3rd century (Ford *et al.* 2003, 162). At Wey Manor Farm, on the junction of the gravel terrace and River Wey floodplain to the south of Staines, a number of substantial enclosures were re-established and modified during the 1st and 2nd centuries, though also apparently abandoned by the 3rd century (Hayman forthcoming b). Nevertheless a nearby settlement at Brooklands, Weybridge did appear to continue right through into the late Roman period (Hayman 1991; forthcoming c).

The overall impression is one of great variability in the intensity of land use throughout the region during the Roman period, with some areas seemingly abandoned and other, like Terminal 5, continuing largely uninterrupted into late Roman times. At Thorpe Lea, located on the gravels 1 km south-west of Staines, there is evidence for a small farming community engaged in a mixed agricultural regime, including the possible management of hay meadows, right through the Roman period, although with an increased emphasis on pastoralism during the 3rd and 4th centuries (see below).

The economic fortunes of many of these settlements, which can mostly be described as simple farmsteads, may have depended to some degree on the emergence and development of the small town at Staines and major trading centre at London. Roman occupation at Staines (named in the Antonine Itinerary as *Pontibus*) began not long after the conquest and had developed distinctive urban characteristics by the 70s AD (Jones and Poulton forthcoming). The main town was located on a major crossing of the Thames for the London to Silchester road (Fig. 4.63) and occupied a gravel island raised above the floodplain, though it was still prone to flooding. It rapidly became a flourishing market centre during the later 1st and especially the 2nd century, with evidence for

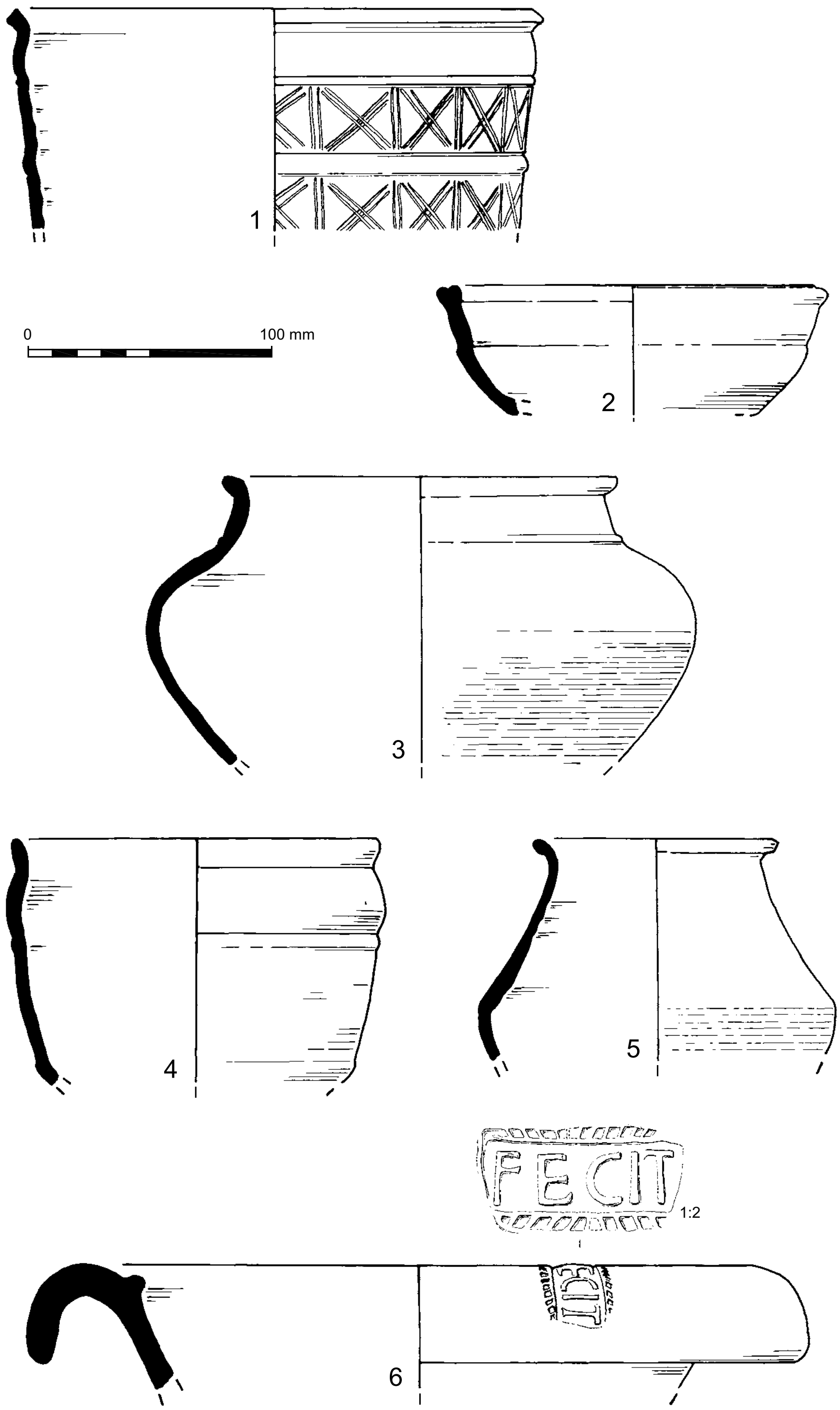


Figure 4.64: Early to middle Roman pottery from waterhole 617178, ditch 542387 and ditches 593231 and 614225 (E4)

Figure 4.65: Late Roman landscape

buildings of some architectural pretension (painted plaster, mosaics, window glass etc) and a range of industrial and craftworking activities (ibid.).

For farmsteads in the local vicinity of the town, like Terminal 5, its emergence must have provided a stimulus for economic development, with potentially rapid integration into the newly emerging market economy. This would certainly account for the expansion of agricultural production witnessed at many sites during this time, as shown above. Excavations within Staines have provided evidence for large quantities of animal bone, with a predominance of cattle, along with charred grains of bread and emmer wheat, barley, rye and oats (Jones and Poulton forthcoming). Environmental analyses have also suggested that hay was being stored in one part of the island (McKinley 2004, 16), providing winter fodder for animals. Although it possible that some of these products may have derived from pastures and arable fields cultivated by inhabitants of the town itself, it is likely that the vast majority came from local farmsteads such as Terminal 5. The exact nature of economic interaction between such settlements is, however, uncertain. The occurrence of just a single coin spanning the 1st to 2nd centuries (2nd century As) at Terminal 5 indicates that here at least, a monetary system was not in full operation, and so transactions probably took the form of both bartering and taxation in kind.

If the town at Staines provided a stimulus to the local economy, then the emergence of London, 30 km east of Terminal 5, may have had an even greater affect, although distribution of goods is still likely to have been through local market centres. London was established as a trading centre very soon after the conquest (*c* AD 50) and very quickly expanded (Perring and Brigham 2000, 128). As with Staines, the greatest period of prosperity appears to have been the 2nd century, and a wall built around the landward approaches to the city in *c* AD 200 encompassed an area of 125 ha. A city of this size would have been by far the largest market for agricultural produce in the region and the demand must have been met by surplus coming from the rural hinterland areas of north Kent, Essex and Hertfordshire (ibid. 153), along with the Middle Thames Valley around Staines.

By the end of the 2nd century, there is evidence for significant contraction in the built up areas of London and many surrounding small towns such as Staines, although they undoubtedly remained as key market centres into the 3rd century. This decline could well have affected some settlements in the Middle Thames region (eg Wall Garden Farm, Mayfield Farm and Holloway noted above), though as discussed above the situation is variable, with others such as Terminal 5 appearing to continue with little apparent disruption. However, significant developments did occur at many settlements at some stage in the 3rd and 4th centuries, undoubtedly as a consequence of widespread economic and social changes in this period (see below).

Figure 4.66: Distribution of late Roman pottery

The character of the settlement during early-mid Roman period

Despite the expansion of the settlement, development of rectangular buildings and diversification of economic practices, there is little of the material culture that points to any deep-seated lifestyle changes for the inhabitants at Terminal 5. Evidence for personal fashion and dress styles remained minimal, with just a small number of earlier brooch types probably continuing in use and a few finger rings now appearing. A very small number of hobnails from mid Roman contexts points to new styles of footware, while tweezers from a waterhole near the buildings hints at greater occupation with personal hygiene and/or beautification. However, aside from the presence of loomweights and pottery there was

> *…little or no Romano-British evidence of a domestic or craft nature, which suggests that range of activities carried out within the areas excavated was very limited.*
>
> *(Scott, CD Section 6)*

The pottery assemblage from this period was moderate and typically dominated by local coarsewares, although imported Roman style wares (including samian and three sherds of amphora) had increased from earlier periods, as would be expected given the site's location so close to Staines (Fig. 4.64). Overall, the evidence from the objects found at the site would suggest nothing more than relatively subtle changes in lifestyle, with little indication of any elevated status. There may have been a low-level shift to more Roman styles of dress (hobnailed shoes), culinary methods (use of mortaria) and aesthetics (use of Romanised pottery forms), but this probably reflects little more than the ready availability of certain types of goods rather than a conscious desire to emulate a Roman way of life.

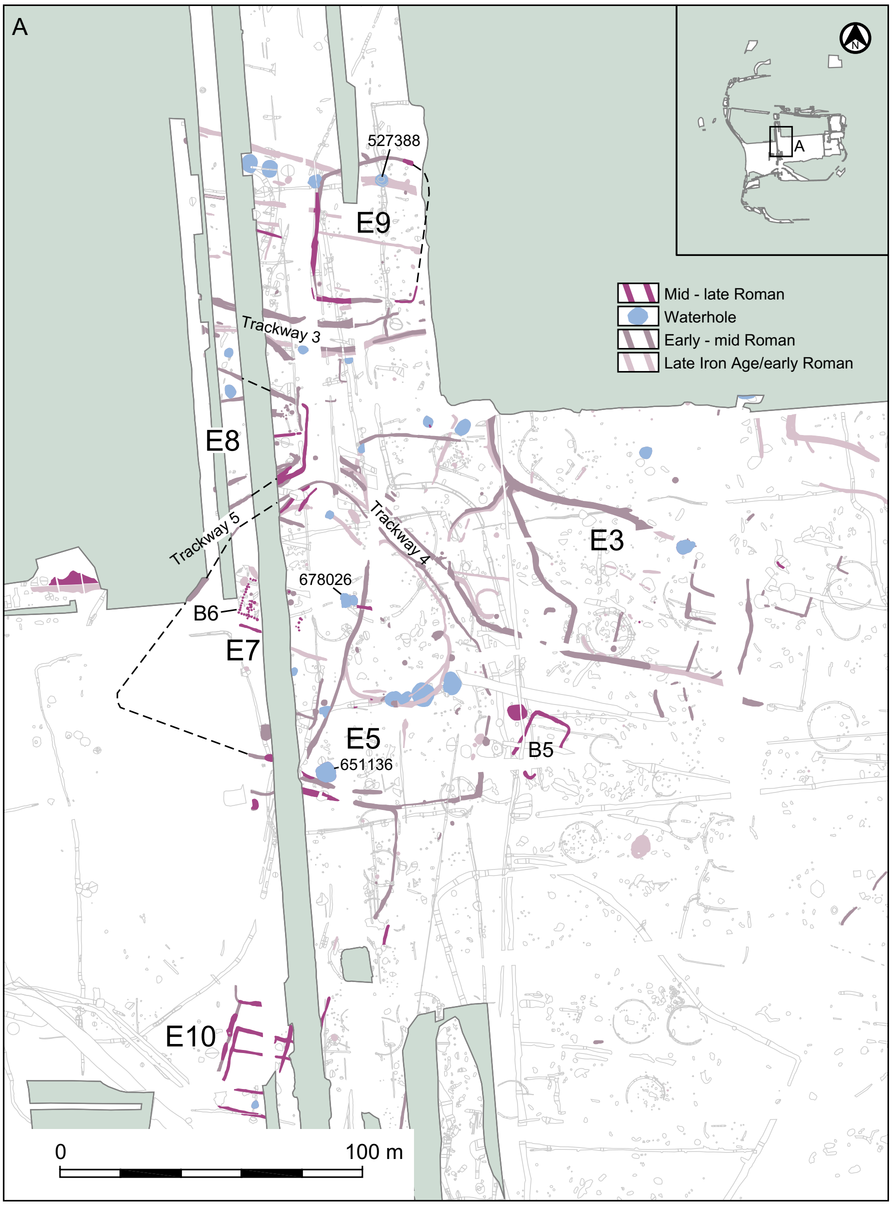


Figure 4.67: Late Roman settlement

The late Roman settlement and landscape

The level of activity during the later Roman period at Terminal 5 is difficult to discern as in general finds from this period are present in reduced quantities. However, there is no doubt that occupation continued, with many of the buildings and enclosures from earlier Roman periods remaining in use (Fig. 4.65). Furthermore, at least two new substantial structures were built in the main settlement area, another enclosure constructed to the south, and a major reorganisation of the eastern field system occurred, culminating in the creation of a 'ladder' enclosure system around a broad central droveway. Unfortunately very little environmental material was available for this phase and so we are unable to discern any changes to the wider environment.

Developments in the settlement

A strong element of continuity from the mid Roman period remained, with the settlement focus remaining in the same place as it had been since the middle Iron Age. The general distribution of late Roman pottery (Fig. 4.66) indicates that much of the settlement area remained in use, though with concentrations suggesting more sustained activity in certain locations.

Enclosure E9 to the north had particularly high levels of late Roman ceramics, and may have reverted to a domestic function at this time (Fig. 4.67). Charred plant remains (sample 27028) from a secondary fill of the enclosure ditch (which also contained late Roman Oxfordshire mortaria) certainly indicated domestic waste.

The flot produced a moderate assemblage (67 fragments) of typical burnt domestic waste arising from the de-husking of emmer/spelt spikelets prior to cooking. Emmer/spelt chaff, a few grains and a few weed seeds were the principal components. Spelt (Triticum spelta) was positively identified from a single glume base. An oat grain, oat awn fragments and a barley rachis fragment provided evidence of other crops or possibly weeds (oats) that were present. The range of weeds was similar to the other samples from this period, including stinking chamomile, scentless mayweed (Tripleurospermum inodorum) and wet/damp ground taxa such as spike-rush. The presence of charred spike-rush seeds could be due to crops growing close to drainage ditches or patches of poorly drained land.

(Carruthers CD Section 14)

In the northern part of this enclosure, waterhole 527388, which had been dug in the mid Roman period, had largely silted up (see Fig. 4.62 above). However, it was obviously still a feature of note, as in the upper fills were a total of 23 coins, almost half of all coins from the site. They all dated to the 4th century with the latest being an issue of the house of Valentinian (AD 364-378). They could well have represented a dispersed hoard *(see Cooke, CD Section 5)*, though as they were distributed throughout the upper four fills, it is tempting to conclude that they were votive offerings made over a period of time into a feature which may still have at least periodically retained water.

The remaining enclosures within the settlement are likely to have still been visible features, though many ditches are likely to have silted up, with the boundaries perhaps now being defined by banks and maybe hedgerows (Fig. 4.67). Mid to late Roman waterholes were found in Enclosures 5 and 7 (678026, 651136), suggesting that both were still in use, with E7 also encompassing a potential posthole building (B6) (see below). Waterhole 678026 in E7 was probably cut in the early 3rd century AD (replacing an earlier waterhole), but went out of use about a century later, after which it slowly filled up with domestic rubbish, perhaps derived from the posthole building, *c* 30 m to the west. A total of nine coins came from this waterhole.

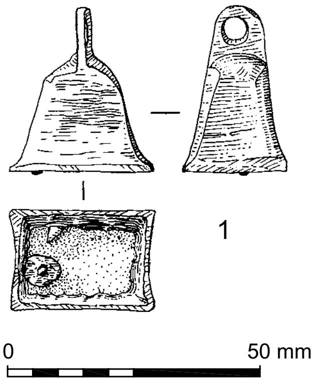
The nine coins all date to the last third of the 3rd century AD and first third of the 4th century AD. This narrow date range provides a fairly accurate date for this deposit. The absence of any coins of the House of Constantine dated to between AD 330 and 348 suggests that these coins were deposited sometime between AD 308 (the earliest possible minting date of the latest coin) and the 330s. This group is dominated by base silver radiate antoniniani of the late 3rd century, and includes at least two 'Barbarous Radiates' (poor contemporary copies of official coinage). They may have been deposited as a small hoard or placed deposit.

(Cooke, CD Section 5)

Waterhole 651136 lay in the south-western corner of E5, replacing middle Roman waterhole 651045 (Fig. 4.68). It contained a stake built wattle revetment on its northern side (Plate 4.26), probably used to prevent collapse and aid water collection, and was later used for deposition of domestic material including large amounts of pottery, ceramic building material, hobnails, a quernstone, five coins and a small copper alloy bell (SF 29102), used in horse harness (Fig. 4.68). The closely dated coins from two upper layers suggests

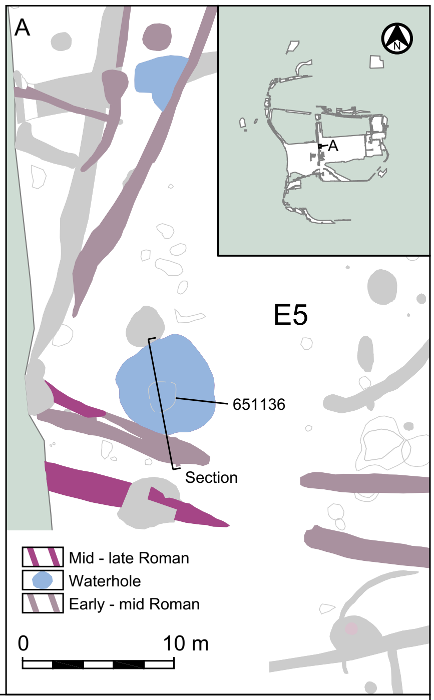
Above:
Plate 4.26: Wattle revetment from waterhole 651136

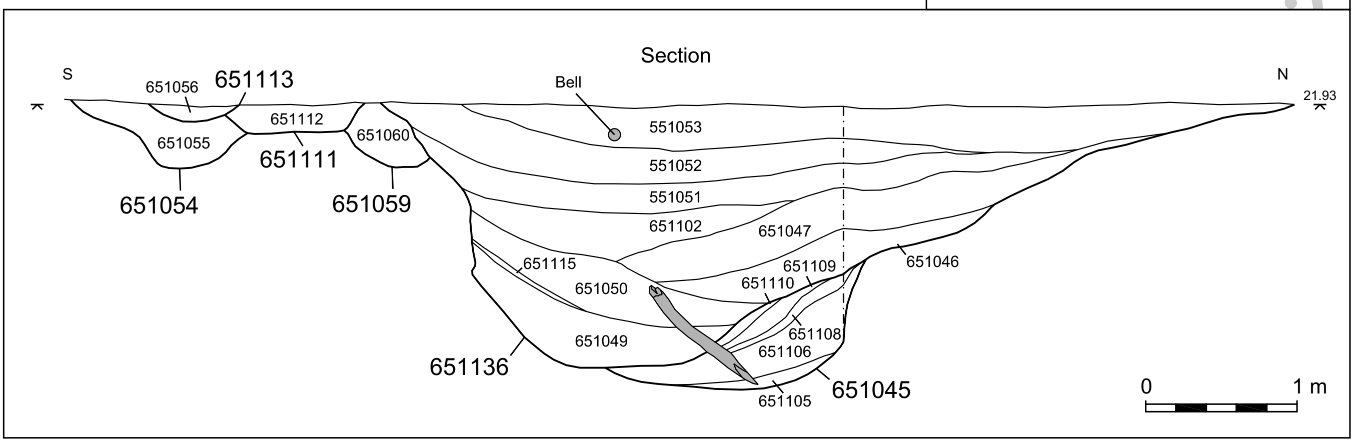
Below
Figure 4.68: Late Roman waterhole 651136



these formed between the 330s and the 350s AD, and as with the other coin deposits in the upper fills of waterholes, may represent specific ritual deposition of material, perhaps as an 'act of closure' *(Cooke, CD Section 5)*.

Aside from the ladder enclosure system to the east, the only 'new' enclosure to be confidently dated to the late Roman period was rectangular Enclosure 10, *c* 60 m the south of the main settlement complex (Fig. 4.69). It was aligned upon the main eastern field system axis and was clearly a multi-phase construction, at its maximum reaching a possible size of *c* 18 x 36 m, with a number of sub-divisions. A possible waterhole (960578) was located in the southern half, but was not fully excavated. The function of this enclosure is unclear, with few finds except pottery (3.2 kg; see Fig. 4.75





below) and small quantities of ceramic building material and slag. The pottery was a typical late Roman assemblage belonging the 3rd and 4th centuries and including Oxfordshire mortaria as well as the usual bowls dishes, flagons and beakers. Despite the pottery the finds do not appear to be typical domestic rubbish, with for example very little faunal remains present, and perhaps a stock enclosure and/or small scale industrial facility is more likely. Metalworking often took place on the periphery of settlements (eg Cotswold Community; Powell *et al.* 2010), and so the enclosure's location would be quite suitable. The morphology of the enclosure was similar to Enclosure 1 to the north-east (see above) which developed from the mid Roman period and eventually became an integral part of the late Roman 'ladder enclosure' (see below).

Figure 4.69: Enclosure E10

Plate 4.27: Excavation of wooden revetment in the base of Roman waterhole 174069

Late Roman structures

It is quite possible that any or all of the potential buildings identified from the middle Roman phase continued in use into the 3rd and 4th centuries. A sequence of intercutting waterholes in this area (174070, 174069) clearly continued throughout the late Roman period, with the latest cut containing a virtually complete Alice Holt flagon dated between *c* AD 330 and 410 (Framework Archaeology 2006, 221, fig. 4.31; Fig. 4.70; Plate 4.27).

During the late Roman period two more possible buildings were constructed, one (B5) just west of B1–4 and the other (B6) lying *c* 95 m further to the west, within Enclosure 7. B5 was similar in form to the earlier possible buildings, in being defined by a rectangular gully, although it was larger at *c* 18 x 11 m (Fig. 4.71). At this width, it is likely to have been an enclosure rather than the drip gully of a building, unless it was quite an architecturally sophisticated structure, which is doubtful. The finds from the gully (pottery, small quantities of fired clay, burnt flint, animal bone and a fragment of roof tile) do not readily provide evidence either way, but the most feasible scenario is that this was an enclosure which surrounded a smaller rectangular building, possibly of mass walled or shallow beam slot construction. A large (*c* 6 m across) pit (171116) just to the west was obviously used to dispose of a variety of ostensibly domestic rubbish, including animal bone, ceramic tile, iron nails (including hobnails), a copper alloy finger ring and 2nd to 4th century pottery. The feature was 1.24 m deep and may have functioned initially as a waterhole.

Structure B6 to the west was of a completely different construction, comprising closely set substantial postholes (Fig. 4.72; Plate 4.28). Only the western end of the building was well preserved with the eastern side appearing to be entirely truncated. The postholes ranged from between 0.3–0.6 m wide and 0.08–0.26 m deep, most of them only surviving to a depth of 0.13 m. The south range postholes

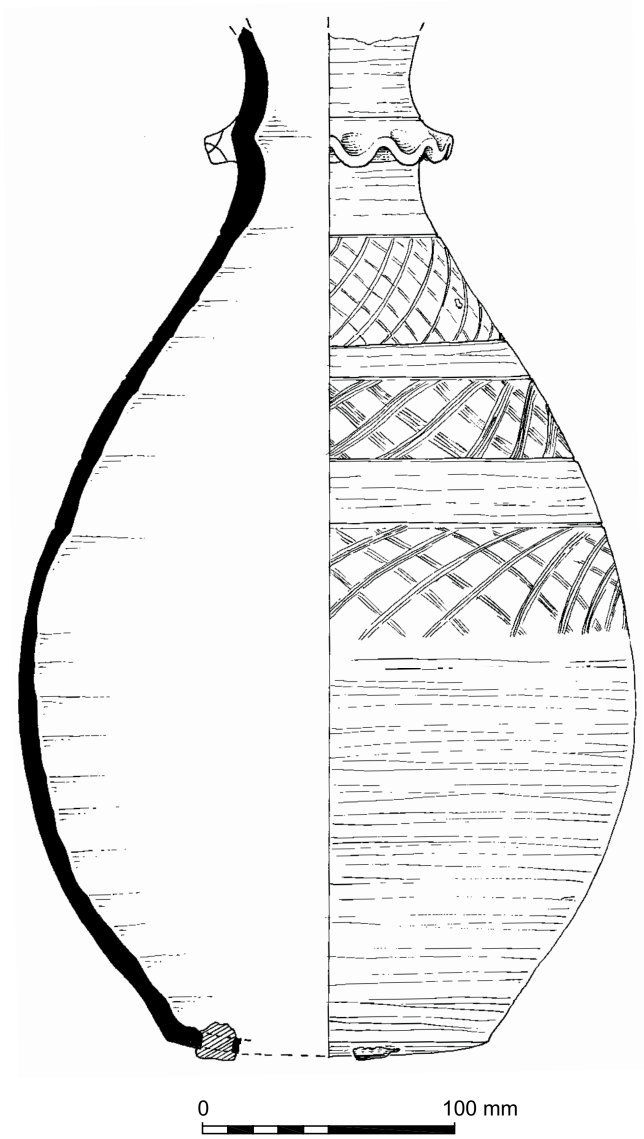


Figure 4.70: Alice Holt Flagon from waterhole 174069

were slightly deeper and preserved packing stones 0.02–0.1 m in size, in contrast to the west wall postholes, which contained only soil and gravel. Despite the absence of post-pipes in the profiles, a general post size of *c* 0.25–0.35 m can be assumed based on the diameters of the best preserved postholes. An internal partition or supporting wall was indicated by a line of postholes, 5 m in length, *c* 3.4 m from the western wall.

Assuming that the maximum width of the structure was revealed by the southern line of postholes (Fig. 4.72A), then it would be a total of 12 x 7 m in size, which is certainly feasible for a roofed post-built building, especially with the centrally placed internal supports that this structure appears to have. Furthermore, as the posts were set relatively close together, *c* 1 m from the centre point of one to the centre of the next, the structure would probably have been sufficiently strong to have supported an upper floor.

Post-built buildings of similar size were found at Thames Valley Park near Reading (12 x 5 m; Butterworth and Hawkes 1997, 85–88), Eton (*c* 9 x 7 m; Allen and Mitchell 2001, 27) and much closer to Terminal 5 at Hengrove Farm (12 x 6 m; Hayman forthcoming d) and Ashford Prison (13 x 6–6.5 m; Carew *et al.* 2006) near Staines. All these buildings except Ashford Prison date to the early–mid Roman period and the substantial postholes at Hengrove led the excavators to also suggest a multi-story structure. The Ashford Prison structure remains undated, but could potentially be of Roman date.

There are some reasons, however, to be cautious about the above interpretation. A single posthole (673073) to the east was on the same alignment with the northern side of the building, and if this was part of the structure, then its dimensions could change to at least *c* 12 x 13 m (Fig. 4.72b), which is then highly unlikely to be roofed timber building. In this instance, the structure could be viewed as a substantial stockade, though for what purpose is unknown. Parts of a similar mid Roman closely-set posthole structure, with minimum dimensions of 21 x 8 m was excavated at Kempsford Quarry in the Upper Thames Valley, but here also nothing was revealed of its function (Booth and Stansbie 2008, 22).

Finds directly associated with the structure comprised small amounts of Roman pottery, fired clay, two

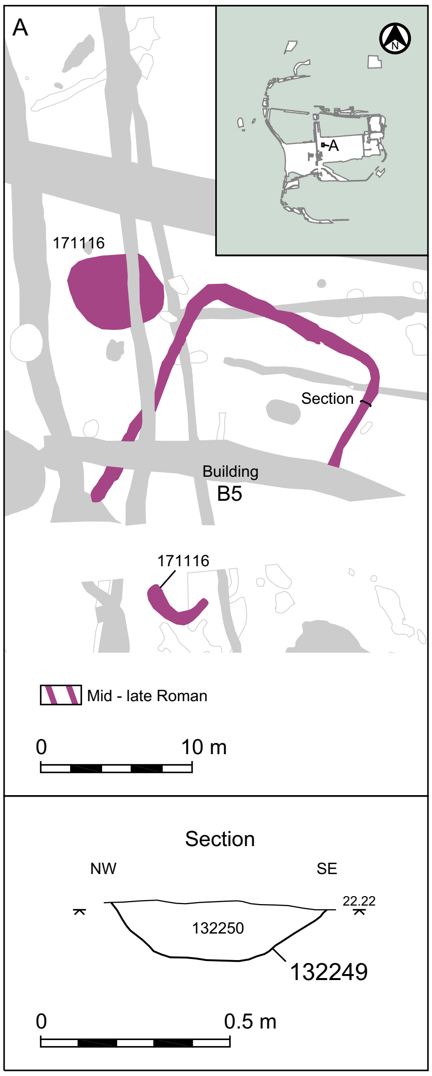
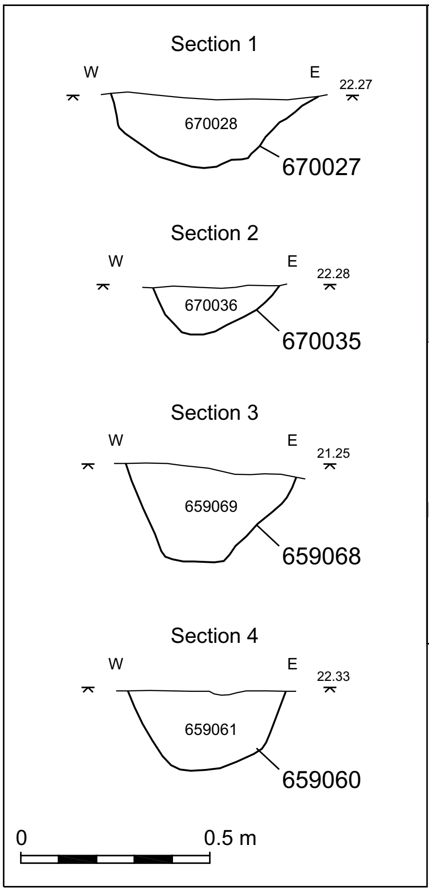
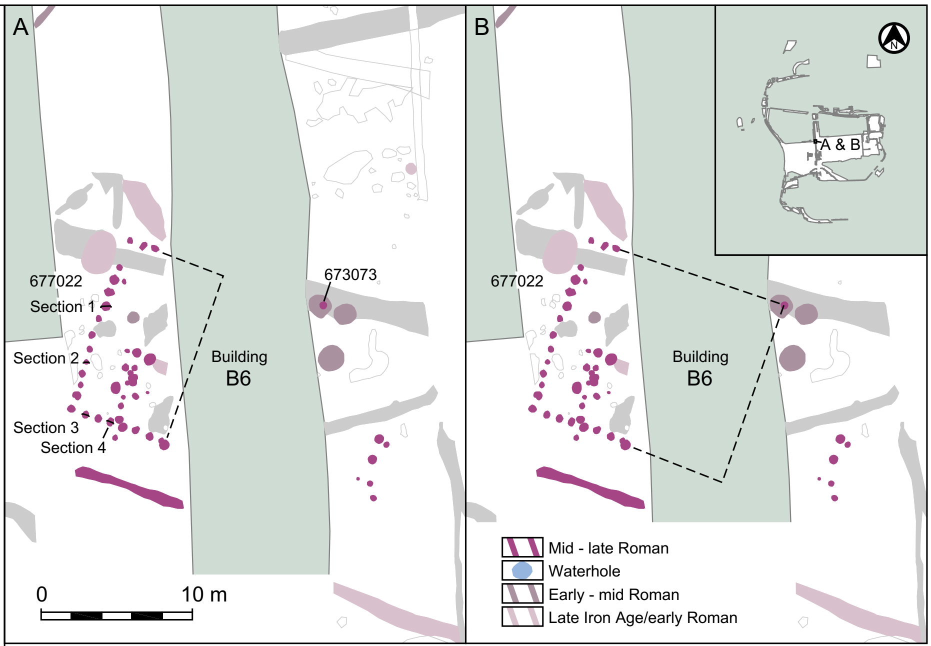


Figure 4.71: Late Roman building B5





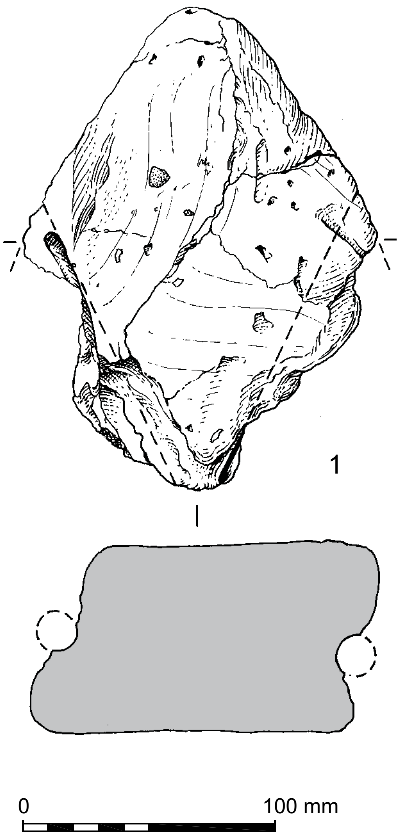


Figure 4.72: Late Roman structure B6

Plate 4.28: Artist's reconstruction showing the two interpretations for building B6

Plate 4.29: Artist's reconstruction of late Roman ladder enclosure

fragments of ceramic tile (including an imbrex) and a glass bead, while a substantial pit (677022) immediately to the north-west contained a reasonable amount of animal bone, a loomweight (Fig. 4.72, 1) and undiagnostic Roman pottery. Its contemporaneity with the structure is uncertain. Internally, a pit (662080) contained small amounts of slag and a coin of Valentinian (AD 364–94), one of the latest coins on site, possibly attesting to the longevity of the structure.

The function of the building, if such is what it was, remains uncertain, but whether for domestic, storage or agricultural use, its scale and appearance would probably have been quite striking and very different to any other structure on site. It could well have been related to the same phase of re-development as the ladder enclosure to the east, which also marked itself out as quite anomalous within the previous traditions of landscape organisation.

The 'ladder' enclosure system

At some point during in the 3rd century AD the pattern of field boundaries to the east of the main settlement area was altered by the development of a new enclosure system, probably occurring over several decades (Fig. 4.73; see Framework Archaeology 2006, 224). Its final form, visible in modern times as cropmarks spread across a large area of the Heathrow landscape, was in an arrangement resembling a runged ladder, hence the term 'ladder enclosure' (see reconstruction in Plate 4.29). This system was on a scale not previously seen at the site, although it did in the most part maintain the approximate same orientation of the earlier fields, and so was not a complete break with the past. The reasons for this development were no doubt complex, and may have been influenced as much—if not more—by external socio-economic and political factors as by the necessary and normal evolution of local agricultural practices (see below).

The scale of the 'ladder enclosure' complex system was impressive. A linear series of linked enclosures extending for at least *c* 350 m either side of a wide central corridor was exposed in the excavations, but it was presumably even more extensive, perhaps continuing in a south-west direction on to the Roman town of Staines. The main axis lay on a roughly NNE-SSW alignment, but an east-west corridor at approximately right angles to the main droveway allowed access further to the east (Fig. 4.73).

The central corridor served as a droveway up to 90 m wide, which was probably designed to accommodate high levels of livestock traffic, but perhaps only seasonally. Gangs of drovers may have moved these animals, probably mostly cattle, but perhaps also sheep, across the landscape, to markets for sale or slaughter, or between summer pasture and over-wintering. The central droveway was flanked by narrow trackways, probably bounded by hedges and/or banks, which provided access into the enclosures.

Although the 'ladder' enclosure system was the latest obvious alteration in a series of changes to the landscape during the Roman period it was not well dated. It clearly cut the eastern field system ditches which had developed from the Late Iron Age to middle Roman period, providing a stratigraphic *TPQ* for the fills. The earliest ditch fills had been scoured out by successive episodes of cleaning, which may account for the lack of significant distribution patterns in the pottery. However, the stratigraphic relationships and minimal pottery evidence does suggest that the system had its inception at some point in the 3rd century AD, probably at a similar time to the construction of the post-built structure (B6) and Enclosure E10 further west. Furthermore, it seems to have remained in use for some time, seemingly still a major feature of the post-Roman landscape.

The ditch fills of the enclosures that flanked the droveway were generally sterile secondary and tertiary deposits derived from the surrounding topsoils and brickearth subsoils, which provided no useful environmental information as to their specific function. However, they could well have been used for short term, perhaps even overnight, management, penning and sorting of livestock in advance of or during movement further afield.

Figure 4.73: Late Roman Ladder enclosure system

A glimpse of the dead

Throughout the entire area of excavations, just two indications of Roman burial were encountered; both seemingly quite isolated and far removed from the main area of settlement (Fig. 4.74).

A cremation burial, 591052, probably placed in a wooden box, was interred almost half a kilometre south of the settlement, on the projected line of the late Roman 'ladder' enclosure system. The bone belonged to a mature adult of 35 years or more who was accompanied on the pyre by grave goods of sheep/goat and (?) red deer, along with an iron object too damaged to identify. A radiocarbon date of AD 250–380 (OxA-16127) was obtained from the cremated bone.

The position of the isolated burial, so distant from the settlement, but not in a formal cemetery, could suggest that this person was not necessarily a local inhabitant. The Roman dead, both civilians and soldiers, were frequently buried along the route of tracks and roads and this may have been no exception. The 'ladder' droveway was an important thoroughfare which, although probably controlled and maintained along the excavated length by the local community, is likely to have been frequented by drovers from other settlements in the area.

The remaining possible inhumation grave (644031) did not contain the remains of any individual, although the size and shape of the elongated east-west pit, together with the concentration of 63 hobnails at the east end, indicates that this was probably a burial, with the skeletal remains not surviving in the acidic soils. It was located *c* 133 m SSE of Enclosure 10, seemingly aligned upon a Bronze Age field ditch, which suggests that elements of this earlier field system were still quite visible in this part of the landscape, as they probably also

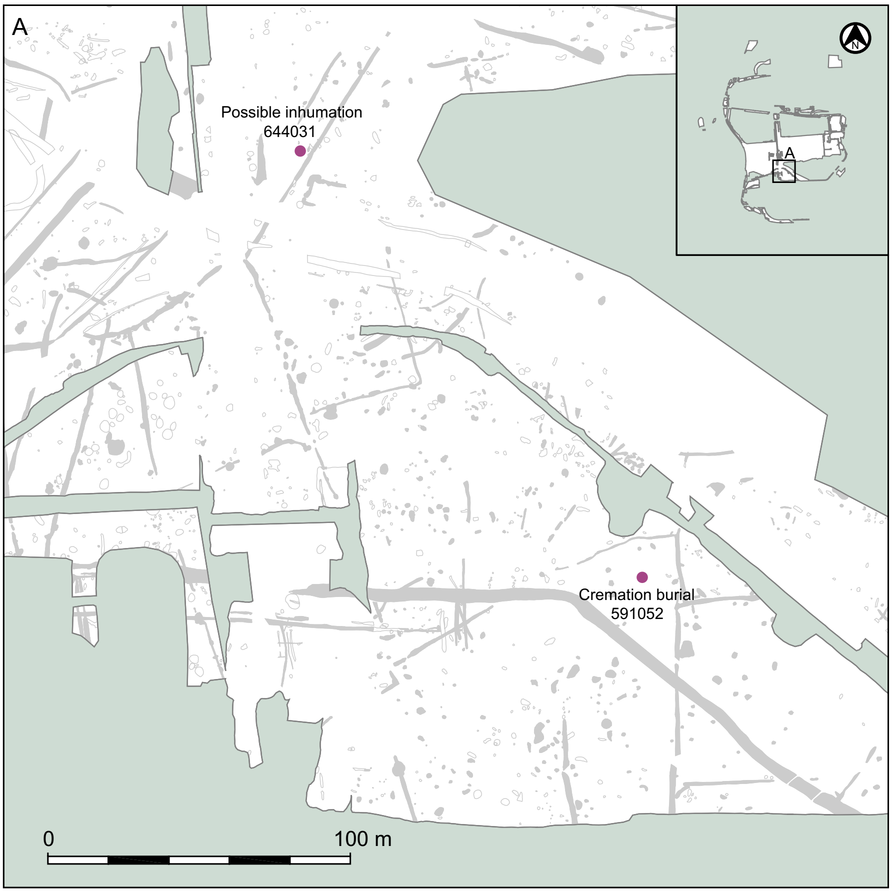


Figure 4.74: Location of Roman burials

were further west. A late Roman date is postulated on the basis that this was the most common period for such burial types, but an earlier mid Roman date is not out of the question.

The recovery of isolated burials in and around small rural settlements is quite typical of the Roman period, with other local examples including a single crouched inhumation at Horton (WA 2009) and two mid Roman cremations (one urned) at Imperial College Sports Ground (A Powell, forthcoming).

Nature of change in the late Roman period

The 3rd and 4th century developments at Terminal 5 are characterised on the one hand by apparent continuity in terms of the maintenance of some existing enclosures and buildings, and on the other hand by the imposition of radically new styles of structure (B6) and wholesale changes to the eastern field systems. The artefacts of this phase were few, aside from pottery and hobnails, the latter of which mostly derived from two burials (see above), with the only items of note comprising a copper alloy finger ring and a neatly cast harness bell. The late Roman pottery produced a typical range from this period (Fig. 4.75), displaying a number of imported wares, but with little to suggest anything other than a lower status rural farmstead *(see Jones and Brown, CD Section 2)*.

The environmental evidence is insufficient to tell if there were any major changes to the landscape or agricultural system, although it is likely that a similar range of crops was grown. Overall, the evidence suggests that the local community continued to farm the land, probably in much the same way as previously, with no obviously detectable increase in wealth or status. However, the substantial post-built structure and 'ladder' enclosure hint strongly at new external influences that may have been part of wider changes to the landscape and economy during the later Roman period.

The variety in local settlement and land use patterns noted above for the 1st to 3rd centuries continued into the later Roman period, although there are signs that the overall character of the landscape was changing. At Imperial College Sports Ground, the enclosure system on either side of the *c* 35 m wide droveway only really developed fully during this period (A Powell, forthcoming; Fig. 4.76). It was suggested (ibid.) that the enclosures may have been used for sorting, processing and handling the flow of livestock, perhaps reflecting the increase of animal-based food production during the later

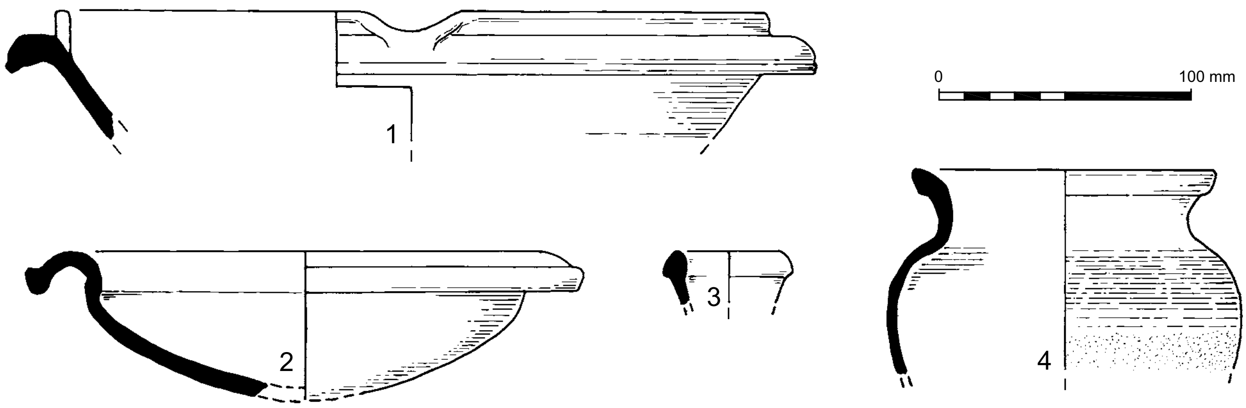


Figure 4.75: Late Roman pottery from E10 (ditch 636025)

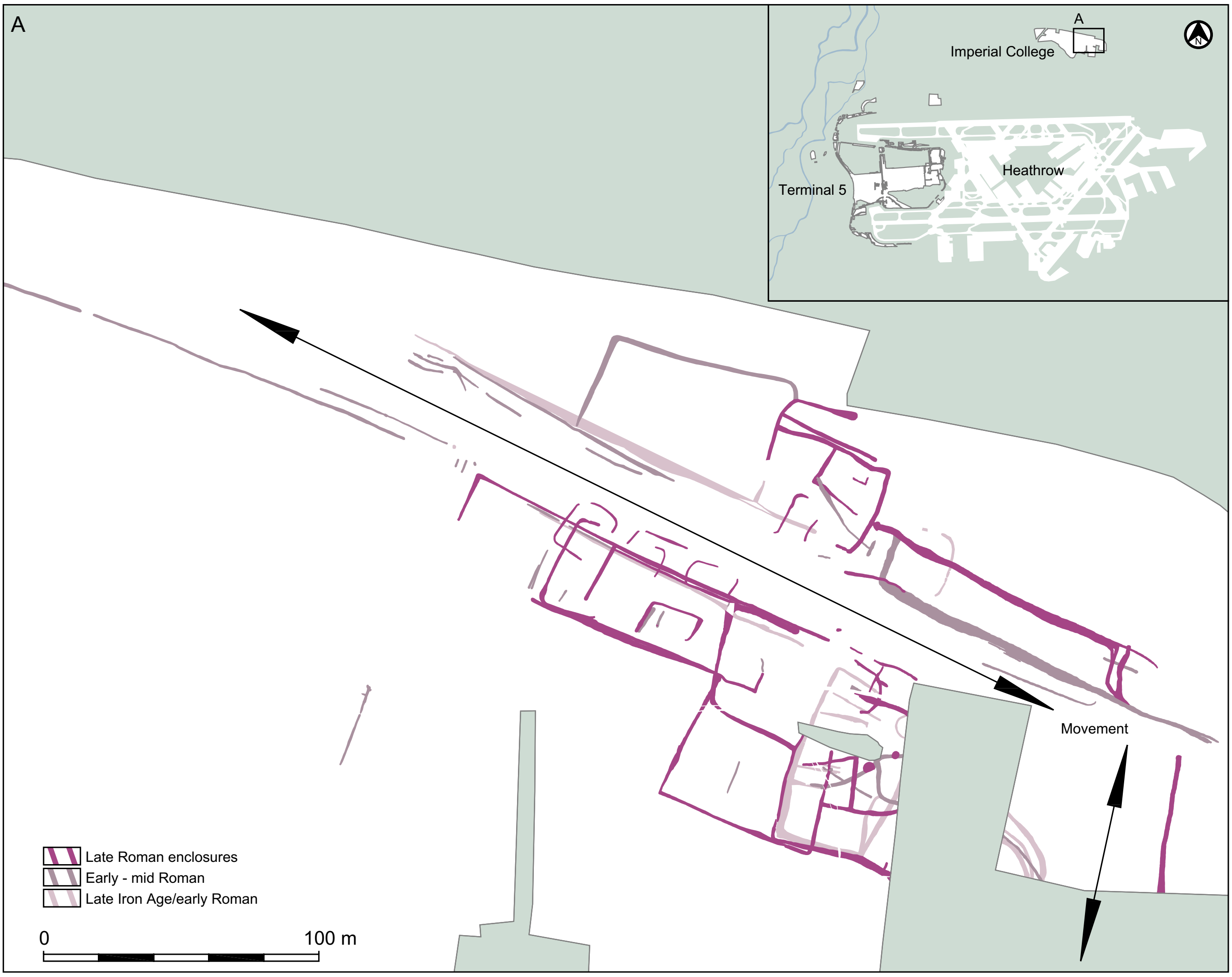


Figure 4.76: Full extent of late Roman enclosures at Imperial College Sports Ground

Roman period for the markets at towns like Staines and especially London. Such expansion of pastoral production is also seen at Thorpe Lea Nurseries, where the settlements developed from a mixed farming economy '…to something resembling a ranch by the end of the Roman period' (Hayman forthcoming a).

Assuming the Terminal 5 'ladder' enclosure was associated with livestock, as seems most likely, then this too contributes to the idea of a widespread increase in animal farming at this time. The axis of this enclosure is at roughly right angles to that of Imperial College, and it is quite likely that they formed part of a network of droveways that served a wide region during the late Roman period, linking a number of rural farmsteads to the major towns and communication routes. The impetus for such developments may have been purely commercial, perhaps driven by wealthy villa and townhouse owners to maximise profits in a steadily changing economic environment. The lack of villas in the immediate area around Terminal 5 (Bird 2004, 69) need not preclude at least parts of the land from being apportioned by their owners for further economic gain, possibly as part of managed agricultural estates. This potential land acquisition may well have been at the expense of poorer rural landowners like the occupants of the Terminal 5 farmstead, who would nevertheless continue to farm their remaining land as they had always done. The late Roman posthole structure at Terminal 5, which was strikingly different to other structures on site, may also have been built under external influence, either as a strong stockade for agricultural produce or even as a house for locals or newcomers.

A renewed interest in the expansion of agricultural wealth at this time coincided with both increased evidence for centralisation of rural settlements, and with signs of new field systems being laid out. While some settlements that had declined from the mid to later 2nd century remained largely abandoned (or at least reverted to peripheral agricultural land; eg Wey Manor Farm, Mayfield Farm, Eton and Cippenham), others such as Wall Garden Farm and Holloway Lane displayed a resurgence of agricultural activity (field boundaries, enclosure and a corn drier) in the late Roman period (see Fig. 4.63 above). New settlements were also established, as seen at Cranford Lane to the south-east of Imperial College Sports Ground, where excavations revealed a mass of enclosures, field boundaries and trackways dated no earlier than the 4th century (MoLAS forthcoming). Further west at Horton there is evidence for new late Roman field systems (Ford and Pine 2003, 84), while at Wraysbury, just 800 m east of the river Thames a triple ditched enclosure was excavated, dating to the 3rd–4th centuries AD (Pine 2003, 133).

The changes in the landscape witnessed during the late Roman period demonstrate that agricultural productivity remained, perhaps even being revitalised following a period of decline during the 3rd century. New agricultural estates may have been formed at this time, perhaps belonging to the owners of more remote villas and/or wealthy townhouses in London, which despite the dilapidation of public buildings by the early 4th century, was clearly still a centre of power and wealth (Perring and Brigham 2000, 160). Rural farmers on these estates may have become *coloni*, essentially subsistence workers who were tied to the land in service of the estate, though also able to produce a meagre surplus.

Above
Plate 4.30: Withy ropes and straps within late Roman waterhole 135087

Right
Plate 4.31: Excavation of lead tank from late Roman waterhole 135087

The final act?

It cannot be demonstrated that occupation continued at Terminal 5 beyond the later 4th century AD, although the latest coin, an issue of Theodosius I, does indicate activity of some kind until at least the end of this century. Such chronology is fairly typical of rural settlement in the local area, although Wraysbury has been argued to have continued without any break into the Saxon period (Pine 2003, 137). At Staines there is evidence for limited survival of occupation through into the post-Roman period, but probably more in the form of a small rural village than the functioning town of the earlier

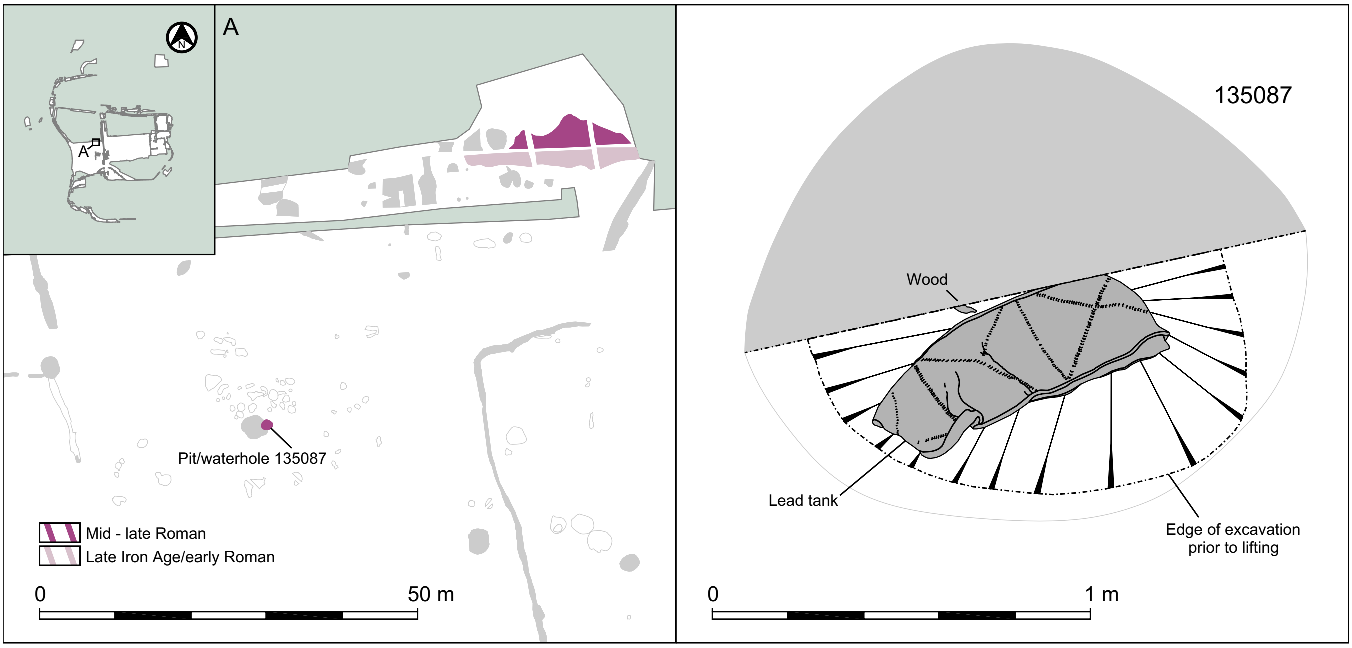


Figure 4.77: The late Roman lead tank

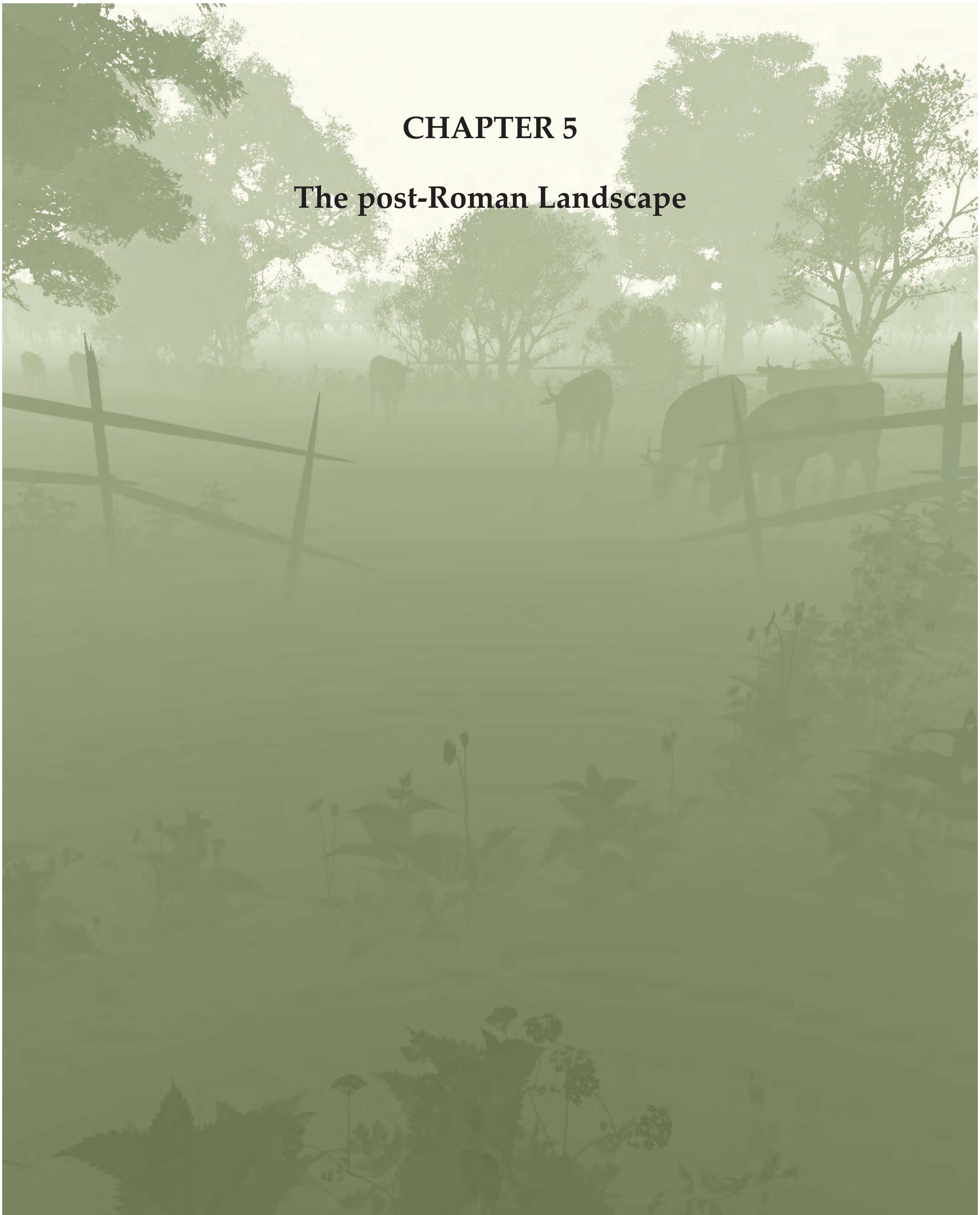
Plate 4.32: Artist's impression of the ceremony leading to the deposition of the lead tank into waterhole 135087

Roman period (Jones and Poulton forthcoming). The often meagre evidence from other rural sites precludes any wider discussion on the transition from Roman to Saxon (Bird 2004, 73; see Chapter 5)

It was probably at this time (*c* AD 400), towards the end of occupation at Terminal 5, that the inhabitants of the farmstead deposited the remains of a damaged lead tank into a waterhole (135087) on the floodplain to the west of the main settlement (Framework Archaeology 2006, 227–30; Fig. 4.77; Plates 4.30–2). The tank is one of a small group of Roman Christian lead tanks found only in Britain, possibly used for baptism or washing of the feet *(see Petts, CD Section 6)*. It provides important evidence for the presence of a rural Christian community at this time, which with a few exceptions (eg the tank deposited in a late Roman well at Caversham), is rare in within the Thames Valley (Booth *et al.* 2007, 223). The placing of this object within a waterhole, perhaps especially dug for the occasion, is, nevertheless, part of a long-standing tradition of ritual deposition within watery contexts seen both at Terminal 5 and further afield (ibid. 217). It suggests that Christianity had absorbed aspects of earlier spiritual traditions, possibly helping the occupants to deal with the tumultuous shifts in the religious, political and social circumstances of the final days of the Roman Empire in Britain.

CHAPTER 5

The post-Roman Landscape



by Kate Cramp, Lorraine Mepham and Chris Phillpotts

Introduction

The Perry Oaks excavations yielded only sparse evidence for post-Roman activity, including an early medieval 'ridge and furrow' system to the west of the late Roman 'ladder' enclosure, a finds distribution which indicated a possible settlement focus on the southern edge of the excavations, and a post-medieval boundary and trackway to the east of the 'ladder' enclosure. No features of Saxon date were identified within the Perry Oaks site, nor were any stray finds of this date recovered.

The subsequent excavations of the Terminal 5 site have significantly enhanced this evidence, in particular through excavation of a small concentration of settlement-related early Saxon features to the north of Perry Oaks and just south of the present village of Longford (PSH02 Area 14). There is still, however, an apparent hiatus of activity in the middle to late Saxon period (mid 7th to early 11th century). The distribution of early Saxon (AD 410–850) features is shown in Figure 5.1.

To the sparse evidence for medieval activity revealed by the Perry Oaks excavations can now be added substantial evidence for medieval settlement and agricultural activity at Burrows Hill Close in the south-west of the excavated area (Areas 47/49)—confirmation of the hints of a medieval focus uncovered by the original excavation (POK96)—together with more sporadic evidence for field systems across other areas of the site, primarily in the west and north of the excavated area. A secondary focus of activity was noted in Area 14 to the far north. The distribution of medieval features across the site is given in Figure 5.1. Chronological evidence suggests that none of this medieval activity can be dated earlier than the 11th century.

Alongside structural, artefactual and environmental analyses, the interpretation of the post-Roman history of the site has benefited from selective research into the documentary sources for the period, covering the parishes of Harmondsworth and Stanwell in detail, and nine surrounding parishes at a broader level. Examination of manuscript and cartographical sources has helped to place the excavated sites in a sequence of landscape development *(Phillpotts, CD Section 22)*. The wealth of documentary evidence for agricultural practices in particular (crops, animal husbandry, grazing, etc) raises the possibility of being able to tie in structural, artefactual and environmental analyses to the documented medieval landscape. One particular objective of the post-excavation analysis was to attempt to trace the Burrows Hill Close settlement in the cartographic or manuscript sources, subsidiary questions focusing on the layout of the medieval field systems and how far these marked continuity with preceding periods, and to link their development with the historical framework.

The Roman-Saxon transition

The latest elements of the Roman settlement included at least two buildings, associated waterholes, enclosures and the substantial 'ladder' enclosure system (see Chapter 4). Stratigraphic and artefactual evidence suggest that the settlement and enclosure system persisted in use until at least the end of the 4th century, but the precise point of abandonment remains obscure, largely because there are no finds types which can be more closely dated within this period with any degree of confidence. One of the final acts of the inhabitants of the Roman settlement may have been the deposition of a lead tank into a small waterhole, an act which 'can be viewed as a metaphor for the end of Roman activity on the site' (Framework Archaeology 2006, 229), but again, the date of this deposit cannot be pinpointed more closely than sometime in the late 4th or early 5th century AD.

The end of the Roman period, its effects on the inhabitants of the province, and the corresponding changes apparent in the archaeological record, remain matters for debate. What happened to the indigenous inhabitants? Does the change in material culture in the early Saxon period equate to a change in population? How far was the existing late Roman landscape exploited by incoming settlers—does early Saxon settlement and agriculture mark continuity or discontinuity with the preceding period?

The dating evidence for the early Saxon settlement at Terminal 5 (Longford) is discussed below, and theoretically there could have been some brief chronological overlap between this settlement and the late Roman settlement and enclosure system, but it is unlikely that this could ever be proved one way or the other. Whatever the timescale, however, it is clear that the inhabitants of Longford's Saxon predecessor were using material culture of almost exclusively Anglo-Saxon origin, although there is a suggestion of the curation of certain Roman objects, such as coins, and possibly a brooch. While there are dangers inherent in the linking of material culture to ethnic identity (Cowie with Harding 2000, 172), since this could be used either to signify the adoption of aspects of a new and dominant culture by the indigenous population, or to reinforce ethnic identity in a period of tense interaction, these people can almost certainly be regarded as part of the influx of settlers moving up the Thames and its tributaries from the 5th century onwards. Their progress can be seen in the distribution of migration-period burial sites (Hines 2004, fig. 7.1).

It is apparent that by the end of Roman rule in AD 410, London was already in decline, and that subsequently, having lost its role as an administrative and military centre, it quickly ceased to function as a town; indeed, it is probable that it was largely abandoned by the early 5th century (Milne 1995, 89; Perring 1991, 128). Some British survival in the London area may be indicated by place-names with Celtic or Latin elements, including Berkshire and the River Brent (Cowie with Harding 2000, 177; Crystal 2004, 25), but 'if there was a period when distinct British and Saxon communities co-existed in the region then it was probably short-lived ... The apparent absence of British sites suggests that the indigenous population either abandoned the area or adopted the material culture of the incoming Saxon groups'

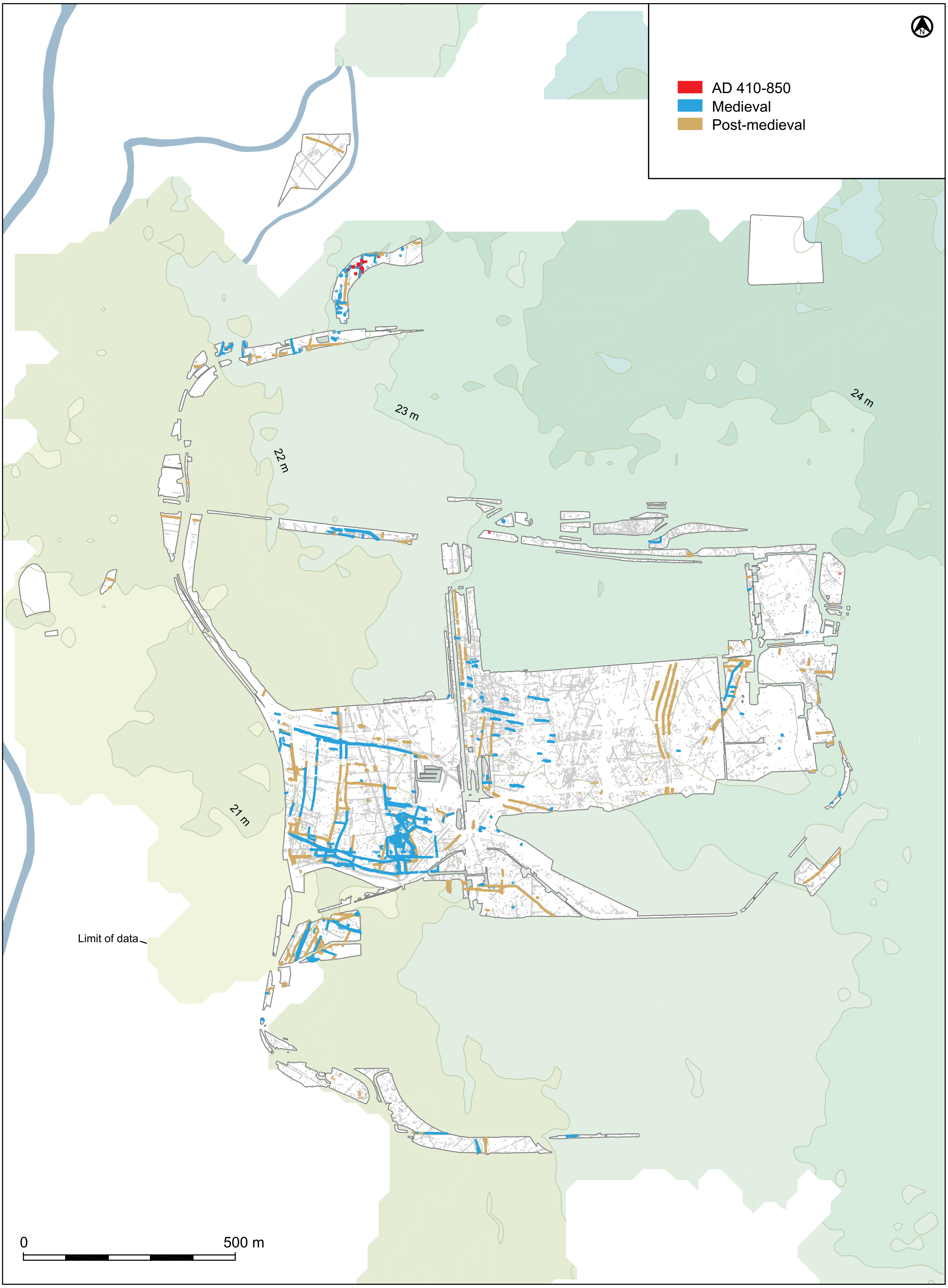


Figure 5.1: Distribution of all Saxon and medieval features

(Cowie with Harding 2000, 178). The extreme rarity of sites for which there is any evidence of continuity from the Roman into Saxon period is notable; Staines is one possible candidate, but the evidence is very tenuous (Poulton 1987, 215). There may well have been a decline in population following the end of imperial rule which would have had an inevitable effect on the agrarian economy (Cowie and Blackmore 2008, 130).

The Roman landscape framework in the Middlesex area centred on the river crossing town of *Pontibus*, which later became Staines (see Chapter 4). Its territory probably equated to the later hundred of Spelthorne, and included settlements with surviving Roman place-name elements at Bedfont (from the Latin *funta* for spring) and Ashford (whose earlier forms include *ecles* for church) (Bailey 1989, 114, 120). The status of the British people who remained in this area may be represented by the slaves recorded in *Domesday Book*, who formed 18% of the population in Spelthorne and Elthorne Hundreds, but less than 5% in Middlesex as a whole (Darby and Campbell 1971, 117–18), although recent commentators have argued for a relatively small-scale Saxon influx and a more consensual division of territory (Poulton 1987, 216; McKinley 2003, 110–11; Hines 2004, 97–8).

The organisation of the early Saxon landscape was partly based on pre-existing Roman land-units and partly on new tribal groupings, both of which 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, there are good correlations between Roman settlements, Saxon cemeteries and parish boundaries (Poulton 1997, 213). Middlesex may be related to the earlier *territorium* of Roman London, the land allocated for the support of the city. In the grain-producing lands on the gravels of south-west Middlesex, the existing post-Roman agricultural units and their slave populations are likely to have been taken over by incoming Saxon leaders and tribes. At least part of the Saxon settlement at Harmondsworth was established within Roman field systems, as were others in the London area (Cowie and Blackmore 2008, 130). Some of the locations of early Saxon groupings straddling Roman roads may suggest the installation of mercenary bands (*foederati*), with land allocated for their support (Poulton 1987, 213; Bailey 1989, 108, 121; Hines 2004, 93), although some of the material evidence for these bands is now under question (Cowie and Blackmore 2008, 128–9).

Evidence for settlement in the Heathrow area, as discussed below, shows a spatial and morphological break with the Roman period, which supports the idea of an incoming population, but the environmental evidence is more ambiguous. Here it is as well to remember that agricultural activity would have been less subject to social than to environmental constraints (ie topography, geology, drainage, etc), and is therefore less likely to have differed significantly in terms of location from the preceding period. Early Saxon field systems have been tentatively identified at Manor Farm, Harmondsworth (possibly also the site of a Roman villa: Cowie and Blackmore 2008, 130), but other evidence for agricultural activity at this period is sparse, and 'it is impossible ... to determine the organisation of agricultural land during the 5th and 6th centuries' (Cowie with Harding 2000, 180). Within the London area settlements were often established within Roman field systems, for example at Rainham, Mucking and Mortlake, or close to late Roman villas—in other words on land that had previously been farmed. Does this indicate continuity of agricultural organisation? At this point the environmental data from the Terminal 5 settlement may be pertinent:

The main issue for this period concerns post-Roman woodland regeneration. The charcoal assemblage has quite a strong hedgerow component, including field maple, which could represent remnants of Roman hedgerows. However, the taxa exploited do not differ significantly from the Roman assemblages, so the charcoal does not offer a reliable indicator of environment change. Nonetheless, the results are interesting in the light of evidence from nearby Saxon sites at Hounslow and Kingston upon Thames for the deliberate use of heather as fuel (see discussion in Smith 2002, 33). It is thought that extensive areas of heath were exploited and managed in the early to later Medieval periods. The charcoal evidence from the early Anglo-Saxon period at Heathrow indicates that this was not yet the case.

(Challinor, CD Section 15)

In 1919 Montague Sharpe interpreted Middlesex and its six hundreds as the surviving elements of the Roman *territorium* of London, the interior elements of its component *pagi* laid out in rigid grid patterns 'like a gigantic chequer board'. Each *pagus* or *semi-pagus* became a hundred by the time of *Domesday Book* in the 11th century. The common assessments of vills in multiples of five hides in this survey were relics of Roman decimal figures. Sharpe detected the grid-lines in the field lanes and boundaries recorded on Rocque's 18th-century map of Middlesex, the location of later churches and supposed Roman surveying mounds. He used much mathematical ingenuity to determine the layout of Roman fields and lanes, considering that the 'rude Saxons' were incapable of achieving this regularity. Although the precision of his system obviously contained an element of optimism, in outline he appears to have discerned a real continuity in the framework of the landscape in parts of Middlesex from the Roman to the post-medieval periods. In Sharpe's system both the parishes of Harmondsworth and Stanwell lay within the south-western *pagus*, the lanes of its grid aligned from north-east to south-west, with other lanes at right-angles. The Roman road from Brentford to Staines lay at an irregular angle across this grid (Sharpe 1919, 64–8, 97–107).

The apparent continuity of some of the excavated field boundaries from the Bronze Age, through the Roman period to the medieval centuries should be seen in this context. Some of these in Stanwell parish were excavated in 1977 and 1979 (O'Connell 1990, 7, 60); others were investigated in the Terminal 5 excavations in the vicinity of the enclosures later called Borough Green, Borough Hill Closes, and Wheat or Long Closes. In contrast, the layout of late Saxon ridge and furrow fields across much of midland England commonly overlies the ditches of Iron Age and Roman fields, and is unrelated to them (Williamson 2004, 65–6, fig 24).

The early Saxon period

Early Saxon political landscape

Historical sources provide a political context for the Terminal 5 early Saxon settlement. Middlesex emerged as an identifiable region between the nascent kingdoms of the East and West Saxons in the 6th century AD, bounded by the Rivers Colne, Thames and Lea, and the wooded hill country to the north, and probably stretching further in this direction than the later county. The first known mention is as a province called *Middelseaxan* in a charter of 704 (Sawyer 1968, 87 no 65; Gelling 1979, 95 no 191). It never formed a separate kingdom, but was rather a loose confederation of peoples called the Middle Saxons. In the south-western part of the later county a widespread group called the *Wixan* appears to have fragmented by the 7th century into smaller units called the *Lullingas* in the Hayes area, the *Geddingas* in the southern part of the later Elthorne Hundred, and the *Stæningas*, occupying most or all of Spelthorne Hundred. One family of early Saxon leaders in western Middlesex may have included *Gislhere*, *Gilla* and *Geddi*, who gave their names to Isleworth, Ealing and Yeading respectively.

In other parts of England the territories of these local groups formed the building blocks in the construction of the Anglo-Saxon kingdoms. Here they were dominated by the surrounding larger kingdoms who extended their influence from their original power centres into the political vacuum of the London area, which had followed the collapse of British authority in the former Roman city in the early 5th century. The neighbouring kings defeated the local leaders and their warriors in unrecorded encounters, or bought them off with gifts of land or money. The kings of Kent and Wessex were competing for control here in the 560s. Ceawlin of Wessex was active in western Middlesex between 560 and 580, and from this period may date the naming of Sunbury after his client Sunna of the Sunningas, a group which had its core lands in eastern Berkshire. 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). It is not clear if these Middle Saxon land-units and groupings should be regarded as surviving Roman estates, Saxon tribal home-lands of the migration period, early Saxon embryonic kingdoms, or middle Saxon multiple estates, or indeed all of them.

Early and middle Saxon cemeteries in the area may give some indication of where these middle Saxon groups had settled. 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 ten skeletons were found with their weapons (Keene 1975, 5). To the rear of the King's Head Inn on the east side of Longford, early Saxon necklace beads and a possible cremation urn were found; these objects are now in the British Museum (Cotton *et al.* 1986, fig. 60; Cowie with Harding 2000, 203). Three early Saxon (6th/early 7th century) inhumation burials have recently been excavated at Victoria Lane, Harlington, although due to aggressive soil conditions only the grave goods survived (Wessex Archaeology 2008). However, there is little evidence for early Saxon occupation on the claylands of northern Middlesex, or in the vicinity of London itself (Bailey 1989, 112), settlement apparently being confined to sites along the Thames and its tributaries. On the London Clays between the river valleys, Iron Age and Roman sites were later covered by medieval woodland and wood pasture (Williamson 2004, 109).

Early Saxon settlement in the Heathrow area

The distribution of early Saxon settlements in Middlesex is likely to have been less dense than its Roman predecessors (Fig. 5.2). A possible decline in population appears to correspond to a retreat from the heavier clay soils in favour of the more easily worked free-draining soils (Cowie and Blackmore 2008, 130–1). Settlements lay across the brickearth and gravel terraces of the Thames basin in a dispersed pattern, each consisting of only a few households (ibid., fig. 137). The settlements in the study area are likely to have drifted within the same locality in the early Saxon period, in a process of *Wandersiedlungen* ('wandering settlements'), and shifted to different sites in the middle Saxon period. These are common factors which have emerged in settlement studies, but are still little understood. It appears that all early Saxon settlements were regarded as temporary, and that they were necessarily deserted by their communities in favour of fresh sites. This implies that a shifting form of agriculture was practised, which periodically required new ground to be broken in, as old fields became exhausted or choked with weeds. The more permanent middle Saxon settlements probably operated a more stable and intensive form of agriculture, based on heavier ploughs able to cope with a wider variety of soil types. The movements of settlements are likely to have taken place within the boundaries of the existing land-units. At Harmondsworth and Stanwell these may have been Roman estates. The mechanism by which these shifts of settlement occurred is unknown, but in the context of the division of the landscape into a series of estates, they are likely to have been seigneurially directed.

Excavated early and middle Saxon settlement sites in the West London area include Winslow Road,

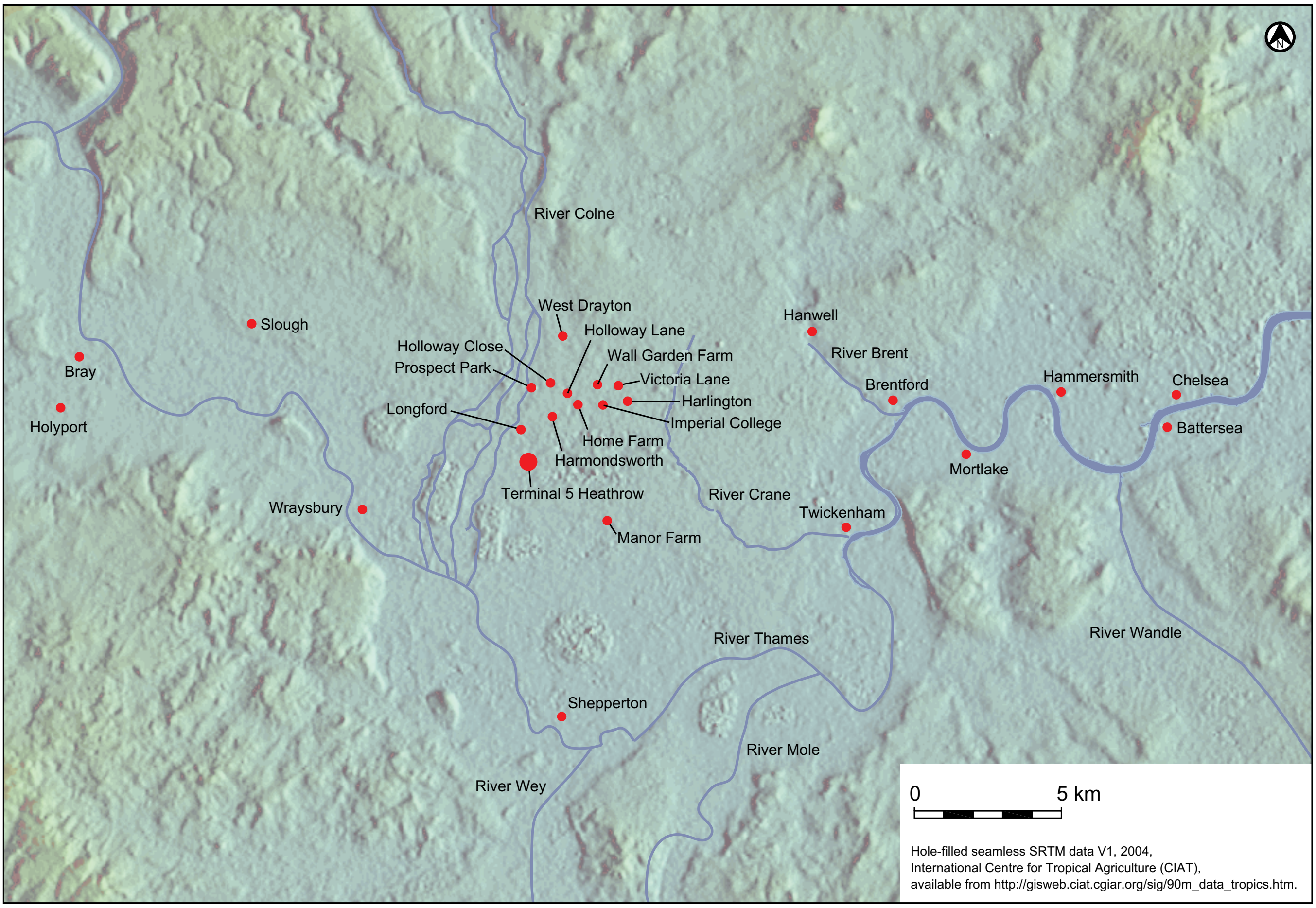


Figure 5.2: Early Saxon sites mentioned in the text

Hammersmith (three sunken-featured buildings and associated postholes); High Street, Mortlake (two sunken-featured buildings, one with a projecting oven, and ditches); Brentford (sunken-featured building); Chelsea (possible post-built structure); and Battersea (where re-analysis has concluded that no buildings were discovered) (Cowie and Blackmore 2008, sites H-K, V and W respectively). A further settlement site has been excavated on the opposite bank of the Thames at Hurst Park, Molesey, about 10 km to the south-west of Heathrow (six or possibly seven sunken-featured buildings; Andrews 1996). In Harmondsworth parish settlement sites have been found at Prospect Park (up to 11 sunken-featured buildings and two possible earthfast timber buildings), Holloway Close (one sunken-featured building), Manor Farm (a rectangular ditched enclosure and a sunken-featured building), Holloway Lane (one sunken-featured building in a small enclosure on the edge of a Roman field system), and features at Home Farm and Wall Garden Farm (Cowie and Blackmore 2008, sites N-Q; Andrews 1996; Farwell *et al.* 1999). Two possible sunken-featured buildings have been identified at Imperial College Sports Ground in the neighbouring parish of Harlington (Mepham forthcoming), while in Hayes a sunken-featured building and a number of rectangular timber structures suggest that early Saxon activity in this area extended as far west as the River Crane (Cowie and Blackmore 2008, 88-9; www.pre-construct.com/Sites/Summary06/HYA01.htm).

This scatter of sites at and around Harmondsworth—'the greatest concentration of recorded early Saxon features in London' (Cowie and Blackmore 2008, 88)—probably represents a drifting settlement of the 5th to 7th centuries AD, similar to the extensively excavated site at Mucking in Essex, but in a more diffuse pattern. Two main zones of activity can be suggested here, comprising a settlement zone along the river terrace just above the Colne, and mixed farmland further east (Cowie and Blackmore 2008, 137). These settlements housed farming communities who grew wheat and barley and kept cattle, pigs and sheep or goats, but little sign has been found of their field systems. At West Drayton wattle-lined pits are thought to have been used for retting flax and hemp for textile production (Thompson *et al.* 1998, 56, 67, 80–3, 88; Cowie and Harding 2000, 175, 179–81, 183, 186, 195; Blackmore and Cowie 2001), which is of interest given the later medieval and post-medieval evidence for flax-retting at Terminal 5, in Areas 16 and 17 (see below). Remains of flax processing have also been found in a Saxo-Norman ditch at Spitalfields to the north-east of the city of London (Thomas *et al.* 1997, 18).

To the west, in Berkshire and Buckinghamshire, evidence for early Saxon settlement is sparse, and again with a largely riverine distribution, along the Thames. A single sunken-featured building has been found at Wraysbury (Pine 2003), further settlement traces at Bray, and there are hints of Saxon activity at Slough and Holyport (Ford 1987, 97–8; Hiller and Munby 2002, table 2.1, fig. 2.2).

It is in this context that the components of early Saxon settlement excavated at Terminal 5 should be viewed, extending the drifting settlement to the south along the Colne, with isolated features to the east, within the putative area of agricultural land. The settlement remains lay within the enclosed tofts of the medieval and later village of Longford, although no continuity between the excavated settlement and the medieval village could be proved.

The name of Harmondsworth means Hermond's farm. The name of Stanwell literally means 'stoney stream or spring', but it may have a relationship to the name of Staines to the south, reflecting an early connection between the two settlements within one estate boundary.

Chronological indicators for the early Saxon period

No scientific dates are available for the early Saxon settlement or other features, and dating instead relies very largely on ceramics. Other datable finds are extremely scarce – just a few metal and glass objects (see below).

Pottery

Whatever the reality of the continuation of everyday life and material culture during the Roman-Saxon transition, the ceramic record shows a marked discontinuity in the early 5th century. The end of Roman rule in AD 410 was evidently followed by a rapid and complete breakdown of the administrative infrastructure of the province, with the existing machinery of production and distribution no longer able to be sustained (Hinton 1990, 1). Pottery production in the Roman style, which involved a number of centres operating at workshop or factory level, distributing standardised, largely wheelthrown vessels over wide areas of the country, was replaced during a relatively short space of time (perhaps within a generation) by handmade, domestic production in a system which had more in common with the later prehistoric period. This renders the recognition of an early Saxon 'horizon' on ceramic grounds relatively easy, but there are difficulties in refining the chronology more closely.

The main problem concerns the lack of comparable, well-dated assemblages. While considerable progress has been made over recent years in the classification and dating of middle and late Saxon pottery in the London area (eg Blackmore 1988b; 1989; 2008; Vince and Jenner 1991), the early Saxon period remains something of a grey area. Pioneering work by Myres (eg 1977) relied overwhelmingly on pottery from cemeteries, and it is only recently that pottery from settlement sites in the London area has been studied. One major assemblage, from Mucking in Essex, has been published, with a ceramic sequence spanning the 5th to 7th centuries (Hamerow 1993), and the state of knowledge of early to middle Saxon ceramics in the London area at this point was summarised by Blackmore (1993). Since then, further early Saxon assemblages have been published (Laidlaw and Mepham 1996; 1999; Blackmore 1997), and work is continuing on others in and around London. The only site for which scientific dates are available is Mucking, and these have not significantly aided the construction of a ceramic sequence, which relies on typology, associated artefacts, primarily from cemeteries, and, from the 7th century, a few continental ceramic imports.

To summarise, a ceramic sequence has been proposed in which the earliest post-Roman assemblages of the 5th century, which are characterised by a range of ware types, primarily sandy but also including some regional imports, and certain distinctive, carinated vessel forms, were superseded in the later 6th century by a more restricted range of wares, predominantly organic-tempered, in less angular forms. Other attributes, such as surface treatments and decorative techniques, can also be chronologically distinctive.

The chronological evidence gained from the Heathrow pottery, which was entirely derived from the Terminal 5 excavations, can be summarised as follows:

The predominance of sandy fabrics within the T5 assemblage, together with the presence of the carinated vessel(s), and the use of external combing, could suggest that there is at least a small 5th century component here, although the majority of the assemblage is less closely dated within a 5th to early 7th century date range.

(Mepham, CD Section 3)

Other finds categories

Other finds types which might provide chronological information for the early Saxon period are very limited. None of the glass bead types are closely datable. Other objects comprise three copper alloy brooches, one of which (a small-long brooch of 5th to 6th century date) was found unstratified, while another is a plain disc brooch from a Saxon context (pit 525287; see Fig. 5.5, 2 below), which could be either Roman or Saxon and is therefore not helpful for dating. The third brooch is a zoomorphic example, in the form of a stag (see Fig. 5.5, 1 below), from pit 525340. The brooch is an unusual type, but its dating has proved troublesome.

Dating the brooch on typological grounds is difficult. Roman zoomorphic brooches are found representing a wide range of living creatures including stags. Stag brooches are not as common as other types of animal brooch and most are quite distinct stylistically from the example under discussion ... The Terminal 5 brooch does not readily fall within the Roman tradition ... Roman zoomorphic brooches were copied in Germanic areas of the Elbe-Saale basin, middle Weser valley and southern Scandinavia between the late 2nd and early 4th centuries, but they did not continue in use into the Migration Period or early Anglo-Saxon period. Examples of Germanic stag brooches ... are more stylised in design and have sprung pins. In the post-Roman world there were Lombardic brooches from Italy representing stags and dating to the 6th and 7th centuries. Although these differ in some respects from the example under consideration, they do have features in common ...

Feature	Context	Sample	Charcoal	Charred plant remains
Pit 525295	525296	15145	-	Yes
Pit 525331	525332	15144	-	Yes
Pit 525340	552322	15142	Yes	Yes
SFB 538326	538329	15146	Yes	Yes
Posthole 538287	538288	19218	Yes	-
Pit 555767	555771	19199	Yes	-
Waterhole 555805	555826	18279	-	Yes
Waterhole 555805	555830	19222	-	Yes

Table 5.1: Palaeo-environmental evidence from early Saxon features

Neither the Roman stag brooches, nor any of the Lombardic brooches provide a completely convincing parallel for the Terminal 5 brooch. However, a recent find from Micheldever, Hampshire, reported to the Portable Antiquities Scheme (Finds ID HAMP3109) is very similar (information from Barry Ager, British Museum). Although it is missing its head and antlers, it is clear that [these] were similar to the Terminal 5 example ... the similarities between the two brooches are striking. Unfortunately, the Micheldever brooch is a stray find.

(Scott, CD Section 6)

Palaeo-environmental evidence for the early Saxon period

The palaeo-environmental evidence available from early Saxon features is limited. Eight samples, taken from seven features, produced charcoal and charred plant remains (see Table 5.1). All these features were located in PSH02 Area 14 (see Fig. 5.3).

The pit and sunken-featured building samples were from dry deposits, so bulk samples (40 litres) were processed. Despite the large sample size, small flots were recovered, and these produced limited amounts of charcoal and sparse, poorly preserved charred plant macrofossil assemblages. Of the charred cereals represented, the barley grains were often too poorly preserved to be identified to species level ... The two waterlogged samples from waterhole 555805 were reasonably well preserved, particularly the lower of the two, sample 19222. Some seed decay was seen in the upper sample (18279), but this is unlikely to have affected the species composition to any noticeable extent.

(Carruthers, CD Section 14)

The early Saxon settlement

Features dating to the early Saxon period were mainly confined to the northern edge of the site (PSH02 Area 14; Fig. 5.3), where they formed a spatially and chronologically coherent group. As noted above, these remains lay within the enclosed tofts of the medieval and later village of Longford and just to the south of the present village. Only three other features of this date were identified, in Areas 34, 61 and 99 respectively. These features are quantified by type and by area below (Table 5.2).

The cluster of pits, postholes and waterholes provided the most comprehensive evidence of early Saxon occupation, although they may be peripheral to the main focus of settlement. Most of the features fall into one of four broad groups: single pits, pit clusters, waterholes and postholes. The exceptions include the finds-rich floor of a probable sunken-featured building (feature 538326), a second possible sunken-featured building (509180) and two areas of natural bioturbation (features 578441 and 581222, the latter in Pit Cluster 1), which did not yield any finds. The features were concentrated in an area measuring some 800 m^2, with the two pit clusters dominating at the centre (Fig. 5.3; see reconstruction in Plate 5.1).

Pit Cluster 1

Pit Cluster 1 (PC1) comprises the more northerly of the two pit clusters (Fig. 5.4). The group of features, which lay within an area of brickearth enclosed

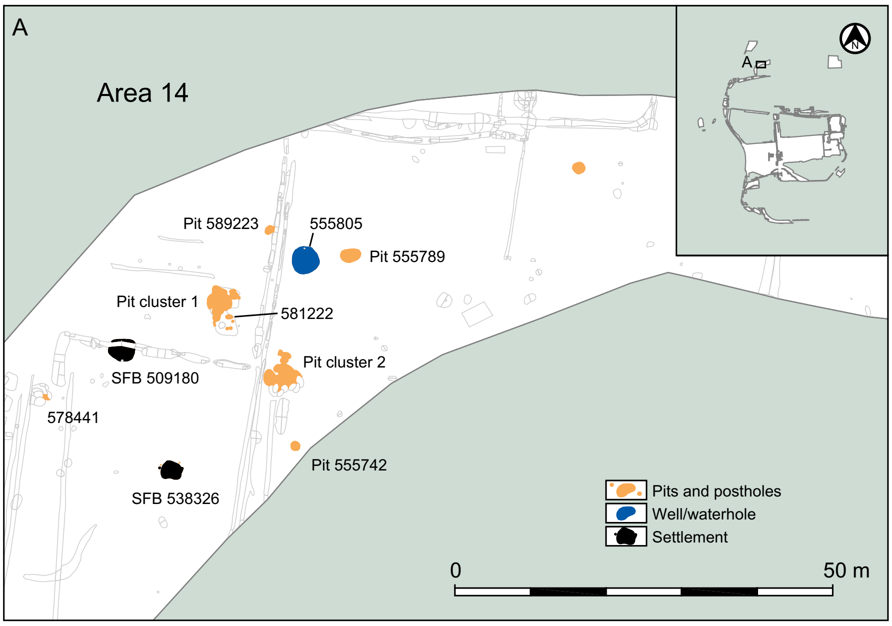


Figure 5.3: Distribution of early Saxon features on Area 14

Site code	Area	Feature interpretation	No. of features
PSH02	14	Natural Feature	2
PSH02	14	Posthole / Stakehole	12
PSH02	14	Pit	27
PSH02	14	Construction Cut	2
PSH02	14	Waterhole	1
PSH02	34	Pit	1
PSH02	61	Waterhole	1
PSH02	99	Pit	1

Table 5.2: Early Saxon feature types

Plate 5.1: Artist's reconstruction of pit digging within the Saxon settlement

by two medieval ditches, consisted of 13 intercutting pits and six postholes. The pit complex covered an area of around 12 m². There were no stratigraphic relationships between the pit group and the six postholes, but the latter were assigned to the entity on the grounds of their proximity. Finds assemblages were recovered from all the pits (Table 5.3), with the exception of pit 525301. An area of natural disturbance (581222) was also identified within the group, although no finds were recovered from this hollow.

There were at least four phases of pit digging and, if the pits were dug and used individually, perhaps as many as fourteen. With a diameter reaching 2 m, pit 525338 was among the largest examples in the cluster. This feature contained a single fill to a depth of 0.34 m and is thought to be the earliest in the sequence, although pits 612087 and 525333 may have been dug at the same time. Pits 525287, 525301, 525323 and 525331 were cut into pit the top of pit 525338, followed by pits 525293, 525327, 525335, 525340 and 612090 in uncertain order. At some later point, pit 525295 was cut into the top of the sequence.

All of the pits produced varying quantities of animal bone, including cow, pig and sheep/goat, presumably the remains of a typical Saxon diet (see Table 5.5 below). The small size of many fragments suggests heavy utilisation typical of comprehensive animal product consumption. The largest number, a total of 80 fragments, was recovered from pit 525287. One of

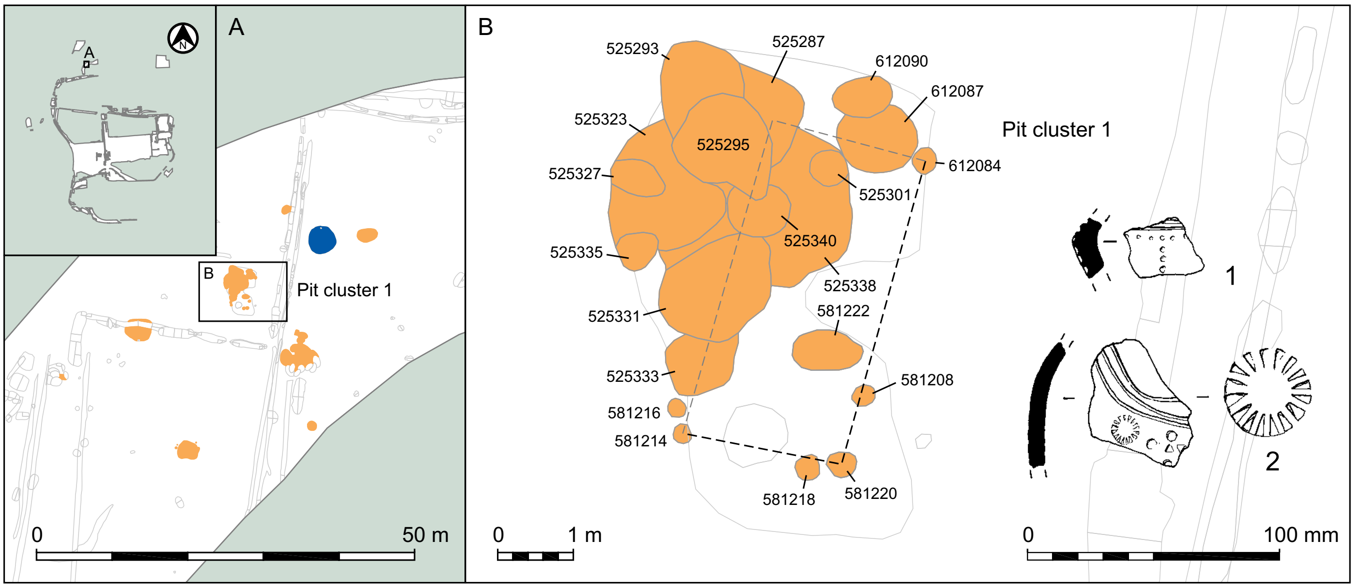


Figure 5.4: Pit Cluster 1 in Area 14, with pottery sherds

Pit	Animal bone	Pottery	Fired clay	Burnt flint	Copper alloy	Iron	Glass
525287	80	23	3	9	1 brooch	-	-
525293	17	-	-	-	-	-	-
525295	62	26	4	13	2 coins	-	2 beads
525323	22	21	2	1	-	-	-
525327	10	-	-	-	-	-	-
525331	41	11	10	10	-	-	-
525333	20	12	2	-	-	-	-
525335	14	5	2	1	-	-	-
525338	16	11	-	-	-	-	-
525340	24	12	2	5	1 brooch	2	1 bead
612087	1	5	1	1	-	-	-
612090	6	2	7	10	-	-	-
Total	**313**	**128**	**33**	**50**	**4**	**2**	**3**

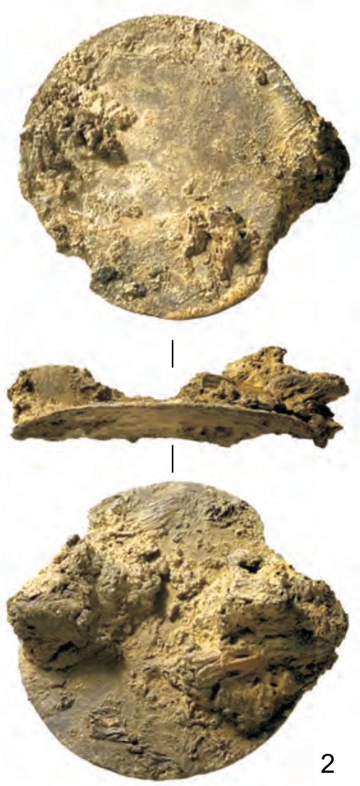
Table 5.3: Quantification of the finds assemblage from PC1 (number)

the more unusual assemblages came from feature 525340, a small pit situated near the centre of the cluster. Most of the weight came from three large, meat-bearing cattle bones displaying cut marks, and three pieces of red deer antler. All three pieces of antler consisted of lengths of sawn beam with the tines removed, ideal portions for comb manufacture, although antler found many uses in the Saxon period, and no 'finished products' were found on the site.

Pit 525340 produced charcoal of oak (*Quercus* sp.), hazel (*Corylus avellana*) and blackthorn (*Prunus spinosa*). The charred plant assemblages from this pit and from two others within Pit Cluster 1 (525331 and 525295) were very sparse, comprising mainly barley grains, with bread-type wheat grains and oat grains from 525331 and 525295. Several weed seeds were present as contaminants, including stinking chamomile (*Anthemis cotula*), a weed of heavy, damp, clay soils, while henbane (*Hyoscyamus niger*) and stinging nettle (*Urtica dioica*) from 525295 are indicative of nutrient-rich soils, perhaps indicating manuring of the fields. The origins of all three assemblages probably lie in the deposition of burnt domestic waste, although the association of possible 'high status' finds in pit 525340 (see below) has prompted the suggestion that the barley grains from this pit 'may represent a handful of processed barley burnt as an offering.' *(see Carruthers, CD Section 14)*

One of the latest pits in the group, feature 525295, produced two copper alloy Roman coins (AD 330–348 and AD 364–378). It is possible that these finds, along with a copper alloy disc brooch (Fig. 5.5, 2) from pit 525287, represent curated Roman objects—the 'magpie' tendency of early Saxon settlers is well documented (eg Plouviez 1985; Hamerow 1993, 71–3). Pit 525295 also contained one pale green glass bead and the fragmented remains of another bead, of translucent blue. An unusual stylised stag brooch (Fig. 5.5, 1; see above) was recovered from adjoining pit 525340, which produced a second pale green glass bead, two corroded, unidentifiable iron objects and three lengths of antler beam. None of the other pits contained metal or glass items, or even organic objects that could be described as decorative objects.

It may be significant that these fairly unusual finds, more ornamental or symbolic in purpose than utilitarian, were concentrated in three intercutting pits (525287, 525295 and 525340) at the northern end of the pit cluster. These three pits were all cut into the top of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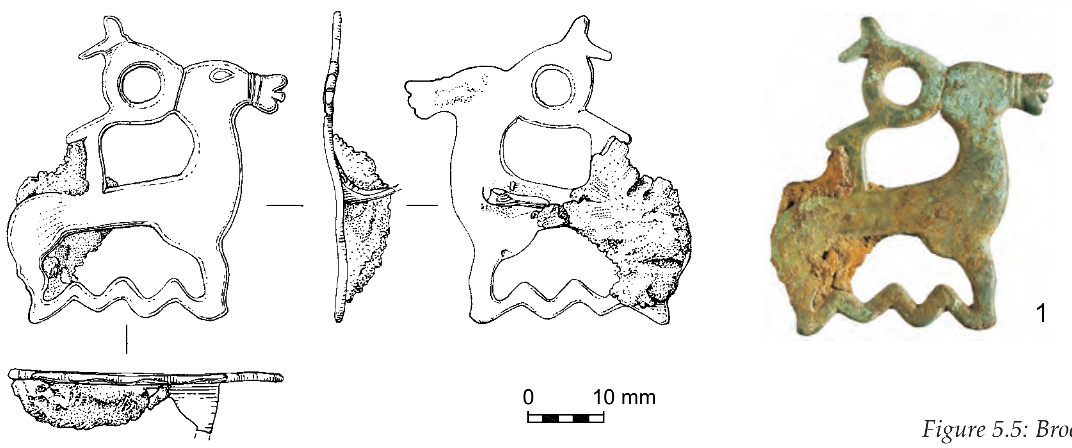

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Figure 5.5: Brooches from Pit Cluster 1

what appeared to be the earliest pit in the sequence. Perhaps the coins, brooches and beads were originally placed or cached in the first pit as a single deposit, held together in an organic container. If never reclaimed, they may have since become dispersed throughout the fills of recuts as later pits were successively dug and filled in. Such small items might go unnoticed during later activity. Indeed, both beads were missed during excavation and only recovered as a result of environmental sieving.

An alternative explanation for the presence of jewellery, accommodating an interpretation of the features as 'heeling' (ie trampling) pits (for the mixing of brickearth with animal dung and fibre to create daub), is that they derive from redeposited midden material used to supplement the daub mixture. Another possibility is that the finds occurred as accidental losses during strenuous *in situ* working. However, it seems unlikely that the peasant inhabitants of Saxon Longford would have been so careless with the few valuable items they had acquired or unearthed from Roman deposits. The presence of an exotic zoomorphic brooch is a particularly unexpected find in a pit containing general domestic waste from what is presumed to be a low status settlement. The possibility that the pit was used to conceal a hoard of valuables from public curiosity is thus an appealing one.

Posthole structure

The pits were surrounded by six postholes (581208, 581214, 581216, 581218, 581220 and 612084), which were confined to the south-eastern side of the pit cluster (Fig. 5.4). These features were of uniform size, ranging from 0.17 to 0.4 m in diameter and from 0.1 m to 0.27 m in depth. The majority contained a single fill, usually of grey clay silt, but none of the postholes produced any finds. The arrangement of the postholes around the south-eastern side of the pit cluster suggests that they formed part of a single structure, perhaps a screen or shelter that was constructed around the pits. The double corner postholes (581214/581216 and 581218/581220) may have been attempts to reinforce or repair the structure. The conjectured outline of this structure is shown in Figure 5.4 (broken line).

Another more likely possibility is that the six postholes belong to a separate, later structure that was unrelated to the pit cluster, which is particularly compelling as Pit Cluster 2 (PC2) lacks any evidence of an associated structure. In the absence of stratigraphic relationships, however, it is uncertain whether this structure pre- or post-dates the pits. Perhaps the missing elements of the building were truncated by the pits, as shown in Figure 5.4 (dotted line), which would imply the earlier presence of a small structure measuring some 2.5 m wide by 4.5 m long. The paired postholes (see above) may have defined the doorway to the building, while the missing corner post may have been situated in the vicinity of pit 525287, which was over 0.5 m deep and certainly would have removed any trace of an earlier posthole. The function of the postulated structure remains uncertain, but its position might suggest a small farm building or an outhouse for storage or stock enclosure.

Pit Cluster 2

A second pit complex (PC2) was located some 10 m to the south-east of PC1 (Fig. 5.6). There were eleven intercutting pits in the group, nine of which produced small assemblages of animal bone, pottery and other finds (Table 5.4). From the absence of postholes, there does not appear to have been any structure associated with the pits. PC2 covered an area of around 16 m^2. The features were less tightly clustered than PC1, and seemed to form an almost linear arrangement on an approximately north-south axis. The aggregation of features represents at least four phases of pit construction and, if the pits were in use sequentially, possibly as many as eleven.

The diameter of individual pits ranged from 0.42 m to 2.4 m, while the depths varied from 0.07 m to 0.78 m. As in PC1, the earliest pit in the sequence

Figure 5.6: Pit Cluster 2 in Area 14

Pit	Animal bone	Pottery	Fired clay	Burnt flint
555733	2	-	-	-
555735	-	-	1	3
555738	7	2	16	3
555752	37	1	-	-
555754	7	-	2	1
555759	7	-	-	-
555767	93	-	-	8
555775	1	-	-	-
555793	6	5	-	2
Total	**160**	**8**	**19**	**17**

Table 5.4: Quantification of the finds assemblage from PC2 (number)

(feature 555738) was among the largest and deepest examples and was centrally located. Assuming that the pits were used for brickearth extraction and daub production, this particular approach to pit building might find an explanation in the construction process. The first—and largest—extraction pit would probably have provided enough daub for the main construction phase of a new building. The subsidiary pits—which were smaller and occupied positions peripheral to the main pit—may have been opened later to extract a bucket or two of brickearth for minor repairs during the lifetime of the building. The series of small, elliptical pits that clustered along the southern edge of the main group may represent just such maintenance pits, suggesting that small but clean deposits of brickearth were being sought for sporadic repair jobs. Each pit cluster, with its associated waterhole, probably represents the original construction and subsequent maintenance of a single building. It would not be unreasonable to conclude that the buildings were situated, for practical reasons, close to the daub production centres. SFB 538326 (see below) may have been one such building; the other may exist a short distance beyond the boundaries of the excavated area.

While originally intended as extraction pits, the hollows remaining from the quarrying of brickearth would have provided convenient receptacles for the deposition of domestic waste. It seems that some of the pits stood empty for some time before they were put to this secondary use. One of the deposits in pit 555738, for example, showed a distinctive 'banding' thought to result from a succession of wet and dry conditions; the pit may have stood open for a considerable period of time before deliberate depositions 555746 and 555747 sealed the previous silting events. This would be consistent with the view that the pits were reassigned as rubbish pits rather than backfilled immediately after the brickearth was extracted. Similar considerations may have governed the later reuse of waterhole 555805 as a latrine or cess pit. Perhaps, if one pit cluster contributed to the construction and maintenance of a single dwelling, it was considered to belong to the occupying household and continued to serve its needs as a refuse pit. Thus, having contributed the raw materials to build the house, the pit was then filled with the by-products of its existence in an almost direct reversal of the process.

The two pit clusters – chronologically or functionally independent?

Were the two pit clusters operating independently? Qualitative and quantitative differences in the finds assemblages from the two clusters (Tables 5.3 and 5.4) may indicate differential treatment. Such discrepancies could be explained in chronological terms, or it could be argued that the material differences reflect the activities of two broadly contemporaneous households, each utilising separate midden deposits, and producing their own depositional signature. The most striking difference is in the overall quantities of material, PC1 producing an assemblage which is numerically more than twice the size of that from PC2.

With a view to exploring the chronological development of the two pit complexes, the pottery was examined, although the overall sample is far too small for any statistically valid conclusions to be drawn. Sandy wares dominate both assemblages, but organic-tempered wares were only present in PC1. Given the ceramic sequence outlined above, in which sandy wares were superseded by organic-tempered wares by the later 6th century, this could suggest a chronological difference, but slightly contradictory evidence is provided by two diagnostic sherds from PC1: a carinated sherd with impressed decoration (shown on Fig. 5.4, 1) and a sherd with stamped motifs (shown on Fig. 5.4, 2). Carinated vessels are considered to be typical of the 5th century whereas stamping is a decorative trait with a *floruit* in the 6th century. Moreover, there is some evidence for contemporaneity (and other links) in the presence in both clusters of distinctive sherds with surface combing, a technique generally dated relatively early within the early Saxon sequence.

The animal bone assemblage from the two pit clusters is quantified in Table 5.5 (above). In both cases the majority of the bones were unidentified, but both produced a similar range of species. The proportions of all species

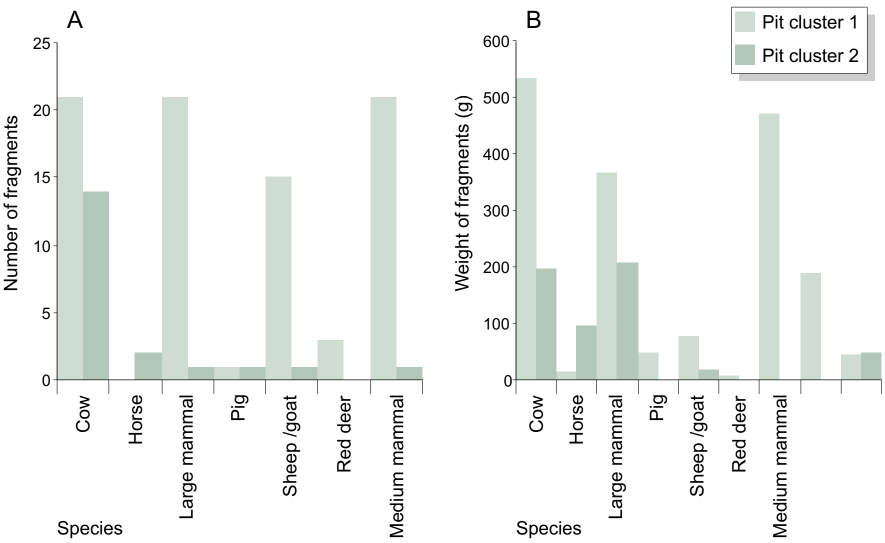


Figure 5.7: Quantification of animal bone assemblages from Pit Clusters 1 and 2

other than cattle are lower for PC2 than for PC1. Figure 5.7 shows the species profiles of the two assemblages (identified bone only).

If the two pit clusters represent two households, then perhaps the activities of their respective owners can be inferred from these subtle differences in domestic waste. The red deer antler beams from PC1 might suggest the workshop of a specialist craftsperson. Perhaps payment for his or her creative services was in kind—brooches, beads, curated antiquities and coins, cuts of meat—which would perhaps account for some of the more unusual finds in this pit complex and may also explain the wide range of domestic species represented by the animal bone assemblage.

There were no metal or glass objects from PC2. Perhaps the limited range reflects a less prosperous household, which in turn suggests that the occupants were engaged in less profitable methods of subsistence. The animal bone assemblage from PC2, which is dominated by large-sized domesticates, might belong to a cattle-farming household that did not possess many other valuable goods apart from their stock.

From the pottery evidence, the two households were probably broadly contemporaneous. The longevity of the two inferred dwellings is traced by the configuration and sequence of the individual daub pits within each cluster. Practical considerations might have linked each pit cluster with its own waterhole, which provided fresh water for daub mixing. Once emptied by the extraction of daub, the pits would have formed convenient receptacles for rubbish disposal.

In summary, the evidence discussed so far could support the presence of two broadly contemporaneous but distinctly separate households, with socio-economic differences reflected in the content and composition of their finds assemblages. On the one hand, there is the rich and varied assemblage from PC1; on the other, there is the comparatively small and impoverished collection from PC2. Such material distinctions might be explained by disparities in wealth resulting from alternative subsistence practices.

The finds evidence is indeed, suggestive, but it still remains questionable whether these pit clusters really were used, after their initial digging, primarily for refuse disposal, as the quantities of material, even from PC1, are not great. Furthermore, the brooches and coins, and possibly glass beads, in PC1 seem unlikely to represent deliberately discarded refuse; their significance as a deliberate deposit, with or without the possibility of recovery, has already been discussed. An explanation involving a limited period of deposition seems to be negated by the chronological evidence of the pottery. Deposition into the pits may, therefore, have been largely as secondary refuse from middening elsewhere, or on an intermittent and *ad hoc* basis. In this regard, the animal bone evidence is pertinent.

Some pits seem to contain bones that may have originated from specific activities, such as butchery or table waste, which implies occasional spontaneous deposition into whichever feature happened to be open, rather than a particular waste disposal strategy.

(Knight and Grimm, CD Section 13)

Feature - Context	Cow	Horse	Large mammal	Pig	Sheep/ goat	Red deer	Medium mammal	Unidentified	**Total**
Pit cluster 1 - 525287	-	-	-	-	2	-	-	78	**80**
525293	17	-	-	-	-	-	-	-	**17**
525295	-	-	-	1	-	-	-	61	**62**
525323	-	-	6	-	6	-	5	5	**22**
525327	-	-	5	-	3	-	-	2	**10**
525331	1	-	-	-	-	1	-	39	**41**
525333	-	-	-	-	2	-	-	18	**20**
525335	-	-	8	-	-	-	1	5	**14**
525338	-	-	1	-	1	-	14	-	**16**
525340	2	-	1	-	-	2	1	18	**24**
612087	1	-	-	-	-	-	-	-	**1**
612090	-	-	-	-	1	-	-	5	**6**
Pit cluster 1 total	*21*	*0*	*21*	*1*	*15*	*3*	*21*	*231*	*313*
Pit cluster 2 - 555733	1	-	-	-	-	-	-	1	**2**
555738	-	-	-	-	-	-	-	7	**7**
555752	2	-	-	-	-	-	-	35	**37**
555754	-	2	1	-	-	-	-	4	**7**
555759	1	-	-	-	-	-	-	6	**7**
555767	10	-	-	-	-	-	-	83	**93**
555775	-	-	-	-	-	-	1	-	**1**
555793	-	-	-	1	1	-	-	4	**6**
Pit cluster 2 total	*14*	*2*	*1*	*1*	*1*	*0*	*1*	*140*	*160*
PC 1 and PC 2 total	***35***	***2***	***22***	***2***	***16***	***3***	***22***	***371***	***473***

Table 5.5: Quantification of the animal bone assemblage from Pit Cluster 1 and Pit Cluster 2

Sunken-featured building 538326

So where were the putative building(s) that were created from the brickearth removed from the two pit groups? Feature 538326 is the most convincing candidate (Fig. 5.8), with another possible structure about 15 m to the north-west (509180); any other structures may have existed beyond the boundary of the excavated area, perhaps a few metres to the north or south of Area 14, but probably not far from the pit clusters and waterholes.

Feature 538326, thought to be a sunken-featured building, was situated some 15–20 m to the southwest of PC1 and PC2 (Fig. 5.8; Plate 5.2). The feature measured 3.05 m long and 3 m wide; its longer axis followed the same alignment as the later medieval ditch boundaries nearby. It was relatively shallow in places, largely due to truncation, reaching depths of around 0.05 m. At each end of the main cut lay a single posthole: 582423 in the east and 538287 in the west. Two small stakeholes were set at some distance (between *c* 0.3 m and 0.6 m) to the north of each posthole, while a third stakehole was revealed within the main cut itself. Tenuous evidence for the actual construction comes in the form of oak (*Quercus*) charcoal (from posthole 538287 as well as the fill of 538326) and a single sedge nutlet (see artist's reconstruction in Plate 5.3).

It is likely that the structural wood for the building was oak, since this makes excellent building timber, but it must be remembered that the charcoal was not recovered from in situ burning, and is more likely to represent the remains of domestic debris, probably dumped into the building post-abandonment.

(Challinor, CD Section 15)

It is interesting to note that at West Heslerton (Carruthers and Hunter forthcoming) frequent sedge seeds and rhizomes from the SFBs provided possible evidence for the use of turves for walling. An alternative explanation is that the sedge was growing as a cereal contaminant, indicating the cultivation of damp ground.

(Carruthers, CD Section 14)

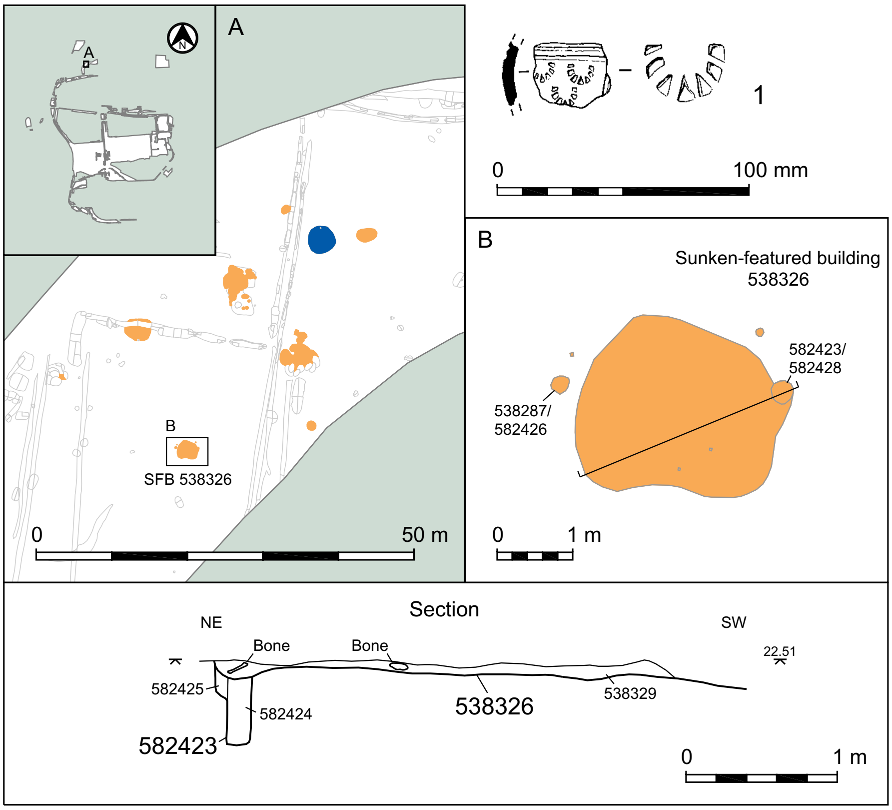


Figure 5.8: Sunken-featured building 538326 and its associated postholes, with stamped pottery sherd

Plate 5.2: Sunken-featured building 538326

The cut was filled by a single deposit (538329), consisting of a dark brown-grey organic silty clay. The layer contained pottery, animal bone, burnt, unworked flint, one iron object and two pieces of ironworking slag (Table 5.6); the postholes (538287 and 582423) also contained small quantities of animal bone, pottery and burnt flint. Virtually the only charred plant remains present (all from 538326) were cereal grains, including barley and bread-type wheat. No finds were recovered from any of the three stakeholes.

Feature	Animal bone	Pottery	Fired clay	Burnt flint	Iron	Slag	Glass
Feature 528326	127	47	13	55	1	2	1
Posthole 538287	7	3	-	3	-	-	-
Posthole 582423	3	-	-	1	-	-	-
Total	**127**	**50**	**13**	**59**	**1**	**2**	**1**

Table 5.6: Quantification of the finds assemblage from feature 538326 and its associated postholes

Plate 5.3: *Artist's reconstruction of sunken-featured building under construction*

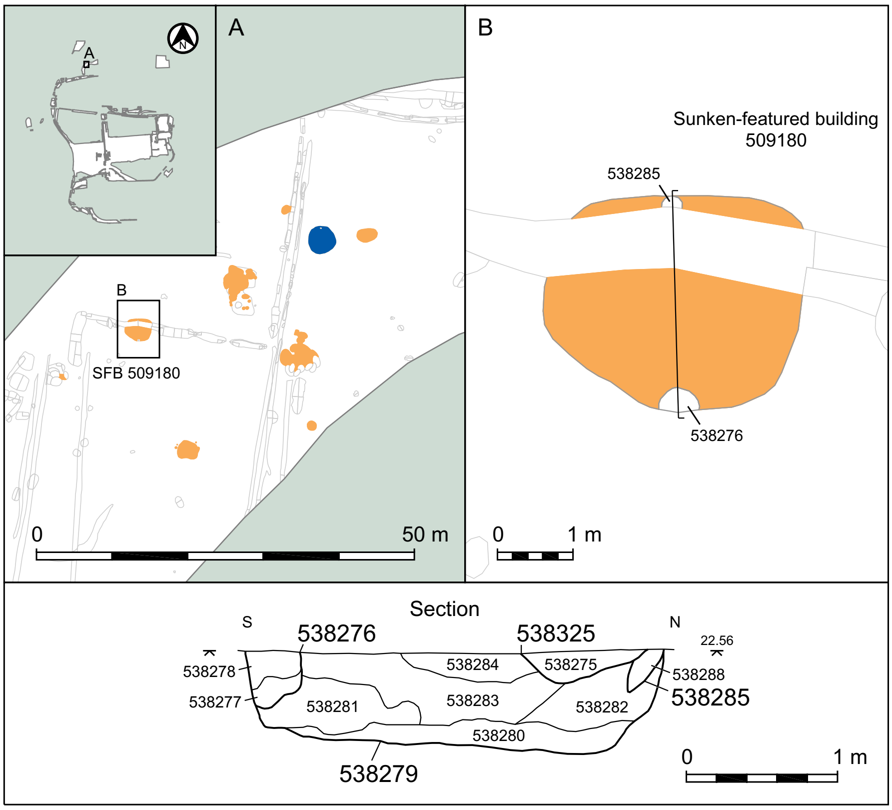


Figure 5.9: Sunken-featured building 509180

In terms of the datable finds, the pottery fabrics are almost exclusively sandy, with just one organic-tempered sherd. Diagnostic forms comprise one carinated vessel, and one sherd with stamped decoration (shown on Fig. 5.8). As with PC1, this gives slightly contradictory evidence; the predominance of sandy fabrics and the presence of a carinated form are indicative of an early date (5th or early 6th century AD), while the organic-tempered sherd and the stamped decoration could fall slightly later in the 6th century.

Sunken-featured building 509180

SFB 509180 was located approximately 15 m to the north-west of 538326, and about 11 m south-west of PC1 (Fig. 5.9; Plate 5.4). It was sub-rectangular but slightly irregular in outline, measuring 3.39 m by 2.63 m. It was flat-bottomed, with steep sides and a relatively even depth of 0.6 m. Unlike 538326, no postholes were observed either within or close to the feature (two features cutting the upper fill of the feature, 538285 and 538276, may be small tree-throws or postholes, but are clearly later in date). Several fills were recorded. Most of these were secondary fills, which had apparently formed initially through a period of slow silting, followed by slumping of the sides, possibly incorporating upcast material, and then further erosion of the sides and surrounding topsoil. These secondary fills produced very few finds, and nothing closely datable. Finally, there was an episode of deliberate backfill, which contained most of the cultural material from the feature (Table 5.7). No palaeo-environmental material was recovered from 509180.

If this is a sunken-featured building, it in unusual in having no associated postholes or stakeholes, but is by no means unique—other possible buildings in the Greater London area also lack these (Cowie and Blackmore 2008, table 66). The dimensions are well within the known range, although the depth is above average, which is particularly marked since 538326 nearby has been so heavily truncated. It is not clear why the depths of the two buildings should have differed so widely.

Plate 5.4: Sunken-featured building 509180

The pottery from the backfill deposit (27 sherds) includes both sandy and organic-tempered wares, in roughly equal quantities; amongst the sandy wares is the partial profile of a small, carinated vessel. As discussed above, the combination of sandy fabrics and carinated vessel forms is considered to indicate a date range relatively early within the Saxon sequence, perhaps 5th century into early 6th century. The quantity of pottery is very small, but this is nevertheless a valuable chronological indicator.

The faunal assemblage is also of interest in providing possible evidence for butchery. In the secondary fill was a single large mammal long bone in very poor condition. All the remaining bone came from the deliberate backfill, which contained horse, pig and cattle (in that order of frequency), and a single dog lower canine tooth.

In the [back]fill … are left equid metatarsal and metacarpal (with abaxials) and associated phalanges and sesamoids, from the deposition of at least two horse feet, and this is the only definite evidence of this species in the feature. It is possible that they were deposited with attached skin, but there is no evidence to confirm this, and these parts of the carcass may have been dumped after primary butchery as low value meat waste. The pig was represented by a humerus, radius and two ulnae, pelvis and unfused phalanges, all potentially from a single immature individual under one year. Other items are medium and large mammal ribs and vertebrae, and cattle humerus and some are burnt. Butchery or consumption waste with some unusual deposits is suggested; the horse bones are of low meat utility so they are likely to be the former, deposited soon after primary butchery and not further disturbed, rather than indicating any particular underlying preferences, such as horse meat avoidance or 'special' deposition of meaningful parts. The young pig remains may also have been deposited after the animal had been cooked or butchered as the absence of the dense teeth indicates that this was not deposited as a whole individual, and the both left and right forelimb parts are present rather than a single limb that had been deposited whole.

(Knight and Grimm, CD Section 13)

While the by now almost silted feature could have provided a convenient site to dump discarded animal waste, an alternative explanation is possible — this could have been a deliberately placed 'termination deposit'. A recent study has identified such deposits in a small number of SFBs and other features from early and middle Saxon settlements (the number is almost certainly under-represented, due to the difficulties inherent in recognition), and may contain human or animal bone, either disarticulated or as articulated limbs or other body parts (Hamerow 2006). The study found that while cattle were the species that most commonly occurred in these deposits, dogs and horses were disproportionately well represented when compared to the figures for settlements as a whole, and this is certainly true in this instance—this is the only occurrence of dog on the site, and only three other horse bones were identified. No other sites in the West London area were included in the study, although there is an example of the dumping of an entire horse carcass into an abandoned SFB at Hammersmith (Ainsley 2008). A partial cat skeleton found on the floor of an SFB at Brentford may merely represent an animal that had crawled beneath the floorboards of the hut (Canham 1976, 30).

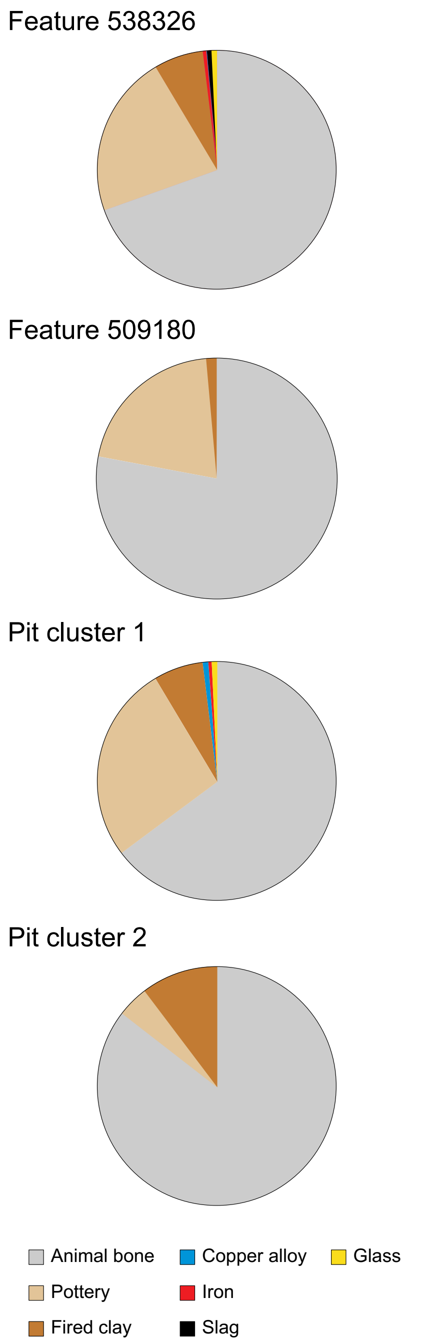


Figure 5.10: Comparison of finds assemblages from (a) Feature 538326, (b) Feature 509180 (c) Pit cluster 1 and (d) Pit cluster 2

Fill	Animal bone	Pottery	Fired clay	Burnt flint
Secondary fill	1	-	2	4
Deliberate backfill	102	27	-	23
Total	**103**	**27**	**2**	**27**

Table 5.7: Quantification of the finds assemblage from 509180

The SFBs and the pit clusters

The hypothesis that either or both of the sunken-featured buildings had particular associations with the pit clusters was explored with reference to the material content of the four features (Fig. 5.10). This approach was based on the assumption that similar debris would be generated by the same process, in this case the activities of a single household, and that it might be possible to examine the composition of an assemblage in order to trace its origin to a common source. The flaw in this approach is that the pit deposits are likely to be contemporary with occupation, while the fills of the sunken-featured buildings relate to the period after their abandonment. The organic nature of the waste from the latter was confirmed by the presence of two mineralised 'nodules' of the type characteristic of faecal and midden deposits from 538326 (Carruthers 1989). Nevertheless, the comparison of the assemblages from the sunken-featured buildings and the two pit clusters is interesting.

The composition of the finds assemblage from SFB 538326 is very similar to the collection from PC1. A comparison of the relative contribution made by each material category reveals the degree of correspondence between the sunken-featured building and PC1 collections (Fig. 5.10). Animal bone makes the largest contribution to each assemblage, followed by pottery and fired clay; the remainder is provided by small quantities of glass, metalwork and slag. Another link between the two entities is the presence in both of pottery sherds with stamped decoration. Meanwhile the finds composition from SFB 509180 is very similar to that of PC2, in both cases restricted to a large proportion of animal bone, accompanied by smaller proportions of pottery and fired clay. The pottery in both instances comprises sandy fabrics only. The potential links suggested by the respective 'finds signatures' are interesting, given the relative positions of the four feature groups but, given the *caveat* above, this cannot be taken as linking the life-use of the SFBs with those respective pit clusters. Instead, a sequence could be suggested in which SFB 509180 and PC1 were backfilled at broadly the same time (incorporating a possible 'termination deposit' in 509180), possibly during the use of SFB 538326 and PC2, which were then backfilled in turn at a slightly later date.

Waterhole 555805

The single waterhole on Area 14 was situated to the north-east of the two pit clusters, and consisted of an irregular sub-circular feature with a degraded shaft at the centre (Fig. 5.11; Plate 5.5). It measured 3.75 m long and was filled by a complex series of 23 deposits to a depth of 1.8 m. These deposits contained a large and varied assemblage throughout, consisting of 102 fragments of animal bone, including sheep or goat, red deer, pig and cattle; 38 sherds of early Saxon pottery, two fragments of fired clay, and 18 pieces of waterlogged wood, including bark and heartwood chippings, and two ladder rungs. The latter are rare finds.

Both have been pared down from small diameter roundwood and their surviving ends have been carefully trimmed to create short, blunt points which would fit into holes cut in the rails. No holes for peg or nail fastenings are present, not are there any wedges which might have been driven into the end grain of the rung to lock it in place. It may be suggested that the holes housing the rung ends did not pass all the way through the rail.

Parallels for these rungs are not easy to find. A single example cut from beech (Fagus sylvatica L.) was identified from a 12th–13th century pit at Pevensey Castle, Sussex (Dunning 1957, 211), but the one surviving end is pierced by a single hole to allow a peg to fasten it into the rail. Three examples, one each of alder, field maple and hazel have been found at 16-22 Coppergate in York in 10th–11th century contexts (Morris 2000, 2320). These have tapered ends to fit into holes augered into their rails and no piercing for pegs, the ends being locked by wedges driven into the exposed end of the rung from outside the rail. A similar method seems to have been used to attach the oak rungs to the alder

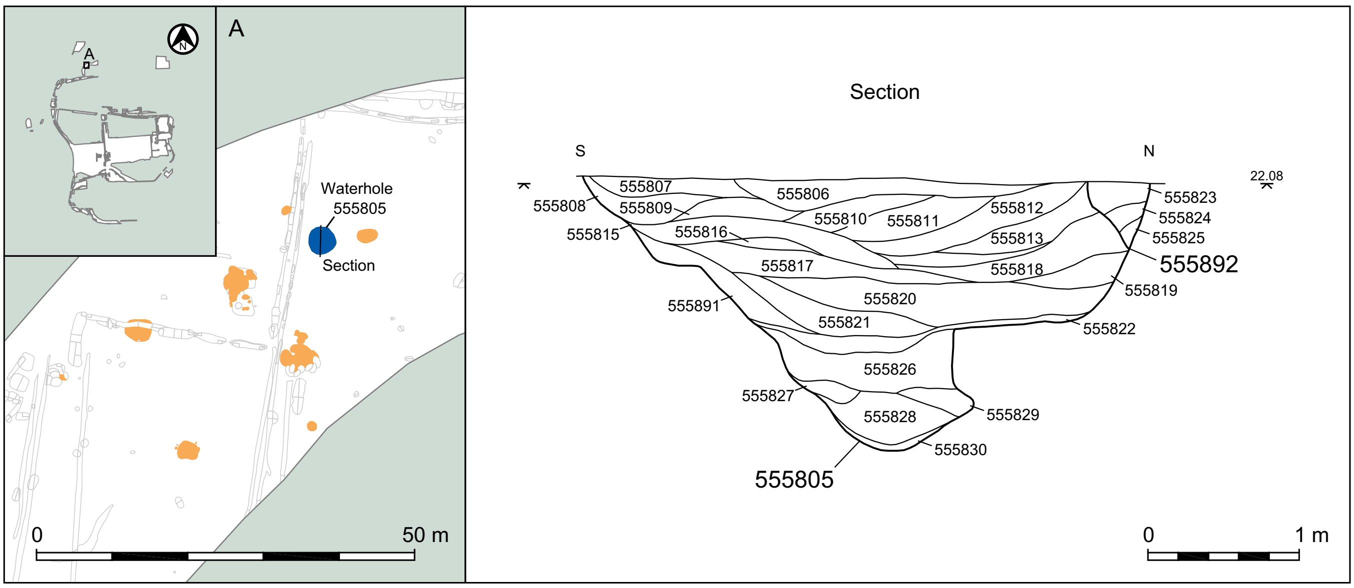


Figure 5.11: Waterhole 555805

Plate 5.5: Waterhole 555805

rails of a late 12th–mid 13th century ladder from 1–5 Aldwark, York (MacGregor 1988, 71). Currently the best parallel is a recently recovered 12th–14th century example from Fox Covert, Dinnington, Newcastle upon Tyne (Allen 2006) cut from ash.

(Allen, CD Section 11)

Human faecal remains were also recorded. Palaeo-environmental samples were taken from two fills—555830 on the base of the waterhole and 555286 above—and yielded hints of its possible use(s).

The main plant group represented in the assemblages from both fills was seeds from plants of nutrient-enriched, disturbed places. These included nettles, (Urtica dioica and U. urens), fat hen, chickweed (Stellaria media), knotgrass (Polygonum aviculare), docks (Rumex sp.) and henbane (Hyoscyamus niger). The increase in henbane and stinging nettles in the upper sample may be due to the establishment of this type of vegetation close to the waterhole. Henbane, a poisonous but also medicinally useful plant, is characteristic of middens and farmyards.

There is some evidence to suggest that the waterhole may have been used for flax retting (rotting down the stems to release the fibres), or at least for the deposition of flax processing waste. Running water is preferable for retting as it is a very smelly business that would have made the waterhole unusable for people or livestock. The small sections of flax capsule observed in the lower sample were more characteristic of the waste from 'rippling', ie. pulling the dried stems through a comb-like structure to remove the brittle, dry leaves, capsules and seeds, prior to bundling the stems for retting. No seeds were recovered from the sample, but these would have been valued for their medicinal properties, for oil and for sowing the next year's crop.

Other evidence of deposited waste was the presence of a few fragments of cereal chaff, both charred and uncharred (bread-type wheat, barley and emmer/spelt), and hemp seed fragments. The charred emmer/spelt spikelet fork was in a very poor state of preservation, so this may have been redeposited. However, there is some evidence to suggest that spelt wheat continued to be grown in small quantities into the Saxon period in some areas. Cannabis or hemp (Cannabis sativa) remains have been recovered from a few Saxon sites, but in most cases this is pollen in retting pools rather than seeds. The seed fragments could have been deposited amongst hemp processing waste, or they may represent the chewed remains of seeds consumed for medicinal purposes. The two cotton thistle (Onopordum acanthium) seeds could represent plants grown for food, fibre or medicinal use. Cotton thistle was grown as a crop in earlier periods, so it may have persisted as a useful weed in the area.

(Carruthers, CD Section 14)

The (potentially toxic) contents of the 'waterhole' on Area 14 would seem to dispute its interpreted use as a reservoir for the provision of clean water, and its primary function may have been for the preparation of daub, which would not have precluded the deposition of faecal matter.

Another possibility is that the waterhole was in fact a latrine pit serving the needs of the nearby household. The finds from the waterhole were distributed throughout its numerous fills, demonstrating that domestic waste was regularly and continuously deposited in the feature. The types of items included—broken pottery, food residues, pieces of wood—would not be unusual finds in a latrine, and least surprising of all is the evidence for human faecal material. The morphology of the feature, described as a large flat-based pit with a deep central shaft reaching the water table, would also be compatible with this interpretation. Of course, the varied interpretations of feature 555805 need not be mutually exclusive: disused waterholes and wells were often revived as latrines and rubbish pits in the Saxon period, and such muddy deposits might later prove suitable for daub preparation.

Comparison with the 'finds signatures' of the two pit clusters and the SFBs suggests that waterhole 555805 is close to PC1 and SFB 538326 in terms of relative quantities of finds (animal bone, pottery and fired clay), and the animal bone species represented are very similar to PC1 (sheep/goat, red deer, pig and cattle). In other words, following on from the potential sequence suggested above for the pits and SFBs, the waterhole could have been backfilled at the same time as PC1 and SFB 509180.

Life in the early Saxon settlement

The archaeological evidence as described here gives a picture of a relatively sparsely occupied landscape in the early Saxon period. Two possible dwellings were located, with associated evidence for pit digging (probably primarily in order to produce the necessary building materials) and one waterhole. Outside the main concentration of activity in Area 14 at Terminal 5, only two other features were located. Given the survival of medieval features across the excavated area, the absence of Saxon features cannot be explained by truncation, and must be seen as a real absence. However, topographical factors must be considered here. As has already been observed, early Saxon settlement in the London area was concentrated on the brickearths and gravels of the river valleys of the Thames and its tributaries, including the Colne. Settlement evidence has been revealed at several locations on the Colne terrace to the north of Heathrow within Harmondsworth parish (Cowie with Harding 2000, 179, 202; Farwell *et al.* 1999; Cowie and Blackmore 2008, fig. 64), probably representing a drifting settlement, of which that at Terminal 5 was possibly a part, with an area of mixed farming to the east. Other settlement evidence from the period may lie to the north and west of the excavated area. While precise dating is not forthcoming for the length of occupation at Terminal 5, the pottery suggests a range of at least late 5th to 6th century, potentially encompassed within one or perhaps two generations.

Evidence for specific activities is limited. There is no textile-working or grain-processing equipment, and craft activity seems to be limited to antler-working, although no finished products were found. Such a scarcity should not be overemphasised, however, in view of the small number of excavated features. There is a suggestion of on-site pottery manufacture in the form of a possible 'waster' vessel apparently deliberately deposited in a small pit.

While it might be expected that small-scale settlement at this period would be largely self-sufficient, the artefactual evidence highlights outside contacts in the form of glass beads and two copper alloy brooches, at least one of which has potential continental affinities (although its date is not firmly established). There is little other evidence for commerce or trade in the early Saxon period in London, although the development of Anglo-Saxon kingdoms in the 6th century may have encouraged the exchange of prestige items (Cowie with Harding 2000, 181; Cowie and Blackmore 2008, 156). The beads and brooches could have arrived via other means, for example as heirlooms, and were not necessarily traded goods.

The evidence for some continuity of the Roman landscape in terms of agricultural exploitation has been discussed. Palaeo-environmental evidence from Terminal 5 is tantalisingly slight, but there is a suggestion of remnant Roman hedgerows *(Challinor, CD Section 15)*. The Old English place-name for Hayes, just to the north of Harlington, means 'land overgrown with brushwood' (Cowie and Blackmore 2008, 88), and suggests a once open landscape.

Cereal cultivation evidently took place, but the sparseness of the remains suggests that,

... arable cultivation was probably a minor component of the economy during this period. The four small charred plant assemblages may not be representative of the period, but it is noticeable that for the first time at T5 barley grains were more frequent in all four samples than the other cereals, bread-type wheat and oats ... By the medieval period bread-type wheat had taken over as the preferred cereal for human consumption in most areas.

The sparse ecological evidence gathered from the charred weed contaminants suggested that the arable fields had been manured, since nitrophilous weeds were dominant, and that at least some of the fields were on heavy, damp clay. It is possible that some of the cereals were being purchased elsewhere and brought onto site, in view of the fact that charred cereal remains were so scarce. However, charred cereal processing waste is scarce on most Saxon and medieval sites, due to differences in the taphonomy of crops being grown at this time. It is likely that most households would have grown some cereals for their own use and to feed livestock. If the main aspect of the economy was livestock, manure would have been in plentiful supply. In addition, stock was often turned onto arable fields after the grain was harvested to graze the straw and manure the fields.

The waterlogged assemblages indicated that nutrient-rich, disturbed areas were common around the waterhole, and that open grassland was likely to be the predominant vegetation type on the site as a whole. As well as providing lush pasture, the damp soils of the floodplain would have been suitable for the cultivation of fibre crops such as flax, cotton thistle and hemp, with flax retting taking place in the flowing waters of the rivers nearby.

(Carruthers, CD Section 14)

Faunal remains are not well represented on early Saxon sites in London, and Terminal 5 adds little to the overall picture. This may be at least partly to do with patterns of discard—there is a suggestion that the majority of bone waste may have been discarded away from the pits, with only bone from specific (and intermittent) activities entering the pits, although a relatively large volume was recovered from the post-abandonment debris in the sunken-featured building.

Relatively large numbers of pig and horse (the latter over-represented by the articulated parts) and the low proportion of cattle may be caused by restricted sample size rather than specific husbandry patterns, although at some sites in this area pigs do seem to be common (Cowie and Harding 2000) and may have been useful for clearing woodland as well as their meat. However, minimum numbers suggests sheep to be more numerous, at least four individuals, with two individuals each of horse and pig, then only one cattle, dog, fowl and deer definitely present (excluding the shed antler). Small numbers of wild resources are typical of the period.

All horse and cattle bones were fused, but for pig and sheep/goat a range of ages was identified; one pig of around 2 years and another neonatal were present, suggesting breeding on site, and of the sheep/goat one individual over 20 months and another under 16 months were present. The tooth eruption and wear analysis indicated one very old, two subadult and one immature animal, presumably retained for their secondary products, although poor preservation may have destroyed many of the less robust younger bones. Where sex could be identified, one male pig and a probable bull were present. Mature cattle and horses may be working animals and this interpretation is perhaps supported by pathological modifications to an equid astragalus, the dorsal articular surface of which has almost completely degenerated. Although the *database is very small, it seems that sizes are larger than for the preceding period, with withers heights for sheep at 631 mm and horse 1333 mm, 1327 mm (these two perhaps from the same animal) and 1436 mm, as a result of Roman improvement of livestock and/or the import of new animals (King 1991, 17).*

(Knight and Grimm, CD Section 13)

There are, however, no associated features on the site that would confirm either stock management or cereal cultivation—no ditches or gullies were excavated. These, of course, could have been outside the excavated area. Limited evidence for field systems have been found on other early Saxon sites in the area, although an enclosure and possible droveway were found at Bath Road in Harmondsworth (Cowie and Blackmore 2008, 83–5). It is also possible that some earlier ditches could still have been extant at this period—the evidence for the continued use of Bronze Age ditch alignments during the medieval period will be explored below.

Other early Saxon activity

The only other evidence for early Saxon activity comprises two isolated features that lay beyond the main focus described above, pits 547384 and 613067, which were situated on Areas 99 and 34 respectively. The locations of these features (*c* 850 m apart), and their position relative to the focus of activity on Area 14, are shown in Figures 5.12 and 5.13. These features appeared to be unrelated to any neighbouring activity, although both lay close to the edge of the excavated site, and it is possible that additional features of early Saxon date once lay within the unexcavated region to the north and east.

Alternatively, it could have been that these two early Saxon pits were as remote from settlement as they appear to be, perhaps situated within pasture-land or by the side of seldom-used trackways. It is possible that they were associated with certain activities, perhaps of an agricultural or industrial nature, that were traditionally located at some distance from domestic settlement. As such, a comparison with contemporary features from Area 14 might reveal differences in fill or form that result from functional differences. Table 5.8 quantifies the finds assemblages from these two features.

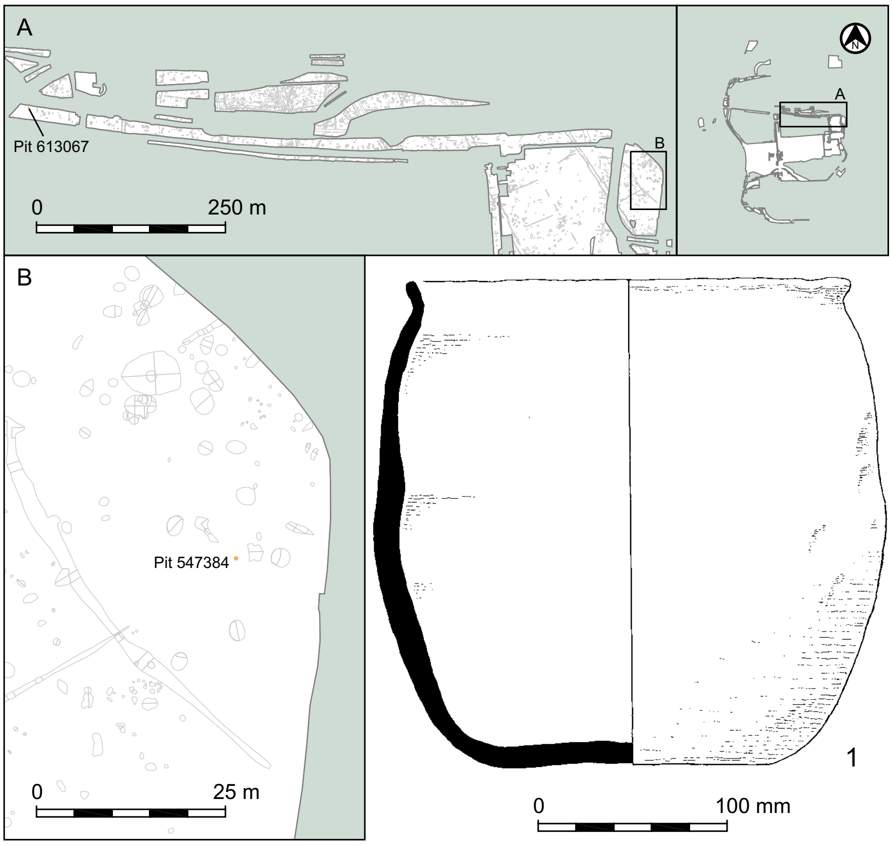


Figure 5.12: Pit 547384, with pottery vessel in situ

Feature	Pottery	Fired clay	Burnt flint
Pit 547384	54	1	-
Pit 613067	3	3	13
Total	**57**	**4**	**13**

Table 5.8: Quantification of finds from isolated early Saxon features (number)

One of the most striking characteristics is the total absence of animal bone from the fills of these isolated features. Comparable features from Area 14 produced large quantities of animal bone, interpreted as general refuse deposits, following butchery and consumption. The absence of such remains from these pits might, conversely, indicate their distance from settlement and domestic activity. Alternatively, it is possible that this discrepancy results from local soil conditions, since the brickearth may have been more favourable to the preservation of bone in Area 14. Other differences can be detected that cannot be so easily explained by taphonomic factors.

Pit 547384

Pit 547384 contained the single largest Saxon pottery deposit from the site, a total of 54 sherds weighing over 1.5 kg. These sherds derive from a single vessel (shown on Fig. 5.12; Plate 5.6), which is described by the specialist as follows:

One interesting deposit comprises what may be most of a single vessel, a large, rounded jar in an organic-tempered fabric, which appears to have been burnt or overfired (the surfaces have powdery feel and a 'cracked/crazed' appearance). The vessel may have been deliberately placed within pit 547384—this is an apparently isolated feature within Area 99, which is at least 800 m from the nearest excavated feature containing Saxon pottery.

(Mepham, CD Section 3)

Above the pottery vessel was a layer of deliberate backfill, which was very similar in appearance to that seen below the pot—a mid grey silty clay

Plate 5.6: Pit 547384, with pot vessel in situ

with charcoal flecking—leading to the suggestion that the material upcast from the pit digging was used first to partially backfill it, then to complete the operation once the pot was deposited.

Very little additional material was recovered from the pit, and none of it convincingly formed part of a delib-erate deposit. Finds included a small fragment of fired clay and two small, residual, flint flakes. In the absence of evidence to the contrary, it seems that the jar itself formed the most important element of the deposit. The possibility that this represents on-site pottery manufacture (which would not be unexpected), is tantalisingly slight. There is no evidence that the pit itself was used for pottery firing, and the fact that only a single vessel is represented would be unusual in such a context.

Pit 613067

This feature was situated in Area 34, nearly 700 m to the south-east of the settlement in Area 14 and some 330 m to the north of waterhole 569189 (Fig. 5.13; Plate 5.7). The pit, which contained a sequence of six deposits, measured some 1.5 m in both diameter and depth. It had an irregular, bell-shaped profile with steep, concave sides. It was suggested that the pit had at one time held standing water, which had undercut the sides, causing gravel to repeatedly collapse into the feature. The location of the pit, adjacent to and cutting the fills of a palaeochannel, may have been critical to its function as a small waterhole.

The feature produced a small but chronologically wide-ranging artefact assemblage. Items included one sherd of late Bronze Age pottery and one sherd of Roman pottery, both residual and from the upper fills of the pit (not included in Table 5.8). Two sherds of unabraded early Saxon pottery came from the lowest deposit (613073) and provide a probable date for the use of the feature. The collection of six struck flints and 13 pieces of burnt unworked flint were scattered throughout the pit deposits, suggesting that the later feature cut through a zone of earlier, prehistoric activity. The description of the pit suggests that it functioned as a small waterhole, serving the needs of those working in the surrounding fields and those of their livestock.

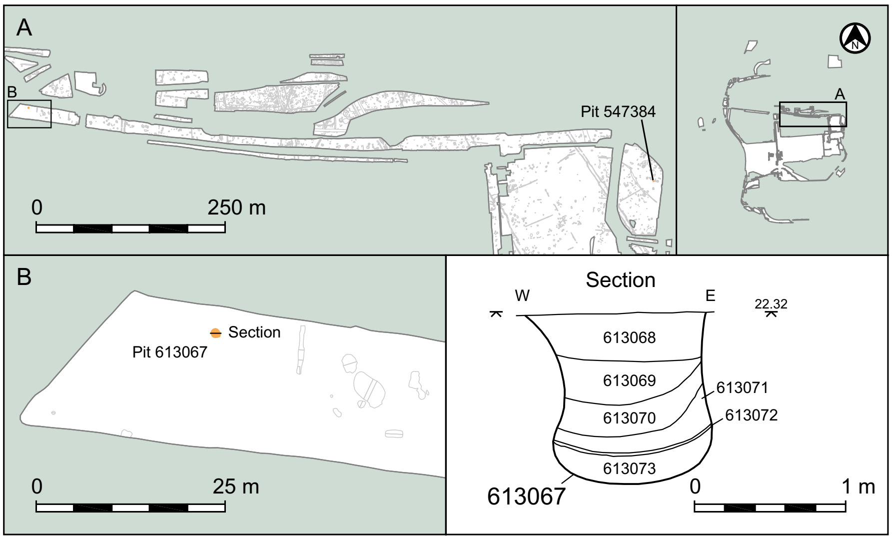


Figure 5.13: Pit 613067

Plate 5.7: Pit 613067

The middle to late Saxon period

The analysis of the pottery from Terminal 5 suggests that there was desertion of the excavated area from at least the early/mid 7th century and perhaps earlier. This is largely supported by similar dating evidence from other early Saxon sites at Harmondsworth (Cowie and Blackmore 2008, 88–9). However, the inclusion of settlements and estates in south-western Middlesex in the written evidence of charters dating from the 8th, 9th and 10th centuries implies that it remained an occupied and exploited landscape throughout this time-frame. Amongst the places mentioned in the charters is Harmondsworth. In AD 704, thirty *cassati* of land at Twickenham were granted to Bishop Waldhere of London by King Swæfred of the East Saxons and the *comes* Pæogthath, with the permission of the Mercian king Æthelred, and the confirmations of his successors Coenred and Ceolred (Sawyer 1968, 87, no. 65; Gelling 1979, 95, no. 191). In about 781 King Offa of Mercia sold twenty *mansae* of land at *Hermondesyeord* (Harmondsworth) in the middle Saxon province to his servant Ældred for a gold bracelet (Sawyer 1968, 102, no. 119; Gelling 1979, 99–101, no. 203). In 831 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). In about 939 King Athelstan gave ten *mansae* at West Drayton to St Paul's Cathedral (Sawyer 1968, 180; Gelling 1979, 107).

There is no evidence that the early Saxon settlement at Terminal 5 was the direct precursor of the present day village of Longford, with unbroken continuity, although middle/late Saxon evidence may still lie beneath the built-up area. Middle and late Saxon settlements are indeed rare in the hinterland of London, beyond *Lundenwic* (Cowie with Harding 2000, 183; Cowie and Blackmore 2008, 165). There is possible evidence for 7th century activity at Feltham, although the pottery could just as easily be of 6th century date (Howell 2008). The middle Saxon dating evidence from Northolt Manor is ambiguous and may in fact be later (Hurst 1961). Closer to the excavated area, there is some rather vague evidence for middle Saxon activity. Earlier excavations at Stanwell located an oval enclosure which may have been associated with Saxon pottery, probably of 8th or 9th century date (O'Connell 1990, 54–9), while at Staines, Saxon finds from the site of the Yeoveney Neolithic causewayed enclosure suggest occupation in the vicinity of the site during the 6th to 8th century (Robertson-Mackay *et al.* 1981). More recently, better evidence has come from excavations at Victoria Lane, Harlington, where an Alfredian coin (AD 871–5), pottery and radiocarbon dates from several features have confirmed occupation from the middle Saxon period into the early medieval period (Mepham forthcoming). Meanwhile to the west, excavations at Dorney in Berkshire have produced evidence for a highly unusual middle Saxon site which has been interpreted as a market or open air meeting place (Hiller *et al.* 2002), and middle Saxon (if not early Saxon) origins are claimed for the royal palace at Old Windsor (Wilson and Hurst 1958).

The late Saxon to medieval period

There is no further definitive evidence for activity within the excavated area until the 11th or 12th century. Field systems established at this period cut through the early Saxon settlement at Terminal 5. Further elements of these field systems were excavated to the south, within Stanwell parish, and a complex of enclosures, probably for stock management, began to be constructed at Burrow Hill, although the evidence for settlement on the site is ambiguous. The following section sets out the historical background to these developments.

Tenurial changes and manorial development in the late Saxon and medieval periods

The origins of the medieval landscape of Heathrow can be seen in the late Saxon period, when the larger middle Saxon estates were broken up and new, smaller estates were formed, later evolving into manors. These late Saxon tenurial changes were accompanied by the concentration of settlements into large villages and the formation of open field systems, although the relative chronology of these various elements is uncertain. These developments have been linked to the processes of manorialisation and feudalisation—along with more efficient estate management—and occurred earliest on royal, episcopal and great monastic estates (Muir 2000, 76-7, 123).

Settlement nucleation may have come first in *c* AD 850–1050, transforming the pattern of settlement from dispersed hamlets to individual villages in each estate. These villages appear to have been created by the lords of the estates, and the rising numbers of the population were moved to them in order to make agricultural arrangements more efficient. The movement was most marked in areas with extensive meadow land and those most suited to grain production, already being cleared of much of their woodland. In these estates it was necessary to mobilise large amounts of labour at short notice to mow the hay and harvest the corn while the weather was favourable, and it was easier to organise the tenants for these labour-intensive operations when they lived in nucleated villages (Muir 2000, 182, 184, 205; Williamson 2004, 15-16, 19, 174, 182–3). These criteria applied to the Harmondsworth and Stanwell estates, with their meadow lands along the Colne valley and their extensive level grain fields, which may have been in continuous production since the Roman period.

The move to nucleation was often accompanied by the development of common field systems, or closely succeeded by it in the early 10th century. These field systems consisted of large open fields divided into furlongs of cultivation strips, resulting in ridge and furrow patterns in the landscape. Stock enclosures developed at the same time. As we shall see, some of the open fields may have been formed within a pre-existing landscape framework, the location of their furlongs dictated by previous boundaries. By contrast, in other areas such as the north Middlesex claylands, the open fields overlay abandoned Roman farms, and the dispersed and shifting pattern of early and middle Saxon settlement (Reynolds 1999, 155–6; Muir 2000, 205–8; Williamson 2004, 6, 70, 119–22).

The manorial structure of the tenurial landscape in Middlesex can first be traced in detail in the *Domesday Book* 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). The frequent geld assessments of the Middlesex manors in *Domesday Book* in multiples of five-hide units probably reflect an earlier more regular arrangement of the landscape, as was postulated, for example, by Montague Sharpe, who saw Middlesex as the surviving elements of the Roman *territorium* of London (see above). The county may have been particularly heavily assessed because of the capacity of parts of it to produce grain (Darby and Campbell 1971, 104–10; Sullivan 1994, 51–2). In the study zone the arable land was not all being used to full capacity in 1086, as the number of available plough-lands in a manor often exceeded the number of plough-teams working, and this was often accompanied by a fall in annual value over the previous 20 years. Only Stanwell appears to have been overstocked, with 13 ploughs operating on ten plough-lands, but Staines, Ashford and West Drayton were fully stocked. The drop in annual value of most of the manors in the previous 20 years probably reflects the political dislocation of the period.

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. Medieval agriculture was subject to advances and retreats. Some manors in the study zone were probably extending their areas of cultivation in the late Saxon period by clearing areas of woodland and heath, a process known as assarting.

Over the two and a half centuries after the *Domesday Book* survey, the advancing frontiers of cultivation progressed at different rates within the tenurial framework of the different manors of the area, each manor taking its own direction on the initiative of the lord or the tenants, or of both. The general method of making an assart consisted of surrounding the chosen land with a ditch and clearing the trees and underwood within it. The land was then ploughed and sown with oats or rye. It was often allowed to lie fallow for several years. There was certainly some assarting in Ashford in the 1220s, when the abbot of Westminster ceded the manor for the support of his monks (*VCHM* ii 306).

The villages and manors

Harmondsworth village lies in the north-west part of its parish. Of the component settlements of the parish Longford was first mentioned in 1337, when it had 30 houses, but had probably had a continuous existence since the middle Saxon period. Sipson was first mentioned in 1214. Southcote or Southcoterow existed by 1265 but its position is uncertain. The name remained in use until the mid 15th century, when it appears to have been succeeded by the name Heathrow (first mentioned in 1416, the new name derived from its proximity to Hounslow Heath), although both names were listed in a rental of 1493 (*VCHM* iv 3-4; LMA Acc 446/EM/1; Acc 446/ED/112, 118; TNA: PRO, E 315/409 ff1v and 4; E 326/9174; SC 2/191/13; SC 11/443; SC 11/446; WC 11502 m1). A Harmondsworth survey of 1542/3 specifically refers to *Sowthecoterow alias Hetherowe* (WC 11451 m4). Perry Oaks probably existed by 1324, when Robert atte Pirie and Robert de Suthcote served on a jury (TNA: PRO, E 142/83/2). Stanwell village centred on a small green and the parish church built in about 1200 on its south side. There were houses at Stanwell Moor by the 14th century (*VCHM* iii 34, 46). Most of these peripheral hamlets which appeared in the 13th century were probably secondary assarting settlements, established by extending the cultivated area into Hounslow Heath or the marshy lands of the Colne valley. Some of them were associated with the formation of sub-manors.

The main manor of Harmondsworth was held by the Abbey of St Catherine's at Rouen from shortly after the Norman conquest until 1391, through its cell at Harmondsworth priory (Sherwood 1993, 3; *VCHM* iv 7). In 1391 the main manor was purchased by William of Wykeham, bishop of Winchester, and passed to his foundation of Winchester College. At this time the manor was farmed out in several lots and increasing in value. The College retained ownership until 1543, when it was subject to one of Henry VIII's forced exchanges (Himsworth ii 457-62; *VCHM* iv 7).

Throughout the medieval centuries the main manor of Stanwell was held by the descendants of William fitz Other, who took the surname of Windsor. Most of the Windsor family probably lived at Stanwell in a manor house on the site of the later Stanwell Place to the west of the village, which was in existence by at least the 14th century (Collins 1754, 4–13; *VCHM* iii, 37-8). In 1542 Henry VIII forced Lord Andrews Windsor to exchange Stanwell and its appurtenances for Bordesley Abbey in Worcestershire (Collins 1754, 16-46; *VCHM* iii 37).

A common phenomenon represented in the study zone is the emergence of sub-manors in the late 13th and early 14th centuries, although it is not clear why this should have taken place. Sometimes these were established as secondary settlements within existing arable fields. The sub-division of manors to form sub-manors is often linked to the digging of rectangular moats, as at Poyle House in Stanwell.

In Stanwell the manor of West Bedfont was already a separate estate in 1086, but the manors of Poyle, the Park, Hammonds or Shepcotts, Cleremunds and Knollers appeared between the late 12th and 14th centuries, mostly on the west and south sides of the parish (*VCHM* iii 36, 38–41, 45). At Harmondsworth the sub-manors of Perry Oaks, Padbury, Luddingtons and Barnards originated in the 14th century. The manor of Perry Oaks included 143 acres of heathland, most of which was called Perry Heath. This may point to its origin as a secondary assarting settlement of the early medieval period. Padbury included part of the hamlet of Southcoterow or Heathrow, and had a manor house in the 16th century; Luddington and Barnards lay in Sipson (Himsworth ii 465-6; *VCHM* iv 8-11). At Harlington the manor of Dawley was already separate in 1086, and the manor of *Harlington with Shepiston* (ie Sipson) was created in the 14th century, apparently from the lands of Hounslow Friary (*VCHM* iii 263-6).

Late medieval agricultural decline

The manorial economies of the study area suffered a general agricultural decline in the 14th and 15th centuries. Like most manors in England the fortunes of Stanwell and Harmondsworth began to change with the transformation of climatic conditions and the increase in population late in the 13th century. The impact of famine episodes and the Black Death in the 14th century on settlement patterns and land-use can be traced directly in manors with surviving accounts of the appropriate dates, as at Harmondsworth. The shock to the agricultural economy often led to the shrinkage of cultivated areas and settlements, a retreat from marginal land, and the abandonment of direct exploitation of demesnes by manorial lords.

Throughout the 13th century the population of England had continued to rise until it reached critical levels. After 1280 the balance between population levels and food resources was delicate enough for the English to be described as 'calamity-sensitive'. The year 1294 was one of famine in East Anglia. Crops were destroyed in the fields by heavy rain and fungus, and the price of corn rose six-fold (Kershaw 1973, 37; Rawcliffe 1999, 14). The most widespread famine of the period was in 1315–17, which resulted from a series of bad harvests and was accompanied in 1316 by an epidemic of an enteric type, which may have been typhoid. There was an unprecedented inflation in grain prices, which lasted until a better harvest in 1317 halved the price levels. Alongside the famine was a sheep murrain, which was followed in 1319 by a disease which wiped out large numbers of cattle and oxen. Starvation was therefore compounded by epidemics of animal disease, which remained prevalent until 1322. As more cattle died, the price of livestock escalated, and the means of restarting arable production was lacking. There may have been an overall loss in the human population of about 10% in these years, and many peasant smallholders abandoned their landholdings, becoming vagrants and refugees.

Over the next few decades the level of population was unable to recover fully, and it suffered a more lasting reduction in the greater mortality of the Black Death in 1348–9 (Kershaw 1973, 10–14, 29, 46, 49–50; Rawcliffe 1999, 14–15). The Harmondsworth court roll of July 1349 and an accompanying list of heriots (death duty) record deaths of at least 46 tenants in that year. While some of the larger holdings had passed to heirs, most of the cottages and smaller holdings were still in the lord's hands (WC 11437-8). There were later visitations of the plague in 1361–2, 1369, 1374–9 and 1390–3, which had more long-term effects on the capacity for recovery.

In these circumstances many manors found it difficult to find tenants to work the customary holdings. Houses and lands were deserted. In 1402 and 1404 Harmondsworth tenants were being fined for allowing their tenements to become ruinous (LMA Acc 446/EF/1/1 mm1, 2; WC 11441). The more prosperous peasants took advantage of the shortage of tenants to increase their land holdings. At Harmondsworth and Longford in 1433/4 and 1450/1 there were still some vacant holdings in the lord's hands, and a number of cottages had been let at reduced rents. Some holdings had been incorporated into the demesne arable and the site of one cottage by the heath at Sipson had been lost (*VCHM* ii 74; TNA: PRO, SC 6/1126/7 mm1, 2, 2d, 3, 4d; WC 11504 mm1, 2).

In the general shortage of labour which followed the reduction of the population, the balance of advantage swung to the tenants against the lords. Hired labour was often substituted for customary works, the annual labour services owed to a manor by its unfree tenants. Lords moved away from direct exploitation of their manors and began leasing out their demesnes in the second half of the 14th century, especially the major landlords with many manors. At first this was a temporary expedient, but as the lease arrangements became more permanent, most labour services due from the tenants were abandoned. However, some manors continued with the direct management of their demesnes until the second half of the 15th century, relying on the customary labour of their tenants (Fryde 1996, 76, 113-14; Campbell 2000, 430-1, 436). At Harmondsworth the tenants organised a campaign of obstruction and vandalism to undermine the manorial economy, a common course of tactics (Fryde 1996, 32). Harvest boon-works (specific days of labour services) were still being demanded of the tenants and performed at Harmondsworth in the late 14th and early 15th centuries, although some works had been commuted; disputes over services and heriots continued into the early years of the 15th century (*VCHM* ii 71; TNA: PRO, SC 6/1126/7 mm1, 3, 3d, 4d; SC 12/11/20; WC 11502-4). In the 16th century the buildings and lands of the manor were leased out (TNA: PRO, SC11/450).

The increased emphasis on livestock in the 15th century led to the enclosure of some common field land in Stanwell. Between 1488 and 1517 Edward Bulstrode enclosed 140 arable acres in the west part of the parish and converted them to pasture, making three ploughs redundant. Andrews Windsor, the lord of the manor, also enclosed a smaller area at this time, comprising half a ploughland (*VCHM* ii 89; iii 44).

Former assarts can be recognised on later maps by series of fields forming lobe shapes, or intruding into wooded or heathland areas, sometimes containing looped secondary settlements; and also by field names such as *Stocking*, *Ridding*, *Ley* and *Hayes* (Sloane *et al.* 2000, 213). Fields in Stanwell in *c* 1252 included *Savoriesrudinge* (*CAD* ii 75 no A2408). This was conveyed in 1471 as *Savereysrydyng*, enclosed with ditches and with an acre of arable land on its south side, by William and Alice Peryman of Borough (BL Additional Charter 27216). It may therefore have been one of the enclosed fields in the excavated area (Area 49). The shape of Borough Field itself suggests that it may have originated as an early and extensive assart into the heathland along the northern boundary of the manor. In Harmondsworth parish the shape of the south-west part of Heathrow Field suggests that it was an assart into Hounslow Heath, with

Heathrow established as a looped settlement on its fringe. The same may be true of the settlements at Perry Oaks and Sipson Green. At Perry Oaks in the 14th century there was a six-acre field surrounded by hedgerows called *le Ridynge* (LMA Acc 446/L1/15).

It is against this historical background that the archaeological evidence for late Saxon and medieval activity must be considered. First, however, the chronological evidence from the excavations will be briefly reviewed.

Chronological indicators for the late Saxon and medieval periods

As for the Saxon period, in the absence of scientific dating, artefacts provide the chronological evidence, primarily in the form of pottery, although there are also coins from this period.

Pottery

Pottery was the most commonly occurring medieval artefact type (1792 sherds; 19,697 g). These fabrics fall into six groups in terms of known or potential source area, including both local and non-local types:

- Surrey types, from early to late medieval, characterised by pale–firing fabrics and iron-stained quartz;
- Greywares falling within the Limpsfield/South Hertfordshire greyware tradition;
- London-type wares;
- Miscellaneous early medieval types (shelly, chalk-tempered, flint-tempered);
- Miscellaneous sandy wares probably largely of local manufacture;
- Imported wares.

A chronological framework for at least some of these wares is provided by the London type series (Vince 1985; Vince and Jenner 1991). Few of the wares, however, are very closely datable, and the best evidence in this respect is provided by the finewares, eg the decorated Kingston-type and London-type wares, and the imported wares. An attempt was made to phase features using the ceramic evidence.

Despite the relatively large quantities of pottery recovered from this area, this exercise has been hampered by the generally low level distribution within individual features—only 13 features (out of 190) yielded more than 25 sherds, and only six more than 50 sherds. Moreover, the preponderance of less closely datable coarsewares in undiagnostic body sherds precludes anything more than a broad spot date for many features. Bearing these caveats in mind, however, three ceramic phases have been defined:

- *ceramic phase 1 (cp1): characterised by the presence of early medieval wares (eg EMCH, EMFL, ESUR, etc), including Q404. Jar forms have undeveloped rims. Date range broadly 11th to 12th century.*
- *cp2: appearance of Kingston-type wares (dated from c 1230 in London) and greywares, generally dated as 13th century; also a few London-type wares. Jar forms generally have developed rims; wider range of forms, including glazed and decorated jugs.*
- *cp3: appearance of later medieval Surrey wares such as Coarse Border Ware (from c 1270 in London), Cheam-type and 'Tudor Green' (both late 14th/15th century).*

(Mepham, CD Section 3)

The first two ceramic phases are the best represented amongst the pottery assemblage (approximately 55% and 41% of the total respectively by weight), with only sparse evidence for cp3. The ceramic phases have been used in conjunction with stratigraphic evidence to provide at least a relative framework within which to consider the various medieval elements of the site. Throughout this report, in descriptions of pottery, ceramic phase 1 equates to 'early medieval', ceramic phase 2 to 'medieval' and ceramic phase 3 to 'late medieval'.

Coins

Ten medieval coins were recovered from the excavations, of which nine, and possibly all ten, are hammered silver pennies. Six of the ten could be closely dated, with the earliest a silver penny of William I (AD 1066–1087) (Plate 5.8) and the latest a penny of Edward I (AD 1272–1307). Of these, only the coin of William I is unusual as a site find. Of these ten coins, however, only five came from stratified contexts, within four features. Three of these were within Area 49, and one in Area 51. Details are given in Table 5.9.

Plate 5.8: Silver penny of William I

Object No.	Context	SG	Details	Date
13194	552066	552098	Silver penny, William I; obverse: 'Canopy type', text illegible	AD 1070-2
13031	529062	527197	Silver Long Cross penny with three pellets, unknown issuer; quartered	Medieval
13173	537154	537164	Silver penny, illegible; unknown issuer; quartered	Medieval
13172	537154	537164	Silver Short Cross penny with four pellets; unknown issuer; quartered	AD 1180-1247
13001	539085	539098	Silver Short Cross penny, Henry II; minted Northampton; halved	AD 1154-89

Table 5.9: Medieval coins

Other finds categories

Chronological evidence from other medieval finds categories is extremely limited. Finds types include metalwork and ceramic building material, of which the latter cannot be dated more closely within the period. As for metalwork, of the 28 objects from medieval contexts (excluding obviously residual and intrusive objects), only one is datable—a horseshoe of typical medieval type (Clark 1995, type 2b; 11th to 13th century) from ditch 517237.

Problems and caveats

Any chronological study has to take into account the taphonomic processes that lead to artefacts entering features. Depositional processes may result in datable material entering features in a non-primary context. For example, finds discarded *in situ* (eg within a living area) may subsequently be cleared out for redeposition on to a midden or rubbish dump, where material may accumulate over a considerable period. The midden deposits themselves may then be utilised for manuring purposes, and the incorporated finds thus redeposited again across the manured fields.

These processes can be postulated within the medieval settlement in Area 47/49, where it is clear that pottery within the enclosure ditches and waterholes is chronologically mixed. Coins, too, add to the chronological mix—the coin of William I came from a ditch in Area 51 also containing 13th century pottery. Coins, of course, may circulate for many years between issue and deposition, and curation may also play a part here.

The problems of dating are also compounded by the continued cleaning out of features during their period of use. This is certainly true of the enclosure ditches within the medieval settlement in Area 47/49, where the original primary fills were not preserved. Any dating evidence contained within these ditches, then, would belong to the final silting and not to construction date and use.

Palaeo-environmental evidence for the late Saxon and medieval periods

The environmental samples—in the form of charred and/or waterlogged plant remains, charcoal and pollen—from medieval features at Terminal 5 are shown in Table 5.10. No samples of insects, mollusca or soil micromorphology were analysed from medieval contexts.

Charred cereals in the medieval samples were fairly poorly preserved but reasonably frequent. The cereal grains were often vacuolated ('puffed up') and there was some surface erosion. Vacuolation is common in bread-type wheat grains that have been charred at high temperatures, because the high gluten content makes large air pockets appear. This often leads to fragmentation due to increased fragility. Distortion during charring and fragmentation during redeposition meant that large numbers of grains could not be identified or accurately counted in some samples.

(Carruthers, CD Section 14)

Some woodland regeneration is evident, although it is unclear whether this process began during the Saxon period or later.

The two waterlogged features [waterholes 569022, 529139] both produced abundant evidence for the presence of trees, and these must have grown close to the features as buds, twigs and leaf fragments were frequent as well as fruits and seeds. The waterhole contained mainly oak remains. Although some of this tree growth may have occurred after the features were abandoned and there was an increase in the occurrence of acorn fragments towards the top of the feature, acorn fragments were also found towards the bottom of the feature so woodland must have existed close to the waterhole while it was in use. This is similar to the situation during the Bronze Age, although at that time thorny taxa were predominant suggesting hedgerows rather than woodland. During the Iron Age and Roman periods the waterholes were located in very open, grassland environments.

(Carruthers, CD Section 14)

Area	Feature	Context	Sample	Charcoal	CPR	Pollen
17	Pit 546437	546438	18459	-	Yes	-
		546439	18455	-	Yes	-
		546439	18458	-	-	Yes
		546440	18426	-	-	-
49	Ditch 529241	538020	16502	Yes	-	-
49	Pit 537105	537109	17063	Yes	-	-
		537109	17065	-	Yes	-
		537110	17066	-	Yes	-
49	Waterhole 529139	-	17518	-	-	Yes
		529149	17059	-	Yes	-
		529159	17518	-	-	Yes
		568018	17046	-	Yes	-
		568019	17054	-	Yes	-
		568022	17056	-	Yes	-
49	Waterhole 569022	569029	17068	-	Yes	-
		569030	17069	-	Yes	-
		569031	17070	-	Yes	-
		569035	17072	-	Yes	-
		569035	17073	-	Yes	-
51	Ditch 559118	559109	15507	Yes	Yes	-
58	Pit 658047	658048	26035	-	Yes	-
61	Kiln 523075	523077	19136	Yes	-	-
77	Pit 562018	562020	15044	Yes	Yes	-

Table 5.10: Palaeo-environmental evidence from medieval features

Likewise, the growth of the heathland is of uncertain date, although palaeo-environmental evidence suggests its presence from the latter half of the 2nd millennium BC (Framework Archaeology 2006, 164). To the south-east of the excavated area lay Hounslow Heath. Palaeo-environmental evidence from Saxon features suggests that within the excavated area at least the heathland was not yet exploited at that period, in contrast to other sites to the east *(see Challinor, CD Section 15)*. By the 13th century, however, these areas of manorial waste were regarded as part of the property of the lords of the manors, with the tenants having common grazing rights on them (Williamson 2004, 92). A keeper of the heath was appointed in the Harmondsworth manor court in 1377 (*VCHM* iv 15). Vegetation was also cut on the heath and regarded as a valuable asset. Thorns and heather were sold by the manor and rents were paid for turf-cutting by the millers of neighbouring parishes (TNA PRO, SC 6/1126/7 m1; SC 11/449 m3; SC 12/11/20 m1; WC 11451 m4; 11501 m1; 11502 m1; 11503 m1; 11504 m1).

Three samples produced small quantities of charred ericaceous fruits, the origins being a ditch and two pits in Areas 51, 58 and 77. All of these areas are on the southern edge of the excavated area. However, waterlogged ericaceous remains were not found in the waterhole samples. Heathland, therefore, may not have been located adjacent to the settlement features, but was probably close enough to make gathering vegetation for fuel worthwhile.

(Carruthers, CD Section 14)

The inherited landscape

How much of the earlier landscape survived into the medieval period? Information comes from the alignments of archaeological features, and also from palaeo-environmental evidence. The sporadic and spatially limited evidence for Saxon activity within the excavated area leaves little scope for assessing continuity over the previous half millennium. We may, however, be able to look farther back for the origins of some elements of the medieval landscape. There are hints from the palaeo-environmental evidence, for example, that Roman hedgerows survived into the Saxon period and beyond *(see above; Challinor, CD Section 15)*, and that this survival could be part of a wider survival of Roman *pagi* or land divisions to formalisation within the late Saxon system of hundreds.

Figure 5.14: Medieval field system overlaid on earlier (Bronze Age) field systems

More interesting, however, is the evidence for the survival of Bronze Age field alignments into the medieval period (Fig. 5.14). This was observed particularly within the field system across Areas 47 and 49, for example, north-south ditch 526228 and its recut, which contained no pottery yet were seen to truncate the upper fills of medieval waterhole 533018 (see Fig. 5.24 below). The enclosure to which these ditches appear to belong contains only Middle/Late Bronze Age pottery (with Bronze Age Settlement 2; see Chapter 3), yet on the basis of the ditches cutting the waterhole, it appears this enclosure may have been in use in the medieval period, possibly existing as a bank and hedge.

Late medieval place names in Stanwell parish may commemorate then extant monuments from an earlier era, for example, Borough Field on the 1748 Stanwell estate map (*Borrowefelde* in 1544), near the boundary between Harmondsworth and Stanwell, may derive from *beorg*, meaning a hill or mound. In this generally flat terrain a man-made feature such as a barrow was perhaps deliberately used to mark the boundary. There is some archaeological evidence for Bronze Age barrows in the vicinity (O'Connell 1990, 7). Alternatively, *beorg* could refer to the C1 Stanwell Cursus, which is known to have been extant as a very low mound in 1943 (see Chapter 2). Another alternative derivation for the name is discussed below, in relation to the Burrow Hill enclosure complex. Land divisions marked on the 1748 map to the north of Stanwell village, 'perpetuate earlier boundaries noted on the aerial photographs of the field and subsequently excavated in 1977 and 1979' (O'Connell 1990, 7), as well as within the Terminal 5 excavated area. Equally intriguing is the suggestion that medieval features excavated to the north of Park Road, Stanwell, followed the same alignment as the Neolithic cursus, although Bronze Age, Roman and Saxon linear features in the same area appear to ignore the cursus (ibid., 60).

In the following section, we will relate the archaeological evidence from the Terminal 5 excavations to the post-medieval cartographic evidence, and in doing, disclose the identity of a possible lost settlement.

Burrow Hill: a lost settlement?

Within the area excavated, medieval activity was concentrated in Area 49, represented by a series of enclosures and post-built structures lying within a field system (Fig. 5.15). The origins of this complex appear to lie early in the medieval period (11th or 12th century), although of particular interest is the fact that some of the ditches seemed to reuse Bronze Age alignments, in some cases actually recutting on the same line. The field systems will be discussed further below, but first the development of the possible settlement focus will be explored.

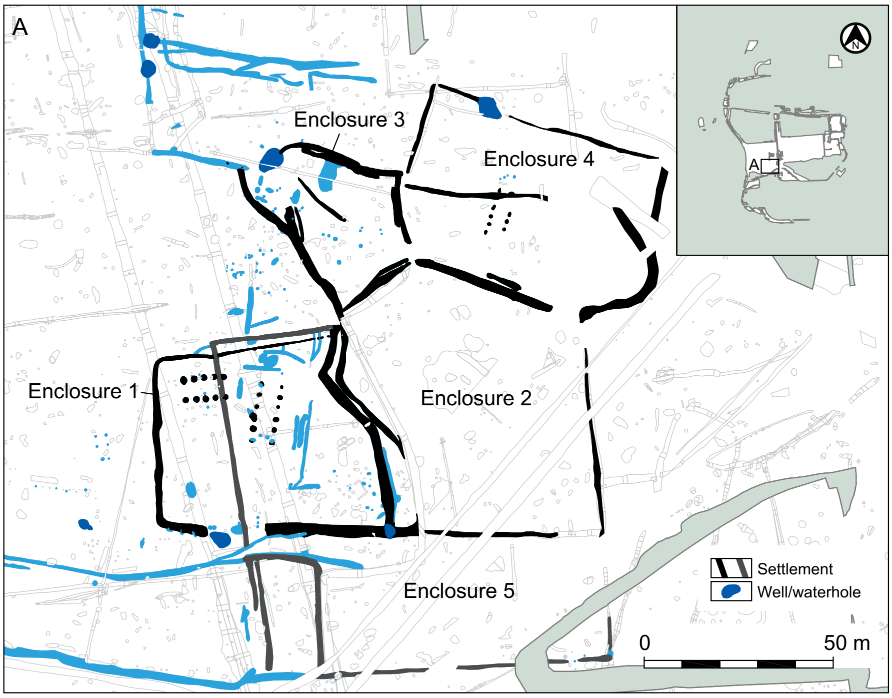
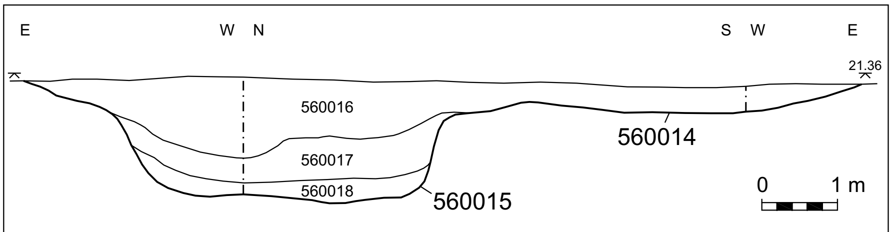


Figure 5.15: Medieval settlement at Burrow Hill

Enclosure 1

This appears to be the earliest element within the complex of enclosures within Area 49, and comprises a roughly rectangular enclosure approximately 50 m by 40 m, enclosing an area *c* 1.8 hectares (Fig. 5.16). Within the enclosure at the northern end are two rectangular post-built structures (Buildings 1 and 2), and several pits and gullies apparently associated with them. At the southern end, and within the entranceway of the enclosure, are a large waterhole (569022) and a smaller pit (537105), while another pit lay within the south-west corner of the enclosure (555453) (see Fig. 5.18 below). Not all of these features are necessarily contemporaneous; the precise layout of the enclosure, its development, and its relationship with internal features, is a matter of some conjecture, as will be explored further below.



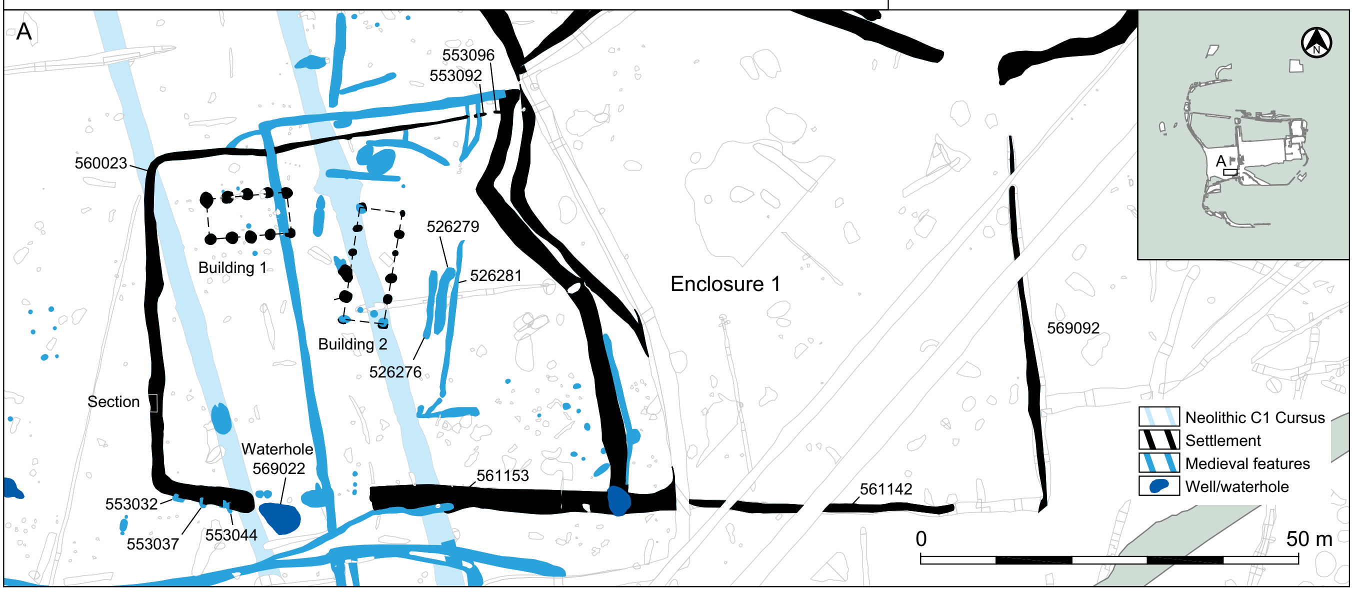


Figure 5.16: Enclosure 1

Ditch 560023 forms the western and northern flank of the enclosure with a short return to the east at its southern extent, terminating in the western cursus ditch. The southern flank is associated with three large post-pit features (553032, 553037, 553044); all are substantial, *c* 1 m in diameter. Their function in relation to the ditch is uncertain, although they are certainly all cut by it. They may have formed part of a pre-existing structure removed when the ditch was constructed, the ditch subsequently following their alignment, which might explain the slight deviation from a right-angle at the south-west corner of the enclosure.

The north-western corner reflects the layout of Building 1, and the northern flank kinks slightly to the north as it heads eastwards, seemingly to take in a group of features to the north of Building 2. Two heavily truncated gullies (553092 and 553096) may continue the ditch line in the north-east corner, but no return to the south is visible here. Further to the south on the eastern side, however, there are three possibilities for the boundary—ditch 526281 and the shorter lengths of 526276 and 526279. All run parallel to each other, and their inter-relationships are unknown (only 526276 produced any datable material), although the most likely explanation is that they represent re-use of a single boundary line. All three of these eastern ditches appear (from concentrations of gravel within fills) to have had a bank on the eastern side.

SG	Burnt flint		Fired clay		Flint	Iron	Pottery		Slag		Stone	
	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)
526276	-	-	-	-	-	-	2	6	-	-	-	-
560023	3	91	11	117	3	1	38	335	2	607	3	497

Table 5.11: Finds from Enclosure 1

The south-eastern corner remains unclear. On the eastern side of the entrance, the ditch appears to continue as 561153, which itself is a recut of an earlier ditch (561142). The latter is dated to the Late Bronze Age on the basis of flint and a single sherd of pottery, but the dating remains ambiguous on such scanty evidence. It is possible that ditch 561142, and its return to the north on the eastern side (569092, which contained a handful of Late Neolithic, Early Bronze Age and Middle Iron Age sherds), in fact marked the original extent of the earliest enclosure, which was later subdivided into Enclosures 1 and 2. There is, however, no definitive evidence to prove this one way or the other. It may be noted that the eastern ditch (569092) follows the same alignment as the eastern side of Enclosure 5 (see below).

There is little dating evidence from the enclosure ditches themselves (see Table 5.11), with the northern and most of the western flanks being conspicuously lacking in finds. What pottery there was came almost entirely from the south-western corner, with two sherds from ditch 526276 on the eastern side. Of the other finds, the flint and possibly the burnt (unworked) flint are residual. The pottery consists exclusively of early medieval wares (dated *c* 1050–1200), including Early Surrey types and London-type coarseware. Also of interest amongst the finds from ditch 560023 is a plano-convex hearth bottom, suggesting iron-smithing in the near vicinity.

Plate 5.9: Building 1

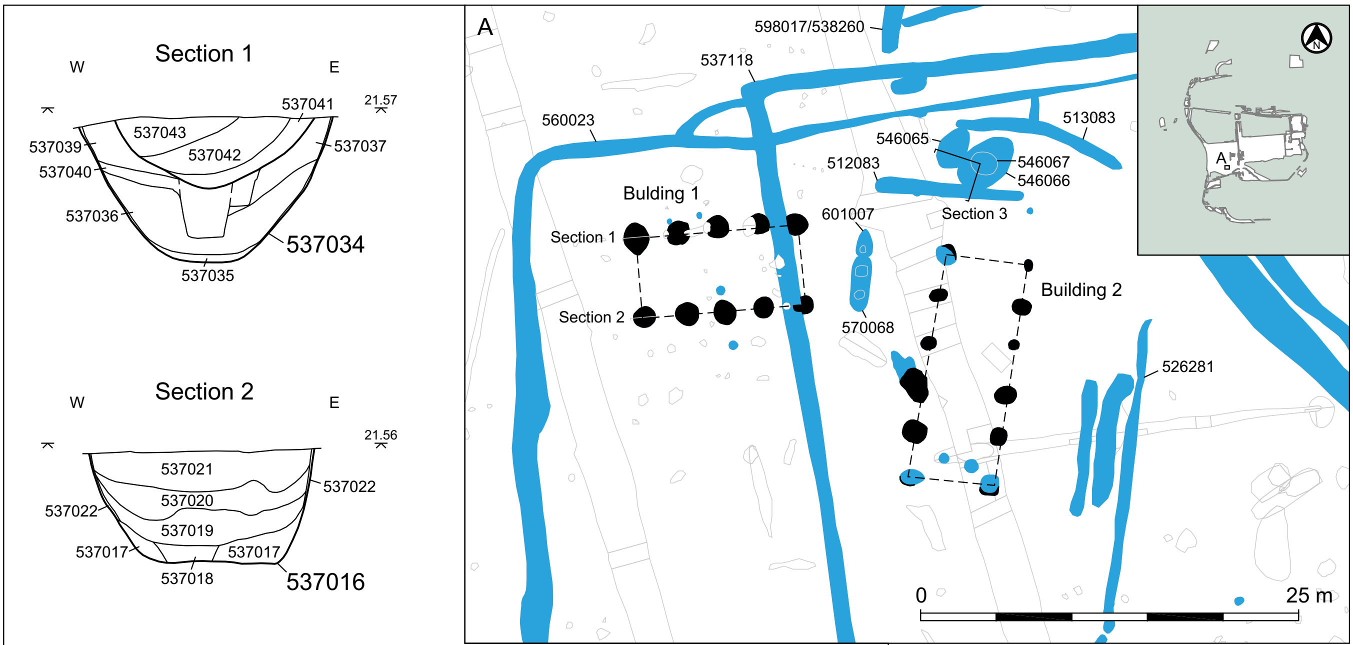
The purpose of the enclosure ditch is unclear. At points it is too shallow for a boundary ditch (although this may be due to heavy truncation) and too flat for drainage. Its nature and depth vary enormously. Towards the south-west corner, it is flat bottomed, very shallow, and becomes quite wide (nearly 2.5 m) where it terminates in the cursus. North of the beam slot it is U-shaped and narrows progressively.

The ditch encloses two post-built structures (Buildings 1 and 2), a group of gullies and pits in between these structures and the northern ditch of the enclosure; and one other large pit in the south-east corner (555453). In the entrance to the enclosure are another large pit (537105) and a waterhole (569022), and various postholes.

Building 1

This structure comprises two rows of five postholes aligned east-west, all of similar form and dimensions (Fig. 5.17; Plate 5.9). Overall the dimensions are 10.5 m by 4.8 m, with an area of approximately 50 square metres. Only one posthole (537034) shows good evidence of a post-pipe, but it is probable that the posts were removed during deliberate demolition rather than left to rot *in situ*. At least two postholes (537034, 570027) show signs of having been deliberately robbed. The two postholes on the eastern end of the structure (537056 and 537068) are cut by north-south ditch 537118.

The location of the structure seems to have been placed quite fortuitously between the ditches of the cursus (Fig. 5.16). Given that the cursus is known to have survived as a very low mound as late as 1943 (see Chapter 2), it was



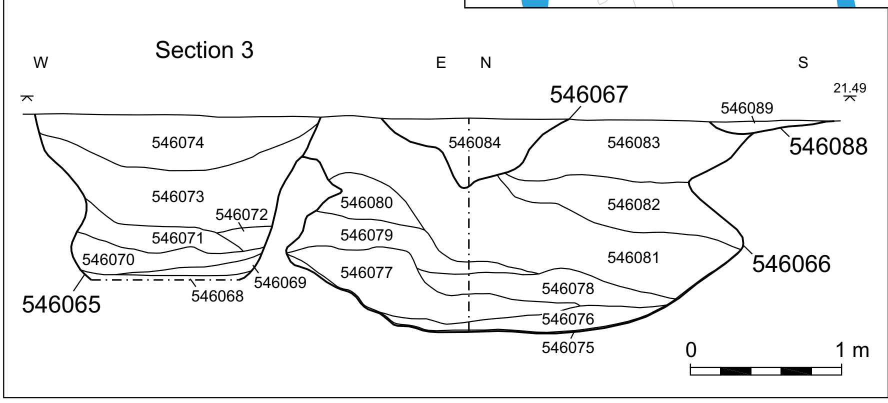


Figure 5.17: Buildings 1 and 2, and adjacent features

presumably extant in the early medieval period. The postholes, however, show no difference in depth across the structure, and the positioning of Building 2 (see below) suggests that it was not a significant landscape feature at this time. The alignment of Building 1 echoes that of the northwest corner of Enclosure 1—either the structure was deliberately placed here within the enclosure, or the enclosure ditch was dug around it, and respecting it, once erected.

The majority of the dating evidence from this structure (Table 5.12) comprises worked flint, of mixed date from Mesolithic to Bronze Age, as might be expected from a structure located in between the cursus ditches. There is also a significant amount of burnt, unworked flint, probably also of mixed prehistoric date. Of the five sherds of pottery, three (from 537016) are Late Bronze Age, one (from 537093) is Roman, and one (from 537023) is early medieval (Early Surrey ware).

Building 2

This structure comprises two rows of six postholes, aligned NNE-SSW (Fig. 5.17). Unlike Building 1, the postholes vary in size and depth. The overall dimensions are 15.3 m by 5 m, covering an area of approximately 73 square metres, and it lies obliquely across the eastern cursus ditch, at an approximate right angle to Building 1. As in the latter structure, it seems that the posts were removed in a deliberate act of demolition; at least five postholes show evidence of robber cuts. None had visible post-pipes.

The dating of this structure relies solely on its morphology and relationship with Building 1 and Enclosure 1; the only finds recovered from the postholes comprise three flint flakes and a small sherd of Late Bronze Age pottery. These artefacts all came from postholes that cut the fills of the eastern cursus ditch.

What were Buildings 1 and 2 used for?

The architecture and function of the two structures is uncertain. From the size of the majority of the postholes, they contained quite substantial posts, and the internal areas are relatively spacious (see artist's reconstruction in Plate 5.10). Either would have been

SG	Burnt flint		CBM		Fired clay		Flint	Pottery		Stone	
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	Wt. (g)	No.	Wt. (g)
537034	-	-	-	-	2	7	-	-	-	-	-
537044	-	-	-	-	1	1	3	-	-	-	-
537056	-	-	-	-	-	-	3	-	-	-	-
537016	33	341	-	-	4	4	184	3	11	4	1326
537082	-	-	-	-	-	-	4	-	-	-	-
537023	72	659	-	-	1	1	211	1	2	1	173
537093	2	7	2	17	1	1	2	1	15	-	-
Total	**107**	**1007**	**2**	**17**	**9**	**14**	**407**	**5**	**28**	**607**	**1601**

Table 5.12: Finds from Building 1

Plate 5.10: Artist's reconstruction of the interior of the medieval barn (Building 2)

Plate 5.11: Artist's reconstruction of the view from the medieval barn (Building 2) to the domestic medieval building (Building 1)

large enough for a range of activities. An interpretation as living accommodation is possible (eg see Plate 5.12), but there are no internal features such as hearths that would support this. Pottery from the late 11th/12th century, which is the presumed date for construction of Enclosure 1 and the two buildings, is relatively scarce—a smattering was found in the enclosure ditches and in some of the internal features, but this is insufficient evidence for intensive use as habitation.

As for construction technique, this could have followed either of two methods within the earthfast tradition. In the first, the walls were constructed with tie beams resting on the tops of pairs of opposing posts, the roof then raised from a wall plate placed on top of the tie beams. The building plan in this case might show some irregularities, as there would be no need for the lines of posts to be absolutely straight, as they were not linked by a wall plate. In the second method, the wall plate rested directly on the post tops. The posts would in this case need to be in straight lines, but there would be no need for equally spaced posts (Brunskill 2004, 26). In Building 1, the post settings are regularly spaced and may be an indicator of tie beams resting directly on the post tops, while Building 2 shows more irregularity, although the posts are in straight lines, suggesting the presence of wall plates, as opposed to tie beams. The absence of ceramic roofing material indicates the use of thatch; even if the buildings were deliberately demolished and materials reused, some fragmentary roof tile at least would have been left behind. As for walling material, the postholes of Building 1 contained fired clay in both packing fills and upper fills, and in post pipes, possibly indicative of structural material such as daub.

Features adjacent to Buildings 1 and 2
To the west of Building 2 are two short, contiguous lengths of gully (601007 and 570068), both of which contained posthole remnants at the base, although it is unclear whether postholes and gullies were contemporaneous, or whether the gullies truncated pre-existing postholes (Fig. 5.17). Whatever the sequence, these lengths of gully may mark a division of space between Buildings 1 and 2, but the six sherds of pottery from 570068 (601007 was devoid of finds) included greyware of 13th or early 14th century date (ceramic phase CP2), that is from a later phase than the initial construction of the enclosure and buildings. An alternative explanation could be proposed by observing the possible continuation of the two gullies to the north, outside the enclosure, as 598017, recut as 538260; the recut contained a single sherd of early medieval pottery.

Plate 5.12: Artist's reconstruction depicting domestic function for medieval building (Building 1)

A number of other features may or may not be related to the two structures; these are located immediately to the north of Building 2, and just inside the northern enclosure ditch—pits 546065, 546066 and 546067, and short lengths of gully 512083 and 513083 (Fig. 5.17).

The sequence in which these features were cut and used is not entirely clear. Pit 546066 is cut by pits 546065 and 546067, and by gully 512083; there are no clear relationships with gully 513083, but the proximity of 513083 to pit 546065 indicates that these two features were not contemporaneous. Gully 513083, however, seemingly respects the position of the earliest pit 546066. Pottery dating is not helpful—there is very little of it, but all five features produced either Kingston-type wares or sandy greywares, dating to the 13th or early 14th century, in other words, potentially contemporaneous with gullies 601007 and 570068. Again, function is unclear. Gully 512083 forms a right angle with the projected line of gully 570068 and could be further evidence of subdivision of the enclosure, or control over access to the post-built structures. The pits do not seem to have been used for primary refuse disposal, and the overhanging section of 546066 (which appears to be deliberate and not a result of erosion) would perhaps be more suited to cool storage conditions.

Features at the southern entrance
Several features clustered around the southern entrance to Enclosure 1—three pits (555453, 537105 and 537115), two postholes (537098, 537100) and a waterhole (569022). The two postholes (537098 and 537100) were located next to each other, immediately to the north of waterhole 569022; their function may have been connected to the latter feature. Four sherds of early medieval pottery came from 537098. Pit 537105 was an oval feature situated approximately midway between the two terminals of the enclosure ditch, and on a similar alignment; it does, however, appear to be a discrete feature and not part of the ditch. The dating also differs—this feature produced pottery of 13th/14th century date, albeit alongside sherds of early medieval pottery in good condition, including a complete jar profile (Fig. 5.18, 1). It was cut by a smaller, circular pit (537115), and the Enclosure 5 ditch 537118, both of which contained pottery of a similar date.

Waterhole 569022 was apparently located directly within the entrance into the enclosure. In common with other waterholes in Area 49, it was pear-shaped, with a gradually sloping access from the west; it contained a series of gradually accumulating deposits laid down in standing water. Finds were relatively prolific, although

Figure 5.18: Features at the southern entrance to Enclosure 1, with section of waterhole 569022, and pottery vessels

consisting largely of pottery, and occurred throughout the sequence of fills (see Table 5.13). Pottery from the lower fills was exclusively of early medieval date (Early Surrey wares, as well as chalk-tempered and flint-tempered local wares; see Fig. 5.18, 2), suggesting that the waterhole was constructed, and started to infill, in the late 11th/12th century—in other words, contemporaneous with the ditches of Enclosure 1. Although early medieval wares formed the bulk of the assemblage throughout the fill sequence, greywares appear in the middle fills, while pottery from the uppermost fills shows that the waterhole was still in use in the late medieval period, perhaps only abandoned in the late 14th or 15th century. Palaeo-environmental evidence from the waterhole is of interest.

Charred plant remains were present in fairly low concentrations in all five samples. The general character of the assemblages was very similar down through the profile, with cereal grains being the dominant components. Weed seeds were fairly scarce and limited in species range. Small-seeded weedy legumes (vetches and tares) and stinking chamomile seeds were the main taxa represented. The dominance of these two taxa indicated that nutrient-poor, heavy, damp soils were being cultivated. Apart from the cereals, cultivated vetch, possible pea and a sloe, cherry or plum (Prunus sp.) stone fragment were the only other remains of economic importance. Mixed burnt domestic waste appears to have been represented.

Compared to the overall average ratio of wheat to barley to oats to rye, the samples from this feature produced slightly lower

SG	Animal bone		Burnt flint		CBM		Flint	Pottery	
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	Wt. (g)
569023	8	20	-	-	-	-	-	49	736
569024	9	9	-	-	-	-	-	165	2069
569027	-	-	-	-	-	-	-	11	105
569028	-	-	-	-	-	-	1	36	593
569029	-	-	-	-	-	-	1	2	29
569030	-	-	-	-	-	-	-	7	91
569031	-	-	3	29	-	-	1	6	94
569035	-	-	-	-	-	-	-	3	64
569032	5	20	2	9	2	92	-	11	121
569034	2	97	-	-	1	242	5	14	451
569033	-	-	6	28	-	-	-	29	455
Total	**24**	**146**	**11**	**66**	**3**	**334**	**8**	**333**	**4808**

Table 5.13: Finds from waterhole 569022

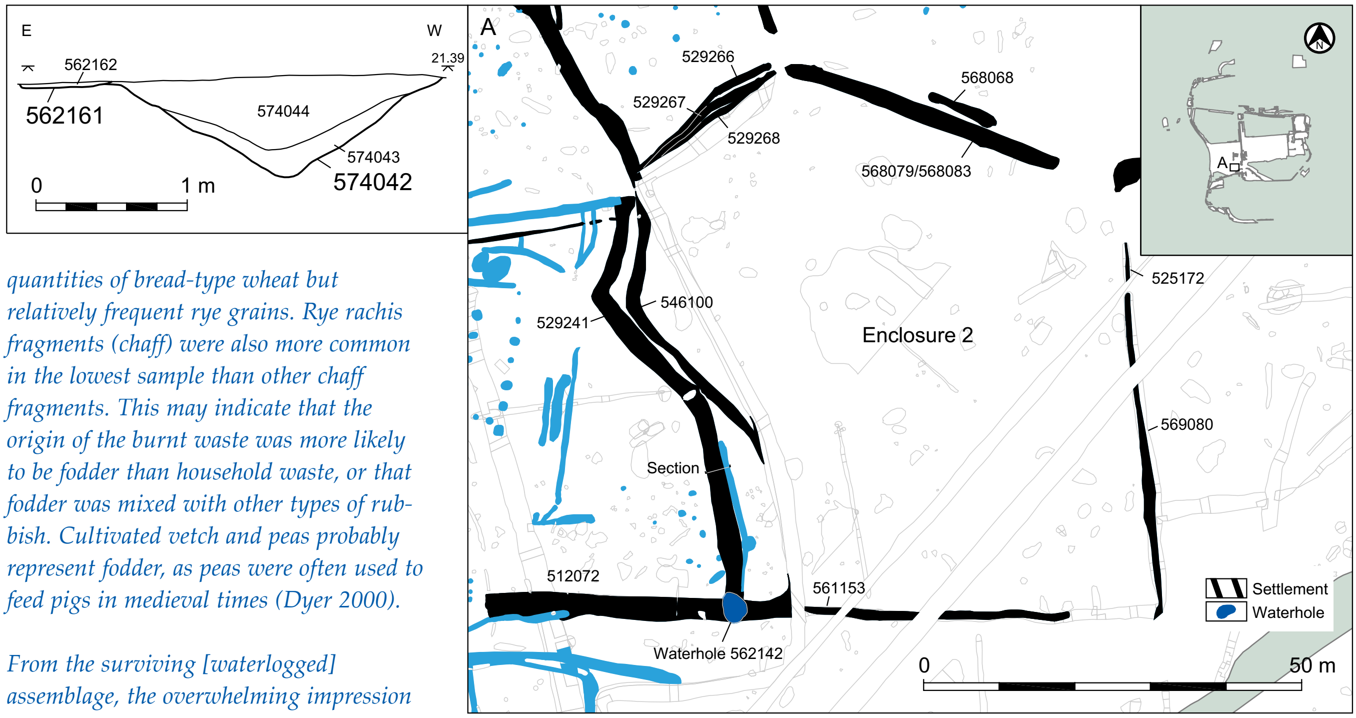


Figure 5.19: Enclosure 2

quantities of bread-type wheat but relatively frequent rye grains. Rye rachis fragments (chaff) were also more common in the lowest sample than other chaff fragments. This may indicate that the origin of the burnt waste was more likely to be fodder than household waste, or that fodder was mixed with other types of rubbish. Cultivated vetch and peas probably represent fodder, as peas were often used to feed pigs in medieval times (Dyer 2000).

From the surviving [waterlogged] assemblage, the overwhelming impression was one of an open vegetation on soils with high nutrient levels. Apart from hemlock which prefers damp soils, no aquatic or marsh taxa were present, even though seeds such as sedge have tough seed coats. Some of the remains were from poisonous plants with medicinal uses (hemlock, henbane), whilst others were from edible taxa (elderberry, mallow, and possibly fat hen and orache). However, use of these plants is difficult to prove since all of the taxa would also be well-suited to growing in a disturbed, nutrient-rich, damp habitat like as a midden or farmyard.

(Carruthers, CD Section 14)

Enclosure 2

Enclosure 2 either extends Enclosure 1 to the east (ditches 568079, 568083 and 52966/52967/52968) or was a sub-division of it (ditches 512072, 529241 and 546100). The subdividing ditches 529241 and 546100 cut off any access from the western end of Enclosure 1, but there are other access points into Enclosure 3 to the north, and possibly at the north-eastern corner (Fig. 5.19). On the eastern side ditches 569080 and 525172 appear to provide the boundary, although these produced only Bronze Age pottery (ditch 569080 is a recut of Bronze Age ditch 569092). On the north-eastern side, a short parallel length of gully (568068) may also be related to the enclosure ditch.

Morphologically, the ditches of Enclosure 2, or at least those on the northern and western sides, differ from those of Enclosure 1 in being wider, although still relatively shallow. There were at least three phases of ditch on the northern and western boundaries, while further possible phases may have been lost due to post-medieval and later medieval truncation. The general outline of the enclosure suggests a corral type area, for the containment or manipulation of livestock. It is likely that an additional access point existed at the northern end of Enclosure 2, allowing filtered access and movement towards Enclosure 3. No contemporaneous internal features were identified.

The dating evidence for Enclosure 2 is more prolific than for Enclosure 1, although still consisting only of pottery (see Table 5.14)—164 sherds in total, of which the five sherds from 569080 are prehistoric. The ditches that did produce medieval pottery are consistent in their dating—all contained Kingston-type ware and/or sandy greywares, of 13th or early 14th century date (ceramic phase CP2). Ditch 529241 also contained a single sherd of Late London-type ware, which could serve to push this into the late medieval period. In terms of dating, then, the ditches of Enclosure 2 appear to be contemporaneous with the internal features of Enclosure 1, apart from the post-built structures.

Other functional evidence is confined to two joining but very abraded fragments from a Nierdermendig lava quernstone, probably from a rotary quern.

SG	Animal bone		Burnt flint		Fired clay		Flint	Pottery		Stone	
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	Wt. (g)	No.	Wt. (g)
529241	5	2	5	75	8	19	2	44	676	2	270
529266	-	-	-	-	-	-	-	27	239	-	-
529268	-	-	-	-	-	-	-	52	387	-	-
546100	5	5	-	-	-	-	-	8	62	-	-
568068	-	-	-	-	-	-	-	26	334	-	-
568079	-	-	-	-	-	-	-	2	22	-	-
569080	-	-	10	21	-	-	11	5	8	-	-
Total	**10**	**7**	**15**	**96**	**8**	**19**	**13**	**164**	**1728**	**2**	**270**

Table 5.14: Finds from Enclosure 2

Enclosure 3

This enclosure comprises several phases of ditch, butting onto the northern boundary line of Enclosure 2 (Fig. 5.20). The initial phase comprised two gullies (603039 and 546107), converging towards the focal waterhole 539129 (Plate 5.13). This was then extended by the construction of a ditch alignment (529228 and 529233). It is uncertain whether these two ditches originally butted on to the northern boundary of Enclosure 2 (and, indeed, what the original stratigraphic relationship of the two enclosures was) as they were later successively recut on a slightly different alignment by 527192, 527195 and 527197. The latter three ditches do cut the northern boundary of Enclosure 2, and appear to supersede gully 546107.

The northern and eastern boundaries of the enclosure were provided by ditches 529237/529239 and 539051, later recut by 546103. Ditch 529239 appears to cut the upper fills of waterhole 529139 (see Fig. 5.21) and thus superseded the use of the waterhole. It remains uncertain if other elements of the enclosure also did so.

The focal point of the enclosure is waterhole 529139, and the design of the enclosure system appears to encourage movement (presumably of livestock) towards it (see artist's reconstruction

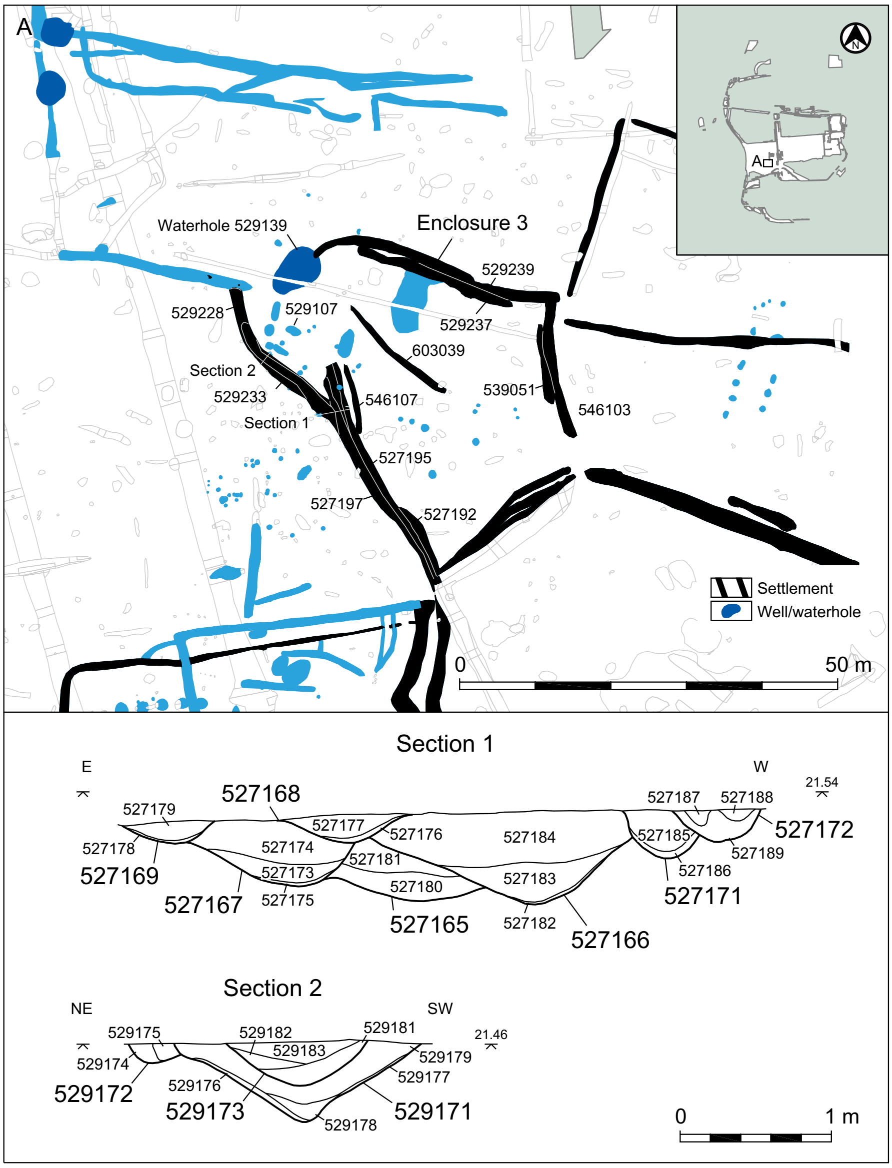


Figure 5.20: Enclosure 3

Plate 5.13: Waterhole 529139

in Plate 5.14). Furthermore, the likely access point at the northern end of Enclosure 2 would have allowed tightly controlled access into Enclosure 3.

It seems likely that a number of postholes in this area are related to animal control, possibly acting as pens or fence lines used with the ditches as funnelling systems. As some of the postholes truncate the later ditch phases it is possible that once the ditches and banks were established and stabilised that the system was further elaborated. Further structural pits and postholes at the northern end of the enclosure, close to the waterhole, may have provided additional control in the form of hurdle lines and tethering posts.

Plate 5.14: Artist's reconstruction of stock control system in Enclosure 3

Dating evidence from the enclosure ditches (Table 5.15) comes almost exclusively in the form of pottery, with most ditches containing sherds of 13th/early 14th century date (Kingston-type wares and greywares). This is also true of the internal 'funnel' gullies 546107 and 603039. Ditches 529228 and 539051 contained only early medieval wares (11th/12th century), but quantities are too small (five and two sherds respectively) to draw definite conclusions as to an early origin for Enclosure 3. Any development of the enclosure, as evidenced by the continued recutting of ditches on the western side, did not, apparently, have a lengthy history. A silver coin from ditch 527197 can only be broadly dated as medieval; the presence of a post-medieval halfpenny in a secondary fill of ditch 546103 is less easy to explain, but is presumed to be intrusive here.

SG	Animal bone		Burnt flint		CBM		Flint	Metal	Pottery		Slag	
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)	No.	Wt. (g)
527192	-	-	1	149	-	-	-	5 Fe	13	213	1	17
527197	-	-	-	-	-	-	-	1 Ag	2	17	-	-
529228	-	-	2	72	-	-	-	-	5	24	-	-
529233	9	137	-	-	-	-	-	-	3	42	-	-
529237	-	-	-	-	1	6	-	-	17	117	-	-
529239	-	-	-	-	1	47	1	-	24	205	-	-
539051	-	-	-	-	-	-	-	-	2	11	-	-
546103	9	6	-	-	-	-	-	1 Cu	5	25	-	-
546107	-	-	2	85	-	-	-	1 Fe	6	26	-	-
603039	-	-	1	32	-	-	-	-	5	42	-	-
Total	**18**	**143**	**6**	**338**	**2**	**53**	**1**	**6 Fe 1 Cu 1 Ag**	**82**	**722**	**1**	**17**

Table 5.15: Finds from Enclosure 3

Waterhole 529139

Waterhole 529139 is pear-shaped, steep-sided and circular at the north-east end, and sloping up to the south-west (Fig. 5.21). It was infilled by a series of edge slumping episodes interleaved with deposits laid down in standing water. At one point an attempt seems to have been made to halt erosion by means of a revetment comprising timber and gravel infill across the south-west end. By the time the uppermost fills were deposited the feature had ceased to hold water. The upcast material from the construction of the waterhole was deposited around the northern and western sides, restricting access from these directions.

Pottery dominates the small finds assemblage from the waterhole (Table 5.16), and wares present suggest a fairly rapid filling sequence—13th/early 14th century wares (CP2) occurred throughout, from the primary fill (529154) onwards, but there were no later medieval wares. Other finds types were sporadic, but the presence of a moderate amount of ceramic building material and slag may be significant (see below). The animal bone consists mostly of large mammals (cattle and horse), represented largely by teeth and other dense elements, making it likely that these bones eroded gradually into the waterhole rather than being deposited deliberately.

In contrast to waterhole 569022 in Enclosure 1, which produced evidence of a location within a nutrient-rich habitat such as a midden or farmyard, waterhole 529139 appears to have been situated in an area of low-level use.

The samples from waterhole 529139 are quite unlike the earlier waterholes at Terminal 5. During the Bronze Age, thorny hedgerow and woody taxa were common in the waterholes, but aquatics and nitrophilous plants were usually fairly scarce during the period of use. In the Iron Age, Roman and Saxon periods, woody taxa became scarce and grassland plants were dominant. Heathland remains, possible dung and charred cereal processing waste were sometimes dumped in the features, and nitrophilous plants were often abundant. Aquatic plants, however, were still rare. Medieval waterhole 529139 appears to have been close enough to mature oak woodland for leaves, buds, twigs and acorns to have fallen into the feature throughout the period represented by the four samples. In view of the lack of evidence for animal disturbance and the growth of aquatic vegetation, it is likely that this period was one of abandonment or very low-level use. The higher fruit and seed concentrations at the bottom and top of the sequence can be explained by differing preservation conditions and perhaps the canopy becoming more closed, making flowering less likely in most plants. Although the highest concentration of remains was at the top of the sequence, signs of decay suggested that some drying

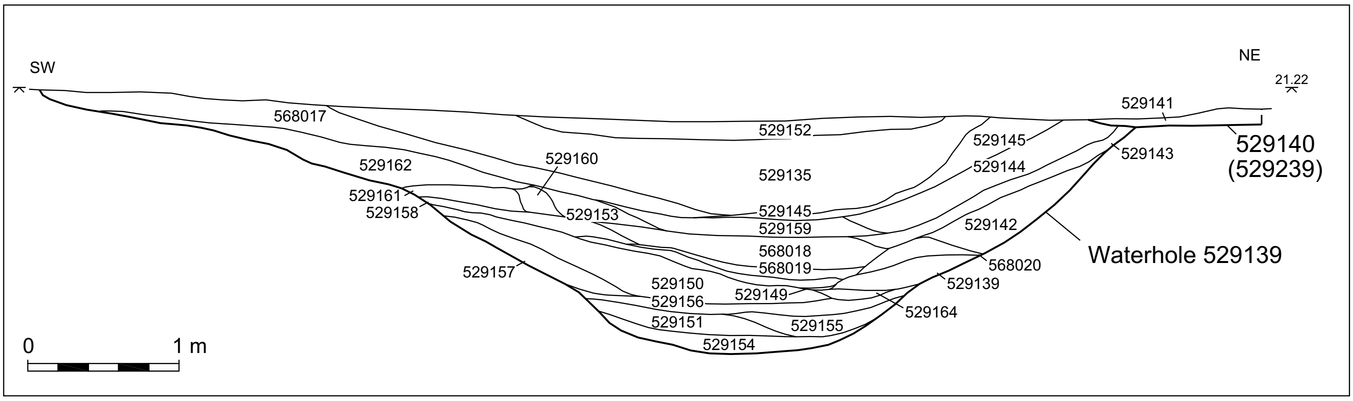


Figure 5.21: Section of waterhole 529139

SG	Animal bone		Burnt flint		CBM		Fired clay		Flint	Iron	Pottery		Slag
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)	Wt. (g)
529152	-	-	-	-	-	-	-	-	1	-	1	1	-
529135	-	-	3	55	8	276	-	-	14	3	6	52	-
568017	6	11	-	-	1	12	-	-	1	1	34	223	159
529144	-	-	1	360	16	326	15	155	1	-	-	-	-
529153	-	-	-	-	-	-	-	-	-	-	6	67	-
529143	-	-	-	-	11	445	-	-	-	-	1	7	1276
568018	14	355	-	-	-	-	-	-	-	-	1	3	260
529158	2	28	-	-	-	-	-	-	-	-	12	110	-
568020	1	2	-	-	1	38	-	-	-	-	5	26	229
529150	1	6	-	-	-	-	-	-	-		2	23	-
529157	-	-	-	-	-	-	-	-	-	-	2	11	-
529151	-	-	-	-	-	-	-	-	-	-	1	2	-
529154	-	-	-	-	-	-	-	-	-	-	1	10	-
Total	**24**	**402**	**4**	**415**	**37**	**1097**	**15**	**155**	**17**	**4**	**73**	**535**	**1924**

Table 5.16: Finds from waterhole 529139

out had occurred, leading to the loss of leafy material which would have increased the concentration of more resilient fruits and seeds. In addition, some of the aquatic plants had clearly become more established by this time. The drying out, therefore, probably occurred after the feature had been backfilled rather than while it remained open.

(Carruthers, CD Section 14)

The pollen assemblages from this feature are dominated by herbaceous taxa, primarily grass pollen, with a relatively wide range of ruderals and species associated with open/rough ground, such as daisy-type, dandelion-type, plantain including buck's-horn plantain (Plantago coronopus), and docks (Rumex undiff). The relatively high values for ribwort plantain, which may be associated with trampling by animals, suggest that some areas also carried livestock. A number of herbaceous taxa typically, although not exclusively, associated with cultivated land are also present, including goosefoots, plus members of the pea family (Fabaceae) such as bird's-foot-trefoil, clovers, and vetches/peas. Cereal-type pollen is well represented and includes oats/wheat and barley in all subsamples, and is better represented in the uppermost four levels.

Levels of tree and shrub pollen appear to be quite well represented, ranging from 15% TLP to over 20% TLP, with a peak at 0.22 m. The dominant tree pollen in all the subsamples is oak, which is responsible for the peak in the tree curve, with some ash and a relatively wide range of shrubs, including holly, honeysuckle (Lonicera periclymenum), rose family (including hawthorn-type), and elder. After the peak in tree/shrub pollen at 0.22 m depth, levels fall once again in the top of the diagram, which, interestingly, is concomitant with the increase in cereal-type and goosefoot pollen.

The results show that the environment surrounding the site was one of open grassland and rough ground, with evidence of both pastoralism and cereal cultivation, the latter perhaps becoming more important later on. Unlike some of the earlier periods at Heathrow, the landscape in this area of the site during the medieval period was slightly more wooded with oak and ash, and also contained areas of shrubs, or hedging. Ash is often indicative of secondary woodland. The pollen assemblages may, in part, represent parkland with grazed grassland and standard oaks.

(Peglar et al., CD section 16)

Functional activity in Enclosure 3
Ironworking slag (*c* 2 kg) was incorporated into the upper and middle fills of waterhole 529139 from the north-east end. Nearby pit 529107 also contained a significant quantity of slag (*c* 6 kg), and further slag came from ditch 527192 (17 g) (Fig. 5.20). This concentration of slag is indicative of localised, small-scale metalworking in the near vicinity, but there is no conclusive evidence of *in situ* deposits of burning associated with furnaces or larger scale metalworking.

Enclosure 4

The evidence for Enclosure 4 is much more ephemeral than for the other enclosures. It comprises a possible extension to the north and north-east of Enclosures 2 and 3 respectively, utilising ditches 568079/568083 and 546103 respectively as its southern and south-

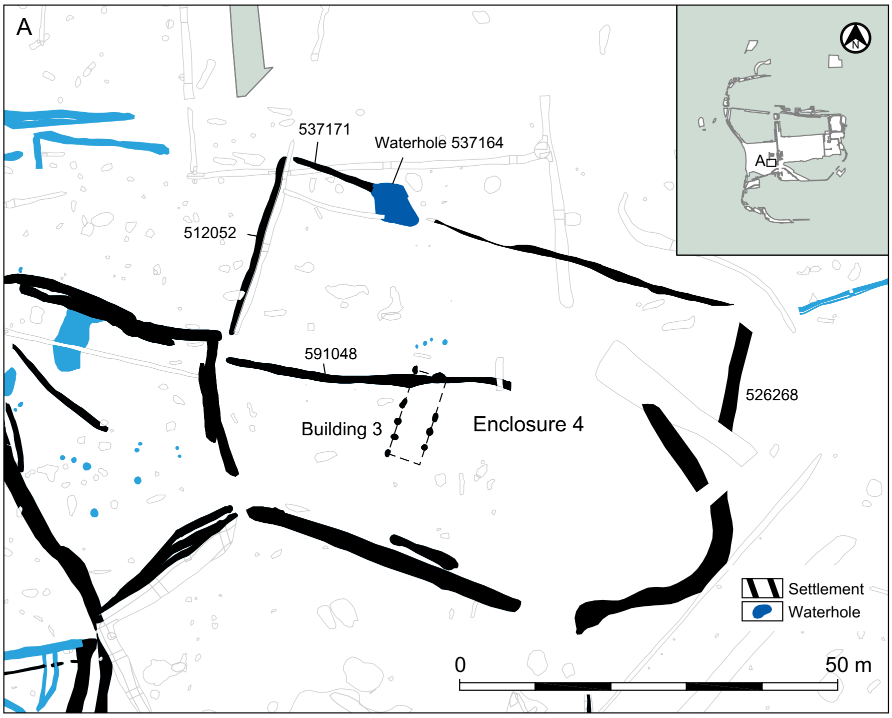


Figure 5.22: Enclosure 4

SG	Burnt flint		CBM		Flint	Pottery		Slag	
	No.	Wt. (g)	No.	Wt. (g)	No.	No.	Wt. (g)	No.	Wt. (g)
526268	1	3	5	162	-	-	-	1	8
591048	1	30	-	-	1	18	106	-	-
Total	**2**	**33**	**5**	**162**	**1**	**18**	**106**	**1**	**8**

Table 5.17: Finds from Enclosure 4

western boundaries (Fig. 5.22). Ditches 512052 and 537171 form the north-east corner, while a partially investigated ditch (526268) may provide the eastern boundary. Other unexcavated ditches on the northern and south-eastern sides have been extrapolated as continuing the line of the enclosure. At the centre of the enclosure is a post-built structure (Building 3), which is cut by ditch 591048 that divides the enclosure roughly in half on an east-west alignment at a later date.

Dating evidence is extremely sparse; pottery came only from the internal ditch 591048, and includes 13th/early 14th century Kingston-type wares (CP 2). Indeed, finds of any type were scarce (Table 5.17).

Building 3
This structure comprises nine postholes (if this was originally a ten-post structure, then the posthole at the south-east corner is missing), with a possible extension to the north, where four smaller postholes or stakeholes may mark an associated, more ephemeral lean-to structure. The overall external length (without the possible lean-to) is 11.5 m, and the width 4.5 m, with an internal area of approximately 38.5 square metres; this is slightly smaller than both Buildings 1 and 2.

The building broadly echoes the alignment of Building 2, and the presumption is that Building 3 is contemporaneous with the two structures within Enclosure 1. This is confirmed by the ceramic dating—all of the nine sherds recovered from the posthole fills are of early medieval date—and by the fact that the building is cut by the 13th/early 14th century ditch 591048. At least two of the postholes on the western side of the building were robbed out.

As with all of the medieval structures, the function of this building is very difficult to interpret. The dimensions may indeed be similar to medieval houses in the surrounding geographical area (Astill and Grant 1988, 54). Yet as Astill points out, there does not seem to be a distinction in terms of plan between dwellings and out-buildings in this period (ibid., 55). Any evidence of activity within this building has been lost to truncation, hampering further interpretation. The lack of contemporary negative features surrounding the building precludes the identification of activities. Although spatially it sits within Enclosure 4, the ceramic dating suggests that it predates the enclosure ditches (and, indeed, those of Enclosures 2 and 3). This building, then, may have formed another element in the earliest phase of the medieval landscape, along with Enclosure 1 and its associated buildings.

Waterhole 537164
This pear-shaped waterhole sits in the north-western corner of the enclosure, within a possible entrance; its upper fills are cut by ditch 537171. Surviving depth is approximately 1.3 m. As for other waterholes, the fill sequence combines deposits formed in standing water with those representing erosion of the side. The dating evidence (Table 5.18) suggests that this waterhole infilled relatively rapidly during the 13th/early 14th century; pottery includes Kingston-type wares and greywares, and there are also two silver coins from the fill—one broadly dated as medieval and the second as 1180–1247 (Table 5.9).

SG	Burnt flint		CBM		Flint	Metal	Pottery	
	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)
537154	17	794	4	8	3	2 Ag	10	51
537149	20	946	-	-	2	-	1	4
537151	3	143	-	-	1	-	11	448
537147	-	-	-	-	-	-	1	14
537145	-	-	-	-	-	-	1	6
Total	**40**	**1883**	**4**	**8**	**6**	**2 Ag**	**24**	**523**

Table 5.18: Finds from waterhole 537164

Enclosure 5

Enclosure 5 forms part of the latest medieval phase of the enclosure system; it cuts through Enclosure 1, thus modifying its use, and extends the enclosed area to the south of both Enclosures 1 and 2 (Fig. 5.23). The north-western corner is formed by 537118, extended to the south by 547167, and the southern side by ditches 529278, 615343, 593239 and 593317, with ditch 621038 forming a short northern return in the south-eastern corner, lining up with the eastern side of Enclosure 2. On the northern side, ditch 537118 just cuts the more westerly of the two ditches forming the western side of Enclosure 2, but does not continue, implying that Enclosure 2 was still in use at this time. Two of the ditches (547167 and 621038) appear to recut Bronze Age alignments (547170 and 578559 respectively); on the eastern side this forms part of an extended alignment which also forms the eastern side of Enclosure 2 (see above). Ditch 529279 appears to continue westwards beyond the enclosure as 512087, but there is a definite kink in this ditch just outside the south-western corner of the enclosure, as though 512087 had been modified to fit in with a pre-existing alignment. Overall, the enclosure measures approximately 93 m from east to west, and 90 m from north to south.

Dating evidence for the enclosure ditches is extremely sparse (see Table 5.19). All finds came from secondary fills. The 25 sherds of pottery include 13th/14th century Kingston-type wares and greywares, but the presence of two post-medieval clay pipe stems in 529278 and one post-medieval brick fragment in 547167 should be noted; the enclosure could in fact have been extant at this period. A later date for the enclosure is also suggested by the fact that the western enclosure ditch 537118 cuts a 13th/14th century pit (537105) within the entrance to Enclosure 1.

No internal features can be definitively tied to this phase of enclosure (the 13th/14th century features adjacent to the post-built structures within Enclosure 1, described above, are potential candidates, but could equally well, along with pits 537105 and 555453 [see above, Enclosure 1], belong to the phase immediately preceding the construction of Enclosure 5). Building 1 had clearly been abandoned by this stage, as the enclosure ditch cuts right through it. Building 2 could in theory still have been extant (there is no dating evidence from the structure), but this seems unlikely.

Some modification to Enclosure 5 subsequently took place, whereby ditches 547179 and 547168/547169 formed a small subrectangular enclosure (approximately 30 m by 15 m) within the south-western corner. Ditch 512087 (see above) forms the southern end of this small enclosure; at the northern end, ditch 547168, itself a recut of two earlier ditches (547169 and 547171) cuts ditches which run on a broadly parallel alignment to 512087 (547173 and 566049), and also ditch 547167, the southern extension of 537118. Dating evidence comprises four sherds of early medieval pottery from 547169 and five sherds from 547168, including one 13th/14th century greyware. One piece of post-medieval brick came from 547179, and a pair of iron pliers from 547168.

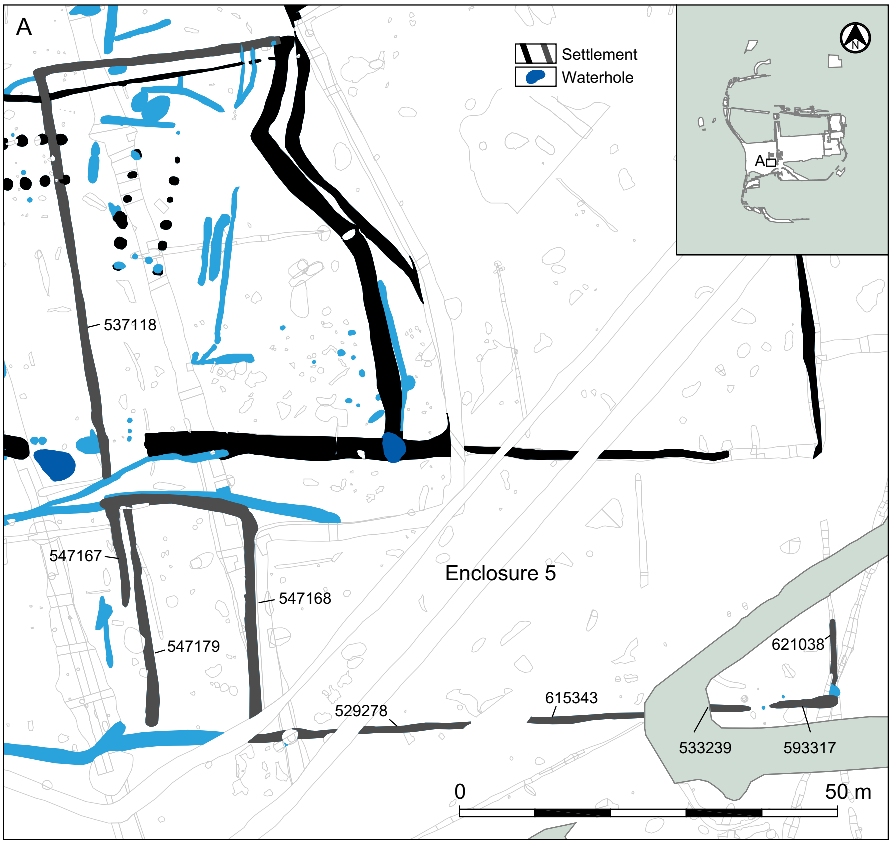


Figure 5.23: Enclosure 5

The function of Enclosure 5 is unclear. It stands out from the rest of the complex of enclosures by its relatively regular form, which imposes a more rectilinear structure on the field system. Its relationship with the parallel ditches 566049 and 512087 is likewise uncertain—the latter could be seen to feed into the south-western corner of the enclosure, but the later, small enclosure appears to block this. The enclosure ditches are generally smaller than those of the other enclosures (apart from the southern and eastern sides of Enclosure 2, which are on similar alignments). There are no internal structures, and no other arrangements which would suggest, for example, stock management. Finds evidence suggests that at least some of the ditches were still extant in the post-medieval period. Although post-medieval ditch 529255 does cut through the southern part of the enclosure, truncating the ditches of the small enclosure in the south-western corner, it does seem to respect southern ditch 529278.

SG	Burnt flint		CBM		Clay Pipe		Flint	Iron	Pottery	
	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)
529278	-	-	1	31	2	9	-	-	-	-
537118	1	16	2	73	-	-	2	-	10	62
547167	-	-	1	204	-	-	1	-	15	63
547168	-	-	-	-	-	-	1	1	5	61
547169	-	-	-	-	-	-	-	-	5	31
547171	-	-	-	-	-	-	3	-	-	-
547179	-	-	1	290	-	-	1	-	-	-
593239	2	114	-	-	-	-	19	-	-	-
593317	-	-	-	-	-	-	4	-	-	-
621038	3	-	-	-	-	-	1	-	-	-
Total	**3**	**130**	**5**	**598**	**2**	**9**	**32**	**1**	**35**	**217**

Table 5.19: Finds from Enclosure 5

The field systems

To the north and west of the enclosures described above were parts of an extensive field system, visible across Areas 47, 49, 51 and POK96 (Fig. 5.24). The field system lies on the northern edge of Stanwell parish—bounded to the north by the parish boundary between Stanwell and Harmondsworth (see below)—and several of the boundary ditches conform to field boundaries shown on the 1748 Stanwell Estate Map (Fig. 5.26). Perhaps more interestingly, this area also saw the extensive reuse of Bronze Age ditches, which must have remained visible in the late medieval period.

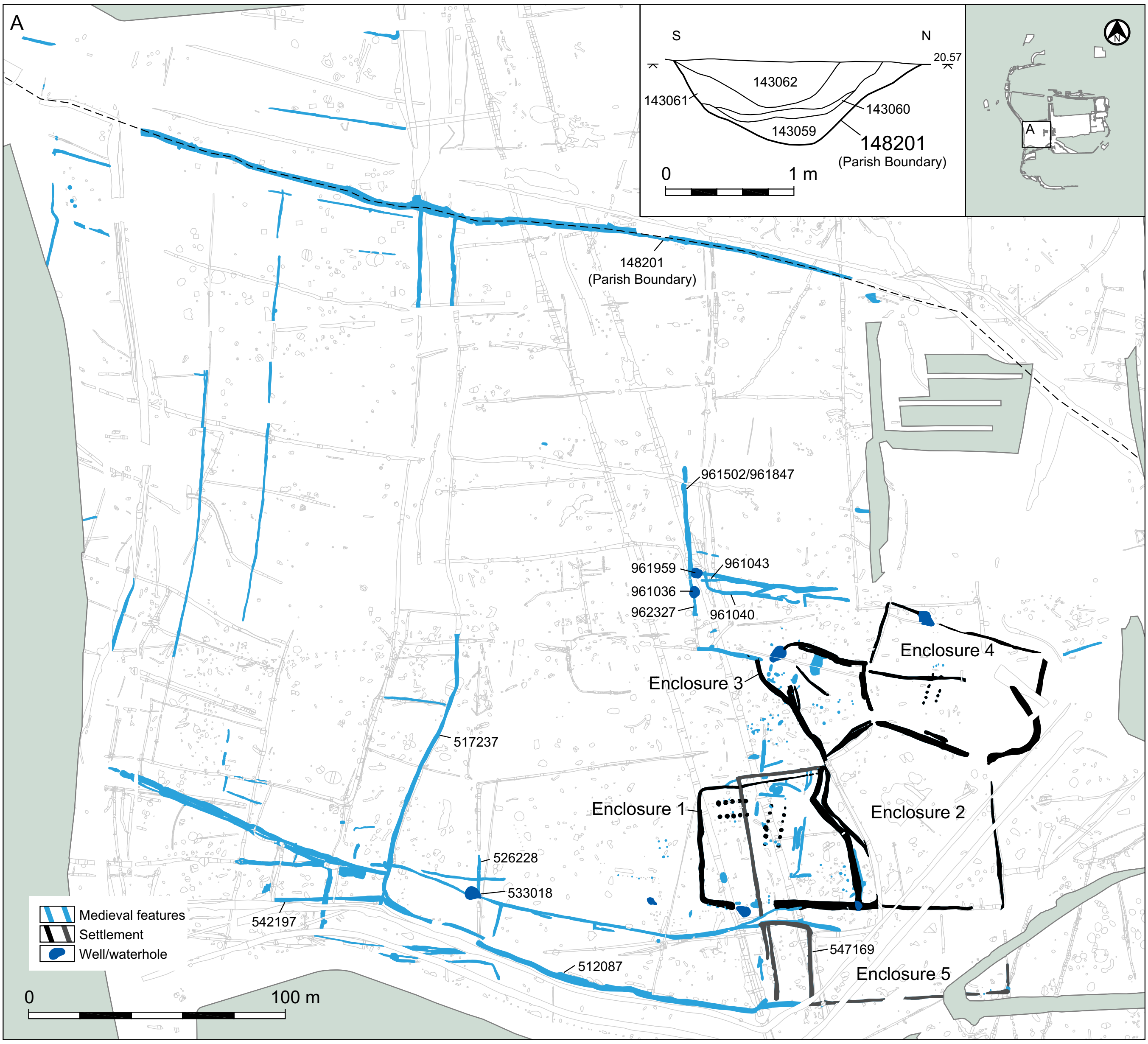


Figure 5.24: Medieval field systems across Areas 47, 49, 51 and POK96

The series of ditches within this area fall into three main blocks: (a) ditches on a broadly north-south alignment, running south from the parish boundary, and forming a series of long strip-like fields, occasionally sub-divided by transverse, east-west ditches; (b) ditches on more varied alignments, several intercutting, running around the southern perimeter of Area 49 and, at the eastern extent, probably associated with Enclosures 1–4; and (c) a small group of intercutting ditches to the north of Enclosure 3. All three blocks together form a series of north-south aligned strip fields, bounded by a serially modified droveway to the south, while other stock-channelling ditches are visible within the overall system.

The strip fields were later amalgamated into the three enclosed (and subdivided) fields shown on the 1748 map as Wheat (or Long) Closes, Borough Hill Closes and Pingles, while the southern droveway formed part of the linked grazing areas of Hither Moor, Spout Moor and Borough Green, leading from the Colne valley in the west to the pasture lands of Hounslow Heath in the east (Fig. 5.26). Within this area there are also assorted pits, postholes, tree-throws, wells and waterholes.

The inference from the distribution of early medieval pottery (see Fig. 5.25) is that at least some elements of the field system were laid out during the 11th/12th century. However, only a few of the features which contained a minimal number of sherds from this period can be regarded stratigraphically as early medieval. Within the complex of ditches to the north of Enclosure 3, these include the north-south ditches 961502 and its recut 961847, possible southern extension 962327, and miscellaneous ditch segments to the east (Fig. 5.24). The quantity of pottery (and other finds) throughout is low; none of these features yielded more than ten sherds. The east-west ditch 961040 produced sherds of Kingston-type ware (mid 12th to 13th century), and bends to the north to run parallel to ditch 961847, possibly forming a trackway leading northwards, on the same line as, but slightly to the west of, a similar

Figure 5.25: Distribution of (A) medieval pottery and animal bone ; (B) ceramic building material; (C) iron and slag

trackway of Bronze Age date (Trackway 10; see Chapter 3). This medieval trackway was subsequently blocked by east-west ditch 961043 (which cut ditch 961040), then by well 961959, and also well 961036. None of these later features, however, contained any pottery later than 12th century.

Similarly, there is a scatter of early medieval pottery and a Henry II penny (1154–89) to the south and south-west of Enclosures 1–4 (Figs 5.24 and 5.26). However, with the possible exception of right-angled ditch 547169, which is possibly part of a separate enclosure to the south of Enclosure 1, none of the major ditches can be assigned on stratigraphic grounds to this period. Nonetheless, some features cut by these ditches—short gully lengths, pits and tree-throws—could be. The ditches in this area seem to be designed to channel movement (presumably of stock) on an approximate east-west alignment, and possibly also to the north, following the line of ditch 517237, which may mark the eastern ditch of a trackway running between Wheat (or Long) Closes and Borough Hill Closes (see Figs 5.24 and 5.25). Ditch 512087, and ditch 542197 to the west, appear to mark the southern extent of the field system; this ditch alignment coincides with the northern edge of Borough Green, which itself formed part of the east-west grazing route (see above).

The parish boundary

The parish boundary between Stanwell and Harmondsworth is represented by ditch 148201, which runs on a WNW-ESE alignment across much of Bed B (Fig. 5.24; Plate 5.15). There is no definitive dating for its establishment; it is assumed to be medieval only through its coincidence with the parish boundary. A single sherd of post-medieval pottery was recovered from an upper fill. Associated ditches offer little supporting evidence. A number of north-south ditches join 148201 and appear to be contemporary with it, though dating evidence is very poor, comprising a small amount of post-medieval pottery. Some of these ditches correspond to features on the 1748 map (Fig. 5.26).

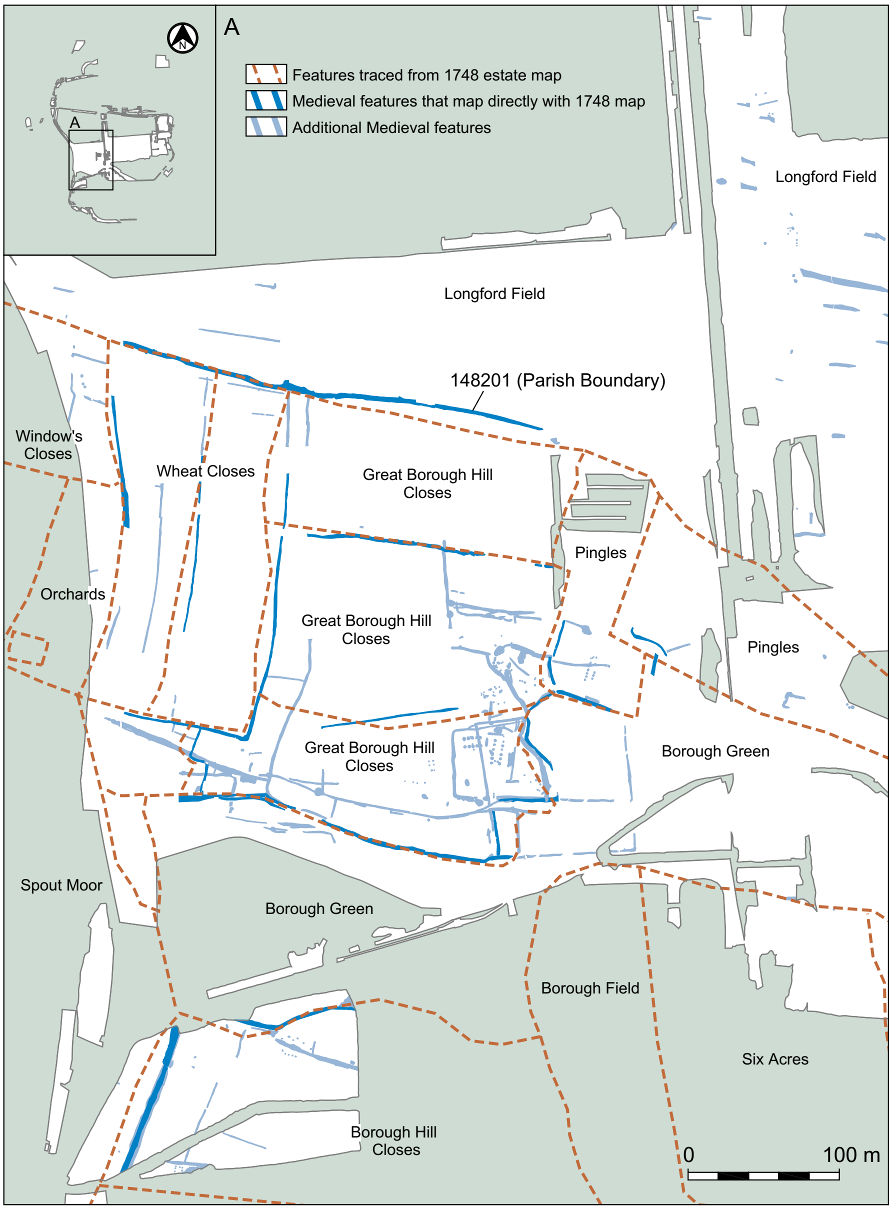


Figure 5.26: Medieval field system overlaid on 1748 estate map

Plate 5.15: Parish boundary ditch 148201

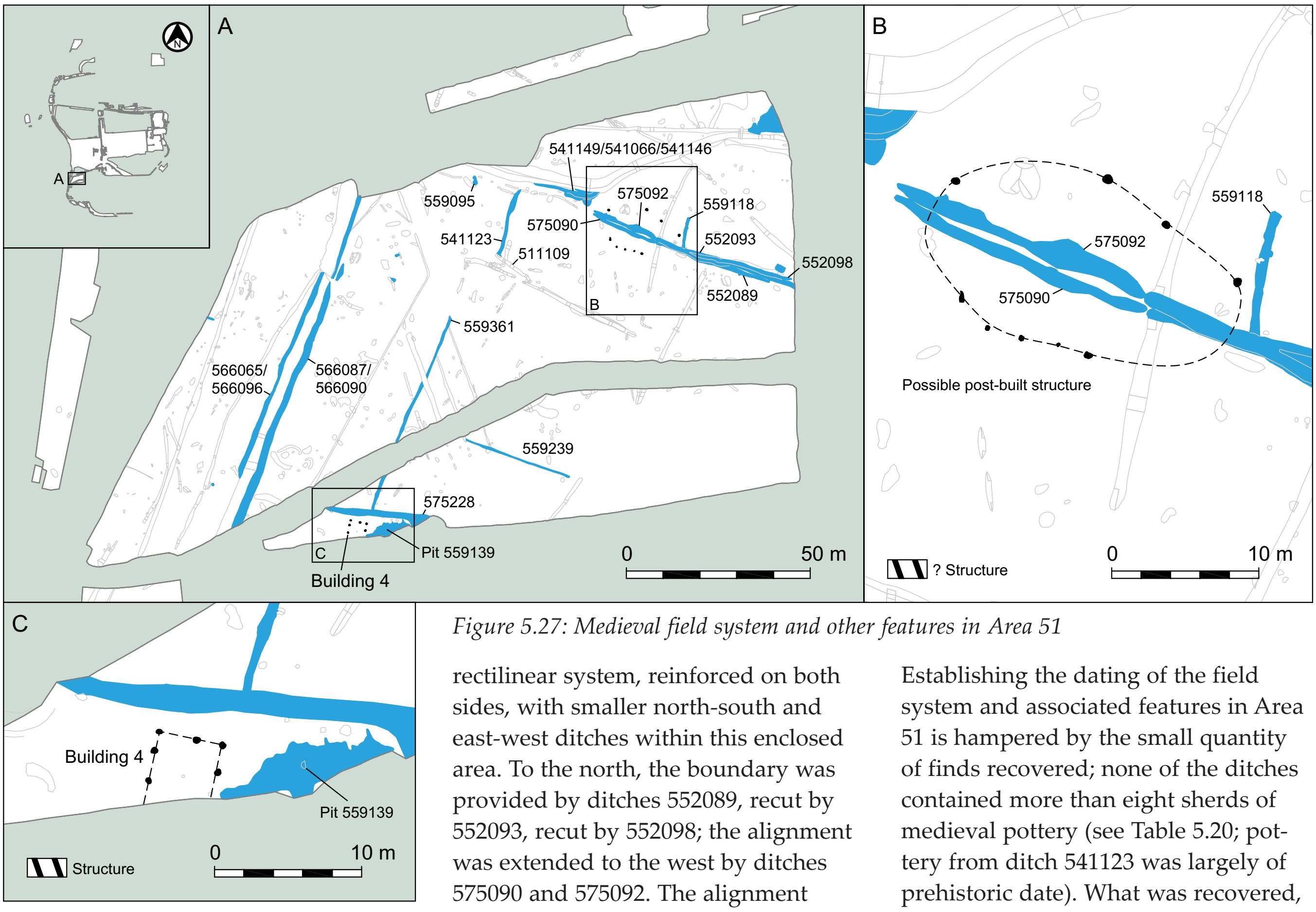


Figure 5.27: Medieval field system and other features in Area 51

Ditches in this area of the site share common characteristics in their fills in that all seem to have formed by the gradual deposition of waterborne silts—in other words, these are likely to have been drainage ditches.

The south: medieval field system and other features in Area 51

The medieval features to the south of Area 49 (areas 51, 52 etc) are limited to a fairly small excavation area, making it difficult to link the activity here to that within the larger excavated areas to the north although, as for the latter area, some correlations can be made with features on the 1748 map (Fig. 5.26). Features consist largely of field boundary ditches, with very few other feature types (two possible post-built structures, one pit). As with the area to the north, this area shows an interesting correlation between the Bronze Age and medieval field alignments, to the extent that it has proved difficult to disentangle the two (Fig. 5.27).

The ditches assigned to this phase form two sides (north and west) of a rectilinear system, reinforced on both sides, with smaller north-south and east-west ditches within this enclosed area. To the north, the boundary was provided by ditches 552089, recut by 552093, recut by 552098; the alignment was extended to the west by ditches 575090 and 575092. The alignment appears on the Roque map of 1754. The western boundary was formed from ditch 566087, cut by 566090, and reinforced to the west by ditch 566096, cut by 566065.

There is a possible entrance to the enclosure on the northern side, where intercutting ditches 541149, 541066 and 541146 form one side of a possible 'funnel' entrance to control the movement of stock, although these three ditches contained no dating evidence. If so, this entrance may originally have been wider, and subsequently become restricted by the western extension ditches 575090 and 575092.

Within the enclosed area, the picture is more complicated. On a similar north-south alignment to ditches 566090 etc are ditches 559361 and 541123, while one east-west alignment is provided by ditch 575228. All three ditches produced medieval pottery, albeit in small quantities. Ditches 559361 and 541123, however, were initially phased as Middle/Late Bronze Age, the medieval pottery being dismissed as intrusive.

Establishing the dating of the field system and associated features in Area 51 is hampered by the small quantity of finds recovered; none of the ditches contained more than eight sherds of medieval pottery (see Table 5.20; pottery from ditch 541123 was largely of prehistoric date). What was recovered, however, may be sufficient to postulate a 13th century date for the main east-west and north-south boundary ditches, and for internal ditches 575228, 541123 and 559361 (if these ditches are included in this phase). Again, evidence is scanty, but chronological mixing of pottery within the ditches (11th/12th century sherds are also present) suggests that these sherds entered the ditches as redeposited refuse, perhaps as part of the manuring of fields (see below).

There is some hint, however, of earlier activity in Area 51. The most prolific feature in terms of pottery recovered from this area was tree-throw 559095, which contained 21 sherds, all of 11th/12th century date (CP1). This could be indicative of an initial phase of tree clearance, prior to the establishment of the field system. Other tree-throws from the area contained no finds, but may also belong to initial clearance. This tree clearance may be linked to the process of assarting, which is well documented in the late Saxon and early medieval period (see above). Area 51 lies within

	SG	Animal bone		Burnt flint		CBM		Fired Clay		Flint	Metal	Pottery		Slag		Stone	
		No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)	No.	No.	No.	Wt. (g)	No.	Wt. (g)	No.	Wt. (g)
Ditches	511109	-	-	-	-	-	-	-	-	-	-	5	24	-	-	-	-
	541123	-	-	2	29	-	-	-	-	2	-	24	51	-	-	-	-
	541149	-	-	13	29	-	-	-	-	-	-	-	-	-	-	-	-
	552089	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
	552093	12	10	7	394	11	330	-	-	1	-	6	131	-	-	1	288
	552098	-	-	8	209	6	383	-	-	-	1 Ag	3	76	-	-	-	-
	559118	1	1	22	215	-	-	67	126	7	-	3	8	-	-	-	-
	559361	-	-	-	-	-	-	-	-	3	-	1	3	-	-	-	-
	566090	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-
	575090	10	8	-	-	-	-	-	-	-	-	1	18	-	-	-	-
	575228	-	-	-	-	-	-	-	-	-	-	5	37	-	-	-	-
Other Features	559095	-	-	5	32	-	-	-	-	-	2 Fe	21	92	-	-	-	-
	559139	-	-	-	-	3	4	-	-	1	1 Fe	7	25	-	-	-	-
	571006	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-
	571012	-	-	1	6	-	-	-	-	-	-	-	-	-	-	-	-
	571020	-	-	-	-	-	-	2	7	-	-	-	-	-	-	-	-
Entity	10005	-	-	1	1	1	1	-	-	-	-	-	-	1	1	-	-
	Total	**23**	**19**	**60**	**917**	**21**	**718**	**69**	**133**	**14**	**4**	**78**	**469**	**1**	**1**	**1**	**288**

Table 5.20: Finds from features in Area 51

Borough Field (prior to the enclosure of Borough Hill Closes), the shape of which suggests an origin as an extensive assart.

The other area of possible early activity focuses on ditch 559118 and a group of postholes to the west, which form a roughly ovoid outline (Fig. 5.27). Ditch 559118, which was cut by 13th century ditch 552093, contained three 11th/12th century pottery sherds (CP1), as well as a quantity of burnt material (126 g fired clay, 22 pieces of burnt flint, and charcoal). Initially, this deposit was interpreted as the burning *in situ* of some form of structure, but the charcoal revealed a range of taxa more in keeping with fuel gathered from the underwood of managed woodlands.

The charred cereal assemblage from this feature was the richest medieval sample analysed, and provides some illumination on crop quality and soil fertility.

Bread-type wheat was the dominant cereal. Chaff fragments were more frequent than in other samples, perhaps because of the better state of preservation, since chaff is less likely to survive charring and redeposition than grain and weed seeds. The fairly high proportion of weed seeds, and the fact that in several cases seed head fragments were present, suggested that either whole sheaves were burnt, or that waste from the early stages of processing had been deposited. Both stinking chamomile seed head fragments, and corn cockle seeds (Agrostemma githago) stuck together in the position they would have been in their capsules, were present. The only other example of preservation of this nature known to the author was from a post-medieval barn at Wharram Percy, Yorkshire, that was burnt down (Carruthers forthcoming). Sheaves of wheat were charred in situ at Wharram, and similar proportions of grains to rachis fragments, and grains to straw nodes, were found in some of the samples. Fragments of seed heads were present in about a quarter of the samples.

It is possible that a similar situation occurred in this ditch, with the remains of a stored crop being preserved in situ. If so, this sample can provide useful information about the quality of the crops grown during this period, as its weed assemblage has not been biased by processing.

Assuming that the assemblage is from a primary context and is not mixed waste, the grain to chaff to weed seed ratio shows that the crop was fairly badly infested with weeds. Stinking chamomile, vetches/tares, corn cockle, corn marigold (Chrysanthemum segetum) and chess (Bromus sect. Bromus) were the main contaminants, all of which are common weeds of arable fields. Corn marigold is more typical of moderately acid soils and stinking chamomile prefers damp clay soils. Leguminous weed seeds were particularly frequent, although some of the larger seeds, 3-4mm, could have been from the crop plant, cultivated vetch (V. sativa ssp. sativa).

An abundance of leguminous weeds in a crop is often indicative of impoverished soils (Moss 2004). Leguminous plants are at a competitive advantage as they have the ability to manufacture their own nutrients with the help of nitrogen-fixing bacteria located in nodules in their roots. It is interesting to note, however, that even though charred cereal processing waste was also frequent in some of the Late Iron Age to Roman samples at T5, leguminous weeds fell dramatically in occurrence. This may indicate improvements in soil fertility, probably through manuring. The implication is, therefore, that by the medieval period manuring may not have been adequate to cope with the increased demands on the soil made by the cultivation of bread wheat. Crop rotation involving cultivated vetch, peas and/or beans may have been practised, but this does not appear to have been sufficient to maintain soil fertility.

(Carruthers, CD Section 14)

The possible ovoid post-built structure to the west remains ambiguous. Only one of the postholes produced any datable finds—a single sherd of 11th/12th century pottery; other finds comprised burnt flint and fired clay. The posthole arrangement is, however, bisected by the 13th century east-west boundary ditch alignment and so is presumably of earlier date. It lies across a Late Bronze Age ditch. No direct association with 559118 other than by close spatial proximity and sherds of a similar date is demonstrable, and there was no comparable evidence for charred plant remains. It remains possible, however, that it may represent some from of temporary structure associated with crop processing.

Possible post-built structure (Building 4)

A group of seven postholes at the southern edge of Area 51 may represent the northern end of a post-built structure with a width of 4.2 m, similar to those observed in Area 49 (Fig. 5.27). The only dating evidence from this structure was a single piece of ceramic roof tile, and the only other find was a single piece of ironworking slag. The postholes are located immediately to the south of 13th century ditch 575228. In terms of morphology, the building fits the earthfast building tradition, with unequally spaced posts suggesting the use of a wall plate to support a roof.

Burrow Hill—is this a lost settlement?

The enclosures, structures and field boundaries described above lie in the area recorded in 1748 as Borough Hill Closes (now Burrow Hill), between the Borough Green stock route and the northern boundary of Stanwell manor. It is not clear from the documentary sources if this was an area of habitation in the late medieval period. In 1471 William and Alice Peryman were described as 'of Borough in the parish of Stanwell', but no other references to inhabitants have been found. It seems more likely that the excavated buildings were field barns which held winter fodder for cattle and other livestock, although they may represent an undocumented hamlet abandoned in the contraction in agriculture in the early 14th century. There are references to the cultivated selions (open strips of land) of Borough Field to the south in 1545 and 1677, and Grigg's Close on the south side of the Field in 1366 and 1486. There are descriptions and plans of the Field and the Closes in the Stanwell estate surveys of 1748 (Fig. 5.26), the enclosure award of 1792, and the tithe survey of *c* 1840, when some of the closes were arable and others were meadows.

As we have seen, datable material from the presumed construction date and earliest use of the post-built structures (11th/12th centuries) is largely absent from the structures themselves, and the quantities deposited in the enclosure ditches and various internal features is insufficient to postulate intensive occupation. Quantities of material do not increase significantly through the medieval period (13th/14th century), and the late medieval period is largely blank. Whatever was going on at Burrow Hill, it did not involve the use (and discard) of large quantities of material culture, which would be in line with an interpretation as a complex of agricultural buildings and enclosures, not used for permanent settlement. The environmental evidence may be pertinent at this point.

It is interesting to see that indicators of heavily disturbed, nutrient-enriched soils such as nettles and fat hen were not particularly abundant in the waterlogged features, perhaps suggesting that only small numbers of people were present during this period, or that the occupation was fairly short-lived. Aquatic plants grew in and around the waterholes, whilst during earlier periods use of the waterholes had been sufficient to have prevented aquatic plants from becoming established. Alternatively, perhaps they were deliberately kept clear of weeds or were covered over to keep livestock and falling leaves from fouling the water.

(Carruthers, CD Section 14)

Some artefactual evidence, however, remains intriguing, and has some possible implications for a consideration of the status of the site within the local settlement hierarchy. The 13th/14th century pottery includes fine glazed wares from regional sources (the Surrey whiteware kilns in London), and even a couple of continental imports, alongside the expected range of local coarsewares. The presence of imports is particularly suggestive, as these are rarely found outside major ports and, when they do occur, they are frequently associated with 'higher status' sites such as manorial and religious sites—there are a few sherds, for example, recorded from Northolt Manor (Hurst 1961, 272). The environmental evidence, however, does not support this.

Since no imported fruits and spices were recovered from the samples, apart from possible hemp, the status of the settlement appears to have been fairly rural in character. However, no cess pits or deposits that obviously contained faecal waste were examined, so information concerning diet was fairly biased.

(Carruthers, CD Section 14)

The only other hint of a manorial link comes in the form of the place name of Burrow Hill. The possible derivation of Borough or Burrow from *beorg*, meaning a hill or mound, has already been discussed. The word could, however, be derived from *burg*, relating to a fortification or fortified place. This developed into the common post-conquest use of *burh* to denote a manor house or the centre of an estate, particularly in the 13th century in the Home Counties north of the Thames (Smith 1956). It is therefore possible that the name Burrow Hill could derive from the fact that the field lies close to the manor and/or the centre of the estate.

The following sections examine the pastoral and arable agricultural regimes of the medieval landscape.

A stalled ox: stock management at Burrow Hill

Manuring fallow fields by folding sheep on them was an integral part of the medieval open field system of agriculture, especially on the lighter soils, the sheep acting as mobile muckspreaders within moveable folds made from hazel hurdles. The sheep of whole villages were controlled in this operation by communal shepherds (Williamson 2004, 79, 133–4). At Harmondsworth 13 hurdles were bought for the lord's sheep-fold in 1386/7 (WC 11501). A conveyance of 1488 included two free folds amongst other property in Harmondsworth, Longford and Stanwell (TNA: PRO, E 328/412). Dung carts and dung forks formed part of Harmondsworth manor's equipment in the 15th century; muck and rubbish from the manor courtyard was spread on the fields as part of the services owed by the tenants (TNA: PRO, SC 6/1126/7 m2d; WC 11502 m4d; 11504 m3d).

The *Domesday Book* survey implies that teams of oxen were used to draw ploughs in the 11th century, although only demesne teams may have used eight oxen, the tenants ploughing with smaller teams. In the 12th and 13th centuries work horses called *stots* or *affers* replaced oxen as the main draught animals in Middlesex; they were present on more than a third of the Middlesex demesnes in the century 1250–1350. They were faster and more adaptable than oxen, but more expensive to keep as they ate a diet of oats and hay, whereas oxen could be fed hay alone. The introduction of horses depended in part on the amount of meadow land available (Campbell 2000, 123, 126, 133; Williamson 2004, 158, 196). Manors to the south and west of London sold pigs, geese and chickens to the London market, and sometimes luxury items to richer customers (Galloway and Murphy 1991, 11). In 1293/4 and 1324 Harmondsworth was keeping swans and peacocks (BL Additional MS 6164 p98; TNA: PRO, SC 6/1126/5).

As an interesting exercise, the figures for livestock on the Harmondsworth

Type / Date	1293/4	1324	1337	1388/9	1397/8	1406/7	1433/4	1450/1	Total documentary	Total excavated
Horse	3	2	1	-	6	5	-	6		
Plough-horses	7	4	4	4	4	4	4	5		
Cart horses	-	4	2	4	-	-	6	-		
Sub-total horses	*10*	*10*	*7*	*8*	*10*	*9*	*10*	*11*	***75***	***70***
Oxen	14	12	8	14	15	-	16	14		
Bulls	2	1	1	1	1	-	1	1		
Cows	20	9	8	24	34	-	26	24		
Bullocks	23	5	12	2	2	-	3	-		
Calves	8	5	4	4	1	-	1	-		
Sub-total cattle	*67*	*32*	*33*	*45*	*53*	*0*	*47*	*39*	***316***	***91***
Boars	-	3	2	-	2	2	3	4		
Sows	-	5	-	4	3	3	3	3		
Pigs	24	92	3	23	14	18	30	41		
Hogget	40	-	27	28	45	43	45	42		
Piglets	20	30	20	18	45	45	45	45		
Sub-total pigs	*84*	*30*	*50*	*73*	*109*	*111*	*126*	*135*	***718***	***9***
Ewes	-	-	-	-	202	-	-	-		
Hogasters	-	-	-	-	2	-	-	-		
Lambs	-	-	-	-	2	-	-	-		
Goats	-	-	5	2	-	-	-	-		
Sub-total sheep/goat	*0*	*0*	*5*	*2*	*206*	*0*	*0*	*0*	***213***	***11***
Ducks	-	20	-	-	-	-	-	-		
Geese	-	30	-	26	5	5	5	4		
Swans	2	-	-	-	2	4	11	9		
Peacocks	12	4	-	-	-	-	-	21		
Capons	-	10	-	15	12	2	6	5		
Chickens	-	-	13	4	6	6	6	6		
Pullets	-	-	-	-	24	24	24	24		
Sub-total birds	*14*	*64*	*13*	*45*	*49*	*41*	*52*	*69*	***347***	***0***
Total	**175**	**136**	**108**	**173**	**427**	**161**	**235**	**253**	**1669**	**90**

Table 5.21: Harmondsworth: livestock on the demesne, compared with the excavated assemblage from the whole site

demesne, obtained from various documentary sources ranging in date from 1293/4 to 1450/1 *(Phillpotts, CD Section 22 Table 3)* were compared to the animal bone assemblage recovered during the excavations (Fig. 5.28; Table 5.21). As overall quantities are relatively small (total number of excavated bones = 90), all medieval features have been grouped together, regardless of date. The results show a dominance of cattle and horse, with relatively small quantities of pig and sheep/goat, which is at odds with the documentary records; the reasons for this may be at least partly explained by the bone preservation on the site.

The medieval assemblage is small ... Four bones that may have originated from a single immature roe deer in pit 555777 [Area 14] may indicate deliberate deposition. They were not complete and may have been fully exploited for food; deer remains may have been buried to avoid detection of illicit hunting and consumption of venison. The assemblage as a whole was quite poorly preserved, with some in good condition, but little gnawing. Horse and cattle were most common, with smaller numbers of sheep/goat, pig and roe deer, and this may have been due to bias from poor preservation favouring larger animals. Prior to deposition two of the horse bones had been marked during butchery, with possible skinning marks on a horse metatarsal and cuts from disarticulation of a horse femur; it is likely that horses were not eaten by humans at this date, but the skin would have been used and meat may have been fed to dogs. Pigs [were probably] killed relatively young for their meat, and cattle kept to maturity to provide secondary products (milk, traction, manure, etc.),

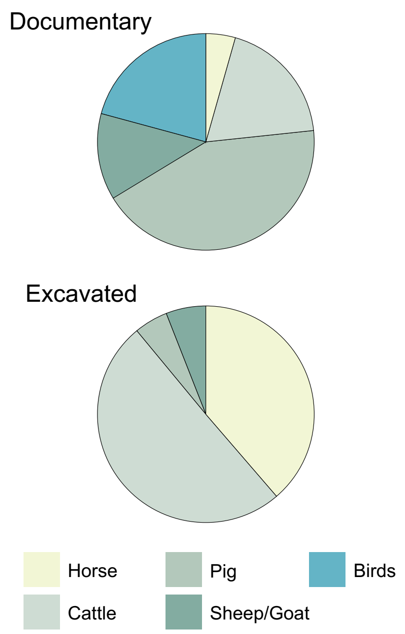


Figure 5.28: Comparison of animal bone data from documentary and excavated sources

a typical pattern for this period. The assemblage is atypical in certain respects, for instance the low proportion of sheep, in a period where sheep farming for wool was popular, but is probably not representative due to preservation and small sample bias.

(Knight and Grimm, CD Section 13)

In the last quarter of the 14th century and the 15th century, manors in the Greater London area and elsewhere kept more pigs, sheep and cattle, supporting them by increasing the area of pasture at the expense of arable, and growing more fodder crops (Campbell 2000, 166, 431; Sloane *et al.* 2000, 222). Pigs were now more likely to be transferred within the different manors of an estate than other animals; they were often sent to the lord's household for slaughter (Campbell 2000, 167). Pigs and cattle were also sold, with cattle being bought at Drayton, Kingston and Reading. A herd of between 100 and 140 pigs was kept by Harmondsworth manor, and the servants included a pig-keeper, while the manor also had about 25 cows. Sheep were grazed on Hounslow Heath but the demesne had only about 200 in the late 1390s, and none at any other time; it must have relied upon the sheep of the tenants. Thirty stones of wool were sold in 1397/8. In 1411 and 1416 the tenants had at least 140 sheep which they had grazed on the lord's land. In the late 15th and early 16th centuries 120 sheep were also kept on the sub-manors of Padbury, Barnards and Luddingtons. The manor also kept cart-horses, draught-horses and stable horses, oxen, goats, geese, pigeons, chickens and swans. Twenty-five geese were sent to the lord's household in 1388/9 and nine swans in 1406/7 (*VCHM* iv 11; TNA PRO, SC 6/1126/6; SC 6/1126/7 mm1, 2d, 4; WC 11473, 11501-4).

It was necessary to move much of this stock around from common grazing to enclosed pasture fields to fallow grazing on the stubble after the harvest. Small greens and grazing areas were linked by a network of hedged lanes and wider driftways (Williamson 2004, 176). In Stanwell the linked grazing areas of Farther Moor, Hither Moor, Spout Moor and Borough Green formed a stock movement route from the meadow lands of the Colne valley, between the open arable fields of the manor and the enclosed fields of its northern edge, to the pasture lands of Hounslow Heath (*VCHM* iii 35). This route ran to the south of the complex of enclosures at Burrow Hill, but there are elements within these enclosures, and within the wider field system excavated in Areas 47 and 49, that were almost certainly designed to facilitate the movement of stock.

Speed the plough: arable agriculture in the Heathrow area

The particular version of common field agriculture which emerged in western Middlesex consisted of one very large field for each village, surrounded by a series of smaller peripheral fields. In these systems crop rotation was practised on an intra-field basis between the furlongs of the main field, and on an inter-field basis between the smaller fields. Stanwell had the enormous Stanwell or Town Field and the smaller Borough Field and West Bedfont Field, each divided into cultivation strips; part of Ashford Field also lay within the parish. Harmondsworth had Harmondsworth Field, and also Longford Field, Sipson Field and Heathrow Field, which were based around subsidiary hamlets. There were similar patterns at Ashford, East Bedfont, Feltham, Hanworth, West Drayton, Harlington, and Northolt. It is not clear when the subsidiary settlements in the study area and the wider zone developed. They may have been the relics of a dispersed pattern of settlement which preceded nucleation, or they may have been early medieval secondary hamlets associated with assarting and the creation of sub-manors. There may have been elements of both.

The largest holding in each manor was the lord's demesne or home farm, consisting of arable land in the open fields, meadows in the Colne valley and pasture on Hounslow Heath and elsewhere. The villein tenants of the manors had holdings which consisted of a series of cultivated strips in the common fields, allotted doles of meadow land and rights of pasture, in return for services performed for the lord of the manor on his demesne lands.

Almost all the arable land in Stanwell and Harmondsworth lay in open fields divided into cultivation strips or selions, which occupied a large percentage of both parishes. In Harmondsworth in 1293/4 there were 241 arable acres in the demesne (BL Additional MS 6164 p98), and in 1324/5 there were 240 acres 'in divers perches in the common fields' (TNA: PRO, E 142/83/2). Strips of both demesne and tenant land were intermingled in the fields of both manors, grouped in numerous furlongs (LMA Acc 132/1 and 2; Acc 446/L1/15; TNA: PRO, SC 11/445; SC 12/11/20 m1). The positions of most of these cannot now be traced. The ridge and furrow strips excavated in the Terminal 5 project (see below) lay in Longford Field in the manor of Harmondsworth. A medieval strip-field system has also been excavated at Pinner, and field ditches at Stanwell (Sloane *et al.* 2000, 221). In 1404 tenants were fined in the Harmondsworth manor court for removing hedges and allowing their animals to enter the lord's meadows and corn (LMA Acc 446/EF/1/1 m2).

Crops

Manorial accounts reveal what crops were grown on the demesne land in particular years. Since the demesne arable strips were mostly intermingled in the common fields with the strips of the free and bond tenants, they must also have grown the same crops in similar proportions. At Harmondsworth the accounts of tenants' crops paid as tithes also indicate what they were growing.

These details can be compared to the assemblages of seeds recovered during the excavations. Relatively little attention was paid in medieval agriculture to weeding crops, and environmental samples of plant remains from medieval sites normally contain a rich weed flora.

In comparison with earlier periods, the medieval samples produced fairly high concentrations of charred plant remains. The poor preservation of most of the grains is typical of the period, mainly being due to the nature of the grain being charred. Some of the better preserved samples produced chaff and seed head fragments, demonstrating that cultivation was occurring locally (as opposed to processed cereals being bought at market). The accompanying weed seeds were indicative of nutrient-poor soils (frequent leguminous weeds) and heavy, damp clay soils (seeds and seed heads of stinking chamomile). It is likely that the predominant cereal, bread-type wheat, would have been grown on the heavier soils, and that nutrient depletion was mainly due to the cultivation of this nutrient-demanding crop. Barley, oats, rye, cultivated vetch, Celtic beans and possibly peas were also being grown, as is common on many medieval sites. It is less certain whether flax, hemp or hops were being cultivated or gathered (in the case of hops). However, where a useful plant such as hop was growing locally in the hedgerows it is inevitable that someone would have made use of it, at a time when much more was known about plant uses than today, and resources were more highly valued. This would also have been true for hedgerow herbs, fruits and nuts such as mallow, blackberries, sloes, cherries and hazelnuts.

(Carruthers, CD Section 14)

Grain yields were low in the medieval period, averaging about eight bushels per acre for wheat, about four bushels of which was surplus available for sale. At the end of the 13th century the manors along the Thames were supplying the London market (Galloway and Murphy 1991, 11). Between 1250 and 1350 many demesnes in the Thames valley grew rye as the dominant crop, followed by barley, oats and wheat in that order of importance (Campbell 2000, 267, 470). Harmondsworth in 1293/4 was growing more wheat and oats than other crops, and wheat was accelerating in importance by 1337 (*VCHM* iv 11; BL Additional MS 6164 p98; TNA: PRO, C 270/17/7; 1126/5). The tenants must have been growing oats in 1301, as Robert Cridde took four sheaves from the house of Roger Pellyng (TNA: PRO, SC 2/191/13).

Raising a variety of crops gave some insurance against the failure of a particular crop in any one season. As barley and oats were normally sown in spring, and wheat and rye in autumn, the work of ploughing, manuring and sowing was spread more evenly over the year. This made the utilisation of tenants' services and the rotation of crops easier. The leguminous crops of peas and vetch were cultivated extensively in England from the 13th century onwards to replace nitrates in exhausted soils, suppress weed growth and improve fodder supplies. There is insufficient evidence to discern crop rotations in the study area. There was evidently rotation between a large number of furlongs at Harmondsworth, but they are not usually identified in the accounts. Only a small portion of the demesne land was left fallow in each year. In 1367 only 104 demesne arable acres of Stanwell manor were sown, out of a possible 269, the remainder lying fallow (*VCHM* iii 43–4).

In the period from 1350 to 1450 there was greater emphasis on growing wheat at Harmondsworth, followed in importance by barley, oats and legumes. Some of these crops were grown in the form of *harascum*, a mixture of oats and legumes designed to be fed to horses and therefore sometimes called *horsemeat*. This was an innovation of the mid 14th century in demesne agriculture, partly substituting for grain in crop rotations. At the end of the 14th century a substantial proportion of the Harmondsworth demesne wheat and barley crop was sold, partly to the tenants; in the 15th century wheat sales decreased but barley sales rose. The acreages of demesne wheat and barley grown in the open fields were remarkably consistent. Oats were not grown much, and sometimes had to be bought in. Demesnes were becoming more dependent on selling to the market, particularly those owned by religious houses and colleges (Campbell 2000, 166, 227–8, 435, 470; *VCHM* iv 11; TNA: PRO, SC 6/1126/6 m1; SC 6/1126/7 mm1, 1d; SC 12/11/20 m2; WC 11501 m1; 11502 m2; 11503 m1; 11504 m1).

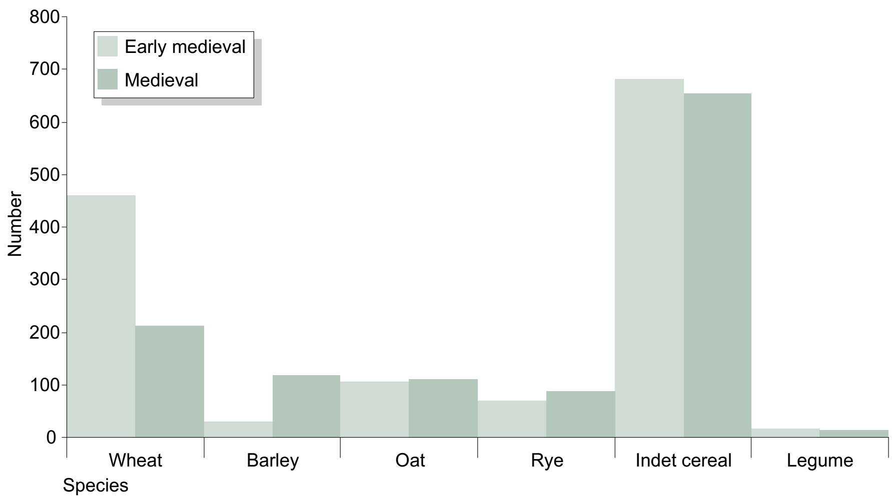


Figure 5.29: Cereal and legume remains by period

Plate 5.16: Artist's reconstruction of medieval ploughing

The palaeobotanical evidence

As a very crude means of reviewing the excavated evidence against these documentary references, the charred plant remains from five medieval features were quantified (these were the only five features of this date range analysed for charred plant remains, two in Harmondsworth parish, and three in Stanwell). Two features were dated as early medieval (11th/12th century; pit 562018 in Area 77 (east of the Burrow Hill enclosures), and ditch 559118 in Area 51; Fig. 5.27), while the other three were later medieval (13th/14th century; pit 537105 and the upper fills of waterhole 569022, both in Area 49 (Fig. 5.18), and pit 658047 in Area 58). Figure 5.29 presents the quantities of cereal and legume remains by period. The poor preservation of charred cereal grains at this period has already been commented on, and has resulted in the high proportion of indeterminate cereal grains. Throughout the period the predominance of wheat is clear (although less so in the 13th/14th century features), and appears to agree with the documentary references to the emphasis on this crop in Harmondsworth. There is certainly no evidence to support the documentary references to the importance of rye elsewhere in the Thames Valley. Legumes appear in small quantities from the early medieval period, but in the 11th/12th century features approximately half the total is made up of cultivated vetch, which is virtually absent in the 13th/14th century features. The other leguminous crops identified are Celtic bean and pea. The low proportion of legumes does not tally with their use as part of a mixed harascum crop, although it must be remembered that these figures are based on a very small sample of features, which have a wide distribution across the excavated area.

The archaeological evidence: ridge and furrow in Longford Field

Figure 5.30 shows the location of a series of parallel features interpreted as ridge and furrow (see Plate 5.16 for artist's reconstruction of medieval ploughing). The interpretation seems sound, but the precise date of the furrows is open to debate. Some of these ditches contained Roman pottery, probably redeposited from the truncation of the area of Roman activity towards the north of the furrowed area. The survival of the furrowing in this area of the site and not elsewhere may be due to truncation. However, the survival may be indicative of areas of differential use within the medieval period. It seems from the study of the Roman activity that this area was subject to remodelling during the Roman period (see Chapter 4), and this may have had a bearing on the land use into the medieval period. Another factor could be the topography of the area. The western edge of the furrowing almost coincides with the 22 m contour line. This topographic feature may have had an impact on the utilisation of the land, the slightly higher ground being cultivated while the lower land towards the east remained as pasture.

Use of the meadow: medieval activity to the south of Longford (Areas 14/15/16/17 and 35/42a)

Stanwell manor had substantial amounts of meadow land along the River Colne and its various branches, but Harmondsworth had rather less (*VCHM* iii 35, 44; iv 11). There were 24 acres of demesne meadow in 1293/4 and 16 acres in 1324/5. In the 15th century they produced about 20 loads of hay each year, which was used for winter fodder (BL Additional MS 6164 p98; TNA: PRO, E 142/83/2; WC 11504 m2d). The Stanwell meadows were in Foul Haw, Runnings, Bone Head Mead and Blackengrove (LMA Acc132/2 and 24; Acc 809/MST/9B). The Harmondsworth meadows were called Wereyt (probably an island between branches of the Colne), Fotherheth, Longmede, Wydemede, Bury Mead, Testemede, Shepemede, Fayre Meade, Lord's Hay, Medehay, the Inning, Redmede, Colbrookmede, Scollaresmede and next to Blackengrove, which lay across the boundary in Stanwell (LMA Acc 446/EM/1 m1; Acc 446/L1/15; TNA: PRO, E 315/409 ff3, 9v; SC 6/1126/7 mm1, 3; SC 11/444 m4; SC 11/445; SC 11/449 mm2, 3; SC 12/3/15; SC 12/11/20; WC 11451 mm1, 3; 11501 m1; 11502 m1; 11503 mm1, 4; 11504 mm1, 2). The excavated hollow-way to the south of Longford (Area 35/42a) may represent a stock route to the common meadows of the manor.

The northern part of the excavated area, comprising Areas 14, 15, 16 and 17, provides a restricted 'keyhole' view of features just to the south of the medieval village of Longford, falling within the area of the medieval meadowlands (Wydemede) (Fig. 5.31). Longford was first mentioned in 1337,

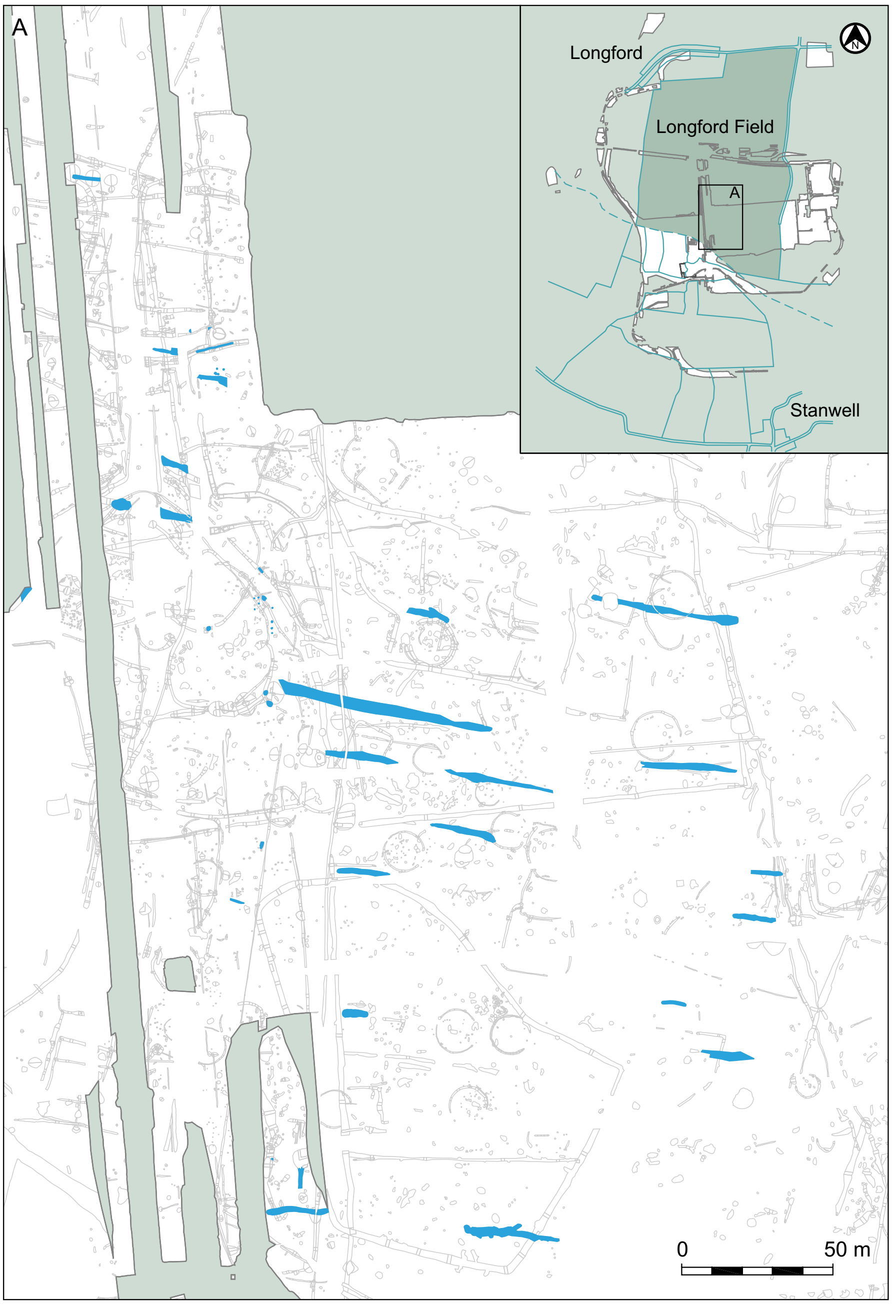


Figure 5.30: Ridge and furrow in Longford Field

when it had 30 houses, but had probably had a continuous existence since the middle Saxon period.

The most coherent pattern can be seen in Area 14, comprising two contiguous strip fields and a linear cluster of pits. The western field (Field 1) appears to be the earlier of the two, and was dug and recut in several sections, the western north-south ditch (617141) appearing to pre-date the first east-west alignment (555876) which was subsequently recut along the eastern part. Ditch 617141 contained a few sherds of pottery, a mixture of early medieval wares and 13th/early 14th century greywares, while ditch 555876 produced a single greyware sherd; all sherds came from secondary fills. The east-west ditch cuts early Saxon pit 509180 (see above). The relationship to Field 2, to the east, is uncertain; the ditches here, too, seem to have been dug in sections, and the western side was recut at least once on the same alignment, although most of the ditches are truncated by post-medieval recuts. Dating is dependent on a very few sherds from the western ditches—again a mixture of early medieval wares and 13th/14th century wares (Kingston-type). The full dimensions of the two fields are unknown, but

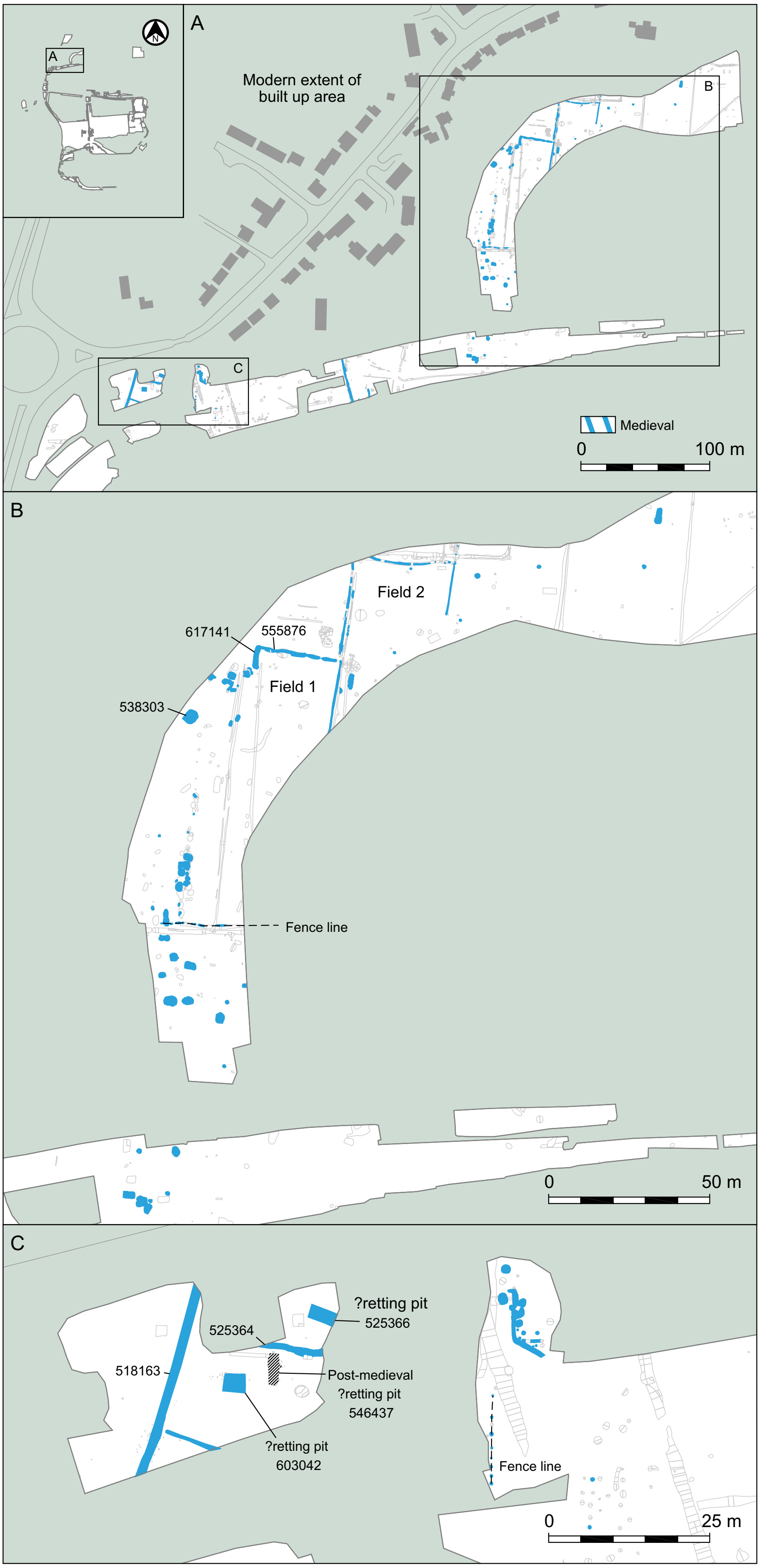


Figure 5.31: Medieval features in Areas 14 to 17

their widths are, respectively, around 26 m (Field 1) and 31 m (Field 2); this would equate roughly with widths of 5 rods/perches and 6 rods/perches (using the measurement of a rod as 5.5 yards, as standardised in 1607).

Approximately 50 pits form a linear cluster aligned broadly north-south, and concentrating in the southern part of Area 14. Although of varying sizes (the largest is over 4 m in length) and shapes (some appear as fairly regular subrectangular cuts, some more irregular), most are relatively shallow, and the fills suggest that once cut, these pits were left to silt up gradually. Finds are generally few but include medieval pottery sherds, a mixture of early medieval wares and 13th/early 14th century greywares. One pit stands out, both in terms of the contents and the nature of the fill. This is pit 538303, one of the largest pits, which produced 107 sherds of pottery, including both early medieval and 13th/early 14th century wares, 757 g of fired clay (possibly hearth material), and small quantities of animal bone and ironworking slag, nearly all of which derived from one deliberate backfill layer—this pit was not left to silt up gradually. The chronological mixing of the pottery, however, suggests that this dump originally derived from a nearby midden deposit.

The purpose of the pits is not entirely clear, nor is their contemporaneity definitively demonstrated. Apart from a couple of residual early Saxon sherds, however, the only dating evidence is medieval, and their concentration, alignment and intercutting supports broadly contemporaneous use. The most likely explanation is that these pits were used for the extraction of brickearth, for construction purposes, presumably by the inhabitants of medieval Longworth. At least one pit was subsequently utilised for the dumping of midden refuse, but otherwise the pits were left to silt up gradually, thus precluding the use of this area for agricultural purposes. The pitted area is clearly separated from the adjacent fields—few pits were observed within Fields 1 and 2.

To the west, within Areas 16 and 17, there is another area of activity, comprising ditches, pits and a fence-line. Two of the pits may have been used for retting (the processing of flax or other fibres for textile production). Short lengths of gully in the north-west corner of Area 16 were interpreted as drainage gullies, possibly for a small structure, although no definitive evidence for this was found. These gullies were surrounded by, and cut by, a small cluster of pits of uncertain function. Pottery sherds from one of the gullies and one of the pits indicates an early medieval date (11th/12th century), but there were very few finds. To the south of this small cluster, a north-south alignment of postholes formed a fence-line. No dating evidence was recovered, and this feature is dated as medieval purely by association with other features.

Features within Area 17 reflect the wet conditions of seasonally flooded meadows—a series of drainage ditches surrounding three rectangular pits. One of these pits (546437) is dated as post-medieval, and is discussed further below, but all three have been interpreted as possible retting pits, utilising the wet conditions during seasonal flooding (this is implied by the interleaved alluvial and clay fills of the pits, which included much waterlogged organic material). The two medieval pits are both very sharply rectangular and straight-sided. One pit (603042) appeared to be lined with roughly worked wooden (willow) stakes. Waterlogged plant remains from the post-medieval pit (546437; see below) confirmed the wet nature of the environment, but no definitive evidence was recovered for the function of any of the pits.

Another small 'keyhole' into the medieval archaeology south of Longford is provided by features in Areas 35 and 42a (Fig. 5.32). Wide, shallow ditches 562140 and 524190 appear to form a hollow-way running approximately ESE to WNW across the narrow excavated area. The only finds recovered from this feature were worked flint, burnt (unworked) flint and one sherd of very broadly dated

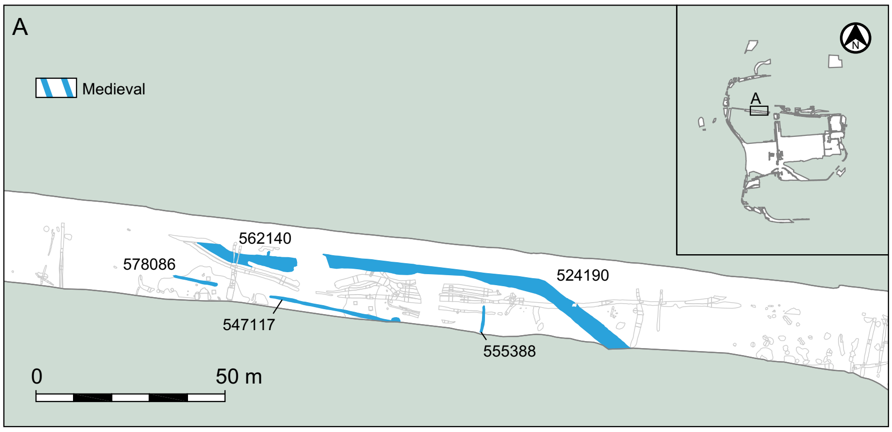


Figure 5.32: Medieval features in Areas 35 and 42a

prehistoric pottery, but it is dated as medieval on the grounds of morphology and stratigraphic position. To the south, ditch 555388 contained five early medieval (11th/12th century) pottery sherds, while one 13th/14th century sherd came from ditch 547117, although the apparent western continuation of the latter (578086) produced only prehistoric flintwork.

Post-medieval developments

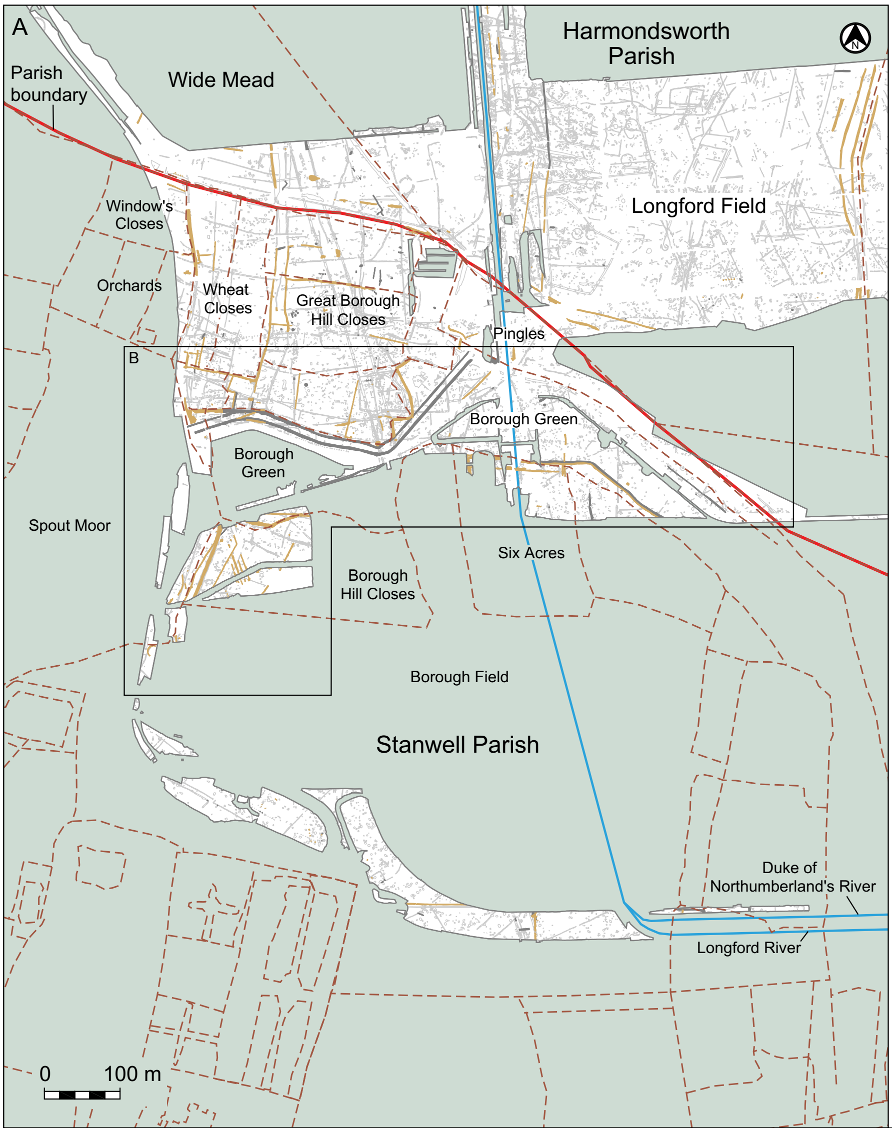
As we have seen, some elements of the post-medieval landscape were already in place by the middle to late Saxon period, and in some instances prior to that. The boundary between the lands of the later Stanwell and Harmondsworth parishes was established by the middle Saxon period, while elements of the field system to the south of the boundary may have utilised alignments surviving from the Bronze Age. The Duke of Northumberland's River, an artificial cut dug in about 1530-43 to run from a branch of the River Colne upstream of Longford to supply Isleworth Mills with water, runs along part of the parish boundary and is likely to have run along the course of an established watercourse or boundary ditch. The name of Longford suggests that it was at a river crossing, and this river may have been the predecessor of the Duke's River on a similar alignment (Sherwood 1999, 31; *VCHM* iii 33, 42; iv 2, 3, 7; see above). The Longford River was cut to the south of the Duke's River by Charles I (1625-49) to improve the water supply to Hampton Court. It was also known at various times as the New River, the King's River, the Queen's river, the Cardinal's River, the Hampton Court Cut and the Hampton Court Canal (*VCHM* iii 34; iv 2).

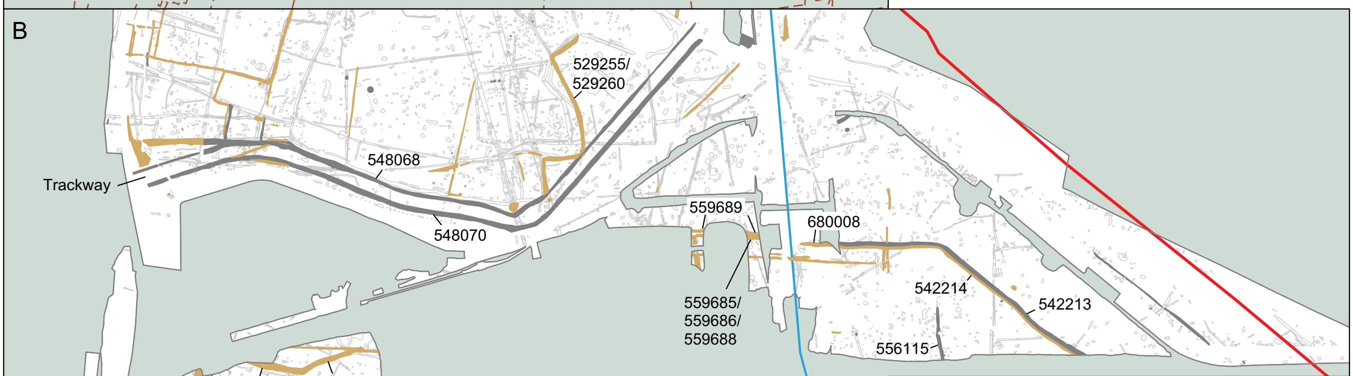
From the 15th century onwards, further developments of the medieval field system largely took the form of enclosure of the common fields, a process which can be traced through surveys and maps spanning the post-medieval period. Most of the meadow lands in the western parts of Stanwell parish around Stanwell Moor and Hammonds were enclosed before the mid 18th century, and there was a failed attempt to enclose the rest in 1767. Borough Field, Court Ley and Griggs Close were enclosed in 1771 to form Sir William Gibbon's Park of more than 300 acres, attached to his house at Stanwell Place. In 1792 (under an Enclosure Act of 1789) Stanwell enclosed its portion of Hounslow Heath and 1600 acres of open field arable land, increasing its annual value from 14s to 20s per acre. Artificial grasses and turnips were sown in the new hedged fields, which were allotted to the landowners of the parish in lieu of their strips in the common fields, lammas lands in the meadows and common rights of grazing (*VCHM* ii 98-9; iii 35, 38, 44). There was piecemeal enclosure in the north-west and south-west parts of Harmondsworth parish in the second half of the 18th century. Full enclosure of 1100 acres of common fields and meadows, and 1170 acres of heath and moor in 1819 (under an Enclosure Act of 1805 and an amending act of 1816) resulted in the usual landscape of straightened roads and small hedged fields (Sherwood 1999, 7, 9; *VCHM* iv 4, 13).

Stanwell parish

In Area 51 the medieval boundary ditches of Borough Field were recut. Parallel lines of ridge and furrow within the field, however, dated as post-medieval on the presence of ceramic building material, are on a different, NW-SE alignment (Fig. 5.33). The northern boundary ditch of Borough Field, picked up again to the east in Areas 54a, 58 and 72 (542214, 559685, 559686, 559688, 559689, 680008), does not appear to have had a medieval precursor, although it is shown on the 1748 estate map. The ditch was recut again in the modern period (542213). A short length of ditch to the south (556115), containing post-medieval brick, may mark the eastern boundary of Six Acres, a subdivision of Borough Hill Closes shown on the 1748 estate map; this field was subsumed within Sir William Gibbon's park in 1771.

To the north, within Area 49, further modifications were made to the complex of enclosures. Ditch 529255, and subsequent recut 529260, both recut the north-western ditch of polygonal Enclosure 2, then cut across its western side, turning to the west and then dog-legging south to terminate just to the north of the southern boundary





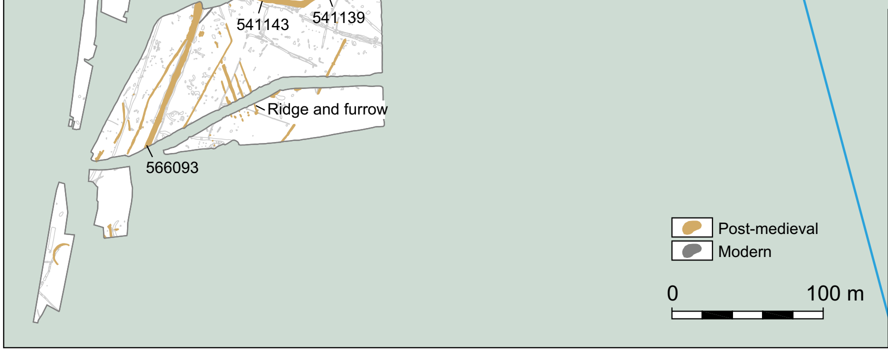


Figure 5.33: Stanwell Parish

of Enclosure 5. This appears on the 1748 map as part of the northern edge of Borough Green, and marks the boundaries of a small copse next to the road on the 1792 enclosure map. The fields to the north of Borough Green were established, as we have seen, in the medieval period; some of the ditches were apparently recut in the post-medieval period, including the boundary between Wheat Close and

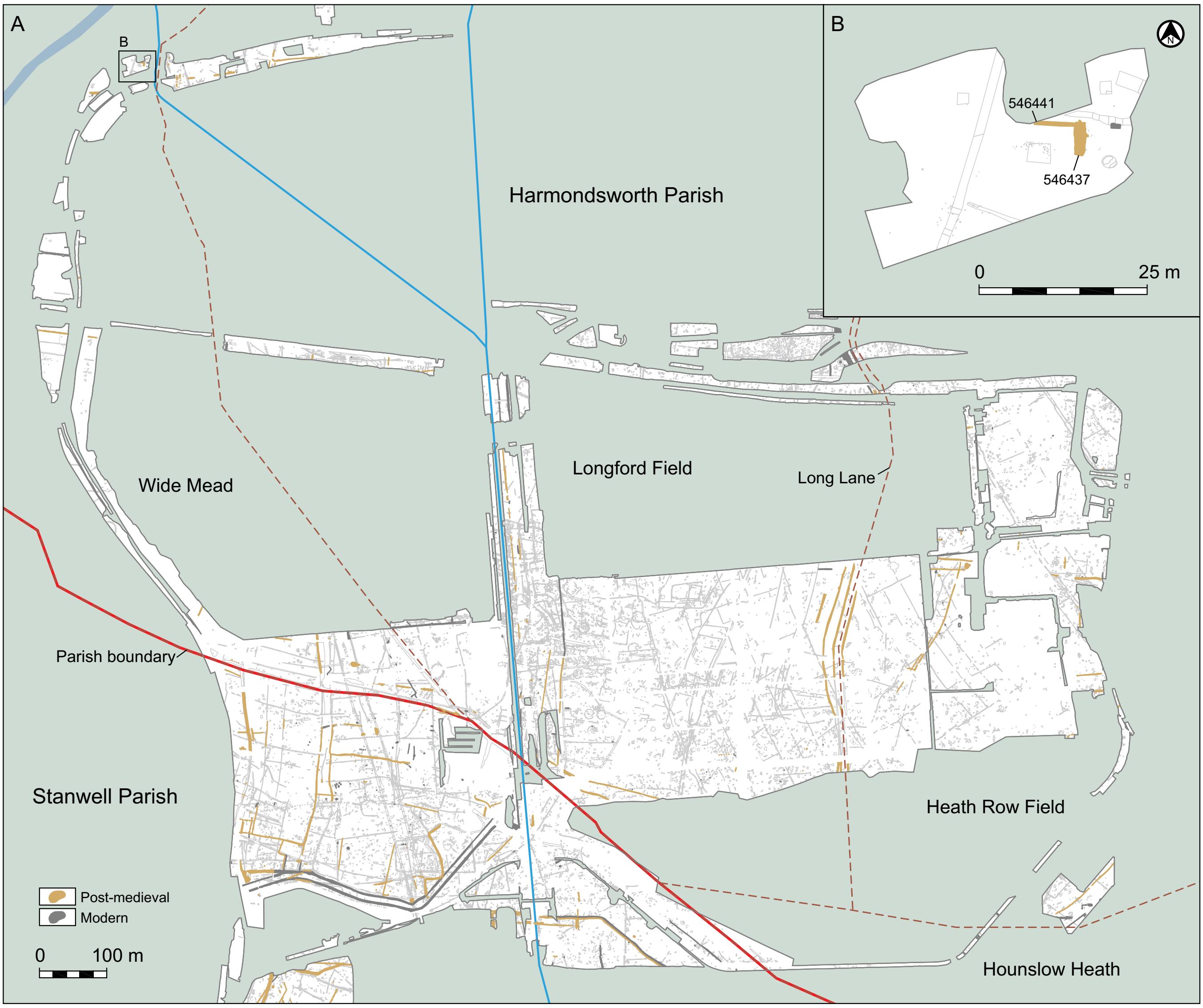


Figure 5.34: Harmondsworth Parish

Great Borough Hill Close, and the subdivisions of Great Borough Hill Close also become apparent at this period.

Harmondsworth parish

The trackway excavated during the Perry Oaks excavations (Framework Archaeology 2006, fig. 4.37) marks the boundary between Longford Field and Heath Row Field; it is visible on John Rocque's map of 1765, and was known as Longford Lane, leading south towards the heath (Fig. 5.34).

In Area 14, to the south of Longford village, the field system ditches that were laid out in the early medieval period were recut on similar alignments. Despite the proximity of the village, little cultural material was found in this area—just a few sherds of pottery and fragments of ceramic building material. Use of the meadow to the south-west of the village, however, did apparently continue, where another possible retting pit was excavated.

Possible retting pit (546437)

This subrectangular, straight-sided pit was situated in Area 17, and was cut into the upper fills of a palaeochannel (Fig. 5.34; Plate 5.17). Its secondary fills, particularly the uppermost, were rich in organic material (wood, seeds, leaves). Within these secondary fills were numerous lenses of grey clay, which appear to represent individual flooding events. The relationship of the pit to a gully at the northern end was unclear, but the gully may have been cut to feed water into the pit. A series of wooden stakes (willow/poplar and elm) was recovered from one of the secondary fills, and may have formed a revetment to the pit; evidence of collapsed wattle was also recovered, as well as a few axe chippings, and a small piece of sawn oak board with peg holes, of unknown function. One post-medieval sherd (Border ware) came from a secondary fill.

The function of this pit is unclear. It is one of three features in Area 17 interpreted as retting pits; the other two were more sharply rectangular and were dated as medieval (see above). The straight-sided form of 546437 and the possible relationship with the gully suggests that it was a tank of some sort. The palaeo-environmental evidence confirms the wet or marshy nature of the immediate environment, but is ambiguous on the question

Plate 5.17: Pit 546437

of retting. No flax remains were recovered from the pit, and hemp remains, although present, were sparse.

The pollen assemblages are indicative of a largely cleared landscape with a mixture of pastures, arable fields with cereals including possibly barley, emmer/spelt and rye, and probably hemp (Cannabis), rough open ground, and damp/wet grassland. The biodiversity of the area is very high with many taxa. Obligate aquatic species are represented, and taxa of shallow water or marshy ground including flowering rush (Butomus), common reed (Phragmites), bulrushes/bur-reeds, and sedges, are present, indicating that the palaeochannel into which the pit was dug was still a damp course with a high water table, and that the pit would have filled with water to enable the hemp to be retted. Surprisingly, the hemp pollen values are quite low, and the pit itself is quite small in area. It may be that the male hemp plants were harvested and put into the retting pit before they were fully ripe and producing their pollen. It is also possible that the pit was used just for collecting water and not as a retting pit, and that the hemp pollen is indicative of the growth of hemp close by.

(Peglar et al., CD Section 16)

The waterlogged plant remains were reasonably well preserved, with the lower samples producing wider ranges of taxa and slightly more fruits and seeds. Leaf fragments, buds and twigs were frequent… willow buds (Salix sp.), ash keys (Fraxinus excelsior) and alder seeds (Alnus glutinosa) were present in small quantities in all three samples. These taxa grow together in floodplain alder woods and fens, with alder and willow on wetter soils close to rivers, and ash growing on drier land where the vegetation is sufficiently open.

There was little evidence to indicate that domestic waste had been deposited in the feature, or to demonstrate what the function of the pit had been. Two, poorly preserved charred cereal remains (a possible rye grain and a barley rachis fragment) were present in the middle of the three samples, but these may have been washed in from manured land close by. The three cherry stones (Prunus avium) present in the middle sample had all been gnawed by rodents, so they probably represent an animal deposit rather than human waste. Nitrophilous plants such as nettles and docks were common but not abundant, as might be the case if the pit had been used for retting. No flax remains were recovered from the three fills.

The only unusual taxa represented were hop (Humulus lupulus) and possible hemp. (cf. Cannabis sativa seed fragments). Hop was present in small numbers in all three samples but a few hemp seed fragment were present in the middle sample. Hops grow naturally in hedgerows, scrub and fen-carr, so it is difficult to know whether the presence of seeds has any bearing on the use of the feature. No flower bracts were found to indicate use of the fruits for brewing or dyeing. Hops also have medicinal uses.

The hemp seeds were unfortunately only present as fragments, so there was some uncertainty over their identification. Hemp was grown as a fibre crop and for medicinal purposes, and it may also have grown more widely as a casual (escaped cultivated plant) in the medieval period than today, during a period when it was widely grown as a garden plant as well as a crop. If the identification is correct, hemp retting is a possibility, although the author would have expected greater evidence for nutrient-enrichment of the soil around a feature with this function. Retting is a smelly business that produces large amounts of organic waste.

The remaining taxa in these samples were primarily plants of wet places, grassland

and damp meadows. Aquatics such as duckweed (Lemna sp.), flote grass (Glyceria sp.) and crowfoot (Ranunculus subg. Batrachium) appear to have been growing in the feature from the earliest level sampled, and their presence confirms that the feature held standing water. Frequent sedge nutlets (Carex spp.) and other marginals such as gypsywort (Lycopus europaeus) would have been growing around the edges. Damp grassland, possibly growing as hay meadow, occurred nearby. Meadow plants such as meadowsweet (Filipendula ulmaria), buttercups (Ranunculus repens/bulbosus/acris) and wild anglica (Angelica sylvestris) were present.

(Carruthers, CD Section 14)

The end of rural Heathrow

Despite the establishment of some industry (brick-making and paper mills), the character of the Heathrow area remained predominantly rural well into the 20th century. In 1935 it was described in idyllic terms as a scene *'as rural as anywhere in England … there is a calmness and serenity about it that is soothing in a mad rushing world'* (Maxwell 1935). The mad, rushing world, however, was about to engulf it.

Perry Oaks Sludge Works

Ironically, it was the isolated position of Perry Oaks, and the 'unlikelihood of future building development taking place in the immediate vicinity', that appealed to John D. Watson, who devised the West Middlesex Main Drainage Scheme in 1928 (Watson 1937). For these reasons the site was identified as ideal for the process of sludge treatment, and in 1934 the Perry Oaks plant was constructed as an adjunct to the sewerage plant at Mogden in Isleworth, seven miles away. At that time, the Mogden/Perry Oaks plant was as advanced as any plant in use in Germany or the USA, then considered to be leaders in this technology. Over the remainder of the 20th century, the plant evolved to meet new demands and technologies, changing from a manual, land-hungry and intermittent process to one that was fully automated, compact and continuous (Framework Archaeology 2000; 2006, 10–11).

Aviation at Heathrow

In 1929 the Fairey Aviation Company purchased 150 acres of land at Heathrow, for the construction of an airfield, which opened in 1930, and was known as the Harmondsworth Areodrome (Sherwood 1993, 20–3). It was probably the presence of the Fairey aerodrome at Heathrow that led to the identification of the area as a prime site for a civil airport, but it was not until the outbreak of war in 1939 that an opportunity was offered for the whole area to be requisitioned.

The first recorded mention of the proposals to develop aviation facilities at Heathrow, initially at least as a Royal Air Force Base, is the Air Ministry files for mid 1943, although it is clear that the development was always intended for civil aviation (now in the National Archives; see Sherwood 1999, 35). The War Cabinet provisionally accepted the recommendation for development in three stages in November 1943.

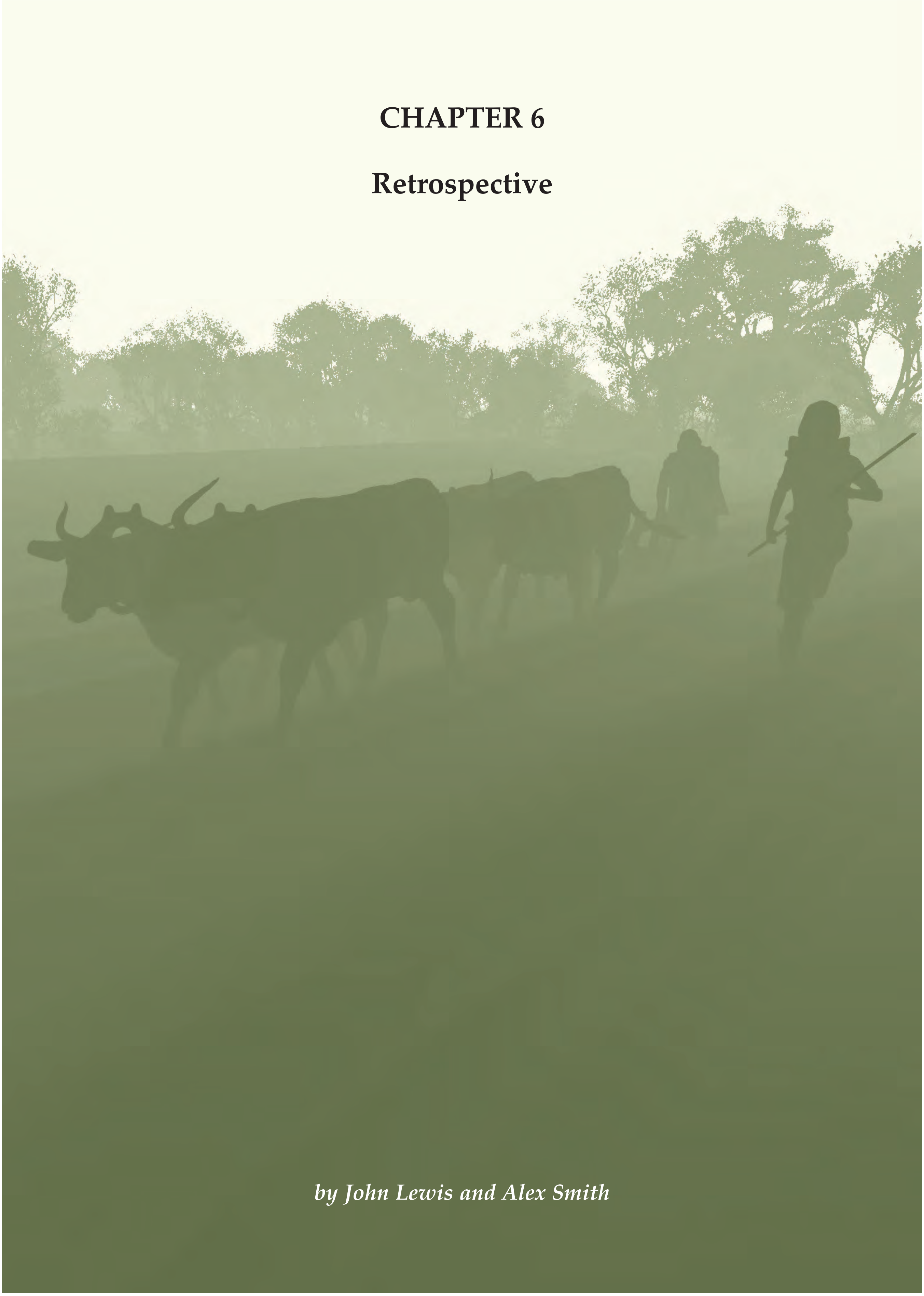
The original planned layout of the new airport shows runways extending over the site of the sludge works (Sherwood 1999, fig. 16), but the works could not be closed down without finding an alternative site. This could not be resolved quickly, and the plans were revised, with two runways, one either side of the sludge works. The other impediment to the development was the presence of the Fairey aerodrome, and in 1947 the Fairey Aviation Company moved its operations to White Waltham airfield in Berkshire. By then, work had already started on the first stage of construction, which began in June 1944, Construction involved the demolition of existing buildings on the site, which extended south of the Bath Road from Harlington to Longford. The airport was transferred from the Air Ministry to the Minstry of Civil Aviation on 1st January 1946. The airport had never been used as an RAF base; the first use was for a civil flight. It was formally opened on 31st May 1946.

Stage 2 of the airport construction did not involve any further acquisition of land, but Stage 3 proposed extension north of the Bath Road, involving the complete destruction of the village of Sipson, and most of Harlington; these proposals were agreed by the Cabinet in January 1946, but without a firm timetable. Concerns over costs, combined with resistance to the proposals from local residents, and objections from bodies such as the Royal Commission on Historical Monuments, has deferred a decision to proceed with the development until the present day. In 1952 the Ministry of Civil Aviation announced that the scheme had been abandoned, but it was to be resurrected later. (At the time of writing, the proposals for a third runway, running east to west across Harlington, Sipson and Harmondsworth, have recently received Government approval.)

Construction of the airport continued within the perimeter agreed in 1952, and in 1953 Gatwick was selected as the site of the second London airport, to relieve the pressure on Heathrow. It soon became apparent, however, that even two airports could not cope with the anticipated expansion of air traffic, and proposals were made in the mid 1970s to expand Heathrow by constructing a fourth passenger terminal. Terminal 4 opened in 1986 and was seen then as the final development of Heathrow, beyond which no further expansion would be permitted. Again, however, pressure of air traffic led to proposals for a fifth terminal, which was approved in 2002. Although the the fate of the Perry Oaks Sludge Works was finally sealed, the approval precipitated the need for the extensive archaeological work described in this volume.

CHAPTER 6

Retrospective



by John Lewis and Alex Smith

Introduction

In the introduction to this volume, we set out the academic aim and approach that has been adopted by Framework Archaeology at Terminal 5 and our work at other BAA Airports:

The archaeology of inhabitation demands more than the recording of the traces of human activity and the history of inhabitation involves more than tracing the changing organisation of activities in a landscape.

Inhabitation concerns the practical ways in which people established their presence in the material, social and political conditions of their day. To establish a presence involves having the power, common to all human agency, to move and act in the world according to available opportunities and constraints, where such actions express knowledge of various levels of technical proficiency, social adequacy and moral authority. The archaeology of inhabitation is therefore an investigation of the various ways the human presence was established in and contributed towards maintaining or transforming the material and social conditions of history. It is an investigation of the material, moral and political contexts of human diversity.

(Lewis this volume, Chapter 1)

We have tried to follow this approach through the narrative of this volume, whilst attempting to provide the reader with the degree of description necessary in a volume which reports the findings of a major programme of excavation. Admittedly, this philosophy, has succeeded to varying degrees, and it is particularly noticeable that the authors of the chapters covering the later periods have found it difficult to adopt this philosophy within an academic framework that becomes increasingly dominated by historical documentary evidence.

Nonetheless, that such a philosophical aim could be adopted for this project at all reflects the structural changes in British archaeology: with a shift from 'rescue' to commercial archaeology in the 1990s has come much greater archaeological excavation and an increase in our understanding of the past. For this final chapter, we will examine briefly the changes which have occurred in our understanding of the past landscapes of West Middlesex and the Middle Thames Valley from the late 1970s onwards, and how the Terminal 5 project has added to that body of knowledge. Our first benchmark is the 1976 publication by the London and Middlesex Archaeological Society of a Special Paper entitled *The Archaeology of the London Area: Current knowledge and problems* (Collins *et al*. 1976). This slim volume outlined the current state of knowledge of London's past on a period by period basis, and also noted the fields where further research was required. The second benchmark is the publication in 2000 of *The Archaeology of Greater London* (MoLAS 2000). The drafting of this volume was begun in the mid 1990s and thus tended to reflect the results and thinking of the late 1980s and early 1990s. Nonetheless, this volume is an order of magnitude larger than the 1976 paper, reflecting both the large amount of excavation and research that had been undertaken since the advent of PPG16 in 1990, and also the substantial work undertaken in Greater London during the economic boom of the late 1980s. Both the 1976 and the 2000 documents were strategic overviews, focusing on present knowledge and areas for further research.

Figure 1.6 in this volume shows the very large area around Heathrow that has been investigated archaeologically. These investigations were undertaken by several organisations (eg the Museum of London, Framework Archaeology and Wessex Archaeology amongst others) over different periods of time and with different analysis and publication schedules. The Terminal 5 excavations are some of the first to be published, to be followed in 2010/2011 by those of Wessex Archaeology with the Museum of London publication sometime in the future. It is against this background of fragmented programmes of excavation and research that the Terminal 5 results must be placed.

Hunter-gatherers of the Mesolithic, 10000–4000 BC

In 1976 and 2000, our understanding of the Mesolithic period was very much influenced by key sites in the Colne and Lea Valley floodplains. Most of these dated to the Early Mesolithic, with relatively few key Late Mesolithic sites (Lewis 2000, 53; Lewis *et al*. 1992). Although the Terminal 5 excavations have not added greatly to the body of knowledge for the Mesolithic period, they have contributed in two main ways. Firstly, the Mesolithic fllintwork residing in later features provides confirmation (if confirmation was needed) of landscape exploitation away from the Colne floodplain, whilst the stakeholes at Bedfont Court demonstrate flooplain activity during the 7th millennium BC. The contrast between the two depositional environments demonstrates that the brickearth capped gravel terraces of the Thames are unlikely to yield well preserved Mesolithic lithic and faunal scatters comparable to those of the fine grained alluvial floodplain deposits of the Colne.

No direct evidence was provided to shed light on the Meoslithic / Neolithic transition. Clearly, the 'culture' of Mesolithic people was enshrined in oral tradition and practices which only occasionally were expressed (or which survive) through the medium of artefacts. What we have suggested is that the burnt flint-filled pits at Terminal 5 marked a location in the landscape which came to acquire a meaning to the people that met there. The juxtaposition of the pits, probably dating from sometime between 7760–6610 and 6190–5640 cal BC, with the 4th millennium BC Stanwell Cursus did show that the people marked and altered the landscape at specific locations thus imbuing the landscape with great chronological depth, long after the original meaning of the location had been lost.

The first farmers of the Neolithic 4000–2400 BC

Mention of the C1 Stanwell Cursus turns our attention to one of the major contributions of the Terminal 5 project. In 1976 the excavation of the Yeovenny Lodge, Staines, causewayed enclosure during the early 1960s (finally published by Robertson-Mackay in 1987) was still the focus of Neolithic studies in West London (Macdonald 1976, 25). This was supplemented by isolated pits containing Peterborough Ware, although Grooved Ware pottery remained rare (ibid.). The Stanwell Cursus was still regarded as a Roman road in 1976 (Merrifield 1976, fig 7), although by 2000 excavation had correctly identified it as a Neolithic cursus (O'Connell 1990). In addition, excavations ahead of gravel extraction north of Heathrow had revealed many more pits containing Peterborough Ware and Grooved Ware pottery, as well as circular and rectangular monuments (Crockett 2001). On the Colne floodplain excavations at Horton had revealed a double-ditched enclosure of Neolithic date at Moor Farm (Ford and Pine 2003).

By the time of the Terminal 5 excavations it was, therefore, clear that West Middlesex contained an extensive Neolithic landscape of linear and circular monuments, and that Terminal 5 would provide the opportunity to investigate this landscape further, and the Stanwell Cursus in particular. Interest in cursus monuments has risen over the last decade with several monuments being excavated and published (Barclay *et al*. 2003). As discussed in Chapter 2, the Terminal 5 excavations revealed one of the largest (and most extensively excavated) concentrations of cursus monuments in Britain, together with a handful of small circular monuments and pits.

The Terminal 5 evidence suggests fairly widespread clearance of woodland prior to the construction of the cursus monuments. We have tried to show how these monuments were constructed to link together locations in the landscape which already had histories and were important to the inhabitants. Therefore, although their appearance in the archaeological record may seem sudden, it is likely that this major architectural transformation was in fact rooted in the past. Unfortunately the Terminal 5 excavations have been able to add nothing to the refinement of the chronology of the 4th and 3rd millennia, with other projects (eg Powell forthcoming) offering greater promise in this direction.

If the cursus complex is the signature of the late 4th millennium, then the Terminal 5 excavations seem to confirm that the 3rd millennium landscape contained little in the way of new monument construction aside from the occasional ring ditch. Instead we are presented with the sense of a landscape shaped by ancient monuments and a population that used them, together with pit deposits containing Peterborough Ware and Grooved Ware pottery, as part of the mechanism of apportioning land and resources amongst the community.

The Early Bronze Age: a time of transition 2400–1600 BC

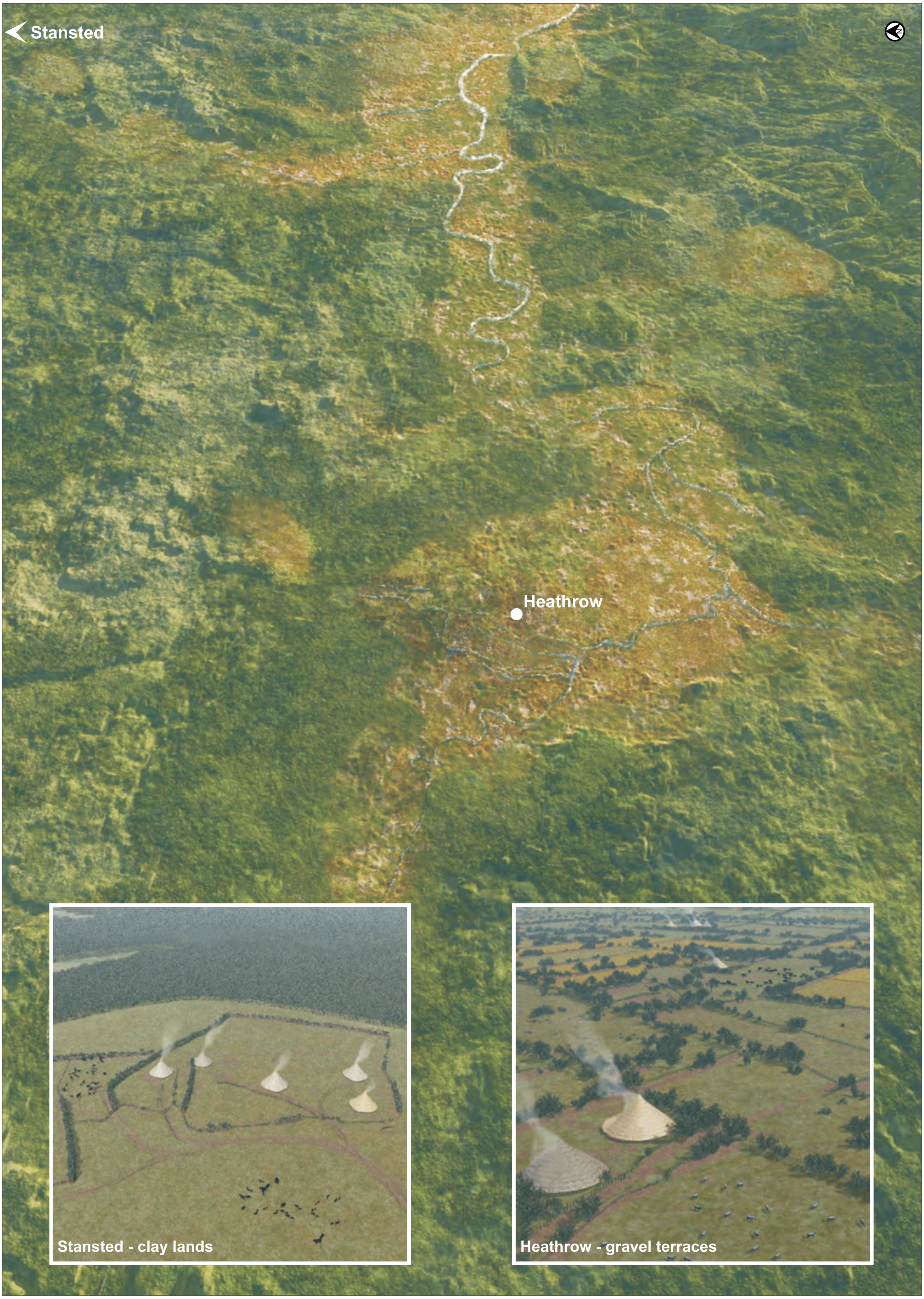
The centuries between *c* 2400 BC and 1600 BC were poorly understood in the 1976 and 2000 assessments, and the Terminal 5 excavations appear to have done little to improve matters. However, the excavations (in combination with others in West London, see Fig. 1.6) seem to confirm the suspicion that the communities inhabiting the higher gravel terraces of the Middle Thames did not construct large henge monuments in the later 3rd and early 2nd millennia, and the adoption of Beaker pottery and burial traditions appears to be superficial in the extreme. This Early Bronze Age period is important, both in its own right and also because the origins of the transformations that led to the construction of the 2nd millennium field systems lay at this time.

We have suggested that the mechanisms of ceremony and ritual that had been used to apportion landscape resources in the 3rd millennium continued to be used and to evolve into the early 2nd millennium, with the partial adoption of some Beaker associated artefacts (eg flintwork) and new pottery forms (the scraps of Beaker and Collared Urn). These artefacts were deposited in contexts which were the result of local practices and interpretations, such as the Aurochs burial (Cotton *et al*. 2006), pits containing pottery fragments (eg pit 707016 in T5C) and small ring ditches with poor artefact assemblages. Some time around 1600 BC, the tradition of using ceremony and ritual to apportion landscape resources, which had grown out of the monumental landscape of the 4th millennium, was replaced with physical landscape division.

The Middle Bronze Age agricultural landscape (1600–1100BC)

The creation of Middle Bronze Age field systems is widespread across southern England, and their extent has been mapped by Yates (2007), drawing on the huge increase in archaeological fieldwork following the implementation of PPG16 in 1990. Whatever caused this change was not confined to the Thames Valley, but was a fundamental change to society and farming practices which left lasting impacts on the landscape across large parts of Britain.

Revealing and documenting the evolution of the agricultural landscape of the second half of the 2nd millennium BC is perhaps the greatest contribution of the Terminal 5 excavations. It has illustrated the extent and complexity of the field divisions and trackways and the dispersed settlement pattern (Plate 6.1). We can see field boundaries and banks topped with hedgerows surrounding fields utilised for both arable and pastoral agriculture. The ubiquitous waterholes also provide evidence of woodworking to produce wattle revetments, tools and domestic utensils. This landscape could only be tentatively predicted in 1976 (Barrett 1976, 35), whilst in 2000, the first results of fieldwork from the 1990s were starting to filter through


Stansted
Heathrow
Stansted - clay lands
Heathrow - gravel terraces

(Brown and Cotton 2000), although control of agricultural land was still seen as predominantly a Late Bronze Age phenomena (Brown and Cotton 2000, 92), whilst field systems were not considered as fully as settlement and burial evidence or metalwork from the Thames.

It is worth considering for a moment that whilst Terminal 5 has contributed to our understanding of the 2nd millennium settlement pattern, the burial and metalwork evidence is relatively scarce. The scarcity of cremations at Terminal 5, apart from the small cemetery adjacent to farmstead 11 (Leivers this volume, Chapter 3), can at least be partly be explained by the previous truncation of the site by the airport and sewage works. In contrast, it is hard to view the scarcity of metalwork as anything other than a true pattern of deposition. The scarcity of metalwork is not confined to the Terminal 5 site: other large scale excavations by Wessex Archaeology (Crockett 2001, 2002 and Powell forthcoming) and the Museum of London (MoLAS forthcoming) between the M4 and A4 to the north of Heathrow have produced similarly low frequencies of Bronze Age metalwork. It is clear that in this part of the Middle Thames Valley, bronze artefacts were carefully collected for re-cycling and re-use and/or deposition. This would at least partly explain the distribution and composition of metalwork 'hoards' (discussed by Brown and Cotton 2000, 88) and of course, the rich metalwork finds from the River Thames (for a summary, see Brown and Cotton 2000, 86–8). One is therefore left to conclude that the discovery of any Bronze artefact in the West London landscape is a particularly significant occurrence.

If the Terminal 5 excavations have revealed the complexity of the 2nd millennium BC field systems on the Middle Thames gravel terraces, the organisation of the landscape on the London Clay of north Middlesex is far from clear, due to a relative paucity of fieldwork. For a possible model of Bronze Age settlement of the clay lands, we can instead turn to the recent excavations at Stansted Airport (Framework Archaeology 2008). Extensive excavations by Framework Archaeology (ibid.) and Essex county Council (Havis and Brookes 2004) at Stansted Airport have revealed a completely different form of 2nd millennium BC landscape, devoid of extensive field systems, on the Essex claylands (Fig. 6.1). Clearly, the field systems of the 2nd millennium were not universally adopted and Yates's map (2007, 111, fig. 12.2) shows large areas of Britain where no field systems have been detected. The Middle and Late Bronze Age Stansted settlements were predominantly located on valley sides, where the slopes would have aided drainage of the fertile soils, and would have been supplied with water from the streams in the valley bottoms or waterholes (Framework Archaeology 2008, figs 4.7 and 4.41). Extensive division of the landscape by fields and trackways is conspicuously absent, and natural features such as streams and brooks seem to have been more important in defining landscape blocks. We can thus suggest that, in the absence of large excavations on the London claylands, the landscape of the later 2nd millennium BC north of the Thames terraces would have had more in common with Stansted than Heathrow. This raises interesting questions regarding the contrasting agricultural regimes on the London Clay and the gravel terraces, and issues of short and long fallow agricultural systems and land tenure discussed by Barrett (1994, 143–4).

Facing page
Plate 6.1: The Middle Bronze Age landscape of the Middle Thames Valley, looking east

Overall, we see that the Terminal 5 excavations have made a major contribution to our understanding of the development of the landscape in the latter half of the 2nd millennium BC. Furthermore, there is now sufficient data available from large area excavations of landscapes with different topographies and geologies in other parts of southern Britain to begin the process of analysis at an inter-regional scale.

The Late Bronze Age and Early Iron Age agricultural landscape (1100–400 BC)

Returning to the gravel terraces of West London, the Terminal 5 excavations have documented the complex development of the settlement and field systems through the latter half of the 2nd millennium BC. Leivers (this volume, Chapter 3) has suggested that the large open area between trackways 11 and 3 acted as 'common Land' between the aggregate fields of the Colne Valley system to the west and the coaxial fields of the Heathrow Plateau system to the east. Fragmentation visible in the 'aggregate' field system around 1400 BC was followed by the coalescing of settlement around Farmsteads 3 and 4 in the final 2nd and early 1st millennia BC. In contrast, the 'coaxial' landscape to the east appears to have become increasingly sub-divided, with newer smaller settlements appearing during the same period (see Chapter 3). The arrangements of the field systems at Imperial Collage to the north (Crockett 2001; Powell *et al*. forthcoming), Cranford Lane to the north-east (MoLAS forthcoming) and Horton to the south-west (Chaffey *et al*. forthcoming), all differ. Clearly, local solutions to questions of tenure and land use were being adopted within an overall social framework, giving rise to a mosaic of fields, trackways, common land and settlement.

In the *Archaeology of Greater London*, it was noted that Early Iron Age settlements were scarce, and this had been used to suggest a diminution of activity compared with the Late Bronze Age (Waite and Cotton 2000, 105). Unfortunately, the Terminal 5 evidence is insufficient to understand in detail the inhabitation of the landscape during the Early Iron Age from *c* 700 to 400 BC.

The study of development during the first half of the 1st millennium BC is hampered by problems with radiocarbon dating and ceramic chronologies, but at Heathrow it is clear that from 400 BC onwards, a single larger central settlement replaced all the other

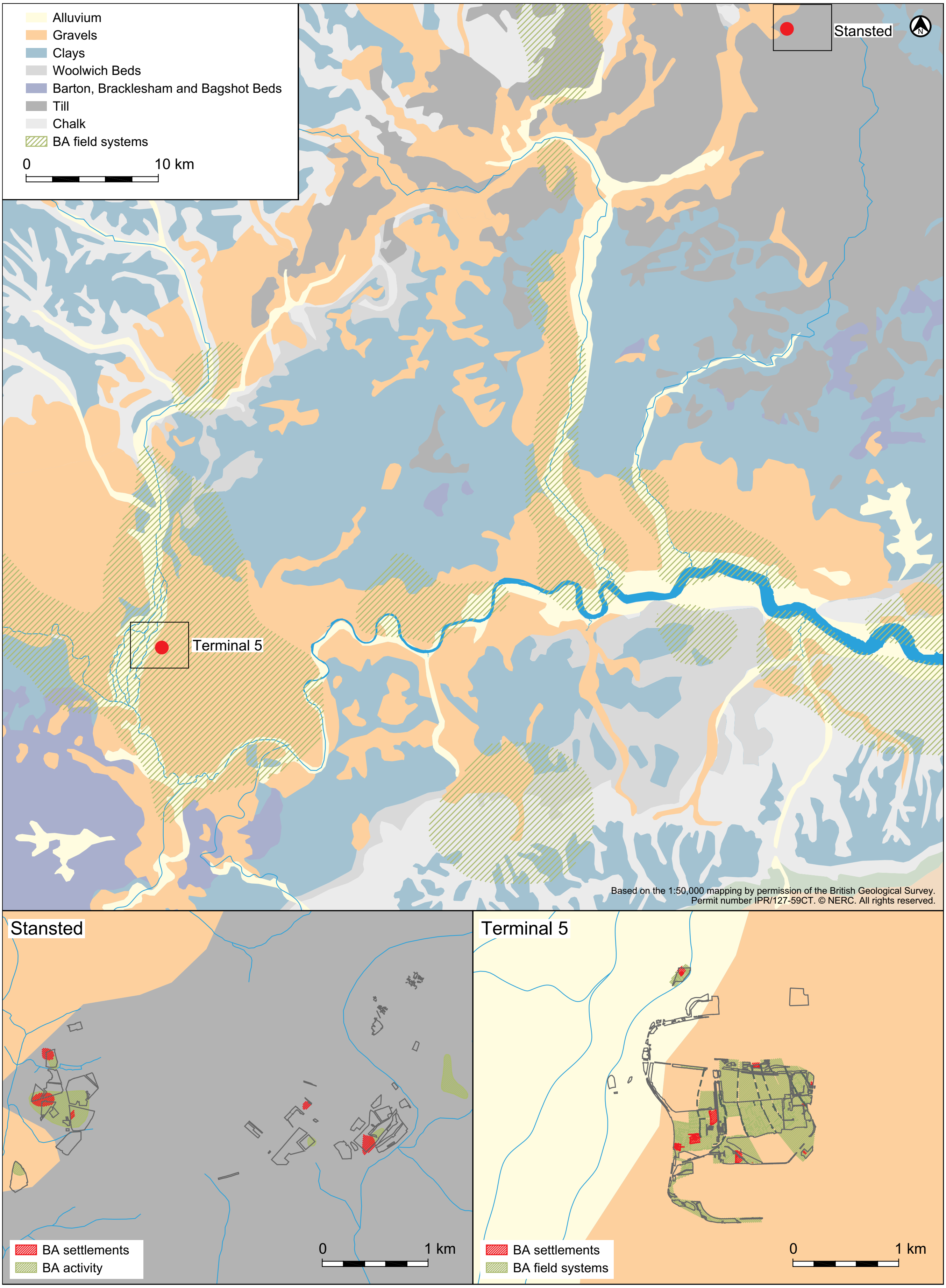


Figure 6.1: Comparison of the Middle and Late Bronze Age landscapes at Heathrow and Stansted

scattered settlements of the Middle and Late Bronze Age (see below). The processes that led to this (including environmental change and soil degradation) have been considered already (see Chapters 3 and 4); however one of the most compelling reasons lies in the nature of the closely sub-divided landscape. The successful development of the individual landholdings may paradoxically have required more co-operation between groups. In other words, successful development would have reached a point where it could only continue by farmsteads working in co-operation, rather than isolation. Within the wider context of Bronze Age society, co-operation also depended on complex networks of gift exchange (eg Rowlands 1980), and the collapse of these networks in the 8th Century BC as iron replaced bronze would have had a marked effect on social organisation and hence settlement pattern and land use (Framework Archaeology 2006, 166). At Heathrow, the location of the single settlement in the area of 'common land' between Trackways 3 and 11 can be traced to the Late Bronze Age, but it is from the Middle Iron Age (400–100 BC) that an archaeologically distinct settlement becomes apparent in the centre of the Terminal 5 site.

The Middle Iron Age to the end of the Roman period (400 BC–AD 400)

Compared with the Early Iron Age, the Middle Iron age of West London was well documented (Wait and Cotton 2000, 106). Iron Age sites in the Middle Thames and Heathrow in particular have been comparatively well represented in previous excavations. The famous site of the Heathrow 'temple' and earthwork enclosure was excavated by in 1944 ahead of construction of the airport and finally published in 1993 (Grimes and Close Brookes 1993). To the south of the airport, Iron Age settlement structures have been excavated at Mayfield Farm, East Bedfont (Farrant 1971 and MoLAS forthcoming), while to the north, at Stockley Park, a small settlement of three or four roundhouses was excavated by the Museum of London in the mid 1980s (MoLAS forthcoming and Merriman 1990). In Surrey, Iron Age settlement evidence has been recovered from Ashford Prison (Carew *et al*. 2006), and at Eton Rowing Course in Buckinghamshire an Iron Age boundary ditch was cut diagonally across a Middle Bronze Age field system, but avoided two double enclosures that it contained (Allen and Mitchell 2001). Extensive Iron Age settlements have also been excavated in the Upper Thames, such as at Cotswold Community (Powell *et al*. 2010) and Claydon Pike (Miles *et al*. 2007).

Wait and Cotton made the observation that in spite of a comparative wealth of settlement evidence, the landscape organisation and subsistence economy were less easy to document, although they did suggest that earlier field systems continued to be used (Wait and Cotton 2000, 106). It is here that one of the main contributions of the Terminal 5 excavations to the study of the period 400 BC–AD 400 can be found. Namely, that we have achieved an understanding of the development of a settlement and its economic basis and how it was situated within its landscape. For example, Brown and Smith (this volume, Chapter 4) have shown how the location of the settlement in the 'common ground' between the two Bronze Age field systems would not have been accidental. This was the only large open area available to build a new settlement, but furthermore, would have represented a neutral area where the families from the aggregate landscape of the Colne Valley and the coaxial landscape of the Heathrow Plateau could join together. The result was that from 400 BC onwards the settlement pattern changed to more widely spaced but larger settlements (eg the Phase 1 settlement at Terminal 5 consisted of at least 10 roundhouses; Chapter 4, Fig. 4.20), which farmed as a single community the previously separate farmsteads of the 2nd millennium.

The extent of the Terminal 5 excavations make it clear that the settlement was, compared with those of the 2nd millennium, relatively isolated (see Fig. 4.1). The only other indications of possible settlement were a small enclosure and a few pits at the extreme east of the excavated area, which could represent the periphery of another settlement. Failing this, the nearest known settlements are the Heathrow 'temple' site, 3.2 km to the north-east, and Mayfield Farm 2.9 km to the south-east. The landscape surrounding Iron Age settlement in other parts of the Middle Thames has also proved puzzling, as, compared to the ubiquitous field ditches of the 2nd millennium, Iron Age field boundaries are relatively scarce. This has led some authors to propose that the 2nd millennium fields were abandoned, even 'decommissioned' (Yates 2007), to be replaced with, presumably, an open prairie-like plain (although note the suggestion by Wait and Cotton of continued use of earlier fields: see above).

Brown and Smith, together with the environmental specialists (this volume, chapter 4), have shown that some of the old Bronze Age fields were abandoned and the landscape does seem to have become more open. Grazing and pastoralism appears to have been the main form of subsistence as evidenced by environmental data and the construction of small stock pens. It seems that arable agriculture played a much smaller part in the economy than in the Middle Bronze Age. Nonetheless, it is also clear that many of the old field boundaries remained, and were only altered or demolished where necessary. Thus the Middle and Late Iron Age settlement was not located in a landscape wiped clean of earlier features, but in a landscape with a skeleton of old field boundaries, trackways, hedgerows and ancient Neolithic earthworks (see Fig. 4.2). These were the structural conditions that the people of the Iron Age inherited and transformed through the agency of inhabitation. In contrast, on the Essex claylands at Stansted, the Iron Age inhabitants did not inherit an enclosed landscape from the 2nd millennium, and it was not until the Middle and Late Iron Ages that droveways and major field banks were built, starting the process of reordering the world with physical boundaries 1000 years after this was first undertaken at Heathrow (Framework Archaeology 2008).

The Middle Iron Age developments at Terminal 5 continued into the Late Iron Age and early Roman period, though with increasing modifications such as different architectural forms, larger more agglomerated stock pens and—much more significantly—a complete realignment of the eastern Bronze Age field system, possibly associated with increased arable cultivation. Similar accelerated changes were seen at other settlements in the Heathrow area such as Imperial College Sport Ground, although the changes were certainly not uniform, and the overall impression is of quite a varied local landscape, generally developing in a piecemeal fashion throughout the Iron Age and into the Roman period. Some elements of older Bronze Age field systems no doubt continued in use (or were still at least visible parts of the landscape), as seen with the western lower lying area at Terminal 5, while some field boundary alignments had clearly been first laid out in the earlier Iron Age. The later Iron Age and early Roman period saw further elaboration of these existing field systems along with the creation of other systems, perhaps responding to new economic or social stimuli. Defined trackways also developed, though in many cases these don't appear to date to before the later 1st century AD, possibly under Roman influence.

In all cases, the agrarian landscapes continued to develop quite intensively until at least the 2nd century AD, and the increased network of trackways in the wider landscape presumably linked the disparate farmsteads with market centres in the newly established towns. The evidence overall suggests that many settlements in the Heathrow landscape reached their peak in the later 1st to early 2nd century AD, with an accompanying intensification of agricultural production. All settlements still appeared to have operated mixed farming regimes, although there is evidence for an increase in arable production as well as diversification into economic activities such as hay-making. It is likely that this agricultural expansion was associated with the need to create a surplus within the emerging Romano-British economy, though there is little evidence for any great archaeologically detectable wealth, and very few early to mid Roman coins. The economic fortunes of many of these settlements, which can mostly be described as simple low-status farmsteads, may have depended to some degree on the emergence and development of the small town at Staines and of course the major trading centre at London. The apparent decline of these urban centres from the later 2nd century could in part explain an accompanying decline in some settlements, although this was not the case at Terminal 5. However, the major social, political and economic upheavals of the late Roman period in Britain may be traced in the rural landscape of Heathrow.

While the main settlement at Terminal 5 itself exhibits few significant developments in the later Roman period, aside from the appearance of a substantial posthole structure, the eastern field system was transformed by the creation of a huge 'ladder' enclosure and associated droveway, designed to accommodate high levels of livestock traffic. This system was probably linked to another substantial droveway and 'ladder' system to the north at Imperial College Sports Ground and may have continued southwards towards the town at Staines. This suggests a greater emphasis on pastoral agriculture during the later Roman period, probably associated with cattle farming.

Similar levels of agricultural expansion and specialism are witnessed across the wider Heathrow region at this time, with signs of new field boundaries, enclosures, corn driers and even newly founded settlements. The impetus for such development was probably commercial, perhaps driven by wealthy estate owners to maximise profits in a steadily changing economic environment. Farms like the one at Terminal 5 may have been incorporated (if they were not already) into large managed agricultural estates (*latifundia*), perhaps belonging to the owners of more remote villas and/or wealthy townhouses in London. Rural farmers on these estates may have become *coloni*, essentially subsistence workers who were tied to the land in service of the estate, though also able to produce a meagre surplus for themselves.

It would seem that there is little evidence for the Heathrow settlement continuing beyond the end of the 4th century, with many other settlements in the area also probably in decline by at least the middle of the 4th century. If this landscape was part of a large managed estate, then the fairly rapid decline could be explained by the general economic uncertainties and decline in eastern Britain at this time—it was part of the more widespread disintegration of the Roman social, political and economic state.

The Terminal 5 excavations have shown a remarkable degree of continuity in settlement from the Middle Iron Age to the end of the Roman period. Although domestic architecture and agricultural practices changed during this period, the settlement remained essentially a small rural agricultural community. Continuity of settlement in East London had been noted by in the Archaeology of Greater London (MoLAS 2000, 155), although at the time it was felt harder to document this for West London. The major changes occurred within the wider world: changes to Late Iron Age society, the Roman conquest, the founding of *Londinium* and *Pontes* (Staines). These much wider economic, social and political changes can be seen in the rearrangement of the fields and the construction of the 'ladder enclosure' to name but two examples. It is to be hoped that the Terminal 5 excavations, along with an increasing body of other excavated evidence from the last decade, may move the focus of Romano-British studies in the Middle Thames away from *Londinium* and other towns to the rural landscape that helped support these urban centres. For example, *The Archaeology of Greater London* devotes approximately 25 pages to the Roman City of London, whilst the countryside is dealt with in less than six (MoLAS 2000, 127–152).

Saxon and medieval to the modern day

Compared to the prehistoric and Roman periods, the contribution of the Terminal 5 excavations to the understanding of the evolution of the Middle Thames landscape through the Saxon and medieval periods is more limited.

As we have shown, by AD 400 the fertile brickearth capped gravel landscape of Heathrow had been shaped by over 2000 years of mixed agriculture and settlement on an intensive scale. The landscape would have been largely clear except for relict hedgerows and droveways ranging in date from the Middle Bronze Age to the late Roman period, and it is highly likely that heath land was already established to the east of Terminal 5 by the Roman period.

Throughout this book, we have argued that almost all the changes that we have observed archaeologically had their roots in earlier practices and values attached to places. For example, the Stanwell Cursus has clear links with the pre-cursus landscape, the monuments of the later Neolithic were built to accommodate the cursus complex, and the middle 2nd millennium BC land divisions may have echoed the social groupings of the Early Bronze Age. However, the early Saxon period may mark the first clear break with the past history of inhabitation at Heathrow.

The settlement pattern of the early–middle Saxon period was characteristically dispersed and transitory, with the small Saxon settlement of sunken-featured buildings, pits and postholes south of the medieval and present day village of Longford being a good example. Although there is clearly a large gap from the early Saxon to the early medieval period, the evidence from Longford shows how a medieval settlement could develop from a Saxon precursor. At Heathrow, the middle Saxon period saw the emergence of more stable settlement locations with increasing nucleation in the late Saxon period leading to the familiar pattern of villages and open fields. During the early medieval period, the remaining woodland was cleared and heath land reclaimed from small hamlets, expanding settlement away from the villages.

The Terminal 5 excavations revealed a complex of field-barns, enclosures and fields at Burrow Hill which formed part of the medieval agricultural system. Perhaps the most important contribution of the Terminal 5 medieval evidence is that it demonstrates the longevity of the Middle Bronze Age field banks and hedges at Burrows Hill (area 49). The Stanwell Enclosure map of 1748 clearly depicts field boundaries that the archaeological excavations proved were medieval (Fig. 5.25). However, those medieval ditches in many instances followed the alignment of Middle Bronze Age ditches which must have been fully silted by the medieval period (Fig. 5.14). The most plausible explanation is that the medieval field boundaries followed banks and hedgerows which were relics of the 2nd millennium BC field system. Of course, large areas of the Bronze Age field system had disappeared or had been altered in the Roman period, but clearly pockets of 2nd millennium BC landscape were still extant in the late 18th century AD, if not later.

The post-medieval rural tranquillity of Heathrow was disturbed with the construction of the Perry Oaks Sludge works in 1935 and the whole landscape changed in 1944 with the construction of Heathrow Airport.

Conclusion

The archaeological investigations at Terminal 5 have demonstrated a remarkable history of human inhabitation. It has demonstrated the extraordinary scale of human endeavour in changing the natural environment, and how successive generations came to change the landscape they inherited. We hope we have shown how the project has contributed to advancing our understanding of this particular part of the Middle Thames landscape since the last strategic overview in 2000.

The Terminal 5 project has again shown the value of investigating very large areas of landscape. The challenge for the future, both for the Heathrow area and for British archaeology in general, is to devise a process whereby the results of many excavations by different organisations that have resulted from PPG16 can be brought together to form an atlas of past human inhabitation. In this respect it is hoped that the data displayed in the Freeviewer in this book and the on-line version hosted by ADS will provide a model for an online digital atlas that will move beyond the portrayal of archaeological sites and finds as a series of dots or site outlines.

In 2000 the hope was expressed (Andrews *et al.* 2000, 530) that the Terminal 5 project would show that a particular theoretical approach to archaeological practice can produce cost effective and interesting results to the benefit of clients, archaeologists and general public alike. This aspiration was largely in response to the way in which commercial archaeology in Britain had developed since the introduction of PPG16 in 1990, with its emphasis on the primacy of 'the record' and a consequent deferral of interpretation (Andrews *et al.* 2000, 527). Our hope has been that this volume, together with Volume 1 (Framework Archaeology 2006) and the volume on excavations at Stansted Airport (Framework Archaeology 2008), will demonstrate that we have gone some way towards fulfilling this aim. The impact of the Terminal 5 project within the archaeological profession was demonstrated in 2008, when the project was awarded the Best Archaeological Project Award and the Freeviewer was highly commended as Best Innovation at the British Archaeological Awards. It is pleasing to note that the new Planning Policy Statement 5 has shifted the emphasis away from PPG16's 'preservation by record' and instead placed advancing 'our understanding of the past' at the heart of the document. It was this desire to make a tangible and significant contribution to the knowledge and understanding of past lives which has been fundamental to the ethos that has guided the Terminal 5 project.

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The construction of an additional passenger terminal (Terminal 5) at Heathrow Airport was preceded by one the largest archaeological investigations ever undertaken in the UK. The previous volume revealed the results of earlier phases of work in 1996 to 2000, while this volume presents a complete account of all excavations up to 2007.

The earliest evidence for human activity revealed in the Terminal 5 excavations related to hunter-gatherers in the 7th or 6th millennia BC. By the end of the 4th millennium BC the landscape had been transformed by a series of major cursus monuments, which were part of a significant ceremonial centre. Further changes by the early 2nd millennium BC resulted in the first archaeologically detectable settlements, fields and trackways. Major elements of this Bronze Age agricultural landscape persisted right up to the medieval period.

A nucleated settlement of Middle Iron Age date remained as a focus of occupation right through into the later Roman period. There is no evidence for post-Roman continuity, although the remains of a dispersed early Saxon settlement were revealed further to the north-west. Extensive medieval and post-medieval activity was found across much of the excavated area, largely comprising field systems and agricultural buildings. The character of the Heathrow landscape remained predominantly rural well into the 20th century.

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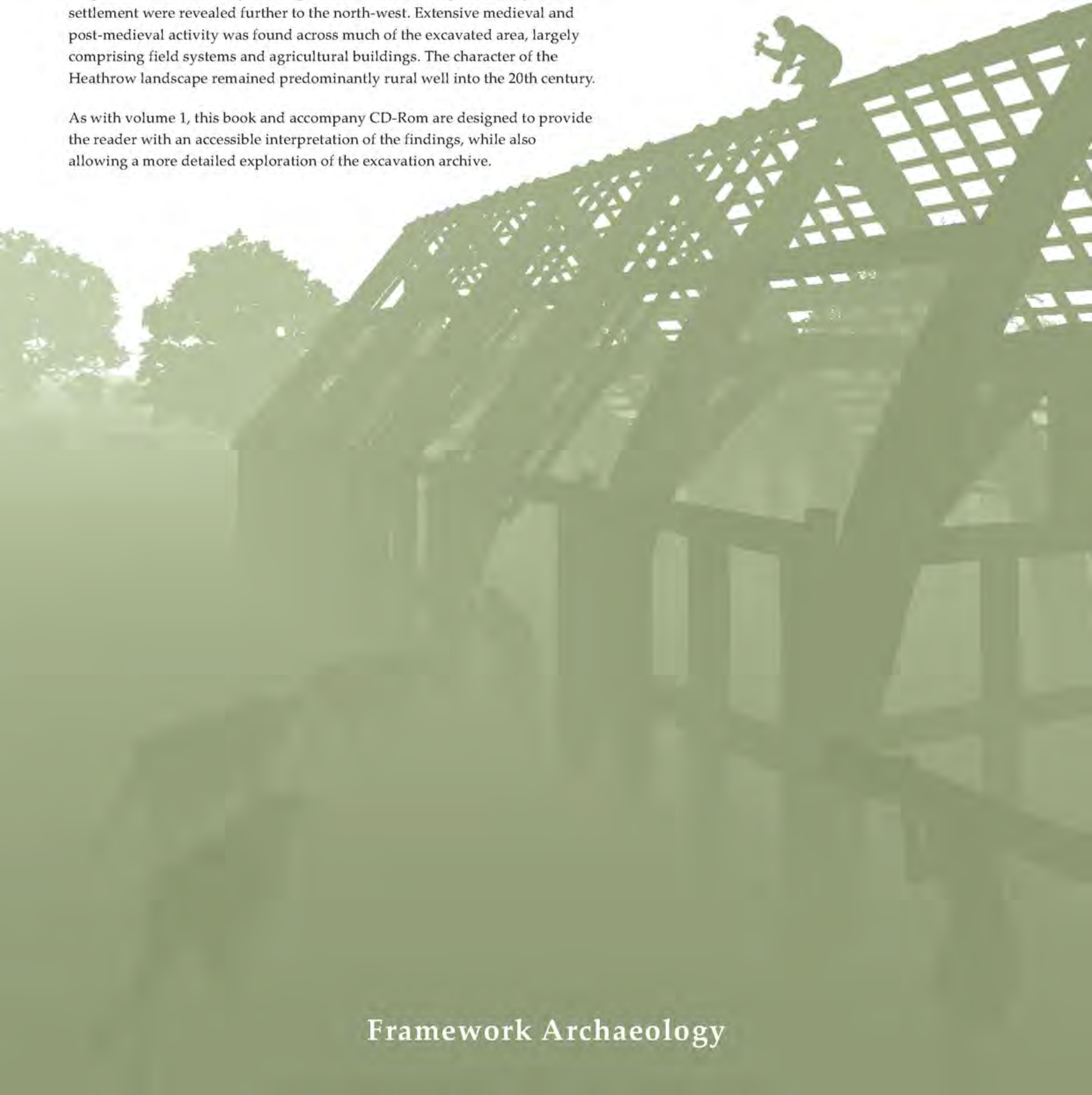

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