Proceedings of the Cambridge Antiquarian Society

(incorporating the Cambs and Hunts Archaeological Society)

Volume XCVI
for 2007

Recent Publications of the Cambridge Antiquarian Society

Proceedings XCIII, 2004: Price £12.50 for members, £14.50 for non-members

Steve Boreham: *The Structure and Formation of the Wandlebury area*
Jon Murray: *Prehistoric Lithics from Station Road, Gamlingay, Cambridgeshire*
Charles French: *Evaluation survey and excavation at Wandlebury ringwork, Cambridgeshire, 1994–7*
Mary Alexander, Natasha Dodwell, Christopher Evans: *A Roman Cemetery in Jesus Lane, Cambridge*
Natasha Dodwell, Sam Lucy, Jess Tipper: *Anglo-Saxons on the Cambridge Backs: the Criminology site settlement and King's Garden Hostel cemetery*
Craig Cessford with Alison Dickens: *The Origins and Early Development of Chesterton, Cambridge*
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Kate Nicholson: *Medieval deposits and a cockpit at St Ives, Cambridgeshire*
Mary Alexander, Elizabeth Shepherd Popescu: *Excavation of medieval burials associated with St Neots Priory*
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Peter Bryan, Nick Wise: *Cambridge New Town – A Victorian Microcosm*
Field-Work in Cambridgeshire 2004
Alison Taylor, Tony Kirby: *Reviews*
Summaries of 12 March 2005 Spring Conference papers: *Garden History and Archaeology in East Anglia*
THE CONDUIT: *local history and archaeology organisations and events*

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Phil Andrews: *Romano-British and medieval saltmaking and settlement in Parson Drove, Cambridgeshire*
David Baxter: *Roman tumuli or medieval industry? Moulton Hills, Bourn, reconsidered*
Kate Nicholson: *A late Roman Cemetery at Watersmeet, Mill Common, Huntingdon*
Tim Malim: *A Romano-British temple complex and Anglo-Saxon burials at Gallows Hill, Swaffham Prior*
James Wright: *An Anglo-Saxon settlement at Cherry Orton Road, Orton Waterville, Peterborough*
Christopher Taylor: *Landscape History, Observation and Explanation: the missing houses in Cambridgeshire villages*
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Philomena Guillebaud: *Changes in the landscape of west Cambridge after Enclosure 1805–1870*
Archaeological Notes: *Romano-British buildings at Tunbridge Lane, Bottisham TL 5453 6095; Medieval land reclamation and subsequent occupation on High Street, Ramsey TL 2870 8506; Animal carcasses in a Roman ditch, West End, Haddenham, TL 4613 7552*
Fieldwork in Cambridgeshire 2005
Obituaries
Anne Holton-Krayenbuhl, Tony Kirby, Alison Taylor: *Reviews*
Chris Jakes: *Recent Accessions to the Cambridgeshire Collection*

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Editor Sarah Bendall

Published by the Cambridge Antiquarian Society 2007
ISSN 0309-3606

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Cambridge Antiquarian Society

Report for the Year 2006

Membership: 20 Members and 2 Associates joined during the year. 4 Members and 1 Associate died, 13 Members and 2 Associates resigned. There were 2 new Affiliated Societies and 2 Affiliated Societies let their membership lapse. There were 3 new Institutions, 4 Institutions cancelled their subscriptions and 2 Institutions were removed. There are now 408 members and 56 Associates, 50 Affiliated Societies and 64 Subscribing Institutions.

MEETINGS: There were four Council meetings and nine Ordinary meetings, at which the following lectures were given:

Mr G Owen	*Archaeological Photography – Whither Away?*	9 Jan
Dr D Banham	*Yes, but what did they have for breakfast? Anglo-Saxon Food & Drink*	6 Feb
Prof A Legge	*Edward Daniel Clarke and the Rosetta Stone*	6 Mar
Dr M Page	*Medieval Villages in an English landscape*	3 Apr
Mr T Kirby	*The Rise and Fall of the English Seaside Resort 1750–2005*	8 May
Prof N Hammond	*New Light on the Ancient Mayan Town of La Milpa*	5 June
Mr D Robertson	*The Norfolk Rapid Coastal Survey – the archaeology of the Norfolk coast*	9 Oct
Dr G Garrow	*Pits: exploring settlement & deposition in the Neolithic in East Anglia*	6 Nov
Dr P Smith	*A Fruitful Marriage of Interests & a Tea-Room Empire: CAS and Archaeology & Anthropology at Cambridge University*	4 Dec

In addition, a one-day conference on *The Medieval Castle in East Anglia and Beyond* was held on 11 March and was attended by just under 200 people, about 45 of whom were members of the Castle Studies Group. More than 100 people attended the conference *Recent Archaeological work in Cambridgeshire* on 25 November.

EXCURSIONS: There was an increased number of excursions this year. Mrs Holton-Krayenbuhl led a group of 18 on a walk around medieval Ely on 5 April. 15 people went to Leicester, led by Mrs Allan, on 22 April. A group of 22 people went to Stowe on 20 May and 18 visited Wisbech & Thorney on 14 June with Mr Kirby. 24 visited Churchill College on 5 July, 12 people toured the Sidgwick site on 7 October and Dr Booth led a group of 10 on a walk around Milton on 21 October.

PUBLICATIONS: Volume 95 of the *Proceedings* was published in September. This year, a partnership with the Cambridgeshire Association for Local History enabled *The Conduit* to be produced once again as a separate publication. A copy was sent to all affiliated societies and multiple copies were made available in libraries, record offices, archaeological units and continuing education institutions. Individual members were able to access *The Conduit* on the Society's website (ww.camantsoc.org) or to request a paper copy.

The Society administers a journal exchange programme with 100 institutions, mainly other archaeological societies and university departments, from both Britain and abroad. Journals received are deposited in the Haddon Library.

REPRESENTATIVES: The Society was represented by Mrs Holton-Krayenbuhl on Cambs Archives Advisory Panel; Dr James on the Faculty Board; Mr Taylor on the University Museum Committee; Dr Allen on the Cambs Records Society; Dr Pickles on the Haddon Library Committee; Mr Burn-Murdoch on Cambs Curators' Panel; Mrs Ridout on the committee of Cambs Association for Local History; Mr Pritchett on the Council for British Archaeology and Mr Kirby on Cambridge City Council Conservation and Design Panel. During the year, the City Council decided to re-constitute the latter and the Society will regrettably no longer have a representative.

FINANCE: The financial state of the Society at the end of 2006 continues to be sound. There was a surplus of £5,492 from the normal activities during the year. £220 was spent on compiling the index of Council minutes and £1,300 invested in Government Stock. After allowing for known commitments, the reserves on 31 December 2006 were £17,027; this is in the permitted range set in 2005, and is considered satisfactory.

OTHER MATTERS: Council has been keen to encourage the interest of young people in their local heritage and grant aid has been sought to provide an opportunity for Cambridgeshire school pupils to participate in a practical archaeology/local history project. Council has also decided to make available the sum of £500 per annum (initially for three years) to be disbursed in grants to assist projects on local archaeology and history in Cambridgeshire, carried out on a voluntary basis by groups or individuals.

Throughout the year, the Society has continued to be represented at local history and other events in the county and has continued to act as a source of information, not only on its own work, collections and publications but also for enquiries relating to local heritage generally.

GOVERNANCE: The conduct of the Society is governed by the Laws dated 1988 (amended 2003). Management is vested in an elected Council whose members' names are published annually on the membership card/lecture programme.

Cambridge Antiquarian Society Accounts for the Year Ended 31/12/2006

Registered Charity 299211 • Founded 1840

PAYMENTS

2005		2006
258.00	Lectures: Publishing Programme	307.85
470.36	Expenses	330.28
8811.75 (c)	Proceedings Vol XCIV Publication	
1718.54	Delivery	
	Proceedings Vol XCV Publication	7172.68 (c)
	Delivery	1018.75
	Conduit	620.46
1250.40 (d)	Conference: March	1541.13 (d)
281.88 (d)	November	302.37 (d)
1462.30 (d)	Excursions	951.99 (d)
398.90 (d)	Mailings: Delivery Charges	283.36 (d)
99.00	Subscriptions (CBA, Rescue, CRSoc)	102.00
100.00	Haddon Library: Conservation	100.00
454.15	Office Expenses, Web Site	454.85
250.00	Emolument: Registrar	250.00
146.00	Publicity	146.00
203.10	Insurance	206.10
682.00 (e)	Index of Council Minutes	220.00 (e)
120.00	Refund of Subscriptions/Misc.	0
16706.38	Sub-Total	14007.82
4000.00	Purchase of Investments	1300.00 (f)
20706.38	**Total Payments**	15307.82

RECEIPTS

2005		2006
6852.50 (a)	Subscriptions: Members & Societies	7266.75 (a)
681.86	Tax Reclaimed	862.37
900.00	C.U. Archaeology Dept.	900.00
3910.00	Proceedings Vol XCIV: Grants	
	Vol XCV: Grants	4600.00
	Conduit	265.23
1121.38	Conference: March	2221.00
279.00	November	312.00
1838.00	Excursions	1092.00
281.04	Sales of Publications	128.28
375.30 (b)	Royalties, Misc.	129.70 (b)
661.60	Investment Income (gross)	863.66
882.65	Interest NSB (gross)	834.20
17783.33	Sub-Total	19475.19
17783.33	**Total Receipts**	**19475.19**
20706.38	less Payments	15307.82
-2923.05	**Surplus/Deficit**	4167.37
25229.34	Cash Funds Last Year End	22306.29
22306.29	Cash Funds This Year End	26473.66 (h)

Statement of Assets & Liabilities 31/12/2006

Cash Funds: Current A/c	738.72	
Deposit A/c	25734.94	
Total	**26473.66** (i)	
Investments: Treasury Stock 2007 8½%	2529.98	
Treasury Stock 2007 7¼%	2276.97	
Treasury Stock 2008 5%	5330.28	
Treasury Stock 2009 4%	3277.54	
Liabilities: Planned Expenditure	9447.00 (j)	

C. B. Pritchett, Hon Treasurer
8 January 2007

R. E. Seaton I. P. F. A. Hon Auditor
16 January 2007

Notes

The presentation of the accounts conforms to guidance provided by the Charity Commission. Comment on some of the entries is given in the following notes:

a. *£195, due in 2005, was received in 2006.*

b. *Royalties from the use of photographs £122 (2005 £276).*

c. *Includes £1000 paid to the editor, who is also a trustee.*

d. *The cost of mailing details of conferences and excursions has been attributed to the event.*

e. *Exceptional expenditure; not a normal, annual activity.*

f. *Treasury Stock listed in Statement of Assets and Liabilities.*

g. *This figure includes transactions relating to the purchase of investments (f) and the exceptional cost of the index (e); excluding these amounts and the £195 subscriptions due in 2005, the surplus from the normal activities of the Society in the year 2006 is £5,492.*

h. *In 2005 the Council reviewed the policy for the reserves held by the Society and concluded that the cash funds less liabilities (j) should be maintained in the range £10,000 to £20,000; on 31 december 2006 the reserves were £17,027.*

i. *Includes Ladd's bequest earmarked for events associated with Huntingdon; with interest the sum is now £847.*

j. *Planned expenditure: PCAS Vol XCI £8600, Ladd's bequest (i) £847.*

Contents

Cover: 'Ploughing over the site of the Roman villa, The Quave Trees in the background' by George Maynard of Whittlesford, courtesy of the Cambridgeshire County Record Office. Old pictures such as this are a remarkable resource for historians.

A Late Bronze Age enclosure at Lynton Way, Sawston, Cambridgeshire

Phil Weston, Andrew A. S. Newton and Kate Nicholson

with contributions from Martin Tingle, Peter Thompson, Carina Philips and Val Fryer; illustrations by Caroline George

In October 2005, an archaeological excavation was undertaken by Archaeological Solutions Ltd on land at Lynton Way, Sawston, Cambridgeshire. The excavation revealed the southern part of a D-shaped enclosure, with an entrance located on its south-east side; the ditches extended beyond the limits of the excavation but the remainder of the enclosure and its associated field systems have been identified in an aerial photographic assessment (Palmer 2005). Along with further enclosures identified to the south-west, the excavated enclosure might have been part of a wide-reaching unified system of land apportionment. Close to its entrance, the enclosure ditch was cut by a large pit which might have had symbolic significance. In the north-west corner of the excavation, within the enclosure, two partial concentric circles of postholes and stakeholes were identified and interpreted as representing a roundhouse. Artefacts were sparse but the pottery and struck flint assemblages were consistent with the date of c. *1100BC indicated by radiocarbon dating.*

The investigation of this site, located east of Lynton Way and the Icknield County Primary School, on the northern edge of Sawston (NGR TL 4942 4977; Fig. 1), has revealed a circular building set within a Late Bronze Age enclosure shown by aerial photographic survey (Palmer 2005) to be part of a wider system of land apportionment. Large-scale systems of land division are known in the region, particularly from the western fen edge area (e.g. Pryor 2001; Pryor 2006, p. 123), but these differ somewhat in form from those identified in the Sawston area. As well as verifying the Late Bronze Age date of the excavated and cropmark features, post-excavation research has sought to understand their significance in terms of the contemporary development of south Cambridgeshire, and to place them in context by establishing the nature of the landscape in which they were set and their relationship to contemporary sites in the area.

Sawston, which lies about 10 kilometres south-east of Cambridge (Fig. 1), between the Rivers Cam and Granta, has been an attractive area for settlement from prehistory onwards. Early activity might have been stimulated by the proximity of the Icknield Way, which brought people through the area, and by the light gravel soils of the Cam valley, which could itself have formed another important regional route (Woolhouse, Williamson & Harris 2005). Bronze Age activity in the Sawston area is better attested than that of earlier periods. A swathe of settlements and burial sites of this date runs south-west to north-east along the chalk hills of south Cambridgeshire (Last 2000), though settlement might have remained concentrated on the light river gravels, particularly those of the Cam, to which the available agricultural technology of the period was suited. At least ten Bronze Age ring-ditches, probably the remains of barrows, lie to the north of Sawston. Several Early Bronze Age flint daggers, typical of the Beaker culture, have also been found approximately one kilometre north-east of the Lynton Way site. A Late Bronze Age hoard, including three axes and two spears as well as several broken pieces, typical of the sort left (but never collected) by travelling smiths on the Icknield Way, has also been found in Sawston Parish (Taylor 1998, p. 75).

Bronze Age enclosures have recently been excavated, along with evidence for Iron Age settlement, at Sawston Police Station (Mortimer 2006a; Cessford & Mortimer 2004), and an investigation at Sawston Hall has identified Bronze Age, as well as later, activity (Mortimer 2006b). Cropmarks indicating the presence of enclosures in the immediate area of and about 200 metres south-west of Lynton Way were known prior to the current investigation (Cambridgeshire Historic Environment Record (HER) 04118); several of them have been built over without formal archaeological investigation. Although no direct dating evidence had been found for them, they had been tentatively considered to be of Roman date, based on their form and on a find of Romano-British pottery not far from the more south-westerly group.

The Iron Age enclosed or fortified sites of Borough Hill and Wandlebury Ringwork lie 2.3 kilometres west and about four kilometres north, respectively, of the Lynton Way site and form part of a string of such sites stretching from the Thames to the fen edge, dividing East Anglia from the rest of the country. This line

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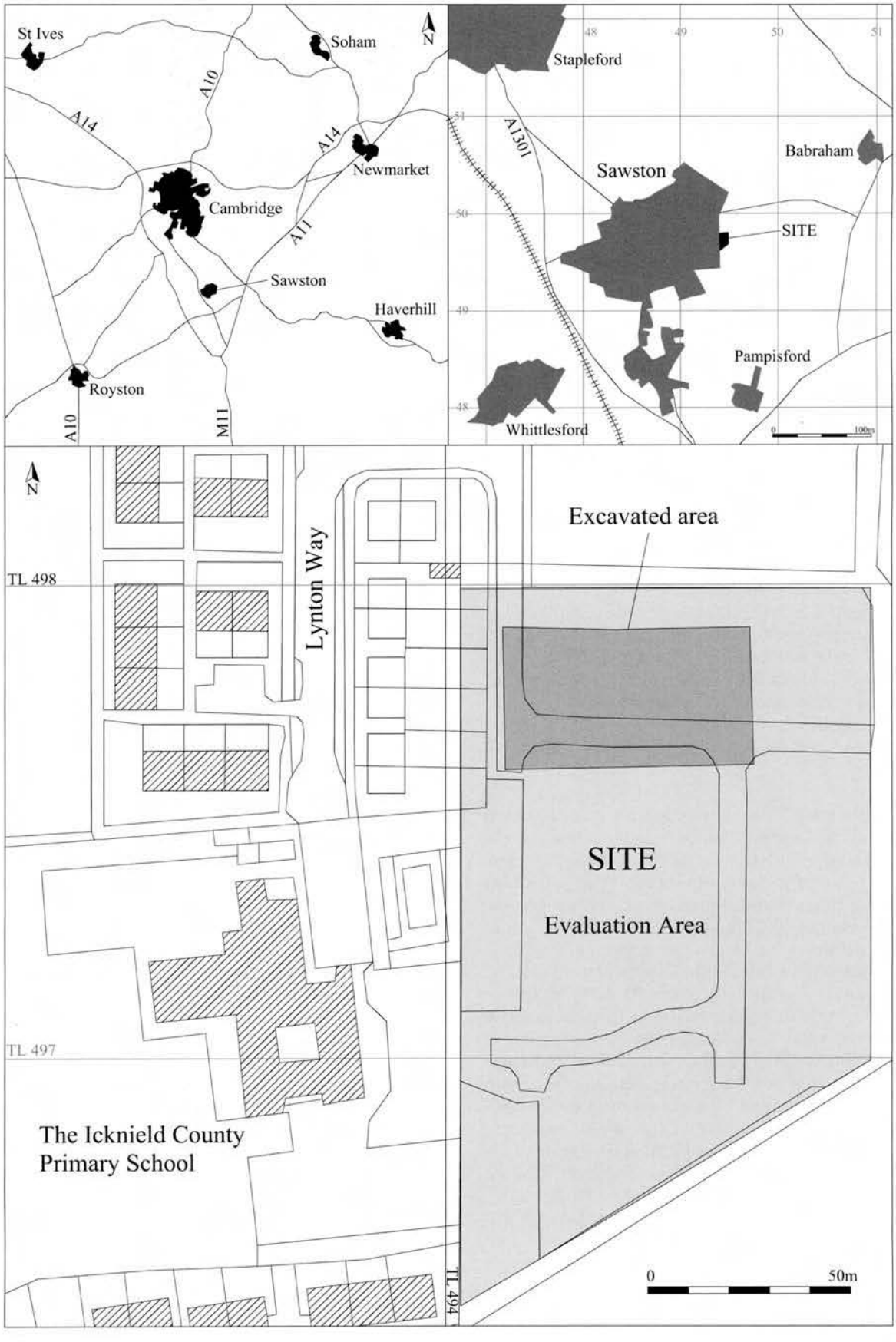

Figure 1. *Site location.*

of fortifications might have its origins in inter-tribal conflicts, as the territories of the Iceni, Trinovantes and Catuvellauni, all met in Cambridgeshire (Bray & Way 1997, p. 3). They also mark the route of a probable north-south communications network through the region (Malim 2000). The Borough Hill site might have controlled a fording point of the Cam on one of the branches of the Icknield Way (Taylor 1998, p. 3). It is of interest then to note that Bronze Age activity prior to the establishment of the enclosures or fortifications is attested at Borough Hill (Mortimer 2001; John Samuels Archaeological Consultants 2003), and that recent investigation at Wandlebury Ringwork has revealed tantalising evidence to suggest the possible existence of a Late Bronze Age or Early Iron Age palisaded enclosure preceding the earliest elements of the Iron Age ringwork (French 2004, p. 59).

The investigation

Prior to the excavation, a trial trench evaluation (Woolhouse, Williamson & Harris 2005) revealed features in seven of its nine trenches (Fig. 2). The features in Trenches 1, 5 and 6 were considered to be of natural origin, but archaeological features were present in Trenches 2, 3 and 4; these were further investigated during the open area excavation, and are discussed below. A single, shallow, undated pit was also revealed in Trench 9. A subsequent programme of test pitting (Fig. 2), which aimed to recover artefacts from the ploughsoil, returned negative results. The area selected for excavation comprised 1560 square metres in the north-western corner of the larger site (Fig. 2). The excavation revealed 15 archaeological features, detailed descriptions of which are contained in the site interim report (Harris & Nicholson 2005).

An aerial photographic survey (Palmer 2005), which re-examined all available aerial photographs of the area, was also commissioned as part of this investigation. Its results, summarised below, have been invaluable in interpreting the excavated features.

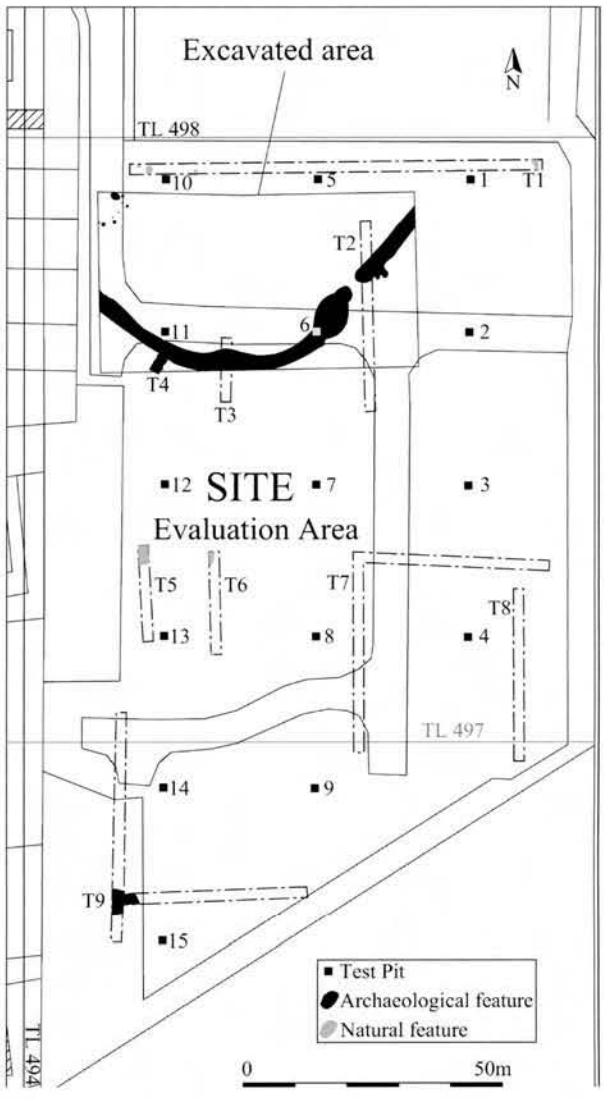

Figure 2. *Test pit and trial trench locations.*

The enclosure: excavated features

The archaeological features previously identified in Trial Trenches 2, 3 and 4 were revealed by excavation to be ditches forming the southern part of an enclosure (F2041 and F2004, recut as F2030; Fig. 3) extending beyond the limits of the excavation. The enclosure ditches were substantial features, between two and three metres wide and up to 1.25 metres deep, but both varied in profile along their lengths. F2041 was the more variable of the two, having steep sides and a narrow, flat base in Seg. B. (see Fig. 3) but being much shallower (just 0.49 metres) with moderately sloping sides and an undulating base to close its terminus (Seg. A.). F2004 had moderately sloping sides, in places much steeper at the top than at the base, and a rounded base, but was generally broader and shallower in its southernmost extent, probably because of a rise in the natural topography of this area. It was apparent that, after it had been filled in, ditch F2004 was recut along part of its length (Segs A. and B.) as ditch F2030, though this was much shallower (0.32 metres) than the original cut. It was not possible to establish a chronological relationship between ditch F2030 and the large pit F2051, described and discussed below.

The seven sherds of pottery recovered from the enclosure ditches were of Late Bronze Age date (see Thompson below); this dating evidence was supported by the 15 pieces of worked flint recovered from the ditches (see Tingle below) and by the radiocarbon date of 1100–800 BC (see Newton below) obtained from a sheep/goat molar from ditch F2004. Also recovered, from ditch F2041, was a fragment of pale grey-buff sandstone, probably the edge of a saddle quern (identification by Nina Crummy). Two of its fractured edges were scorch marked, suggesting that it could have been reused as a potboiler or to line the edge of a hearth.

A south-east facing entrance to the enclosure, which was also apparent in the cropmarks identified by the aerial photographic survey, was located within

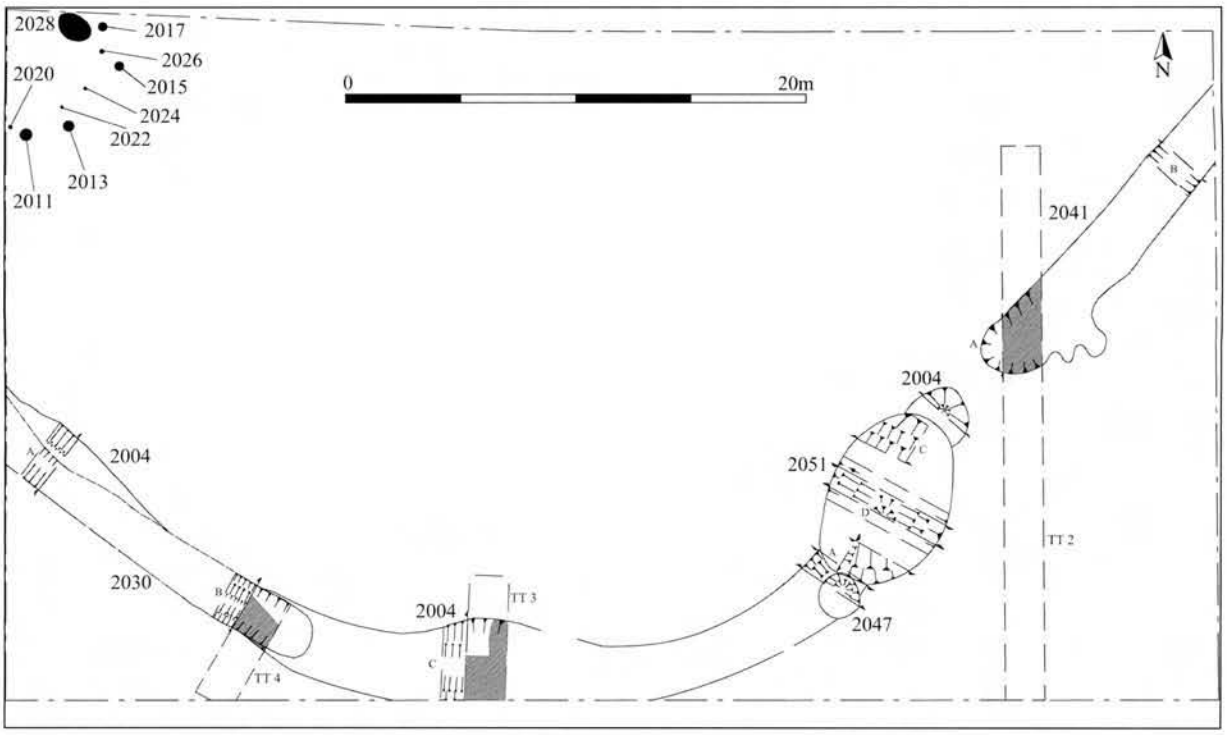

Figure 3. *Archaeological features.*

the excavated area, between the termini of the two ditches. Its precise width is uncertain (1.8 metres or up to 10.5 metres), owing to ambiguity in the interpretation of ditch F2004's eastern terminus: the feature north-east of pit F2051 could have been a discrete pit, rather than the end of ditch F2004.

The enclosure: aerial photographic assessment

The aerial photographic assessment (Palmer 2005; Fig. 4) provided a clearer picture of the previously-known cropmarks in the immediate area of Lynton Way and to the south-west. The positions of the excavated enclosure ditches are consistent with their having formed the southern part of a sub-square or D-shaped enclosure, the rest of which is indicated by cropmarks north of the excavated area. This enclosure seems to have been part of a larger system of land division, with an adjoining enclosure to the south. The somewhat unusual inclusion of curved lengths was suggested to be a response to changes in the local topography. The degree of apparent superimposition of features within or adjacent to the site suggested either redesign or change in use.

One of two short, parallel 'possible ditches' identified by the aerial photographic assessment might have been encountered during the trial trench evaluation, in Trench 5, though the position of the feature does not match perfectly with that of the cropmark (compare Figs 2 and 4). This feature was thought at the time of the evaluation to be of natural origin, perhaps either a solution hole or of glacial origin (Woolhouse, Williamson & Harris 2005, p. 18); its presence as a cropmark does not belie this interpretation. The similarity of alignment between the cropmarks in the area of the site and the broader-ditched enclosures to the south-west (see Fig. 4) might indicate that these features were all part of one system of land allotment, including fields, tracks and settlement areas.

Pit F2051

A very large pit, F2051 (9.5 x 5.5 x 2.9 metres), cut ditch F2004 close to its terminus. The pit was roughly oval in plan and had a regular profile with the slope of its sides increasing from gentle at the top to vertical near its narrow, flat base (Fig. 5, Plate 1). The slope of the sides might have been broken by steps, but these were only clearly apparent to the north-west. This feature thus resembled a very large posthole; it has been suggested (K. Gdaniec Pers. comm.) that it could have been a monumental feature, its shaft holding a large post with symbolic significance.

The animal bone assemblage from pit F2051 included a partial disarticulated dog skeleton from L2063, L2062 and L2059 (see Fig. 5). The pit also contained eight sherds of pottery dating to the eleventh to eighth or seventh century BC (see Thompson below) and 32 pieces of Late Bronze Age or Iron Age struck flint (see Tingle below). A radiocarbon date of 1380–1100 BC (see Newton below) obtained from the humerus of the dog skeleton (from L2063) suggests (assuming that the dog skeleton was not residual) an earlier rather than a later date within the range implied by the pottery dates. The implications of this radiocarbon date are discussed below.

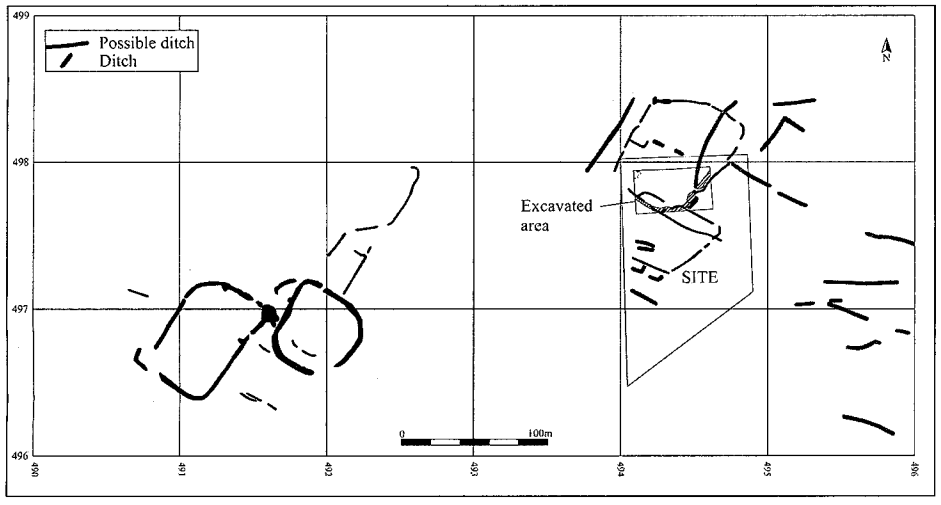

Figure 4. Cropmarks identified during aerial photo survey, after Palmer 2005.

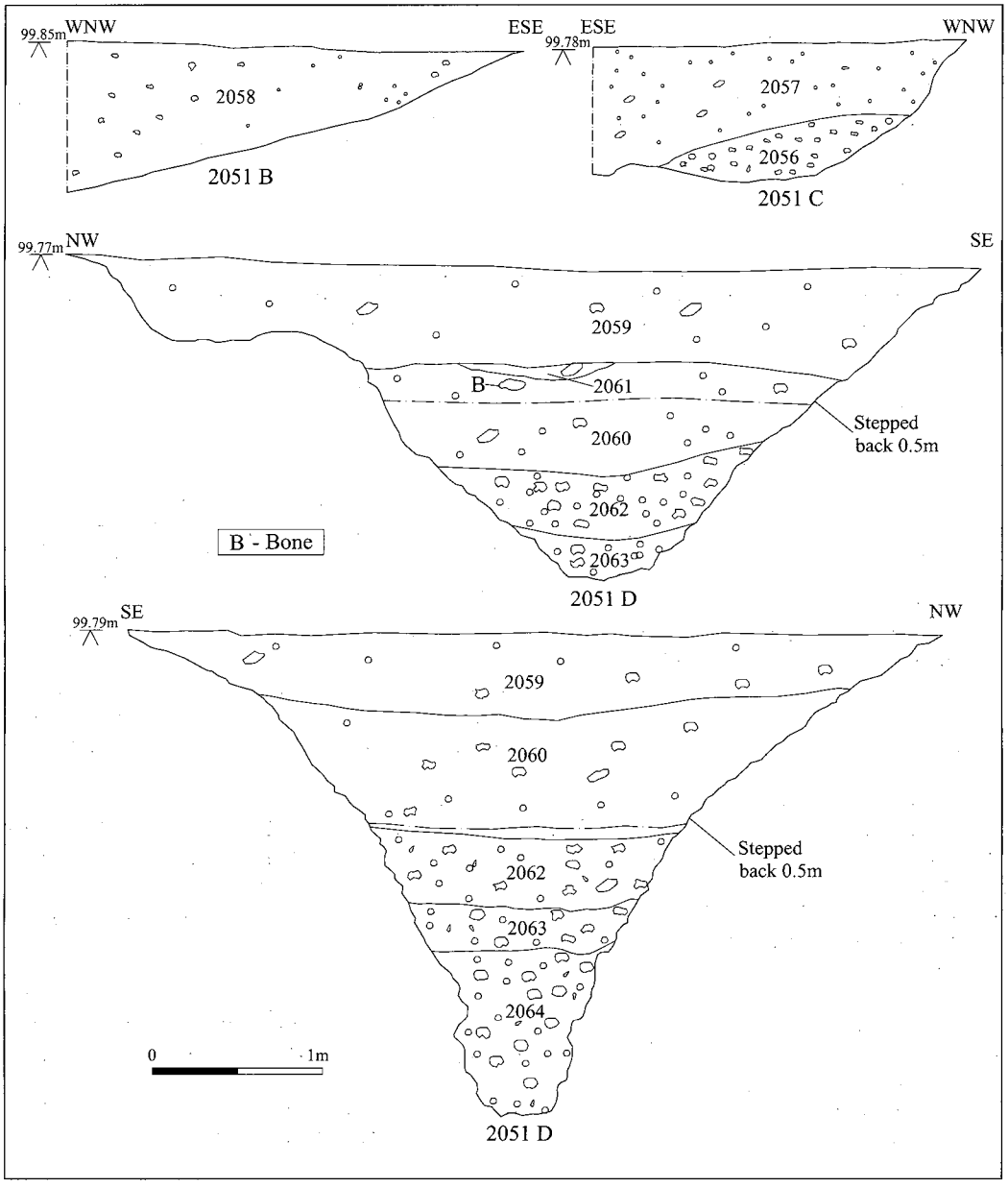

Figure 5. Sections of F2051.

A second, smaller pit (F2047) was cut through the upper fill of enclosure ditch F2004 and was cut by pit F2051. This feature had a steeply sloping north-eastern side and a steep stepped south-western side; it contained no datable finds.

The circular structure

Two concentric partial circles, the outer of postholes and the inner of stakeholes, were identified in the north-western corner of the excavated area (Fig. 3). These are thought to be part of a roundhouse, contemporary with the enclosure in which it stood. The postholes and stakeholes were cut into the natural chalk, and contained similar fills of mid brown, moderately loose silty sand or sandy silt. The postholes (0.36–0.4 metres diameter, 0.14–0.32 metres deep) had sides ranging from moderately sloping to near-vertical, with flattish undulating bases; the stakeholes (0.09–0.2 metres diameter, 0.1–0.26 metres deep) had steep to near-vertical sides and V-shaped bases. Although plough damage was revealed by the trial trench evaluation to have been concentrated south of the excavated area, some of the postholes and stakeholes (particularly F2013, F2024 and F2020) are thought to have been truncated from above. A shallow pit (F2028) was located within the concentric circles. No finds were recovered from any of these features.

The flint

Martin Tingle

Forty-two pieces (426 grammes) of worked flint were recovered from the enclosure ditches and from pit F2051 during the excavation; a further 17 pieces (212 grammes) had been found in the topsoil and subsoil during the trial trench evaluation. Fifty-six pieces (2003 grammes) of burnt but apparently unworked flint was also recovered. Terminology used to describe the flakes recovered follows Andrefsky (1998, p. 104).

Sawston is situated in an area of underlying chalk with discontinuous clay capping. The worked flint appears to derive from secondary flint deposits, perhaps within the terrace gravels of the Cam or Granta.

The assemblage is dominated by tertiary and uncorticated flakes with a small number of primary, secondary or broken flakes. The evidence does not suggest *in situ* flint knapping. Only one retouched tool was identified, a scraper recovered from the topsoil during the evaluation. There are no diagnostic pieces within either assemblage, but the assemblage as a whole is consistent with later Bronze Age or possibly Iron Age flint-working (Humphrey 2003).

The pottery

Peter Thompson

The combined evaluation and excavation recovered 26 sherds (188 grammes). Of these, 20 sherds were stratified, coming from the enclosure ditches and pit F2051. The stratified material was all prehistoric, as was one unstratified sherd from the topsoil. The remaining unstratified sherds are post-medieval red earthenwares and a sherd of stoneware. The prehistoric pottery is, overall, in quite poor condition, abraded with an average sherd size of 7.8 grammes.

Three sherds in a dark grey fabric with pale brown surfaces, containing platy shell between one and four millimetres across, were recovered from ditch F2004 during the trial trench evaluation. The largest of these (one centimetre across) is in quite good condition, with fresh breaks and only slight erosion to the surfaces; it is probably from a large coarse-ware vessel. During the excavation, this ditch yielded a sand- and shell-tempered simple upright rim, also from a thick-walled vessel. Such sherds are reminiscent of thick-walled large Deverel-Rimbury-type vessels which usually appear in bucket, barrel or urn forms during the Middle Bronze Age (Gibson 2002, pp. 105 & 106). Similar examples in shelly fabrics have been found at Broadlands, Peterborough (Thompson 2007, p. 16). Also from ditch F2004 was a thin sherd tempered with sand and fine crushed flint, and with a smooth, almost polished external surface. The presence of finer wares such as this sherd is a characteristic of the Late Bronze Age or Early Iron Age (Barrett 1980a, pp. 302–3).

Ditch F2041 contained four small sherds with shelly fabrics, probably from the same vessel. The sherds from ditch F2030 were in a dark grey fabric with buff and dark brown external surfaces, containing sparse to moderate fine shell and sand. These sherds cannot be closely dated but are probably of Late Bronze Age or Iron Age date. An unstratified black grass-tempered sherd from the topsoil could date from the Middle or Late Iron Age.

Pottery from pit F2051 included a flat, slightly pinched-out base in a mixed temper of sparse flint with quartz sand and chalk, from L2056. A similar base from Papworth Everard was recovered from a Late Iron Age context (Thompson 2006). Also present, in L2061, was a sherd in a very mixed fabric comprising sparse angular flint, grog and rounded chalk and sand, whilst the remaining sherds from the feature were in fabrics containing flint, sand or grass. L2059 contained the upper profile of a slack shouldered jar with simple upright rim containing sand and crushed flint temper (Fig. 6). Though incomplete, this bears similarities to post Deverel-Rimbury 'Plainwares' as outlined in Knight's ceramic sequence (Knight 2002, p. 128). The jar's upper profile has some similarities to vessels from Aldermaston Wharf, Berkshire, radiocarbon dated to the eleventh to ninth century bc (Bradley *et al.* 1980, p. 238, figs 14 & 239, figs 15 & 248) and from Knight's Farm, Berkshire whose radiocarbon dates centre around 740 and 600 bc (Bradley *et al.* 1980, p. 271, figs 33 & 283). This jar is also similar to Barrett's plain-ware assemblage, which includes examples from Cambridge (Barrett 1980a, p. 304), and particularly similar to jar P29 from Runneymede Bridge, Surrey, which dates to between 1000 and 700 BC (Longley 1991, p. 181, fig. 78).

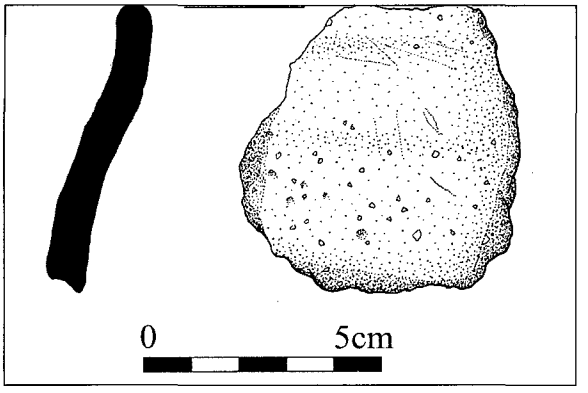

Figure 6. Upper profile of jar found in pit F2051.

The general lack of decoration in the assemblage is consistent with a post-Deverel-Rimbury date, although the small size of the assemblage is acknowledged. Flint tempering, as seen in the jar from F2051 (L2059) as well as in the finer sherd from ditch F2004, is an innovation which occurred (or re-occurred, having previously been seen in the Neolithic) during the later Bronze Age. The transition from the early to later Iron Age saw a reduction in its use and a return to the use of sand, shell and grass (Bryant 1997, p. 26). The presence of these fabrics in the Lynton Way assemblage may suggest a Middle Iron Age date, and so a broad date range of 14/1200 to 200 BC is possible. From the evidence presented above though, a later Bronze Age date is favoured over an Early to Middle Iron Age one.

The animal bone

Carina Phillips

A small animal bone assemblage of only 221 fragments was recovered from enclosure ditch F2004 and the two pits which cut it. The bone was badly preserved; root damage had occurred particularly to the bone surface and brittleness resulted in much modern fragmentation. The poor state of preservation hindered the identification of species and is likely to have affected the recognition of butchery marks.

Only 51 fragments could be identified to species. Cattle (*Bos* sp.) and dog (*Canis familiaris*) bones were present in similar numbers (24 and 21, respectively), though the latter were all from the same animal; sheep/goat (*Ovis/Capra* sp.; 4 bones) and horse (*Equus* sp.; 2 bones) were also present. The dominance of cattle (large) over sheep/goat (small) bones may be due to a bias of preservation. Seventeen bones which could not be identified to species were assigned to the category 'large-sized' (cattle, large deer and horse), and 21 to the category 'small-sized' (sheep/goat, small deer, dog and pig (*Sus* sp.)). No evidence of butchery was identified, and it was not possible to estimate the ages or sizes of any animals except the dog.

The dog bones were recovered from pit F2051 (L2059, L2061 and L2063; see Fig. 5). The remains were partially complete; most long bones, right and left metacarpals and two phalanges, part of the sacrum, two lumbar vertebrae, atlas, part of the left mandible and two maxillary teeth were present. The bones came from an adult dog. The mandibular teeth exhibited much wear and lumbar vertebrae exhibited osteophytosis (lipping) of the vertebral body, indicating that the dog might have been in old age. An estimation of shoulder height was calculated as 53.1 centimetres, from measurements of three long bones; the absence of the skull prevented consideration of head shape.

The distribution of the dog skeleton throughout three fills of pit F2051 suggests that the carcass was disarticulated at the time of deposition. The absence of butchery marks suggests that no deliberate dismembering took place. It is possible that erosion obliterated such evidence, particularly cut marks, but the completeness of some of the long bones (the left femur, left humerus and radii) indicates that any butchery must have been careful and deliberate (using a knife) so as to leave no marks. It seems most likely that the dog's carcass had decomposed to the extent that it became disarticulated when disturbed. The spreading of the carcass between the fills of F2051 is discussed below.

Given the unusual nature, and possible symbolic significance, of pit F2051, attention must be given to the possibility that there was a ritual aspect to the deposition of a partial dog carcass in its fills. Finds of complete or near complete animal carcasses, especially of dogs and horses, deposited in significant features without apparent economic or practical explanation, are a well attested, though much debated (cf. Wilson 1992), phenomenon of the Iron Age in southern Britain. They have been labelled as 'special deposits' (cf. Grant 1984; Wait 1985) or as examples of 'structured deposition' (cf. Hill 1995). Such deposits have also been found in Bronze Age contexts (e.g. Needham 1991, p. 380) and dog remains occur frequently in ritual deposits of Bronze Age date (cf. Green 1998, p. 11; Cunliffe 1992, p. 77; Hinman 2004). No parallel has been identified, however, for the special or structured deposition of dog (or other species') remains in a manner comparable to those recovered from pit F2051. It thus seems most likely that a mundane explanation should be sought for the presence of the dog remains in this feature (see below).

The environmental samples

Val Fryer

Six samples for the extraction of the plant macrofossil assemblages, taken from the upper fill of ditch F2041 and sequential fills within pit F2051 (L2063, L2062, L2060, L2061 and L2059; see Fig. 5), were submitted for assessment. A tabulation of results is included in the site archive. All plant remains were charred. Modern contaminants including fibrous roots, seeds and arthropod remains were present in the sample from the ditch, but were rare in the samples from pit F2051.

Grains and seeds were exceedingly rare. Samples from ditch F2041 and pit F2051 (L2061) contained single cereal grains, puffed (probably as a result of combustion at high temperatures), fragmented and not identifiable to species. Black bindweed (*Fallopia convolvulus*) and goosegrass (*Galium aparine*) type seeds were also present in both of these samples, and might indicate the burning of grassland herbs. Further evidence for combustion of organic remains at high temperatures (black porous cokey and tarry material) was present in the sample from L2059, and charcoal fragments were present in all samples save that from L2063, though not in quantities sufficient to indicate deliberate deposition of burnt waste. The charred plant remains are likely to have derived from scattered or wind-blown detritus, accidentally incorporated into the ditch and pit fills.

Mollusc shells formed the major component of all six assemblages. Although identification of some specimens was prevented as a result of a heavy encrustation of fine silt particles, all four ecological groups of terrestrial taxa identified by Evans (1972) were represented. Open country species occurred most frequently: shells of *Pupilla muscorum* and *Vallonia costata* were abundant within all six assemblages, suggesting that reasonably dry, short-turfed grassland conditions prevailed in the area. However, a small number of shells of woodland and shade-loving species were also present, possibly indicative of local shaded microhabitats (such as hedges or isolated small stands of shrubs or small trees). The molluscan assemblage from L2060 differed from the others, with an increased representation of shade/moisture loving taxa including *Punctum pygmaeum* and *Vallonia pulchella*. The moister surface conditions implied by this assemblage may indicate that L2063 incorporated material imported to the site from a wetter area.

Radiocarbon dating

Andrew A S Newton

Two samples were selected for radiocarbon dating in order to provide absolute dates for the enclosure (ditch F2004) and the large pit that cut it (F2051). This was considered necessary given the perceived significance of the features and the scarcity of datable material recovered from them. The samples comprised a sheep/goat molar from the second fill (L2007) of ditch F2004 and a dog humerus from pit F2051 (L2063), Seg. D. Radiocarbon dating was carried out by Beta Analytic Inc. of Miami, Florida, using radiometric standard delivery analysis of collagen. Dates were calibrated according to the maximum intercept method (Stuiver & Pearson 1998; Stuiver & van der Plicht 1998), incorporating a fine splitting mathematical approach (Talma & Vogel 1993).

It was expected that the two samples would date to the Late Bronze Age or possibly to the Early to Middle Iron Age (see Thompson, above). The sheep/goat molar from ditch F2004 dated to 1100–820 BC (Beta 219153; 2790±60BP), while the dog humerus from pit F2051 dated to 1380–1100 BC (Beta 219154; 2990±40BP). The implications of the *earlier* date range obtained from the sample from the stratigraphically *later* pit are discussed below.

Discussion

The date of activity at the site

The pottery assemblage from the Lynton Way site is very similar to that from the Late Bronze Age site of Aldermaston Wharf in Berkshire (Bradley *et al.* 1980, pp. 232–48); comparisons with sherds from this site and others has led to the suggestion of a Late Bronze Age date for the enclosure, roundhouse and associated activity, although the possibility of an Early to Middle Iron Age date could not be fully discounted. Analysis of the flint assemblage also suggested a date range of Late Bronze Age or possibly Iron Age.

Radiocarbon dates of 1100–820 BC and 1380–1100 BC were obtained respectively from a dog humerus from ditch F2004 and a sheep/goat molar from (stratigraphically later) pit F2051. The date for ditch F2004 confirms the Late Bronze Age date of the enclosure. It is, however, possible that the bone sample from pit F2051 was not in its original depositional context: although the sample was selected from a partially complete skeleton and from a sealed context, it is possible that the three deposits containing the dog bones were redeposited from elsewhere, and that the bones were already present within them when they were dumped in the pit. The majority of the dog remains were recovered from L2062 and L2063, which were very similar (see Fig. 5) and could have derived from the same original deposit. The remaining atlas and metacarpal were from L2059, which might have represented the finer (silty) components of that original deposit (see Fig. 5), perhaps fractionated out as it was transported to the Lynton Way site, or stored prior to deposition in F2051. The premise that (some of) the fills of this pit were transported to the site from elsewhere is supported by the mollusc assemblage from fill L2060.

This interpretation would explain the spread of the dog skeleton between three different fills of pit F2051, and would also account for the earlier radiocarbon date obtained from the dog humerus, as compared with that from the sheep/goat molar from ditch F2004. If the dog bones are considered to have been deposited as part of these three fills, then the provenance of the pottery and flint from these contexts is not secure: all could be residual. However, the Late Bronze Age date of the feature remains valid as datable pottery and flint were recovered from other fills of the pit, and no finds of other dates were recovered.

Despite the neatness of the interpretation proposed above, it remains plausible that (whatever the derivation of these fills of pit F2051) the partial dog skeleton represents a (comparatively) recently deceased animal whose remains were thrown into the pit as

it was being (rapidly) backfilled. If this was the case, then the radiocarbon dates from ditch F2004 and pit F2051 must be interpreted as showing that that the pit was dug and backfilled soon after the ditch was filled in, and that both events occurred in about 1100BC, confirming the Late Bronze Age date suggested by pottery and flint analysis.

The field systems

The features excavated at the site correlate almost exactly with cropmark features identified by the aerial photographic assessment (Palmer 2005; Fig. 4). The aerial photographic assessment shows that the excavated ditches are part of a roughly D-shaped or sub-rectangular enclosure, the remainder of which extends to the north, and that this enclosure forms part of a complex field system. Other ditches and 'possible ditches' identified by the aerial photographic assessment within the excavated area (and, with the exception of a single feature in Trench 5, within the wider evaluation site) were not archaeologically attested. The posthole/stakehole structure identified at the site would have stood towards the south-western corner of the D-shaped enclosure.

Consistency of alignment suggests that this system might be associated with cropmark enclosures to the south-west and excavated enclosures at Sawston Police Station (Mortimer 2006a) as part of a unified system of land allotment. The Late Bronze Age date of the excavated enclosure ditches can thus be tentatively extended to the rest of this proposed unified system (cf. Brown & Murphy 2000, p. 12). It is thus likely that the Roman date previously assumed for the more south-westerly enclosures is erroneous, and that the pottery on which it was based was not associated with them, but rather with archaeologically attested Romano-British activity in Sawston, for example at the Police Station (Cessford & Mortimer 2004). Bronze Age features at Sawston Hall (Mortimer 2006b) and various Bronze Age artefacts recovered in the area might also have been associated with the putative Late Bronze Age field system. It must be noted though that this theory cannot be proved: it remains possible that the observed similarity in alignment is coincidental, and that the cropmark enclosures to the south-west of the site were not part of the same system as (or even contemporary with) those excavated at Lynton Way.

Such a wide-reaching, unified system of land allotment is consistent with a Bronze Age landscape, but such systems are usually characterised by large boundary ditches, some stretching to hundreds of metres in length, forming long strips of land that were then subdivided into smaller plots by the imposition of further ditches or by hedge-lines. The best known of these systems is at Fengate (Pryor 2001), on the western fen edge. The form of the enclosures seen in the aerial photographic assessment at Sawston bears more similarity to later (Iron Age) field systems, which appear to have developed more organically, following no discernable pattern as elements were added.

The D-shaped enclosure is also generally considered to be a Mid- to Late Iron Age form, with some continuing in use into the Romano-British period (Wilson 2000, p. 165). However, a range of forms is known for later Bronze Age enclosures (Barrett 1980b), and circular enclosures of this date have also been found, for example at Mucking and Springfield Lyons in Essex (Champion 1999). Such sites appear to be restricted to the east of England (Cunliffe 1995, p. 30).

The atypical morphology, for the Late Bronze Age, of the proposed system of land division could indicate a slightly unusual tradition of land allotment, possibly related to that which saw circular enclosures constructed in Late Bronze Age Essex. Alternatively it may be that the site represents a very early move to the use of the type of field system more commonly associated with the Iron Age. Cunliffe (2005, p. 69) suggests that the Middle and Late Bronze Age was a period of transition from the simple agricultural regimes of the Neolithic and Early Bronze Age to the more sophisticated approach to agricultural exploitation typical of the Iron Age and Roman periods. It is possible that the field systems evident in Sawston represent this transitional period. Continuity in activity from the later Bronze Age into the Iron Age is well attested at sites in the Sawston area, for example at the Police Station (Mortimer 2006a; Cessford & Mortimer 2004) and Sawston Hall (Mortimer 2006b), and it thus seems fitting that the wider landscape should be divided in a manner consistent with transition between the two periods.

It should be noted that the highly regular rectilinear fields and paddocks of the Late Bronze Age landscape at Fengate was originally set out in the earlier Bronze Age (Pryor 2001). The regularity of the fields within such systems is suggestive of fair apportionment of resources between the rival claims of a large and well established community (Cunliffe 2005, pp. 37–8). It might be that land allotment and division followed a different system in areas, like Sawston, that were being divided up for the first time in the Late Bronze Age, although an extensive system of regular, rectilinear fields at West Deeping, Lincolnshire, also has its origins in the later Bronze Age (Pryor 2006, pp. 109–23). Another possibility is that topographic factors influenced the manner in which land was divided; it is notable that, unlike Sawston, the best known typically Late Bronze Age field systems in East Anglia all lie at relatively low elevations, close to the fen edge.

The posthole and stakehole structure

The double-ringed structure in the north-western corner of the excavated area could represent the first Bronze Age dwelling known in the Sawston area. The arrangement of the outer ring of postholes and inner ring of stakeholes has led to the interpretation of these features as a roundhouse (Harris & Nicholson 2005, p. 14). However, the structure was located at the corner of the excavated area and much of it remained unexcavated. It is possible that the unexcavated part

of the structure would have yielded finds or features, such as central hearth, that would confirm that structure was occupied. A piece of sandstone saddle quern thought to have been reused as a pot-boiler or to line a hearth suggests at least one episode of domestic activity, but it was recovered from one of the enclosure ditches (F2041) and so may not represent activity associated with the circular structure

The absence of finds from features associated with the structure, and the general paucity of finds from the site, might indicate that the post and stake settings had a non-domestic function, perhaps as an animal pen or shelter. This would fit neatly into the argument that the excavated site represents part of a wider later Bronze Age field system.

Scarcity of occupational debris is not necessarily inconsistent with settlement having occurred. For example, a post-built circular structure seven metres in diameter that was encountered during excavations ahead of the Fordham by-pass, Cambridgeshire, was interpreted as a roundhouse despite the absence of associated artefacts (Mortimer 2005). This roundhouse was subsequently dated to the Late Bronze Age/Early Iron Age based on finds recovered from the associated field system and on typological grounds (*ibid.*).

The layout of postholes and stakeholes, and the absence of an encompassing ring ditch or drip gully at Lynton Way makes interpretation as an early (i.e. Bronze Age, not Iron Age) roundhouse seem the most probable. The roundhouse excavated at the Late Bronze Age enclosure at Loft's Farm in Essex displayed a similar double ring structure and a number of buildings like this are known on the chalklands of southern England (Brown 1988). The outer ring of postholes in buildings of this type represents the line of the outer wall, while the inner ring represents roof supports.

The duration of occupation at Lynton Way

Most Middle to Late Bronze Age settlements appear to have been short-lived (Cunliffe 2005, p. 238), though (in contrast to Middle Bronze Age settlements that rarely demonstrate more than two or three phases of occupation) some Late Bronze Age sites display extensive sequences of rebuilding of dwellings, suggesting occupation over several centuries (Brück 1999). It may be that occupation at the Lynton Way site conforms to Cunliffe's generalisation, and was short-lived with only a single phase of activity. This may account for the scarcity of artefacts, animal bone and plant macrofossils indicative of domestic activity, though it is thought that truncation of relevant deposits and destruction or dispersal of artefactual and environmental evidence by later ploughing was also a significant factor.

The apparent single phase of occupation at Lynton Way may be explained as a result of a neolocal residence pattern, a cause to which the single phases of occupation at Middle Bronze Age sites is often attributed. This is the ethnographically common occurrence of children leaving the parental home and establishing their own household upon marriage. Such single-phase settlements are established upon marriage, occupied throughout the life-span of the head of the household and then abandoned (Brück 1999). However, it is possible that the remains of further roundhouses, displaying evidence for rebuilding and thus for more than one phase of occupation, might exist beyond the limits of the excavated site.

Pit F2051

The large oval-shaped pit (F2051) cut enclosure ditch F2004 close to (or possibly at) its southern terminus. Its function is unclear: the natural chalk geology of the site rules out its use as a large watering hole or well (the water table was not encountered during excavation), and there is no evidence to suggest the disposal of domestic waste. The pit tapered sharply in profile (Fig. 5) and the possibility has been suggested that it might have been a (very) large posthole, and have held some form of 'tribal marker'. The stratigraphic relationship of this pit to the enclosure ditch indicated that the ditch was filled in before the pit was cut. However, the pit might have been in use at the same time as the ditch's (much shallower) recut (F2030), and the in-filling of ditch F2004 does not necessarily imply that the rest of the enclosure ditches (F2041 and those seen as cropmarks) had also been filled in before pit F2051 was cut (Figs 3 and 4).

The erection of a marker-post could have been an elaboration of a newly enlarged entrance to the enclosure (between the termini of ditches F2041 and F2030). Alternatively, the erection of a massive post might have acted as a notice of (continuing) ownership of the land following the disuse of the enclosure and the infilling of (all of) its ditches; it might even have been considered important that the location of the former entrance to the enclosure should be marked. Deliberate acts of 'closing-down' of burial mounds and cairns have been identified in the earlier Bronze Age and it has been suggested that similar acts of planned abandonment of settlement sites were carried out (Nowakowski 2001). The in-filling of ditch F2004, the digging of pit F2051 and the putative erection and subsequent removal of a 'tribal marker' might have constituted such an act. If the radiocarbon-dated bone and tooth were both in their primary depositional contexts, then pit F2051 cannot have been in use for long (as a posthole or as an open feature).

Whatever the function and duration of pit F2051, it seems that its backfilling was rapid, unless parts of the dog skeleton were being deliberately conserved for deposition in this pit during more widely spaced episodes of backfilling. The possible function of the pit as the posthole for a large 'tribal marker', combined with the attested role of dogs in Bronze Age ritual activity (see Philips, above), invites speculation on a possible ritual aspect to the interpretation of the presence of the dog skeleton, possibly including the reserving of bones especially for deposition in this feature. However there are no known parallels for such an act resulting in the spreading of a skeleton across several fills within a feature. It is considered

more likely that the dog remains are residual or were deposited as a convenient means of disposal, as discussed above.

Conclusion

The archaeological features excavated at Lynton Way represent part of a Late Bronze Age system of land division and enclosure, the unexcavated portions of which have been identified from aerial photographs. The presence of a roundhouse suggests that this field system was not just an agricultural landscape but that there was also some degree of domestic occupation. The aerial photographic assessment demonstrates that a second, similar, set of enclosures exists to the south-west of Lynton Way, on a similar alignment. It is suggested that both sets of enclosures were part of an (atypical) unified system of Late Bronze Age land division. Given the identification of evidence for Late Bronze Age activity preceding the Iron Age enclosed or fortified sites at Borough Hill and Wandlebury Ringwork, and the recovery within the parish of a hoard of bronze items thought to have been left by an itinerant smith (Taylor 1998, p. 75), it is possible that the anthropogenic Late Bronze Age landscape stretched over a very large area, representing a widespread system of social organisation.

The site might also contribute to furthering the understanding of how populations and settlements developed in later prehistory. The Bronze Age settlement evidence at Sawston lies within a wider landscape in which both earlier and later activity are archaeologically attested. Nearby precursors include the Neolithic and Early Bronze Age ritual site at the Babraham Road Park and Ride site about four kilometres to the north (Hinman 1998). Later (Iron Age) settlement is well attested in the area, for example at Sawston Police Station (Cessford & Mortimer 2004), and significant population centres such as the Borough Hill and Wandlebury Ringwork enclosed or fortified sites are nearby.

Cunliffe (2005, p. 69) has described the Middle and Late Bronze Age as a transitional phase between the agricultural systems of the Neolithic and Early Bronze Age and the more sophisticated regimes of the Iron Age. It seems that the Lynton Way site reflects this theme of transition, possibly representing an amalgam of Bronze Age and Iron Age settlement and land division patterns. The roundhouse, being a post-built construction and lacking a drip gully, has a Bronze Age appearance. The apparent single-phase occupation of the roundhouse, possibly indicating a neolocal residence pattern, is also a phenomenon associated with the Bronze Age. However, the similarity of the enclosures and field systems in which the roundhouse is set to those of the Iron Age, may suggest that field-systems and layout of enclosures more commonly associated with later periods were already being used in the Late Bronze Age in this area.

The large pit F2051 is an intriguing feature because of its great size, its relationship to enclosure ditch F2004 and the lack of clear evidence for its function. The possibility that it had a ritual function as the setting for a large 'tribal marker' can be neither proved nor disproved.

There is evidence to suggest a dislocation in the settlement pattern in some areas of the East Anglian region, such as the Lea Valley, during the Bronze Age/Iron Age transition (Bryant 2000). However, the area in which the Lynton Way site is located demonstrates plentiful evidence of the continued use of sites through this transitional phase, and the site itself appears to be an eloquent representation of this transition; a frozen moment in the evolution of the Bronze Age settlement form into that of the Iron Age. This suggests that social or economic conditions present in the south Cambridgeshire area might have allowed this apparently smooth development from Bronze Age to Iron Age settlement form and function that was not possible in other parts of East Anglia. Identification of these conditions may form an important part of future research agendas for the Eastern Counties for this period and could assist in increasing what is currently known about the social and economic effects of the ending of bronze production and exchange networks and the introduction of iron technology, an area of research which is at present poorly understood (Bryant 2000).

Acknowledgements

Archaeological Solutions Limited would like to thank the Kelsey Housing Association for commissioning this investigation and Geoff Allen of Cocksedge Building Contractors Ltd for his assistance. AS also gratefully acknowledges the assistance of staff at the Cambridgeshire Historic Environment Record and the Cambridgeshire County Record Office and the input of Kasia Gdaniec of the Cambridgeshire Archaeology Planning and Countryside Advice (CAPCA). The evaluation and excavation were directed by Paul Harris on behalf of AS, and the aerial photographic survey was carried out by R. Palmer of Air Photo Services. The project was managed for AS by Jon Murray. Finds were co-ordinated by Claire Wallace. The site archive can be accessed at the Cambridge County Archaeological Store. A grey report containing full specialists' reports is available at the Cambridgeshire Historic Environment Record and the National Monuments Record.

The Cambridge Antiquarian Society is grateful to the Kelsey Housing Association for a grant towards the cost of publishing this paper.

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Plate 1. *Pit F2051, Lynton Way, Sawston. This may have been a monumental feature, its shaft holding a large post with symbolic significance.*

The Chronicle Hills, Whittlesford, Cambridgeshire

Christopher Taylor and Ashley Arbon

The extensive late prehistoric and Roman site at Whittlesford, first discovered in the early nineteenth century, is re-examined and re-interpreted.

This paper has three aims. To publish the historiography of a little understood archaeological site in Whittlesford that has been misinterpreted in the past, to describe the results of a Local Heritage Initiative Project and to examine some of the problems with interpretation that have emerged from this site that is typical of so many elsewhere in Britain.

Setting

The extensive site, now entirely under cultivation and known generally as the Chronicle Hills, occupies some 30 hectares (80 acres) of land along the western edge of Whittlesford parish, close to its boundary with Thriplow (Figs 1–3). It lies on Middle and Lower Chalk, between 22 metres and 35 metres OD, within and on the eastern side of the valley of the Hoffer Brook (TL 453472). The latter is a small north-flowing tributary of the River Rhee. Its shallow, although well marked, valley at this point is formed by the brook cutting through the slight north-facing escarpment formed by the Melbourn Rock that is situated at the junction of the Middle and Lower Chalk. Except where it crosses the valley to the south, the Melbourn Rock is visible in the modern arable cultivation as a broad white band some 20 metres to 30 metres across. Immediately below it is a narrow outcrop of chalk marl, the uppermost strata of the Lower Chalk that occupies the base of the valley. The Middle Chalk above is capped with thin patches of glacially-derived material that includes coarse gravel and small pieces of 'foreign' rocks (Worssam & Taylor 1969, pp. 42, 133; Geological Survey 1952).

The Hoffer Brook rises well to the south on the flatter open land there. However, its flow is greatly enhanced by water from two areas of springs that lie opposite each other in small embayments in the main part of the valley at the base of the Melbourn Rock. These are known as Great Nine Wells on the Thriplow side of the valley and Little Nine Wells on the Whittlesford side. Because of the impermeable nature of the chalk marl, water also seeps from the base of the Melbourn Rock both up- and down-stream from the Nine Wells, producing an area of almost permanently damp and even waterlogged ground along the valley bottom and on its lower slopes.

Early post-glacial freeze-thaw action in this environment led to the development of ground-ice hollows, or 'pingos' along the whole length of the Hoffer Brook valley below the Melbourn Rock, beyond it on the flatter wet ground to the south and, in places, even on the valley crests and adjacent hilltops where some waterlogging also occurred as a result of a perched water table created by the impervious chalk marl (Taylor 1981a). These ice hollows were once a series of interlocking and overlapping roughly circular peat-filled depressions bounded by low banks or 'ramparts'. With a few exceptions, where the largest of the hollows survive as water-filled ponds, modern agriculture has now destroyed all the fine detail and the ground is marked by very uneven hollows with circular patches of peaty soil surrounded by lighter raised edges (Figs 3 & 4).

The result of this geological and geomorphological past is that the valley of the Hoffer Brook is characterised by impeded drainage. Despite modern efforts to improve it, the area remains markedly damp, especially when compared with the dry chalk and gravel of the upper valley sides and the higher land beyond. This situation was clearly recognised in earlier times when the whole of the valley bottom was known as Got Moor in Whittlesford parish and The Moor in Thriplow (CRO R60/24/2/76, Q/RDC/65). The small copse called The Quave, close to the brook, takes its name from the 'quaking land' resulting from the deep peat deposits there (Reaney 1943, pp. 98, 220). The name Fen (now Fern) Wood also recalls the nature of the underlying soil in the valley bottom.

There are, however, two important exceptions to this overall picture of ill-drained land, where the remains of the ground-ice hollows would have been expected but are not visible. The first place is immediately downstream of Little Nine Wells, on the eastern side

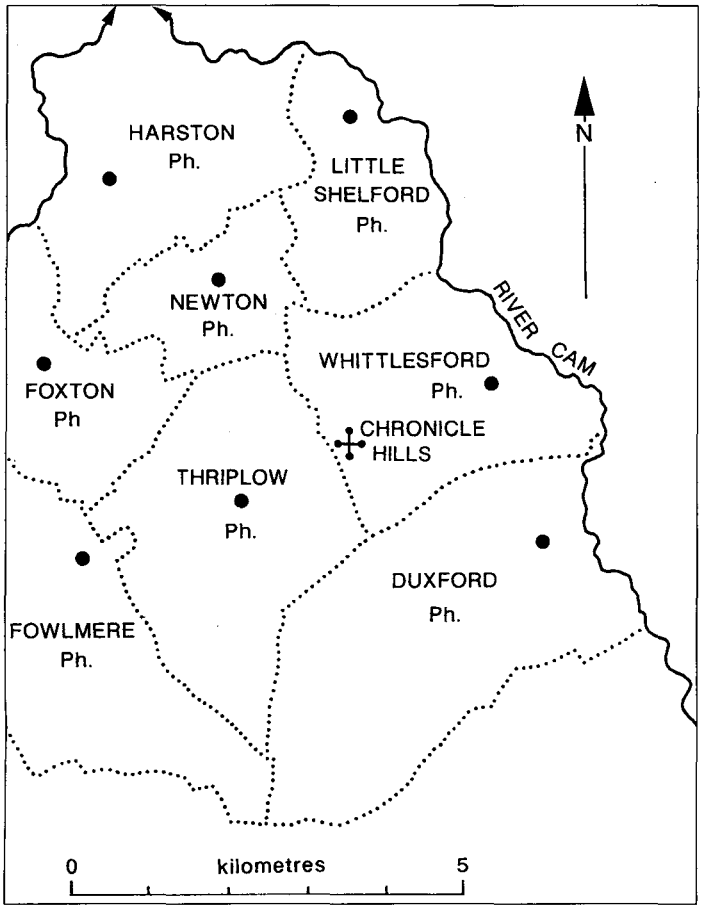

Figure 1. The Chronicle Hills, location.

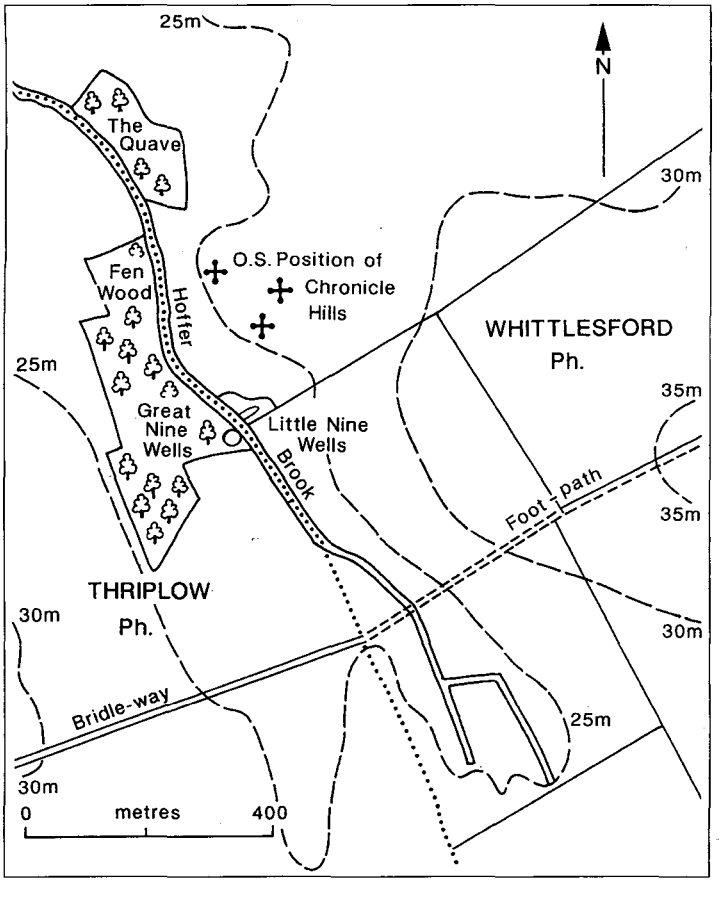

Figure 2. The Chronicle Hills, setting.

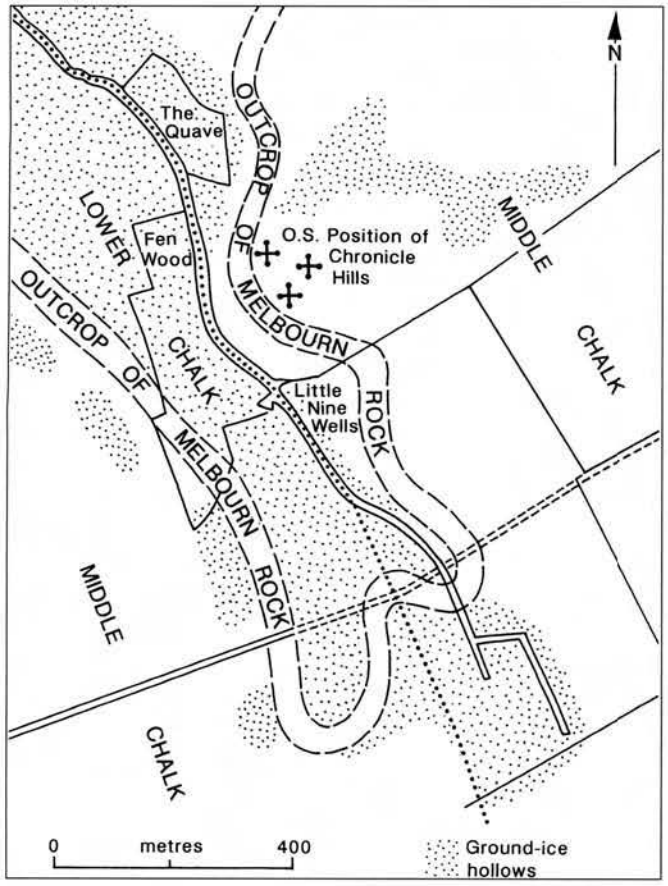

Figure 3. *The Chronicle Hills, geology and geomorphology.*

Figure 4. *The Chronicle Hills, aerial photograph of main area of crop marks from the east. The almost completely filled in ground-ice hollows are visible in the valley bottom below. BPN 10 Copyright reserved Cambridge University Collection of Air Photographs.*

of the brook, where, in a broad band for a distance of some 170 metres between the stream and the bottom of the Melbourn Rock, no trace of the hollows can be seen either on the ground or on aerial photographs. The second place is just upstream of the Little Nine Wells where a narrow terrace-way, also at the base of the Melbourn Rock, appears to have destroyed the hollows that must once have existed here.

Historiography

The significance of the Chronicle Hills as a place where material from the ancient past has been found has long been appreciated. The name, a corruption of *Crockelhull*, the hill or place where pottery has been found, is recorded as early as 1398 (Reaney 1943, p. 98). The detailed archaeological history of the site began in 1818, soon after the Parliamentary enclosure of the medieval open fields of Whittlesford had taken place. Until then the higher eastern side of the Hoffer Brook valley was the western edge of both Stone Hill and Bar Fields, two of the three large open fields of the parish. The indented boundary between these arable fields and Got Moor lay roughly along the outcrop of the Melbourn Rock (Fig. 5; CRO R60/24/2/76). This supports the geomorphological evidence that most of the bottom and the lower sides of the valley were too wet for cultivation in the medieval period and that they were meadows.

The Enclosure Act for Whittlesford (49 Geo III c 99) was obtained in 1809 and the land of the parish was probably divided and enclosed soon afterwards (Fig. 6). Of the 1617 acres that were enclosed, over half went to Ebenezer Hollick, the then lord of the manor and the major landowner (VCH 1978a, pp. 266, 269). Amongst Hollick's allotments were all of Got Moor, until then the parish meadow and pasture, a large part of the former Bar Field to its north-east and the north-western corner of the former Stone Hill Field adjacent to Got Moor (CRO R60/24/2/76). According to two identical contemporary accounts (*Cambridge Chronicle* 1818; *Gentleman's Magazine* 1819), at some time in mid 1818 Hollick began to 'improve' some of his land here. As part of the work he employed labourers 'to level' the Chronicle Hills, then said to consist of three 'ancient tumuli' as well as two other mounds. The three tumuli are described as being 'upon Got Moor' while the implication is that the other two also lay there.

The alleged location of these mounds is important for, even today, their precise position is uncertain. Some facts are clear but much has to be disentangled from unsatisfactory contemporary descriptions and later interpretations. Hollick's 'improvements', perhaps seven or eight years after enclosure, are unlikely to have been on his land within the former Bar and Stone Hill Fields, where the dry chalk and gravel soils had been arable for centuries and required little in the way of major changes. The improvements are much more likely to have been within Got Moor

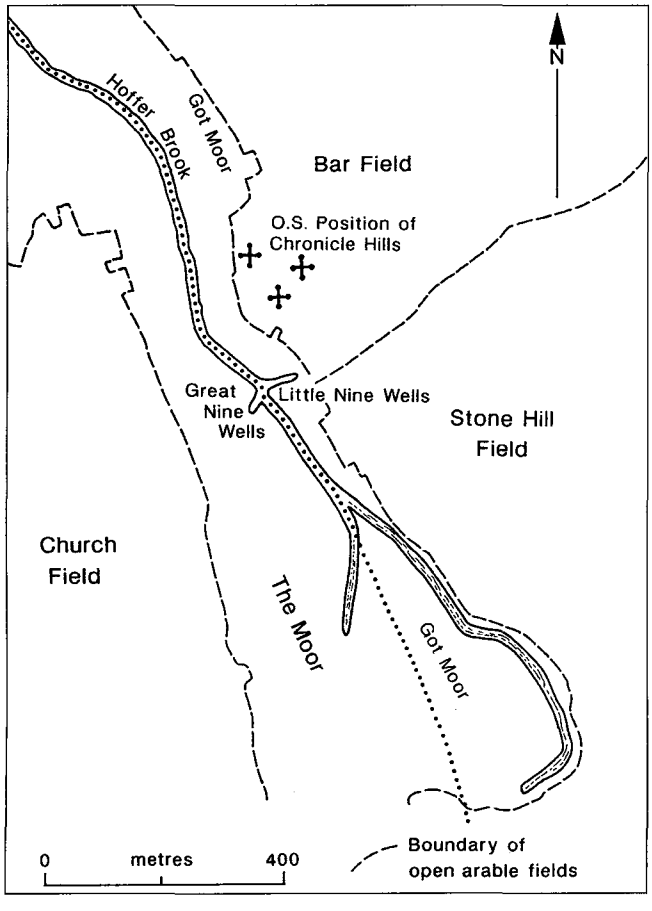

Figure 5. The Chronicle Hills, medieval fields and meadows.

where the uneven ground, deep peat-filled hollows and poor drainage prevented cultivation. Whether the 'tumuli', or barrows, actually lay within Got Moor is not clear from these early descriptions. However, it should be noted that barrows only rarely survive undamaged within medieval fields. They have usually been flattened or ploughed away with the result that they are now visible only as ring ditches. While there are occasions where groups of barrows have remained intact within medieval open fields (RCHME 1975, Woodford (2–4)), it is not a common occurrence. Yet, as will be discussed below, all later accounts and cartographic depictions locate the principal barrows on the hilltop above the valley.

That Ebenezer Hollick's improvements were in the ill-drained valley bottom of Got Moor can been seen in the existing system of deep drains to the south-west of the site. These, which can be dated from map evidence to between 1812 and the early 1830s, replaced the old course of the brook there (CRO R/60/24/2/76; OS 1836). They were thus probably created by Hollick, who went bankrupt in 1825 and died in 1828 (VCH 1978a, p. 260). They were clearly constructed to improve the drainage of the waterlogged valley, perhaps especially after the flattening of the former groundice hollows.

The two accounts of the destruction of the barrows, written within a year of Hollick's improvements, also give details of their relationships, form and contents as well as of other nearby features. There were three tumuli 'upon Got Moor' set along the western side of (and might have been the foundations of) a flint and pebble wall that was said to be aligned north to south. The barrows were thus probably in a straight line. However, as these barrows were also described as on the northern side of the brook, when actually they must have lain north-east of it, they were probably aligned north-west to south-east. The wall, which was 30 inches (0.75 metres) wide and four rods (20.25 metres) long, had 'abutments' (buttresses or wall stubs?) on its eastern side.

The middle of the three barrows was alleged to be eight feet (2.5 metres) high and 27 yards (24.7 metres) in diameter. Although heights of barrows are consistently over-estimated even today, if these dimensions are correct then it was a large barrow. It is difficult to compare its size with others in Cambridgeshire but a rapid assessment of the diameter of some 70 odd barrows and ring ditches recorded in the county produced an average of 19 metres (eg RCHME 1972; Fox 1923; *PCAS* passim). Most were between 15 metres and 22 metres and only nine were as big or bigger than the largest Chronicle Hills barrow. Only five had recorded heights anywhere near it. The results of an examination of barrow sizes in south Dorset might also help to place the Chronicle Hills barrow in context. Of the 872 barrows there, the average diameter was found to be 54 feet (16.5 metres) and, if the 70-odd special barrows there (discs and bells etc) are ignored, the majority of round barrows in south Dorset

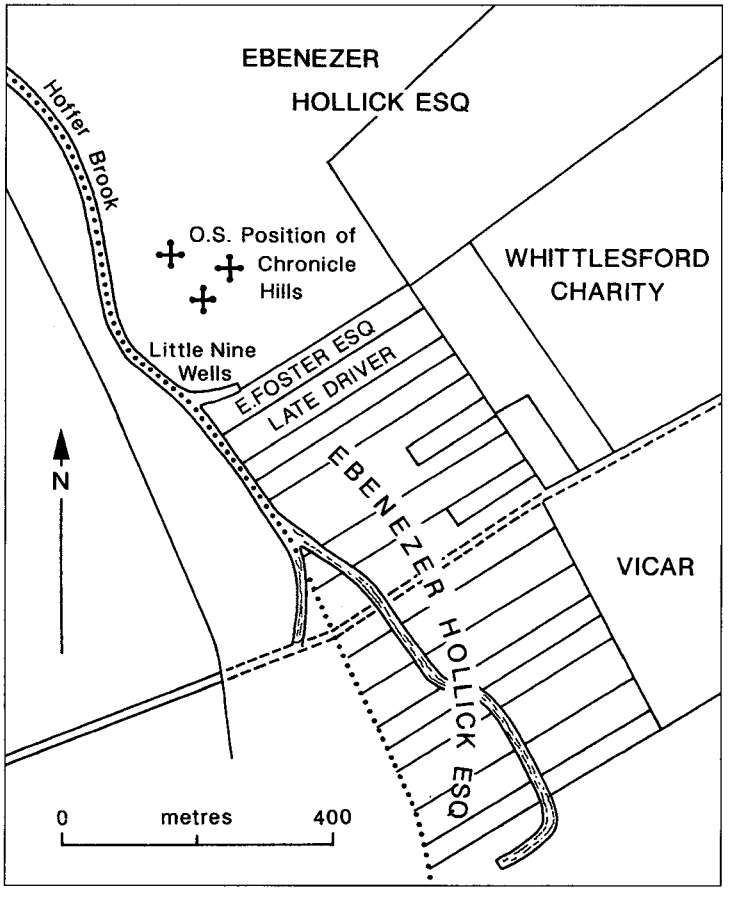

Figure 6. The Chronicle Hills, allotments on enclosure.

are between 30 feet and 50 feet (19 metres to 15 metres) across (RCHME 1970, pp. 423–4). Thus this barrow at Whittlesford was larger than most recorded in south Dorset and almost certainly one of the largest in Cambridgeshire, a fact not hitherto appreciated.

This central barrow contained four human skeletons lying on their backs 'about two feet (0.6 metres) from the bottom'. This probably means that they were well above the old ground surface and not perhaps in a primary position. The smaller, lower barrow to the north (probably north-west) contained huge quantities of small animal bones, described as 'lemmings' (and likely to have been of fairly recent date). Neither this mound, nor the southern (south-eastern) one, also described as 'lower' than the central one, apparently contained burials. What were described as 'broken pieces of terracotta with red and black glazes' were certainly found in the central barrow and probably in all three of them. Some 12 rods (60 metres) to the east (north-east?) of the wall was an 'ancient well', made (or lined?) with clunch, 9 feet (2.7 metres) in diameter and filled with flint and tiles 'of curious shape, so formed to lap over each other'. Some had a hole in the centre and 'it was believed that they had been used in an aqueduct'. Two horns of 'bucks or elks' were also found in the well.

About 100 yards (91 metres) to the north (north-east) of the three barrows were two more, described as mounds. Both contained a 'chamber' or pit constructed of, or lined with, flint and pebbles. These chambers were four feet and five feet (1.2 metres and 1.5 metres) square and both were eight feet (2.4 metres) deep. No dimensions of these barrows were given, but as there were two feet (0.6 metres) of the mound above the chamber, it seemed likely that, unless they were even larger than the centre barrow of the south-eastern group, the pits were cut down well below the original ground surface. Each chamber contained two inhumations. In one, the larger of the two lay on top of the smaller and both skeletons were on an oak 'platform' that was associated with nails (perhaps a box or coffin?). Also on the platform were traces of a bronze vessel and the blade of a knife or dagger of an unspecified metal. In the other chamber a skeleton in a 'sitting position' (a crouched burial?) with an iron spearhead also had another skeleton on top of it. Iron nails were noted there but no wood. Both chambers were surrounded by a circular wall (of flint?) two-and-a-half feet (0.8 metres) thick, three feet (0.9 metres) high and 22 feet (6.7 metres) in diameter (apparently beneath the mound on the old ground surface). Because of the lack of Roman coins, the conclusion reached for the date of all five barrows was that they were 'rather Celtic than Roman'.

As already noted, no location for any of these barrows was given in the original account beyond that they lay on 'Got Moor'. The Whittlesford enclosure map neither depicts nor names them and they were not recorded on the Ordnance Survey (OS) *Old Series* 2-inch map, Sheet 51, surveyed between 1808 and 1822. The re-survey of 1834–5 for the OS 1-inch map Sheet 54 (OS 1836) did indeed depict four of them even though they had been destroyed 16 or 17 years earlier. This was probably the result of the general survey instructions, issued in 1818, that 'all remains of ancient Fortifications, Druidical Monuments ... and all Tumuli, all Barrows shall be noticed in the Plans ...' (Harley 1970). As, presumably, no trace of the barrows remained by 1834, the surveyors had to rely on information from local people regarding their former location and number. The result was that four circular hachured mounds on the north side of the Little Nine Wells, approximately on the crest of the valley, were put on the map. Given the small scale (1 inch to the mile), the fact that the mounds no longer existed and perhaps the failing memory of the informants, this was a fair attempt at depiction. But, of course, the original account of the discovery seems to have placed them on Got Moor, thus perhaps in the valley bottom, and to have described the five barrows in two groups.

The record of the next archaeological advances lay undiscovered for almost a century. Indeed the details were not even written down until the early 1880s. The new information was contained in two places. The first was in the notebooks of a local antiquarian George Maynard (1829–1904). Maynard was a member of a prosperous Whittlesford farming and agricultural engineering family. He was a passionate collector of documents and memorabilia relating to Whittlesford and the surrounding area as well as a competent painter. He was also a knowledgeable botanist and archaeologist. All of the information he gathered was eventually bound in 13 volumes of papers, often illustrated by his own delicate watercolours (CRO R85/5). In 1881 he became the Curator of the Saffron Walden Museum and his papers were subsequently deposited there, where they remained largely unappreciated until the bulk of them were transferred to the Cambridgeshire Record Office in 1958 (Carter 2004, pp. 88–90).

There are two pieces of information about the Chronicle Hills site in the Maynard papers. In a loose sheet in Volume I, George Maynard recalls, as a small boy, seeing a tessellated pavement and a hypocaust as well as part of a 'bath' with a length of lead piping. He also records finds of pottery, roof tile, 'walls of rooms', oyster shells and a 'marble vase'. These discoveries were perhaps made in the early 1840s, probably during a period of renewed agricultural prosperity. There was a concentration of both ownership and occupation of land in Whittlesford then that might well have led to further 'improvements' in the area (VCH 1978a, pp. 269–70). The exact details of these finds were not apparently written down until many years later and may not be entirely accurate. Whatever the case, it is clear that a major Roman site was found near the Chronicle Hills, although Maynard gave no actual location for it.

However, in 1877, Maynard painted a watercolour entitled 'Ploughing over the site of the Roman villa, The Quave Trees in the background' (Plate 2). The painting depicts a man ploughing the land at the bottom of a hillside that was already cultivated.

He is being watched by another man, in early- to mid-nineteenth-century dress, with a dog. This man stands on a flat, still unploughed strip of grassland with a tree-lined stream to the left. In the background is a clump of trees. Despite depicting an event that took place at least 30 years earlier, it is possible to locate the viewpoint and thus to identify the position of Maynard's discoveries. The stream must be the Hoffer Brook while the trees in the background are those of The Quave. This places Maynard's 'villa' on the ill-drained land in the valley bottom, just below the Melbourn Rock outcrop and immediately north-west of the Little Nine Wells. It also coincides with one of the two areas where no ground-ice hollows are visible. This seems to be an extraordinary situation for a Roman villa (Figs 3 & 7).

The second piece of information about the site, which has only recently been appreciated, is contained in a collection of documents, descriptions and comments about Whittlesford compiled, by a remarkable coincidence, by Anne Barker (née Maynard, 1837–1921), a cousin of George Maynard. They date from about 1880. The papers remained in private hands unread until 2000 when a selection of them was published (Strange 2000). The details of the Chronicle Hills are somewhat muddled but are nevertheless of some value in the understanding of the site. A section written by Anne Barker herself (Strange 2000, pp. 105–6) conflates the destruction of the barrows and the Roman finds made by her cousin to a single event that took place in 1818, but she adds a piece of information not recorded anywhere else. This is that the 'tumuli' were 'cleared away by Mr Hollick to fill up some of the hollows near to improve the land for agriculture'. This statement, with its confirmation that it was the ice hollows that were being levelled, and the apparent use of the barrow material as spoil to fill them, is convincing because of its detail which relates to what is now known of the landforms in Got Moor. Just as important is the implication that the barrows were not on 'Got Moor' but lay elsewhere, that is 'near', the material from them having to be taken to Got Moor to fill the hollows. In writing about the Roman 'villa', Barker repeats her cousin's description of the discoveries of a 'bath with a water pipe', but again gives another specific and convincing piece of information. This was that 'Roman tiles some with marks on them could be picked up in the fields and in the beautiful stream of water nearby called Nine Wells'. The discovery of Roman material actually around and within the stream at Nine Wells is of some importance when assessing the function of the 'villa' here.

Barker also included in her collection of papers a curious account of the Chronicle Hills and Got Moor given at the Working Men's Hall at Whittlesford in 1866 by her father, Robert Maynard (1808–83) (Strange 2000, pp. 106–9). The recitation, for such it is, was clearly for entertainment as much as for education and contains a far-fetched and imaginative picture of Got Moor in prehistoric and Roman times, with Druids, Roman Chiefs and Fierce Northmen, all active around a 'lake' at Nine Wells. And he too conflates the discoveries by Hollick in 1818 and by his brother George much later, making them a single event. However, he also claims that the material of the 'mound' – he only records a single barrow – was 'partly used to contract the beautiful spring', that is, Little Nine Wells. This is again confirmation that the material from the makeup of the barrows was actually removed bodily and used to fill in depressions in the valley bottom. It also explains, perhaps, why it has since been so difficult to locate their actual site. It also suggests that Little Nine Wells was perhaps a pool of some size before 1818.

At first sight these nineteenth-century accounts by the Maynards might well be considered unreliable. But all three, George, Robert and Anne, were educated, intelligent people, who lived at Whittlesford for most of their lives and who must have been well acquainted with village gossip, accurate or otherwise and who certainly knew the area of the Chronicle Hills intimately. George Maynard in particular, by the time he recorded his finds, was a knowledgeable antiquarian and curator of a museum holding a considerable amount of Roman material. As such there is no reason to disregard their information about the site.

The potential value of the Maynards' record of their discoveries went unappreciated by archaeologists until the 1990s. As a result, for over a century archaeologists remained unaware of the association of the barrows with a major Roman building. The first archaeologist to describe the Chronicle Hills was Babington (1883, p. 63). His account shows well the problems of errors likely to occur in summarising previous reports. Babington noted that there were three barrows in a line but stated that 'they contained the remains of skeletons' thus implying that all had burials within them. The two north-western barrows with 'internments' in the chambers were merely mentioned in passing and the well now became 'a well or rubbish pit' that contained the red and black glazed pottery as well as the tiles. It should also be noted that Babington gave the wrong year for the initial discoveries, 1819 instead of 1818, an indication that his source material was the *Gentleman's Magazine*, not the local newspaper, an error that was repeated in all subsequent accounts. Nor did he suggest a date for the barrows. He seems to have assumed that the three south-eastern ones were Roman.

Two years later in 1885 the Ordnance Survey reached Whittlesford during work for the new 1:2500 County Series plans that were published the following year. The Ordnance Survey field records have not survived, so it is impossible to know what guided the surveyors in their work at the Chronicle Hills. They appear to have known and used Babington's work for the published plan (OS 1886), which has only three circular hachured mounds that are named as 'Chronicle Hills (Tumuli) *Human remains and Ancient pottery found AD 1819*'. That is, they too gave the wrong year for the discoveries. As already noted, Babington correctly recorded that the three south-eastern barrows were in

a line, yet the Ordnance Survey surveyors arranged them in a triangular group in exactly the same way as the earlier 1-inch map, except that they omitted one shown there. The 1886 map, which was used by every subsequent student of the Chronicle Hills, thus appears to be a compromise between Babington's account and the earlier mapping, neither of which were accurate in respect of either the number of barrows or their location. That the location of the barrows on the 1886 plan may not be correct can be seen by plotting the position of the south-eastern three barrows as shown by the Ordnance Survey against the boundaries between Stone Hill and Bar Fields and Got Moor on the Whittlesford enclosure map (Fig. 5). This shows the two south-easternmost of the three barrows lying within Bar Field while the third lies on or close to the boundary between Got Moor and Bar Field. All are located on the valley crest just above the Melbourn Rock outcrop. This is, of course, at variance with the original 1818 account that places them all in Got Moor, a position that would have been on or below the outcrop and on the valley floor, but perhaps closer to the location implied by Anne Barker. The Ordnance Survey revised the large-scale plans of the area in 1901 (OS 1901). As it was now obvious that the barrows no longer existed the depiction of the three south-eastern barrows was changed from hachured mounds to antiquity crosses but the positions were not altered, nor was the description or the erroneous date. All subsequent map revisions continued to mark the site in that way (eg OS 1956) until very recently when all reference to the site was removed (eg OS 1974, 1999).

The first serious attempt to interpret the site was by Fox in 1923 (pp. 77–9, 199). He made a careful analysis of both the 1818 account and that by Babington. As would be expected, Fox made a number of pertinent observations. One was his comment that the barrows were on 'low-lying ground' and thus were not likely to be of Bronze Age date. It is not clear what evidence he had to reach this conclusion. For nowhere in his writings, or in his biography, are there any real indications of how much fieldwork he actually undertook for *The Archaeology of the Cambridge Region* (Fox 1923; 1948, A2 and A6; Scott-Fox 2002). But, fortuitous or not, at first sight it seems a sensible conclusion. However, in coming to this Fox ignored the precise, if ultimately erroneous, location of the barrows by the Ordnance Survey. He accurately described the three south-easternmost barrows as being arranged in a line and with four skeletons in the central one. He also picked up the ambiguous wording of the 1818 account that might have meant that the red and black glazed pottery was found only in the central barrow, or perhaps in all three. In addition he pointed out that, contrary to the original description, Babington, 'who possibly had access to more detailed information', claimed that all three of the south-eastern barrows contained skeletons. That Babington had more information over 60 years after the event is most unlikely and Fox perhaps was merely being polite to a fellow academic. Contrary to Babington, however, Fox did not change the 1818 interpretation of the Chronicle Hills from being 'Celtic', that is, Iron Age. Indeed he reinforced it by references to parallels elsewhere. On the basis that no Roman coins were recorded and that the 'glazed' wares sounded similar to a sherd found at the War Ditches, Cherry Hinton (Hughes 1903, p. 480; Fox 1923, p. 136), he believed that the three south-eastern barrows were probably of the early Iron Age. He was more certain of the date of the two north-western barrows with their alleged 'chambers' and he listed a number of continental parallels from France and Switzerland, including ones with oak plank coffins, bronze vases, double inhumations and enclosing stone walls, then considered to be of the early Iron Age. Fox also listed the relatively large number of Iron Age barrows in the Cambridge region that might be compared to the Chronicle Hills (Fox 1923, pp. 76–81). The possibility of the Chronicle Hills being Iron Age was acknowledged in 1936, when they were omitted from a comprehensive list of Roman barrows in Britain including all of the then known ones in Cambridgeshire (Dunning & Jessup 1936).

The next published work on the site was by the Victoria County History (VCH) in 1938, actually written by Grahame Clark (VCH 1938, p. 289). Under the *Early Iron Age* section, Clark noted that 'In two barrows 100 yards north of the Chronicle Hills, destroyed in 1819 (sic) were two skeletons in square pebble-built vaults, lined with wood'. He wrote that one 'vault' had an oak floor and that iron nails were found in both. A bronze vessel, a dagger and spear were found. Fox's conclusion that the finds and burial details could be matched at early Iron Age sites in northern France was noted. An implication of this account was that the south-eastern barrows were not Iron Age, but Roman and would thus be included in a future VCH volume on Roman Cambridgeshire, as indeed they were (VCH 1978b, p. 168).

It was not until 1958 that another attempt was made to put the Chronicle Hills into context. This was in a paper by Jessup (1958) that drew together all the then known British material for Roman burials under barrows and within walled cemeteries. He concluded that all five barrows might have been examples of both, although he admitted that neither the grave goods nor the form of burial were typically Roman. In fact his attempts to include all the barrows within the category of walled cemeteries caused him difficulties. He thought that the wall with the 'abutments' alongside the south-eastern three barrows could have been part of such an enclosure paralleled at sites in Kent and elsewhere. Thus, with the 'slight evidence' of the glazed pottery from the central barrow, he concluded that a Roman date for all three seemed possible while acknowledging Fox's idea of an early Iron Age date. However, because he followed Babington's account and not the original one, Jessup claimed that all of them contained skeletons (Jessup 1958, p. 21).

The two north-western barrows proved harder to interpret. Jessup thought the low circular walls that surrounded the 'chambers' and apparently lay *under*

the barrow mounds were also 'walled enclosures', but he accepted that the existence of the iron spear, dagger or knife and the bronze vessel suggested an Iron Age date (Jessup 1958, p. 21). One other feature of the site that made Jessup less than certain of a Roman date for all the barrows was that they were almost the only ones then known that were not associated with a Roman settlement. He did not know, of course, of the remains discovered by the Maynards over a century before, the details of which were then still unread in Saffron Walden Museum and in private hands.

Recent discoveries and research

At the very time that Jessup was attempting to place the Chronicle Hills site in its wider setting, a chain of events began that were to change completely the understanding of it. The first was the arrival of the Maynard papers in the County Record Office in 1958, although it was some time before their contents were appreciated. Of more immediate relevance was the introduction of new agricultural methods that started in Whittlesford in the 1950s and included deep ploughing. This technique cut down some 0.2 metres to 0.3 metres deeper into the subsoil than had earlier cultivation. By the mid-1950s most of the Chronicle Hills site was being ploughed in this way. The result was that large quantities of flint, clunch, limestone and fragments of Colleyweston-type slate were turned up in places as well as, presumably, pottery that was not recognised. Much of this material was collected and carted away for use as hard core on local farm tracks.

Shortly afterwards the less obvious archaeological material was noticed and picked up although not, significantly, from the alleged site of the barrows. Amongst finds brought to the attention of one of the present writers (CT) in the early to mid-1960s were large freshly-broken sherds of Roman pottery including samian and Horningsea wares. Much of this came from a hitherto unrecognised occupation site, to the south of the barrows on the hilltop, above the Melbourn Rock. Similar pottery and at least three Roman coins, one of Carausius (287–93), as well as large pieces of polychrome wall plaster, were picked up in the valley bottom immediately north-west of Little Nine Wells in the same area as the material found by George Maynard. Although not appreciated then, this evidence suggested that there were at least two separate areas of Roman occupation on the site.

Matters were made both clearer and yet obscured by the work of Beveridge in the late 1960s. Beveridge was an experienced amateur archaeologist who was stationed at RAF Duxford in the last years of its existence as an operational unit. Over a period of two to three years he field-walked extensive areas of land around and to the north of the airfield and made numerous discoveries, including important sites comprising Mesolithic and Neolithic flint tools. But most of his finds came from on and around the Chronicle Hills site. However, the location of most of this material is not known with any great accuracy. Almost all of the National Grid references, allegedly given by Beveridge when later asked about his discoveries, and subsequently incorporated in the County Historic Environment Record (HER), are clearly wrong. A crude map, held with the finds in the University Museum of Archaeology and Anthropology, is apparently neither accurate nor complete although it seems to show that most of the discoveries were made on Maynard's 'villa' site. Even the brief note that Beveridge himself published gave the wrong location for most of his finds (1973). As a result the full significance of these finds, and their distribution, remained unknown.

Beveridge is said to have located four separate areas of Roman material (Cambridgeshire HER 04309, 04310, 04312, 04313–4). The most prolific was that in the bottom of the valley of the Hoffer Brook, where Maynard had recorded his Roman 'villa' (Fig. 7). Finds from here included roof, floor and hypocaust tiles, roof slates, sandstone tesserae, wall plaster and glass. Oyster shells and pottery, including samian and Horningsea wares, mortaria and at least one mid-second-century coin, were also discovered. The second area of Roman finds was south-east of the first on the hilltop just north of where pottery had been first recorded in the early 1960s. Although fewer finds appear to have been discovered here, similar Roman pottery was recorded as well as, perhaps less certainly, more tesserae and hypocaust and roof tiles. It seems that the location of this material is not entirely accurate and that it actually came from a little further south (see below). Another area in which Beveridge found more Roman pottery, tesserae, hypocaust tiles, Horningsea, Nene Valley and samian wares, mortaria and a quern stone is said to have been some distance to the south in the valley bottom, in an area of well-marked ground-ice hollows that were cut by the deep drains created by Hollick in the nineteenth century. This is an unlikely place for these finds to have been discovered and, as nothing has ever been found there, before or since, it is certain that the location is wrong and that the material actually came from further north-west on the Maynard site. The lack of accuracy is unfortunate for amongst the discoveries recorded from this alleged location is the pottery head of a female figure, possibly the goddess Minerva (Beveridge 1973; Cambridgeshire HER 04313).

Beveridge is also said to have claimed that more Roman material identical to that from the first two sites came from two other areas whose National Grid references place them on the hilltop a little to the east of where the south-easternmost barrow is depicted by the Ordnance Survey. However, despite one of them being close to an area where Roman material was later found, their locations are almost certainly erroneous and again nothing has subsequently been found here. These finds must relate to the Maynard site in the valley bottom to the west, as the compilers of the Cambridgeshire HER (04312) later noted. The conclusion to be reached from this analysis of the work of Beveridge is that, despite the apparent wide

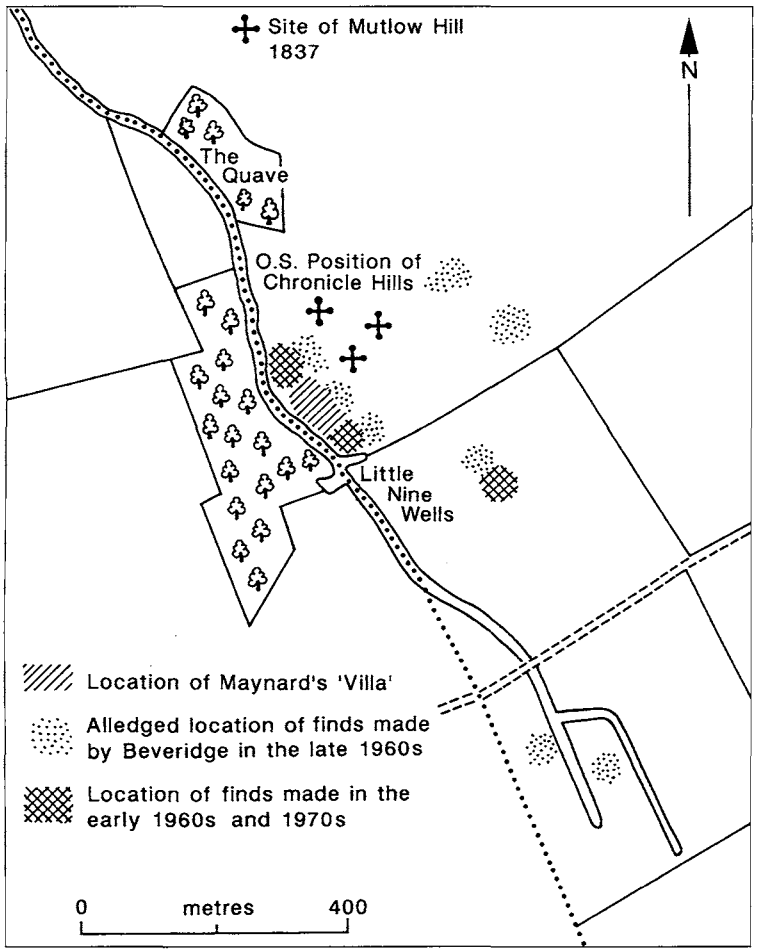

Figure 7. The Chronicle Hills, archaeological discoveries up to 1980.

distribution of finds, he probably only discovered material from two places, a major building or buildings in the valley bottom and another smaller building on the hilltop to the south-east. Both seem to have been occupied from the first until the mid- to late fourth century.

The next major advance in the understanding of the site came in 1973 when Professor St Joseph took the first of a series of oblique and vertical air photographs that continued to be taken until 1981 (CUULM BOE 27, 28; BPN 10; CPI 1, 2; Figs 4 & 8). These photographs are of value for two reasons. First, none of them show any trace of the former barrows anywhere and certainly not where the Ordnance Survey located them. A few circular features are visible on some photographs, including five arranged in a very roughly east to west line in and to the north-east of the area where the south-eastern barrows were said to have been (CUULM CPI 1, 2). But with their dark centres and white rims these features, and others in the wider area, are best interpreted as isolated ground-ice hollows of a type common there, set on the now dry but once waterlogged land above the Melbourn Rock. The second reason for the importance of the aerial photographs taken by St Joseph is that, as well as showing various indeterminate linear features, most show an area of small conjoined enclosures arranged in a roughly L-shaped form. These lie on the crest of the gently sloping valley side, above the Melbourn Rock to the south and east of the site of Beveridge's second area of finds. Although not easy to interpret, there appears to be some form of entrance on the south-eastern side that leads into the open centre where the Roman finds were made. Amongst the various linear features visible on a number of photographs is one to the south of the alleged site of the south-eastern barrows and a track extending north-eastward across the present parish boundary with Thriplow, leading from the enclosure complex on the crest of the valley.

A major event that eventually helped in the interpretation of the Chronicle Hills site was the establishment of the County Sites and Monuments Record (now Historic Environment Record (HER)) in 1975. In the following years much of the information from Beveridge, from the old Ordnance Survey records and maps and from aerial photographs was drawn together for the first time and added to. Inevitably, however, because of the way it was compiled, there were gaps in the HER. Thus, Jessup's work was ignored and the Maynard notes remained unread. Worse, as was usual with most of the evolving HERs at that time, information was merely recorded sequentially as it came to light or was reported and given separate HER numbers based on the alleged location.

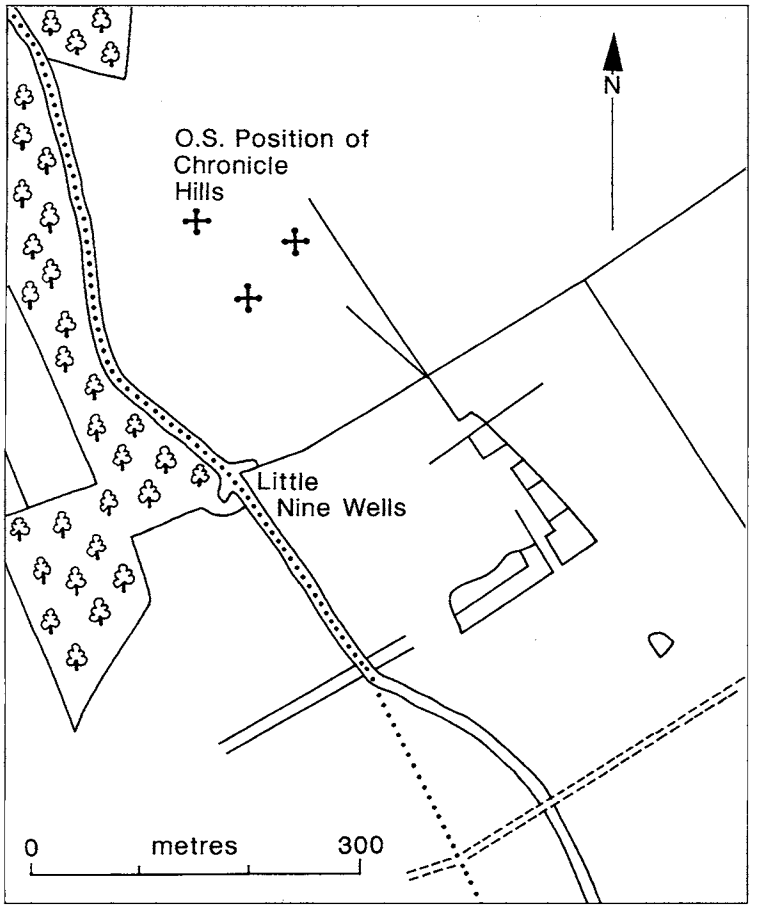

Figure 8. The Chronicle Hills, crop marks

This information was rarely if ever interpreted or correctly integrated. The result was that the Chronicle Hills site now has 22 separate record sheets and numbers, still without any reference to Maynard, Jessup or most later non-local publications (see below). This situation is not a criticism of the County HER. It is a result of the way it, and others, were conceived and set up, and how they have evolved with inadequate resources. One of the present writers (CT), working in Northamptonshire in the 1970s and 1980s, found a similar situation whereby as many as six records of mislocated finds related to a single site (eg RCHME 1979, Little Houghton (13) and (14)).

Despite these limitations, new data on the Chronicle Hills continued to be found and added to the rapidly increasing database for the site. Gradually the full extent of the material and of crop marks began to be appreciated, if not understood, and this has continued to the present. In December 1976 the staff of the then Ordnance Survey Archaeological Division, who were updating the National Archaeological Record (NMR) for the purposes of map revision, carried out work on the Chronicle Hills site. They visited the area, assessed the available evidence and made useful comments. They recorded, correctly, that there were no visible remains of the barrows, but still noted that they had been levelled in 1819 and that all contained inhumations. They also noted that of the five possible barrows said in the County HER to be visible on aerial photographs, only one coincided with the positions depicted on Ordnance Survey maps. More usefully they suggested that the wall with its abutments noted in the original account was likely to be associated with the nearby Roman buildings. The positions of the latter were established by field-walking and indeed the existence of two separate structures was postulated on the evidence of distinct areas of building material and pottery. This material was recorded as being on a 'west slope' and the northernmost of the structures was located within ten metres of the position of the south-eastern of the barrows as positioned on Ordnance Survey plans (NMR Records: TL44NE1; TL44NE25).

A somewhat negative advance in the understanding of the site also took place in the 1970s. The knowledge of it and the richness of the finds encouraged growing numbers of local metal detectorists to visit. From the mid-1970s both the site and large areas around it in Duxford, Thriplow and Whittlesford parishes were, and still are, regularly examined by owners of metal detectors. Very little of what has been discovered has been recorded. Hearsay is that Roman coins of all dates have been found on the site and less frequently in the general area beyond, but it is difficult to quantify this information.

The scholarly understanding of the site was not advanced in these years. The VCH account of Roman Cambridgeshire (1978b passim) merely listed the

material recorded from the site and held in local museums and collections. For the first time since Maynard in the 1870s, the site was termed a 'villa' and located near the south-eastern barrows as depicted by the Ordnance Survey. A paper by Liversidge (1977, p. 29) on Roman burials in Cambridgeshire suggested that the three barrows at Chronicle Hills (presumably the south-eastern group) that had 'contained skeletons and fragments of red and black pottery' were of possible Roman date.

In July 1982 the site was, belatedly, scheduled as an Ancient Monument. Unfortunately, but not surprisingly or uniquely, the area that was scheduled was poorly defined. As a result large areas of ground-ice hollows were included as well as the places where Roman material had been wrongly located. However, it omitted the alleged and, probably, actual sites of all the barrows as well as that of the large Roman buildings or 'villa' in the valley bottom that Maynard had discovered and that Beveridge and the Ordnance Survey had confirmed. In effect, the only certain archaeological remains that were included in the scheduled area were the crop-mark enclosures and the Roman site within them.

The possible Roman attribution for the south-easternmost barrows was revised a few years later. Taylor (1981b, pp. 116–17) returned to the earlier interpretation and decided that they were probably of Iron Age date. This was seemingly confirmed in the same year when Whimster (1981 Pt 1, p. 33; Pt 2, pp. 392–3) at last produced a reasonably accurate description of what the barrows were and what they had contained, as well as a fair assessment of their possible Iron Age date. After examining all the then known Iron Age burials in Britain, Whimster concluded that, in the absence of comparable information, evaluation of the Chronicle Hills remained 'difficult'. He thought that the burials within the large pits or 'vaults' seemed to be reminiscent of the nearby Bartlow Hills in Essex (VCH 1963, pp. 39–43) or the La Tène III Welwyn-type graves in Essex and north Hertfordshire (Whimster 1981 Pt 2, pp. 359–77). However, the crouched inhumations and paucity of grave goods seemed to be at variance with the cremation rites in these late barrow burials. The Chronicle Hills more resembled pre-La Tène III inhumation and cremation burials under barrows, most of which are in East Anglia. In particular, Whimster noted nearby examples of these including one at Chrishall and two on Thriplow Heath (Fox 1932, pp. 79–81; Neville 1848, pp. 14–17; Whimster 1981 Pt 2, p. 292), although again all of these had only cremations. It is clear from his conclusion that Whimster did not know of the Roman material from the Chronicle Hills. If he had, his conclusions might well have been different.

Work on the site itself continued throughout the 1980s and 1990s, particularly by interested local amateur archaeologists who carried out field-walking there. A subsequent examination of the finds (Lucas 1993) pointed particularly to the remarkable size and good condition of the sherds of pottery and their high quality. Fine wares from Hadham, Hertfordshire, the Nene Valley and Oxfordshire, generally dating from the late third and fourth centuries, were specifically noted. In 1995 two separate reassessments of the available aerial photographs were carried out (Dickens 1995; Palmer 1995). Little of major importance emerged and although some of the existing detail was refined much that now appears to be uncertain was included on the resulting maps (HER). One doubtful advance was a new interpretation of the isolated small rectangular enclosure only about ten metres across with slightly bowed sides that lay south-east of the major complex of crop-mark enclosures. Palmer's suggestion that it was possibly an Arras-type barrow seems unlikely.

In 1997 the first thorough analysis of the site as a whole was made (Taylor 1997, p. 109). This short but very useful note gave both an accurate description of the 1818 discoveries, and a new interpretation of the burials. There was no attempt to understand the three south-eastern barrows, beyond a suggestion that they were probably pre-Roman. But the 'chambers and vaults' of the two north-western ones were interpreted as deep grave pits, the wood and nails perhaps being the remains of boxes. If this was so, then the closest parallels were Roman cremations that were often in such boxes together with vessels suitable for feasts. Taylor continued: 'perhaps these [burials] had originally been of this type but had been robbed of anything valuable and possibly had later burials added, a common Anglo-Saxon practice'. This was the first time that the existence of Saxon burials on the site had been mooted. More certainly, Taylor concluded, also for the first time, that the original 'burials were part of an important Roman site that included a large villa and buildings associated with it'.

Perhaps the most valuable work on the site took place in 2003 by members of the local archaeology Rheesearch Group and which has continued ever since. In an attempt to locate the actual site of the south-eastern three barrows and to understand more clearly the valley-bottom Roman site, the Group field-walked the area to the north of the Little Nine Wells. No trace of the barrows was found but on the 'villa' site the usual pottery, tiles, tessarae and wall plaster were discovered.

Of much more importance were the results of a resitivity survey of the same area, carried out in two blocks. One, a narrow strip some 200 metres long, extended across the site of the northernmost of the three south-eastern barrows as depicted by the Ordnance Survey. Again no trace of the barrows was recorded. Indeed, at that point parts of two parallel ditches, perhaps a track running south-west to north-east, were noted. Further south-east the survey picked up other parts of parallel ditches, here running south-east to north-west, at least one of which was a continuation of a ditch visible on aerial photographs further south-east.

The other block surveyed lay in the valley bottom close to the brook with an extension up the valley side. This was positioned to cover the area of most prolific

Roman finds. Although the results are not entirely clear, there is no doubt that they showed the outlines of a major building complex, aligned roughly along the stream and probably less than 50 metres from it. The complex is some 70 metres long from north-west to south-east and at least 30 metres across. Some ten areas of what must have been rooms with paved or tessellated floors are recognisable together with two possible enclosed courtyards, one at each end, the one on the south-east being partly surrounded by a colonnade. Further south-east beyond the courtyard, traces of further buildings and a possible boundary wall on a different alignment suggest either earlier ranges or later additions, although modern sub-soiling appears to have damaged the remains in this area. There are indications that other buildings extended to within at least 25 metres of the Little Nine Wells. The whole complex probably also spread further north-west, as the surface finds indicate. It might also have reached the brook beyond the limits of the survey, although it is unlikely to have ranged much further to the north-east. To the north-west of the main building, within the north-western courtyard, there is a small rectangular dark area about nine metres by 13 metres with a three metre-wide colonnaded walkway on three sides and a line of columns on the fourth. This could have been a temple but its overall size is probably too small for such an interpretation (Lewis 1960; Rodwell 1980; Wilson 1975). A much better suggestion is that it was a small rectangular enclosed pool bounded by a colonnade and set in the centre of the courtyard. The latter might thus have been a garden attached to the main building.

The continued uncertainty over the position of the barrows was emphasised in 2004 when Carter (2004, fig. 2) published a map of Whittlesford parish as it was in 1812, together with former field names and old tracks. The map not only depicts the Chronicle Hill barrows as three crosses all well within Got Moor but also places them 250 metres north-west of the positions given by the Ordnance Survey.

The Local Heritage Initiative project

In 2003 the Whittlesford Society, a village organisation concerned with 'stimulating local interest, promoting high standards of planning and architecture and securing the development and improvement of features of public or historic interest' (Whittlesford Society 1975) applied to the Heritage Lottery Fund for a grant under the Local Heritage Initiative. The grant was intended to assist the setting up of a village archive, to help in the running of guided walks, to carry out wildlife surveys and to organise talks and educational visits. These were intended to involve pupils from the village school as well as local adults. The application was successful and the grant awarded in November 2003. One of the present writers (AA) suggested to the other (CT) that some properly supervised archaeological work, such as field-walking, which could involve relatively large numbers of people of all ages, might be possible under this scheme and so provide both interest and education. It seemed that the one place that met these criteria and had the added advantage of academic research was the Chronicle Hills. Such a programme could be arranged both to establish more fully the nature of the site and to ascertain its actual area. Permission to walk on the scheduled area was obtained from English Heritage.

Initial fears that few people would be interested in turning out on a cold, windy, late August day in 2004 were dispelled when 70-odd arrived on the site for the first walk, together with a handful of metal detectorists. The exercise was repeated on two successive occasions in 2005, with over 40 people each time. The method used was for the walkers to advance in lines across selected blocks approximately five metres apart, collecting, bagging and noting the location of any finds while one of the leaders (CT) controlled the process and recorded the results. The finds were later examined and reported on by staff of the Cambridgeshire Archaeological Unit.

The exercise covered three separate areas (Fig. 9). The first was at the south-east of the scheduled area, south-east of the footpath to Thriplow on land sloping south-west across the outcrop of the Melbourn Rock. This area was covered to try to define the south-western and southern limits of the site. Little except the occasional abraded Roman sherd, presumably from manuring, was found, except in the north-eastern corner and along the north-eastern side of the footpath, above the Melbourn Rock. There, pottery of the first to fourth centuries, including samian, Horningsea and Oxford wares were found in some quantities as well as roof tiles, in soil conditions that were far from ideal. The presumed area of occupation covered some three hectares. No finds whatsoever were made in the ill-drained land below the Melbourn Rock, confirming that the Roman material allegedly found here by Beveridge was mislocated. Although much post-medieval pottery was recorded over the whole area, no medieval wares were found. Of particular interest were three Roman coins, found at the south-western end of the area of Roman occupation. One was of Carausius, another a mid-third-century barbarous radiate and a third probably of the fourth century. Two of these were pierced for use as pendants. Such coins are usually found in early Saxon contexts, in particular with fifth-century burials as at the cemetery at St John's College playing field in Cambridge (Fox 1923, p. 242). If this interpretation is correct, it is more possible evidence for Saxon occupation of the site.

The second area that was field-walked was to the north-east of the scheduled area, on the flat hilltop on Middle Chalk. With better soil conditions, the exercise recorded a light scatter of very abraded Roman pottery over a wide area, again presumably the result of manuring. However, in the north-west corner much more Roman material was picked up across an area of about 0.5 hectares. This included limestone rubble, roof and floor tiles, and pottery from the second to fourth centuries. The latter again included samian,

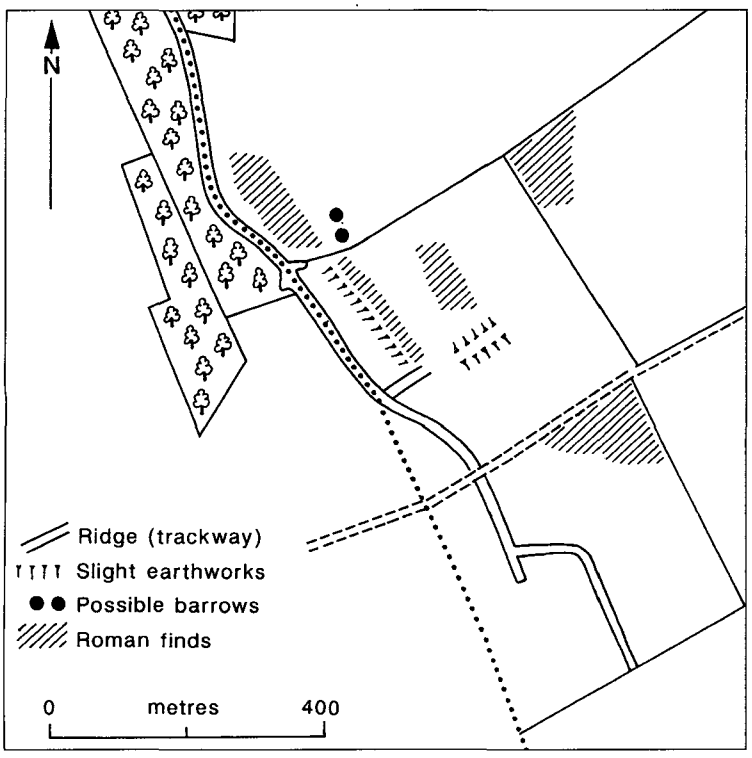

Figure 9. The Chronicle Hills, Local Heritage Initiative discoveries.

Nene Valley, Horningsea and Oxford wares. These finds indicated the former existence of a Roman building or buildings. In addition, a Neolithic polished axe of Cumbrian or Cornish origin and some worked flints were discovered. Considerable amounts of post-medieval pottery, tile, slate and coal were picked up over the whole area as well as a few sherds of twelfth to fifteenth-century date, all presumably from manuring.

The third area that was field-walked was north-west of the scheduled area. It covered the alleged site of the three south-eastern barrows and extended down the valley side and onto the ill-drained land of the former Got Moor. It thus included the site of the Roman building complex. Except for the valley bottom and the outcrop of the Melbourn Rock, a thin scatter of medieval and post-medieval pottery was recorded over the whole area that was walked, presumably again derived from the medieval and later manuring of the Bar Field. The occasional small Roman sherd must have come from similar earlier activity. No trace was found of the three south-eastern barrows at the position shown on Ordnance Survey maps, although patches of light and dark soil, gravel and pieces of chalk were noted. At least some of these coincided with the alleged 'five barrows' visible on aerial photographs but all seem to be the last remnants of ground-ice hollows, only just visible after two thousand years of cultivation (HER 04300–4). However, a little to the south-east of the Ordnance Survey position of the south-easternmost barrow, set on a small local rise on the edge of the valley and overlooking the Little Nine Wells, were two patches comprising pieces of Melbourn Rock, flint and foreign limestone. One was circular, 20 metres in diameter, and the other elongated, 15 metres by 20 metres, lying north-west to south-east and 15 metres apart. There was a thin scatter of Roman pottery and tile in the surrounding area. A metal detectorist claimed that both patches had produced iron nails, although none were found during the field-walking. Nothing that could be interpreted as the two north-western barrows was noted.

The finds from the site of the Roman building in the valley bottom were considerable. A strip of land, 175 metres long and 40 metres to 60 metres wide, north-west of the Little Nine Wells and below the Melbourn Rock outcrop, was covered with Roman material. This included roof, ridge and floor tiles, hypocaust stacks and box tiles as well as large pieces of limestone and flint. Small fragments of lead, perhaps from windows, were noted. Towards the south-western end of the strip, in the area of major buildings recorded by the resitivity survey, large quantities of red and grey tesserae were found. Pottery, mostly of the type recorded before and dated generally to the second to fourth centuries, including samian, Nene Valley, Horningsea and Oxford wares, as well as mortaria, extended across the whole area.

The programme of community field-walking was confined to the extremities of the site and did not extend to the centre and to the north-western side of the scheduled area, where most of the crop marks lay. To avoid damage to this area and the removal of too much archaeological material, the present writers walked this part of the site alone on two occasions in early 2006. No finds were made to the south of Little Nine Wells on the flat valley bottom below

the Melbourn Rock outcrop, where the remains of the ground-ice hollows are particularly well marked. However, a white linear feature running south-west to north-east across the parish boundary, visible on aerial photographs and heading towards the southern part of the crop marks on the hilltop above, was seen to be a ridge, 0.5 metres high, 20 metres across and 5 metres wide across its flattish top. It overlay the ice hollows and is almost certainly a former track. Its date is unknown.

Just above the valley floor, along a narrow strip of permanently damp ground below the Melbourn Rock, a continuous thin spread of Roman material only about 15 metres across was recorded, which extended for some 150 metres from just south-east of Little Nine Wells. Finds included Nene Valley and Horningsea wares, and roof and floor tiles. Together with a single sherd of late St Neots ware and some late medieval pottery, this could be interpreted as having been washed down the valley side from the Roman settlement to the north-east. However, it lay along the north-eastern edge of a very slight terrace 15 metres wide, cut back slightly into the hillside and now almost ploughed out. This terrace appears to be a former track. It may be medieval in date, but it is possible that it is Roman in origin and once had buildings along its north-eastern side. These would have been the continuation of the major buildings to the north-west of Little Nine Wells. The existence of this track explains the lack of visible ground-ice hollows here.

Field-walking along the north-eastern side of the scheduled area, on the flat hillside and across the line of the enclosures visible as crop marks on aerial photographs, produced few finds. Some abraded Roman sherds, small pieces of tile, animal bones, mostly cattle, and fragments of non-local limestone were noted but only one sherd of medieval pottery was found, in sharp contrast to considerable amounts of post-medieval wares. Conditions for field-walking were not ideal and fragments of more friable pottery might have been missed. The central strip of the area, immediately to the south-west of the main line of crop-mark enclosures, was walked under better soil conditions. Although the strip generally followed the main slope of the valley side, minor topographical variations seem to relate to aerial-photographic evidence. Thus, the south-westernmost extension of the enclosures visible on aerial photographs seems to lie on a slightly raised flat ridge, almost ploughed out, projecting south-westwards. It is possible that the ridge was man-made and created to ensure that the enclosures were on level ground. Just to the north-west, within two sides of the crop-mark enclosures, is a ploughed-down broad basin some 75 metres by 50 metres and up to one metre deep, in the centre of which is an area of dark soil. Further patches of dark soil were visible further north-west. Within this basin large quantities of Roman pottery, generally of the same type and date as elsewhere on the site, were picked up as well as a small amount of tile, stone and flint nodules. A flat stone with a 10 centimetre circular depression cut into it, perhaps the pad for a gatepost, was also found. The areas of dark soil to the north-west produced less Roman pottery and no tile or stone.

Conclusions

What can be made of this archaeological site, the understanding of which, typically, depends upon a largely undigested mass of published and unpublished evidence, mislocated detail, inadequate summaries, conflated descriptions, multiple HER entries and numerous superseded interpretations? There are several comments and conclusions that can be put forward. Some are specifically site-related; others are of wider significance.

The first conclusion relates to the Heritage Initiative. This, the most recent work on the site, has shown the great value of community-based archaeological activities for the general public. Although that organised at the Chronicle Hills was short-lived and limited in its aims, it seem to have been of considerable value to the participants who appear to have learnt much in convivial and interesting surroundings. Nevertheless, the limitations of using large numbers of inexperienced amateurs should be taken into account when assessing the result for academic purposes.

Despite all of the work on the Chronicle Hills, one can only agree with Whimster (1981) that its interpretation 'remains difficult': indeed, more difficult than he realised (Fig. 10). The actual locations of the barrows are still uncertain. The south-eastern three seem probably to have lain further south-east than they are shown on Ordnance Survey plans, close to the edge of Got Moor, near the junction of the medieval Bar and Stone Hill Fields and overlooking the Little Nine Wells. The patches of stone noted in this area during field-walking in 2005 may be the last remnants of two of the barrows. However, the details that have come to light of the way they were levelled in 1818 and the reasons for the work would seem to make it unlikely that any convincing trace of them will ever be discovered. The whereabouts of the north-western two barrows, only 60 metres to the east or north-east of the others, remains quite unknown.

In terms of content and relationships, all five barrows are hard to interpret, the south-eastern three especially so. The size of the central one is remarkable, particularly for Cambridgeshire. It seems doubtful that the adjacent wall recorded in 1818 with its 'abutments' was part of an enclosure. On the other hand, the abutments can hardly have been the remains of a former building as this would mean that the barrows were either inside the building, or post-dated its destruction. Given the proximity of other Roman buildings immediately to the south-west, this wall is best interpreted either as the north-eastern side of a building, the abutments being buttresses or, more likely, the north-eastern boundary of a courtyard or garden extending up the hillside from the main buildings. However, this latter interpretation

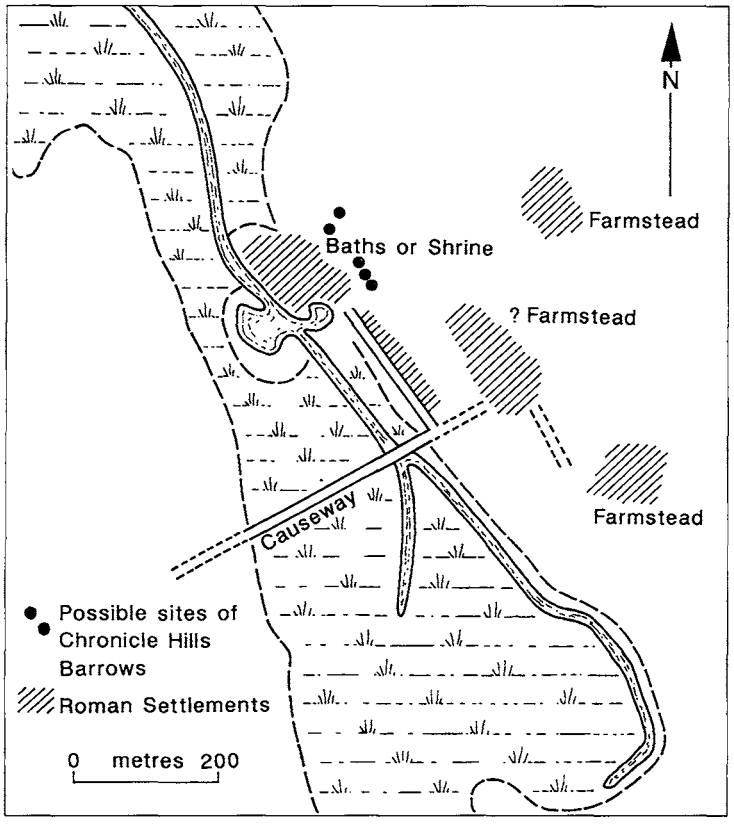

Figure 10. The Chronicle Hills, interpretative diagram of the Roman landscape.

produces further difficulties in that the north-westernmost of the three barrows is recorded as lying against the wall. Such a situation would have been unlikely if the wall was part of the Roman buildings and especially if it and the barrows were contemporary. But it is possible that earlier buildings were later extended up the hillside towards the barrows. It is clear from its plan that the complex comprised more than one phase. The barrows could pre-date this and might have been retained as they were regarded as being of special significance. They might have contained the remains of the ancestors of the occupiers of the villa or of the other Roman settlements in the area. This in turn implies that these three south-eastern barrows were either early Roman or late prehistoric in date. But, apart from the 'glazed' black and red pottery, certainly from the central barrow and possibly from all three, nothing dateable is recorded. The red 'glazed' pottery was presumably samian while the black was perhaps Rhenish, black burnished or even Nene Valley ware of late first-century or second-century date. Given the early nineteenth-century date and the circumstances of the discoveries, it is possible that cremations accompanying these 'glazed' wares were not recognised and that the four inhumations recorded only from the central barrow were secondary. This would mean that all of these barrows could well have been raised over early Roman cremation burials, very similar to others known from the region and that they were not as exceptional as has previously been thought (Fox 1923, pp. 192–9; Ladds 1915, p. 14; Liversidge 1977, p. 29; VCH 1911, p. 279).

Indeed, it is possible that their nearest parallels are the Bartlow Hills in North Essex, only just over 12 kilometres to the east-south-east (Brocklebank 1913; VCH 1963, pp. 37–45). While the great size and rich grave goods of the Bartlow Hills seems a long way from the Chronicle Hills, there are similarities that have not been previously noted. These include the fact that both groups have barrows that are larger than usual, that both have barrows arranged in a line and that both are adjacent to a major valley-bottom Roman structure, albeit neither fully understood (Neville 1853, pp. 17–21). There are also suggestions that the Bartlow Hills lay within an enclosure. A geographically nearer, but perhaps a less close parallel, is the barrow that survived until 1852 in the valley bottom of the River Granta at Hildersham. It is alleged to have been a 'perfect cone' in shape and 190 feet (58 metres) in diameter. This dimension would have made it another very large mound and is surely something of an exaggeration. It contained a Roman cremation (Fox 1923, pp. 195–6). Palmer (1924, p. 13) described it as a 'small Bartlow Hill' and reported that evidence of a Roman building had been found nearby.

As already noted, the location of the two north-western barrows remains unknown. They should have lain close to the position marked by the Ordnance Survey for the southernmost of the south-eastern group, although no trace has been found. Their date is equally uncertain. Both Fox and Whimster thought an early Iron Age date was the most likely, while Taylor went for the early Roman period with

cremations that were not recognised. If this was so, these barrows originally had cremations in boxes in large pits and thus would also have been of early Roman date. In the end, however, all that can be said safely is that all five of the Chronicle Hills barrows seem to be part of a long Western European tradition of such burials, perhaps associated with rich and influential families, that began in the early Iron Age and was continued into the second century AD by Romanised natives. Their proximity to a major Roman building is thus hardly surprising.

The evidence for Roman settlement at the Chronicle Hills comes from five separate areas. The major Roman building complex below the Little Nine Wells, in the valley bottom close to the stream, has often been called a villa. Certainly the finds, building materials of every type and pottery, as well as the results of the resistivity survey might be so interpreted. Yet its actual location makes this attribution unlikely. Set at the bottom of a slope, on a spring line, on ill-drained, permanently damp ground and with no views to the north and east and only limited ones to the west, this seems an unsuitable position for what by any standards is a large and important arrangement of high status buildings. The nature of the site, its position and especially the copious amounts of water produced from the Nine Wells, which earlier perhaps contained a lake or pool of some kind, might all rather indicate either a luxurious bathing establishment or a religious complex, or both. The nineteenth-century records of a 'bath', aqueduct and lead piping, as well as the apparent extension of buildings around and into the Nine Wells themselves, might be taken as support for this suggestion of a bath block. The apparent intentional levelling of the pre-existing ground-ice hollows to form a level area for the buildings certainly confirms the importance of their being placed deliberately on the otherwise unsuitable site. The status that the elaborate layout of these buildings indicates is enhanced by the existence of the small colonnaded structure to their north-west, particularly if indeed it was an enclosed pool within a courtyard or garden arrangement. Yet the same evidence could equally well support the theory for a religious site of some kind, connected with worship of water deities. The alleged figure of Minerva, if it did come from this site, might strengthen this supposition. Even the presumed earlier barrow burials could be the physical manifestation of a long-lasting ritual usage of the area that seems to have existed until at least the fourth century and perhaps later. The links between late prehistoric burials and ritual sites, Roman shrines and Saxon burials in Cambridgeshire have recently been summarised and it is possible that this site also illustrates these links (Malim 2006, pp. 109–12). The close proximity of baths, dwelling houses and water is not of course unknown. Such relationships, especially in areas where there are no known villas, has led to suggestions that sites like these are small spas and water-deity shrines. The building complex at Well, in North Yorkshire, with its house, bath house and plunge pool, all set in a marshy valley, has been suggested as an example, and it certainly has some parallels with the Chronicle Hills site (Gilyard-Beer 1951).

The limited and perhaps unreliable nineteenth-century evidence for a lake at Nine Wells is supplemented by equally unsatisfactory historical and botanical information. No lake or pool is shown on the Whittlesford enclosure map of 1812 (CRO R60/24/2/76). However, on the Thriplow enclosure map of 1840 (CRO Q/RDC 65) the site of the Great Nine Wells is shown as being occupied by an oval pool some 15 metres by 25 metres. The topography of the immediate area with its basin-like form would perhaps have allowed a much larger area of water before modern drainage. The botanical evidence is also of limited value, despite the area beside the Hoffer Brook being renowned in the study of the flora of Cambridgeshire as well having been designated a Site of Special Scientific Interest in 1958. All of the species recorded there, both existing and extinct, grow just as well within and around the water-filled ground-ice hollows as they would in a more extensive sheet of water (Crompton 1959).

The evidence of Roman occupation on the hilltop to the east and south-east of the Little Nine Wells is easier to interpret. The principal area of finds within the hollow of dark soil, enclosed by the crop mark enclosures, indicates a long-lasting habitation. But, despite the tesserae, it hardly seems to be a major building complex; nor do the crop marks themselves help. The almost complete lack of Roman material from them may be because they are later prehistoric in date, the pottery from that time not having survived or been found. Certainly, whatever their date, the crop mark enclosures are probably best interpreted as agricultural in function although a connection with the bath/ritual site in the valley bottom, perhaps through the provision of accommodation or stabling, is also possible.

The areas of Roman occupation to the north-east and south-east are more typical of small rural settlement sites found by field-walking over much of lowland England in that they have quantities of pottery but little or no evidence of major structures. Together with the thin scatters of abraded sherds over the whole of this part of Whittlesford parish, presumably evidence for manuring, these settlements can be assumed to have been farmsteads. The line of Roman material along the edge of the valley bottom to the south of Little Nine Wells that may or may not be associated with the terrace-way there, might be the site of yet another farmstead or again perhaps of a settlement associated with the bath/ritual complex to the north. Certainly other similar, presumably agricultural, sites are recorded in the general area. These include, further north in Whittlesford parish, Roman material from Kidmans Grove and more from just east of Camps Park, both of which sites lie close to the Hoffer Brook, and, incidentally, both of which are within an area known as Blacklands (Beveridge 1973; Carter 2004, fig. 2; CT personal knowledge). Roman pottery has also been found a little to the

south near Crow's Parlour and to the west around Thriplow church (HER 09765; CT personal knowledge). Undated crop marks, possibly of Roman farmsteads, are also recorded on the Thriplow side of the Hoffer Brook (HER 08652, 08655). Thus, whatever the function of the principal Roman occupation site in the valley bottom, it was certainly set within a wider landscape crowded with farmsteads, their associated fields and tracks.

Another point of interest to emerge from this study is the possibility of Saxon occupation of the site. The inhumations found in the centre of one of the three south-eastern barrows and those in the two north-western ones with the spear and dagger might all be secondary and thus early Saxon in date. Indeed the size of the middle south-eastern barrow might have marked it out later for special use as a burial place. The pierced coins might also suggest early post-Roman activity on the site. Given the large number of early Saxon settlements that have been discovered in Cambridgeshire in recent years, such an occupation at the Chronicle Hills would now be regarded as unexceptional. Just as important may be the fact that the barrows lay only some 100 metres from the boundary between Thriplow and Whittlesford, well below the 500 feet (150 metres) that Bonney used to define his category of Saxon burials significantly close to a parish boundary, and thus perhaps marking the limits of an early estate (Bonney 1966, p. 27; 1976). Bonney mentions in passing that Cambridgeshire is a county that seems to have a number of Saxon burials on or close to parish boundaries, but his suggestion has never been taken up seriously.

Late-Saxon activity at the Chronicle Hills might have included the use of the barrows as a Hundred meeting place. The parish was the centre of Whittlesford Hundred by the late eleventh century and a hundred years earlier a moot of Cambridgeshire notables was held there. It is possible that both the moot and the Hundred Court met at the Chronicle Hills. The lost place-name *Mutlow* at Whittlesford could refer to this meeting place although, as it occurs in both Duxford and Whittlesford contexts, it has been suggested that it lay on the boundary between these two parishes (Reaney 1943, p. 92). Meaney (1993, p. 91) thought that it might have been at the ford across the River Cam at Whittlesford Bridge. However, on an 1837 manuscript map of Whittlesford place-names compiled by Maynard (CRO R58/5/9/165), the name Mutlow Hill is shown some 400 metres north-north-west of the Chronicle Hills, close to the Thriplow boundary.

The map also shows the name Mutters Pit and Muttelers in the same area and in the nineteenth century there was a Muttlerway in Newton parish that ran south-east through the open fields there towards the Hoffer Brook (Carter 2004, fig. 2; Meaney 1993, p. 91; VCH 1982, p. 186). There is nothing on the ground or on aerial photographs to suggest former barrows or mounds at the place indicated on Maynard's map and he, or local tradition, might have put the name too far north-north-west. Certainly other Mutlow names in the Cambridge region are located at barrows containing Roman or Saxon burials and the Chronicle Hills would seem to be an obvious place (Meaney 1993, p. 69). The possible continuing use of the barrows for secondary burials, as meeting places, as estate boundary markers, or perhaps because of their value as places of ritual or mythological significance, may be a reason why they survived within the arable open fields of the parish until the early nineteenth century (Whyte 2003).

A perhaps less important aspect of the site to emerge relates to its subsequent land use. As would be expected, the field-walking project produced quantities of post-medieval material from all of the land documented as permanent arable in the early nineteenth century. This material presumably arrived there in manure carted out from the village. Similar but slighter scatters of very abraded small sherds of medieval pottery, broadly dateable to the twelfth to fifteenth centuries, also indicate the manuring of the arable at an earlier period. However, the distribution of the medieval pottery is not identical to that of the post-medieval material. While sherds of medieval pottery were found over the presumed area of the barrows and to the north-east – within the old Bar Field and well to the east of the crop marks towards the centre of the old Stone Hill Field – no more than half a dozen sherds were discovered over the whole area to the south-east of the barrows, above the Melbourn Rock outcrop along the western edge of the former Stone Hill Field. This might mean that this part of the land of the parish was not arable in medieval times, or that it was manured in a different way to the rest, or not manured at all. It seems unlikely that it was never cultivated until post-medieval times or that it could have been manured differently. But it is just possible that here, on the margins of the parish, the land was not permanent arable during the medieval period but only taken into cultivation periodically: a form of infield-outfield. Whatever the answer to these observations, at least new questions have been raised about medieval agriculture in Cambridgeshire that hitherto have not been asked.

Other points to emerge from this examination of the mass of information on the Chronicle Hills may have wider implications beyond Cambridgeshire. The first is that, despite the detailed field-walking in varied conditions by experts and amateurs alike, surprisingly few coins and very little metal work has been recorded from the site in recent years. Given the quantity and quality of other finds and the size of the building complex in the valley, this is curious. But this phenomenon has also been noted on other potentially prolific Roman sites. For example, the large Roman villa at Mill Hill, Castor, near Peterborough (RCHME 1969, Castor (42)), has also been systematically walked and yet has produced very few coins, and incidentally almost no figured samian ware. This has been explained by Paul Middleton, who directed the work, as the consequence of the site being stripped of this type of material by metal detectorists. The lack of coins found at the Chronicle Hills may be for the same reason.

Another matter is the answer to a question that doubtless some readers of this paper will ask. Why has there been no mention of the fact that the Chronicle Hills lie on the Icknield Way? The reason for this is twofold, one academic, the other personal. The academic reason is that, as a result of recent research, there are now serious doubts as to whether the Icknield Way ever existed as a long-distance route (Harrison 2003; 2005, pp. 87–115). In contrast, there is a growing body of evidence from excavations and aerial photography from all over Cambridgeshire and beyond, and, as already observed, not least from the Chronicle Hills and its immediate area, of the existence of a landscape in Roman and late prehistoric times covered by a multitude of tracks and roads (Atheny & Mudd 2003; Gibson 2005). These seem to have been set in a landscape of arable fields, not open downland, and run in every direction linking village to village and farmstead to farmstead. To pick out and to give significance to the least well-marked of these routes, which is ill-recorded even in late-medieval times and which seems largely to be a figment of popular imagination, is to continue to bolster a myth that prevents an understanding of what early landscapes were really like. The personal reason for ignoring both the Icknield Way and the other better recorded roads and tracks that once ran to and from the Chronicle Hills is that one of the present writers (CT) has a life-time dislike of roads and tracks that can usually be described as historical will-o-the-wisps, with little basis on which to draw viable conclusions (Taylor 1979, pp. ix–xiv).

A final point worth making is that, despite all the archaeological work that has been carried out on the site at Whittlesford, large parts of its history are probably still missing and perhaps irrecoverable. This was brought home to the writers in 2006 when, following field-walking on the site, an article appeared in the *Whittlesford Society Magazine* (Arnold 2006, pp. 14–15) by a long-time villager. He pointed out that in the 1930s a stockyard and buildings for pigs were erected on the south-east side of the site close to and south-east of the footpath. These structures, he claimed, survived until the 1950s. Yet no trace of them whatsoever was picked up during the field-walking and the only record of them, other than memory, is on the air photographs taken by the RAF in 1946 where their function is unclear, their detail obscure and their exact site is actually *north-east* of the footpath (RAF 1946).

One last thought: what has been achieved by all the work on this undistinguished archaeological site? Perhaps not much, for in many respects it still remains an enigma and nothing that has been written in these pages will advance its archaeology very much in the short term. But at least this paper has attempted to collate, correct and, most important of all, to interpret the mass of information that has been put together so assiduously by past generations. For interpretation is vital. Without it, information is dead. Now at least it should be possible to move forward and to ask some new questions about the Chronicle Hills. We are reminded of the cry of T. S. Eliot in *The Rock* (1934) 'Where is the knowledge we have lost in information?'

Acknowledgements

In a paper so diverse as this, many people have provided help, information, comments and criticism in equal amounts. They include: Brian Bridgland, Gigi Crompton, Sarah Harrison, Paul Middleton, Alison Taylor, Philip Walker, John Peter Wild and Stuart Wrathmell. Members of the Rheesearch group and the staff of the Cambridgeshire HER and County Record Office have also provided much information. Above all, the help of the men, women and children of Whittlesford is gratefully acknowledged. The line drawings are by Philip Judge.

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Plate 2. *'Ploughing over the site of the Roman villa, The Quave Trees in the background' by George Maynard of Whittlesford, courtesy of the Cambridgeshire County Record Office.*

Iron Age settlement and Romanisation on the Isle of Ely: the Hurst Lane Reservoir site

Christopher Evans, Mark Knight and Leo Webley

With contributions by Katie Anderson, Adrian Challands, Andrew Clarke, Natasha Dodwell, Lorrain Higbee, J D Hill, Gavin Lucas, Donald Mackreth, Gwladys Monteil, Sarah Percival, Chris Stevens and David Williams

The rescue excavation of an extensive Middle/later Iron Age settlement and its ensuing Romano-British occupation at Hurst Lane on the west side of Ely is reported, and the continuities between its two phases are explored. Having evidence of 35 roundhouses, this is one of the most dense Iron Age sites in the region. A development model of their associated compounds is outlined. One of these had marked affinities with the Wardy Hill Ringwork, which allows for discussion of the nature of concentric enclosure elaboration. Numerous 'loose' human remains were recovered, including a modified skull found in 'foundation deposit-like' circumstances associated with a major roundhouse. Review is made of the Iron Age and Romano-British settlements excavated on Ely during the 1990s. The island's cultural/'tribal' affiliations are considered, as is also the apparent poverty of its assemblages and the processes of its Romanisation.

As a great land-locked fen island surrounded by marsh, the Isle of Ely is an intriguing archaeological context, one that directly pertains to questions of bounded territory and 'closed systems'. Prior to the 1990s, very little archaeological fieldwork had occurred on the island proper. The potential scale of its Iron Age occupation had, however, been highlighted through the Fenland Project Surveys (Hall 1996; Hall & Coles 1995), and the wealth of Bronze Age metalwork from its skirtland and internal marsh embayments (Grunty Fen and the Cove of *Cove*-ney) had long suggested still earlier usage (see, for example, Fox 1923). This paper is primarily concerned with the excavation of a major Iron Age settlement complex (with subsequent Romano-British usage) by the Cambridge Archaeological Unit (CAU) at Hurst Lane, on the eastern flanks of the Cove embayment and only one kilometre north-west of the city of Ely itself (Fig. 1). However, drawing upon the results of other recent excavations within the Cove's environs, specifically the nearby Trinity Lands site, the paper also considers the potential Iron Age colonisation of Ely's claylands. Addressing this requires discussion of the island's later Bronze Age seasonal usage, and equally the character of its Romanisation. Potentially relevant as regards the latter and Ely's status as a fen island are notions of 'backwaterness' and the possible survival of archaic traditions, which are also fundamental to 'island archaeologies' in general (e.g. Sahlins 1987's 'islands of history').

These issues are further brought into focus by Ely's situation within the broader cultural geography of Iron Age Eastern England and the question of 'outside' linkages. It falls, on the one hand, just north of the Aylesford-Swarling border and the limits of Late Iron Age Romanised gaulish influence (for example Birchall 1965; Hill, Evans & Alexander 1999). On the other hand, it lies immediately west of the sphere of the Iceni polity and south of their later expansion into the central Fenland islands of March, Stonea and Chatteris (Evans 2003b; Gregory 1991; Jackson & Potter 1996). This complicated political/cultural geography is suggestive of a social mosaic, and that there was not one Iron Age, but many (i.e. non-homogeneous communities).

Finally, with its layout clearly resonating with the Wardy Hill Ringwork at Coveney on the island (Evans 2003a), the main Hurst Lane compound suggests a domestic origin for the latter's eventual defensive elaboration. Analysis of the plans of the two sites provides insights into the nature of the concentric organisation of space and the character of domestic/defensive enclosure.

The Hurst Lane reservoir

The site was investigated under dire rescue circumstances between mid-July and September 1999, as a reservoir was being constructed in conjunction with house-building along Ely's western margin. Whereas the sites relating to the latter were adequately covered through County Council development control, the reservoir had inadvertently escaped planning procedures as its location had been moved from an original application site. The settlement was only discovered during the course of construction, when it was visited by CAU staff working nearby at the West Fen Road complex (see below and Mortimer, Regan & Lucy

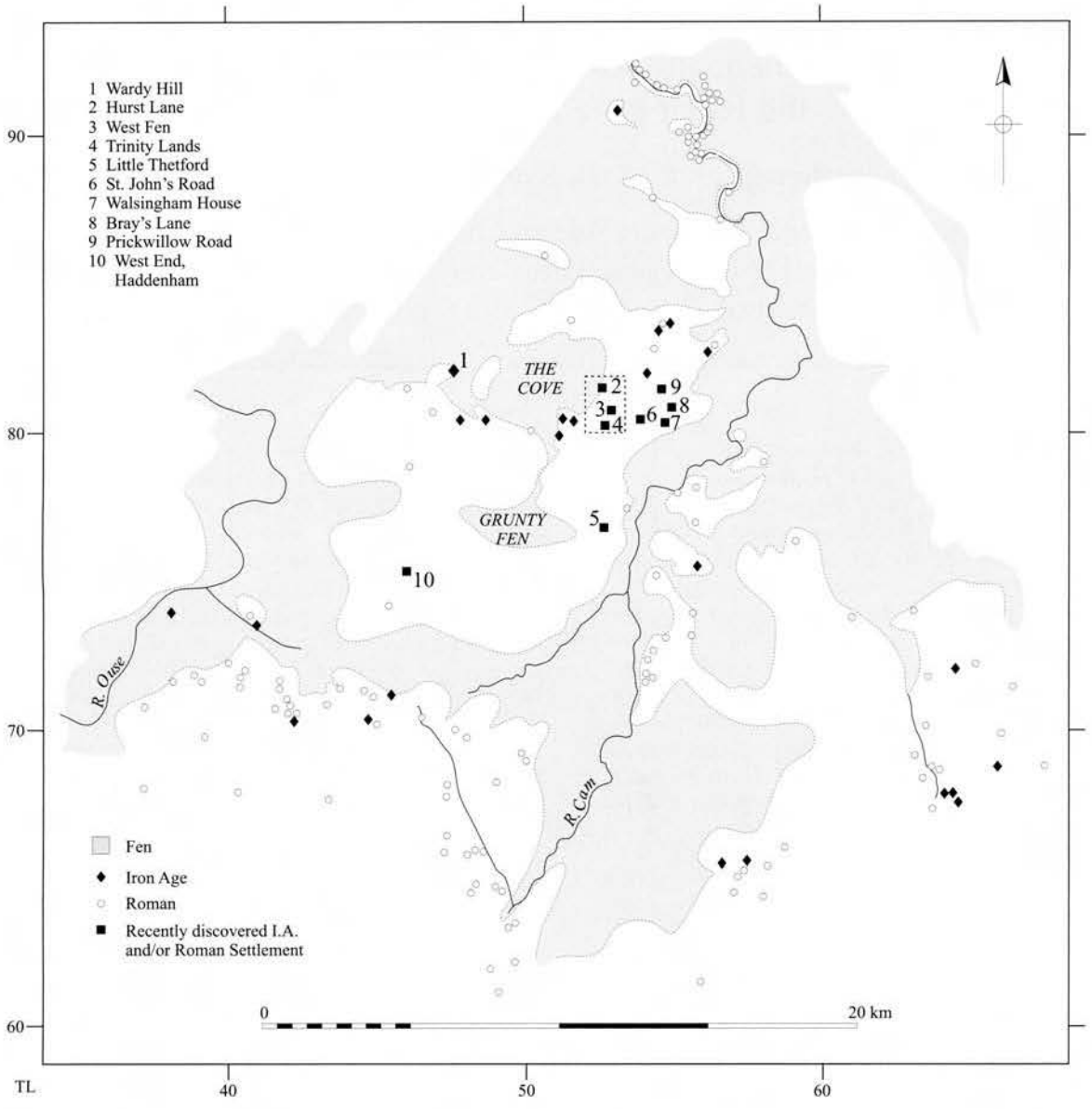

Figure 1. *The Isle of Ely Iron Age and Roman settlements on the island and the adjacent 'mainland' (dashed box indicates area of Fig. 2).*

2005). Following rapid negotiation, a successful application was duly made to English Heritage to retrieve, in effect, whatever was possible from the site.

The site was low-lying, at approximately two to four metres OD, on a gravel terrace flanking the eastern side of 'The Cove' embayment (see Evans 2003a, pp. 10–15 for full discussion of the area's geology and environmental sequence). In the course of the investigations a 2.85-hectare area was stripped (under varying degrees of archaeological control). As indicated in Fig. 2, trenches were also cut off the western fen/Cove-edge side to check whether settlement features extended in that direction; the results proved negative. With upwards of 35 roundhouses present – the largest number exposed on a settlement in the region since the Cats Water, Fengate excavations (Pryor 1984) – the site obviously represents a great missed opportunity. Given the circumstances, the decision was made to focus energies on the main southern horseshoe-shaped compound and its associated roundhouses (Figs 3.I & 6). This was due to the marked similarities it had with the arrangement of the interior of the Wardy Hill Ringwork that had been excavated seven years before. Indeed, many of the issues raised in this paper are discussed in greater detail in that site's publication (Evans 2003a).

The eaves-gullies of most of the Hurst Lane roundhouses were test-excavated (generally metre-long segments of their entrance terminals) and comparable segments were dug, where possible, across the compound and fieldsystem ditches. However, this coverage was too limited to allow, for example,

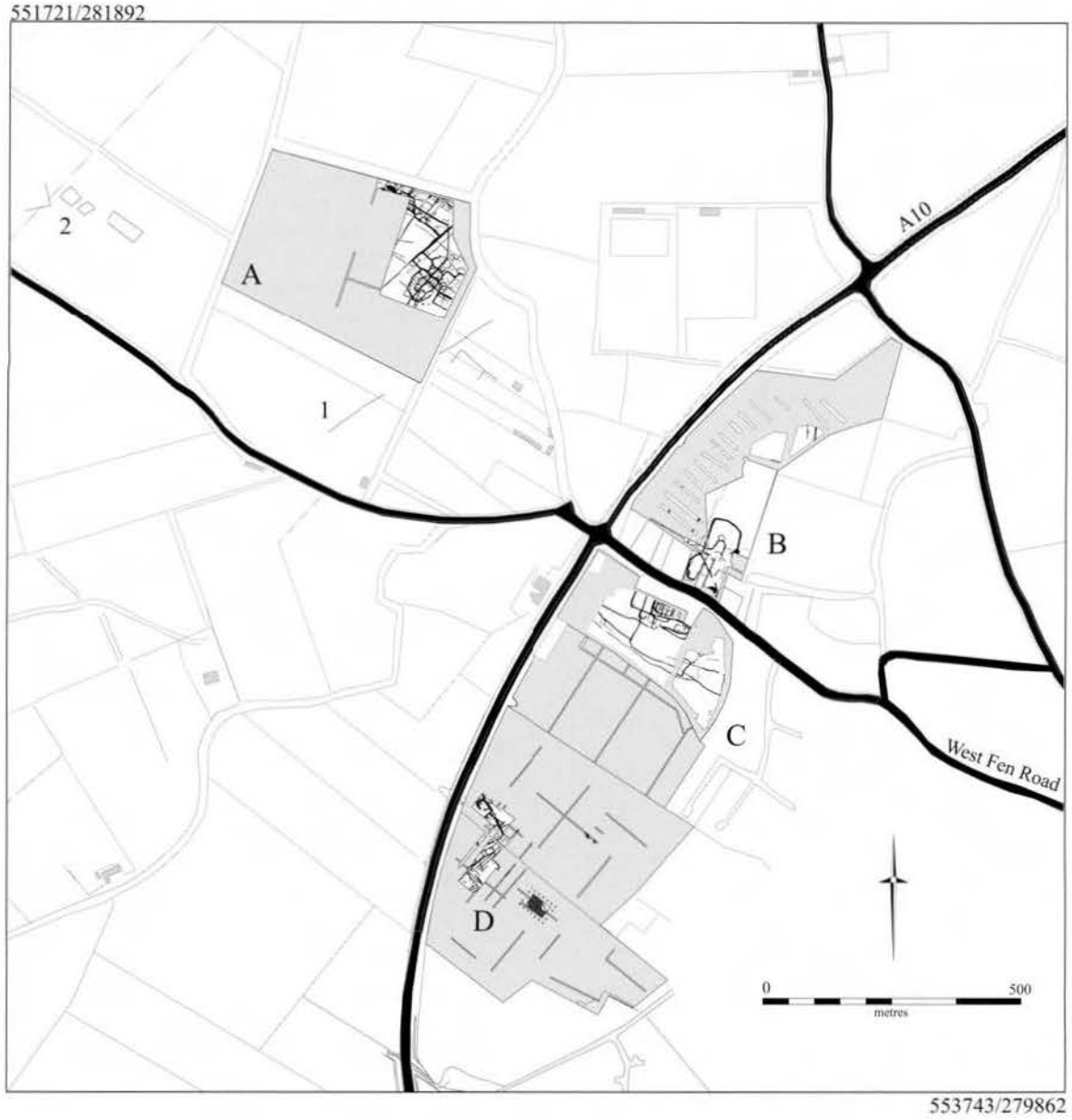

Figure 2. *The West Fen Road Area Sites (Iron Age and Roman phases shown only): A) Hurst Lane Reservoir; B) West Fen Road North; C) West Fen Road South; D) Trinity Lands (1 and 2 indicate cropmarks).*

meaningful distributional analysis, and even for the horseshoe compound its sampling can only just be considered adequate (Fig. 6). This then was not a matter of fine-grained archaeology and the results must not be 'pushed' further than is reasonable. Although enclosure-system development models will be explored, much stratigraphic ambiguity remains (and the base-plan includes a degree of simplification).

Pre-Iron Age usage

A recent paper has highlighted pre-Iron Age usage of the Isle of Ely in the light of its heavy clay subsoils (Evans 2002) and its arguments need not be repeated here. Given Hurst Lane's location on terrace gravels, particularly important in this regard is the sheer paucity of its Neolithic and Bronze Age usage. No features could definitely be attributed to these periods and, apart from nine sherds of Bronze Age pottery, only 42 pieces of worked flint were recovered. As identified by C. Conneller, the latter include diagnostic Mesolithic/earlier Neolithic, Late Neolithic and later Bronze Age items.

Ely's environmental sequence is critical in this context (see Evans 2003a, pp. 10–15 for outline and Waller 1994) for, originally part of the Chatteris 'peninsula', it only became 'islanded' over the course of the first millennium BC. This inundation led to a great loss of low, gravel terrace skirtland, whose 'host' communities were probably both the source of those groups journeying to Ely's clays prior to the Iron Age and

also for its 'new' settlement from that date. Given this, before the Early/Middle Iron Age well-drained sub-soils might have been sufficiently accessible (at lower altitudes adjacent to water), so that the Hurst Lane terrace need not have been deemed particularly 'special'.

Iron Age settlement

Two distinct Iron Age settlement foci were exposed, though neither in their entirety. Whereas that in the north, Cluster II, extended still further in that direction, the southern clearly continued east, beyond the limits of investigation (Cluster I; Fig. 3). Cluster II was the more minor and included the eaves-gully-circles of four definite roundhouses (Structures/Str. 19, 21, 22 & 24), with the fragmented lengths of eight more 'possibles' identified (Str. 20, 23, 26–30; Fig. 4). It also included a trapezoidal ditch compound (F). This appeared to be contemporary with one of the larger house circles that lay within its interior (Str. 24), and a segmented-ditch 'annex' (G) extending from its south-eastern side truncated, or at least impinged upon, three of the roundhouses (Str. 19, 21 & 22). The south-western side of this compound was not defined; it is presumed to have been re-cut by the line of the main Roman fieldsystem at that point.

The three-segment length of ditch extending east from Compound F is a most unusual feature to occur late in an occupation sequence (segmented digging more commonly initiated modes of continuous enclosure-ditching). Where excavated, it was found to be 1.4 metres wide and 0.45 metres deep. Although its line cut through the eaves-gullies of Structures 19, 21 and 22, closer scrutiny indicates that in all three instances the interruptions to the ditch corresponded with the buildings' interior. At no point did they extend more than a metre beyond the gullies and, therefore, it is conceivable – albeit unlikely – that it actually respected the structures *per se*. In other words, the buildings (and their walls) could, in theory, have still stood with their gullies so 'linked'.

The plan that was recovered of the compounds of the southern settlement cluster (I) was much more complete (Fig. 4). It consisted of a large horseshoe-shaped compound (A), whose north-eastern aspect was conjoined by four smaller sub-square or polygonal paddocks (B–E). The circles of 12 largely complete roundhouses were exposed (Str. 2–4, 8–15, 17 & 18), with the partial rings of some four further buildings also present (Str. 5, 7, 12 & 16; see below concerning the status of Structure 6).

The two settlement foci and their buildings were arranged axially. The axis of Cluster II is obviously southeast-northwest, whereas Cluster I's was on the return southwest-northeast alignment. The latter's buildings occurred on two main parallel axes: Structures 2, 3 and 8, and 4, 6, 9, 14, 15 and 17, with Structures 11, 13 and 18 perhaps forming a third eastern line. Whilst complementary to the general arrangement of their respective compound systems, this layout reflected the predominately south-eastward orientation of the roundhouses.

As outlined below, in the case of Settlement Cluster I and the development model of its compounds, it was not possible to determine with certainty whether any portion of the Iron Age settlement predated the establishment of the main 'horseshoe' enclosure, however much that might have been expected. The same is not true for Cluster II, where 'open' settlement clearly occurred prior to the establishment of Compound F (Fig. 4). This was marked by a series of minor linear ditches that extended throughout that area, and also by concentrations of pits and postholes. (Similar discrete features also occurred across the northern portion of Cluster I and extended east to the limits of excavation there. However, because that cluster also coincided with an area of Roman settlement – and very little excavation took place to differentiate between them – there cannot be the same degree of determination as for Cluster I.) As for Structures 22 and 23, a number of the minor Cluster II ditches were also clearly truncated by Compound F's perimeter.

When considering issues of Iron Age chronology and efforts to establish the origins of the Hurst Lane settlement, in hindsight perhaps the greatest shortcoming of the excavation programme was its emphasis on eaves-gully-defined round buildings at the expense of pits and posthole-defined structures. given this, and that gully-surround buildings seem to be a hallmark of Middle/later Iron Age occupation in the region (they are uncommon in Late Bronze Age/Early Iron Age contexts), a major issue then becomes whether any non-gully-defined buildings occurred within the area of Cluster II. Unfortunately the evidence is ambiguous. Although there were suggestive groupings of postholes, none definitely described a roundhouse pattern (a distinct 'four-poster' setting did, however, coincide with the interior of Structure 19). The pottery from the few features that were excavated in the area consisted of a mix of flint-tempered and also sandy Middle/later Iron Age fabrics, and is comparable to other portions of the settlement (see Percival below). Therefore, there is no compelling evidence that any part of the settlement pre-dated the earlier Middle Iron Age, although the area probably saw some manner of usage during the Early Iron Age.

As outlined by Percival below, the site's pottery assemblage provides some degree of chronological control for the buildings' sequence. 'Earlier', La Tène-associated forms were found (without later types) in Structures 3, 4, 9 and 16, with the latest, Conquest-period pottery types being recovered from Structures 2, 6, 8, 10, 15 and 24. However, in the case of Structures 2, 8, 15 and 24, earlier types also occurred. Whilst for the most part this was probably the result of redeposition and residuality, given its stratigraphic associations Structure 15 cannot be 'late' (see below) and, therefore, in that instance the Conquest-period wares might be intrusive.

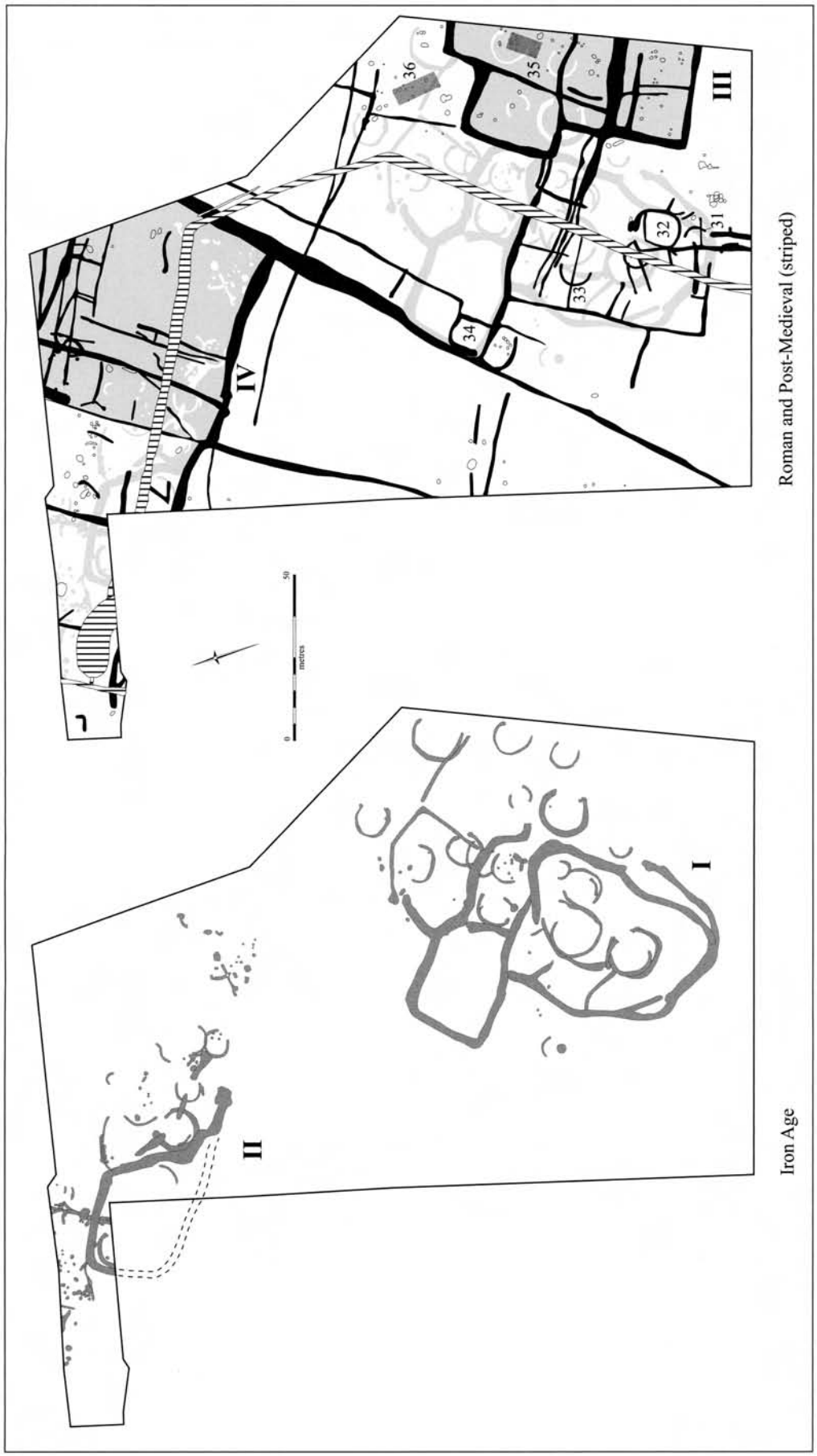

Figure 3. *The Hurst Lane Reservoir Phase plan showing main settlement clusters (I–IV).*

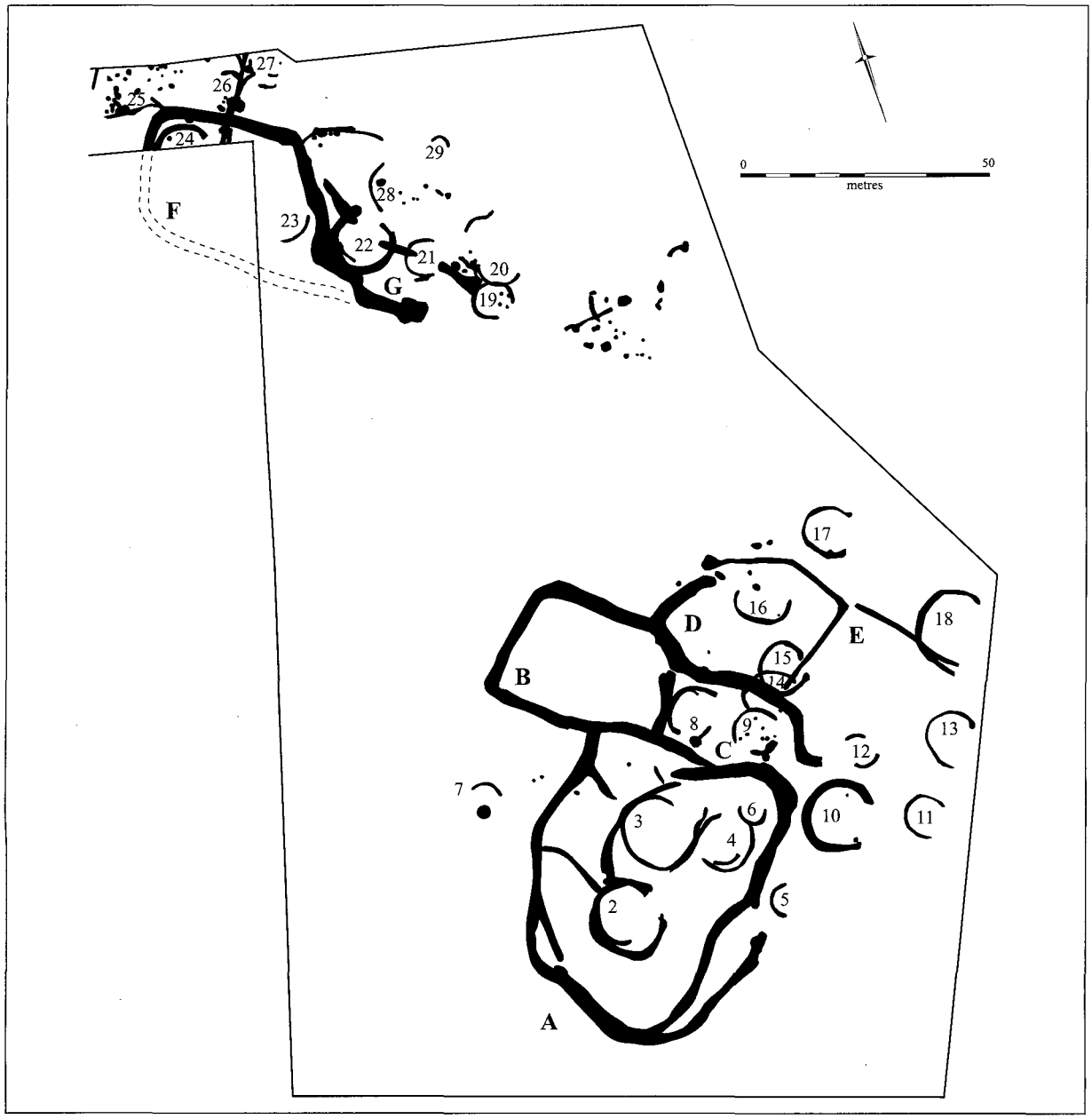

Figure 4. *The Hurst Lane Reservoir Iron Age compounds (A-G) and structures (2–29).*

A development model

When attempting to outline the development of the site's Iron Age enclosure systems, two points warrant attention. First, of the building-associated compounds, the southern 'horseshoe' (A) is the only one in which the perimeter ditch did not truncate earlier round structures. In other words, there is no reason for it not to have been an 'early' or primary construct. Secondly, there was general similarity between Cluster II's 'double-enclosure' arrangement and Compounds B and C in Cluster I (Fig. 5). Both included a western sub-square unit (B/F) with a smaller quasi-trapezoidal annex on their eastern sides (C/G) and, therefore, these two 'pairings' might have been broadly contemporary.

If these pairings were contemporary, then a development model can be postulated for the Cluster I compounds. The sequence is from south to north: first the Compound A 'horseshoe' alone, with the B/C double-unit then added to its northern side (the secondary status of B to A is apparent as the north-western corner of the latter seemed paramount, with the plan of Compound B compromised in relationship to it; Fig. 5); finally, the more markedly angular and linear Compounds D and E (*cf.* the bulbous 'organic' character of A–C's ditches) were added to the northern side of B/C. As a whole, the enclosure complex seems to have been accessed from, and opened onto, the east.

Having established this, it is now possible to consider the phasing of the primary enclosure –

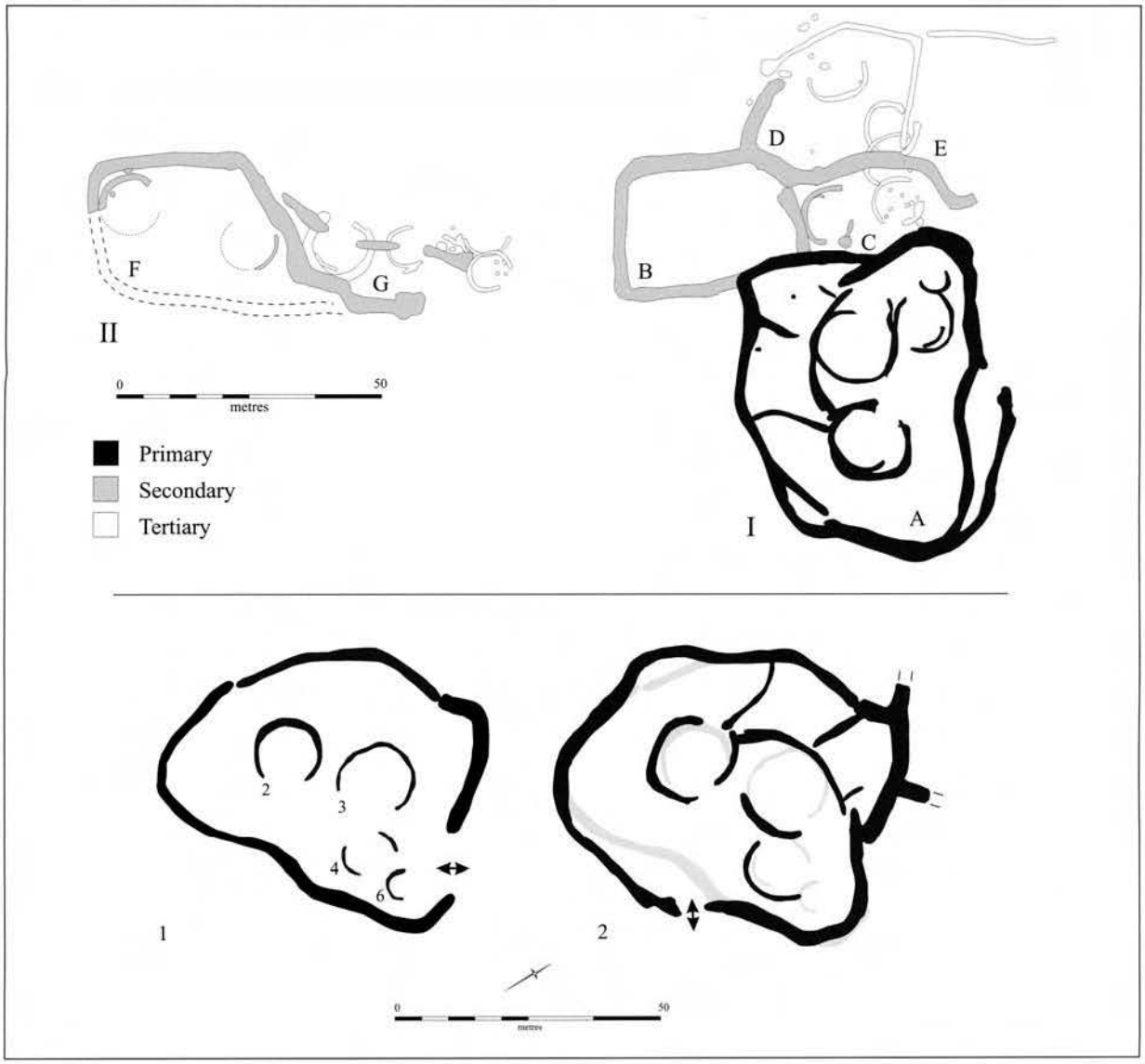

Figure 5. *The Hurst Lane Reservoir Development model of Iron Age compounds (top) and, below, for Compound A: 1) primary; 2) secondary components.*

Compound A's 'horseshoe' – and, in particular, what changes the secondary addition of the B/C double-cell on its northern side might have entailed. While it had a *c.* 4.70 metre-wide entrance along its central eastern side, this only occurred in its secondary circuit. Although requiring a considerable degree of supposition and plan-based inference (as opposed to relying purely on stratigraphic determination), it clearly started with a quasi-trapezoidal plan, involving a straight northeastern 'front' (with a *c.* 8.00 metre-wide entrance gap) from which extended its sub-circular perimeter (Fig. 5.1). Its boundary was 1.40–2.40 metres across and 0.45–1.00 metres deep, generally having a broad 'V'-shaped profile (F. 418, 462 & 475; Figs 6 & 7.A). Segmented construction was evident at two points along its western aspect: a 0.75 metre-wide 'gap' between F. 418 and F. 462, with the ends of the latter and F. 475 abutting in the northwest of the circuit (Fig. 6). These clearly marked construction-related 'interruptions' and not entrances as such.

The secondary alteration to this compound clearly related to the addition of the northern two-cell 'pairing' (Compounds B & C), as ditch F. 466 closed its access in that direction (Figs 6 & 5.2). Of the remainder of its circuit, the southern and eastern sides were 'boxed' to create a more sub-square arrangement in plan with the new entrance in its eastern side. This secondary circuit was comparable to the first, being 1.30–2.40 metres across and 0.50–1.00 metres deep (Fig. 7.B).

Equally crucial, however, is what these alterations imply for the internal settlement space of the compound as, in addition to blocking the primary northern entrance, the line of ditch F. 466 projected into its interior (Figs 6 & 5.2). In order to appreciate this

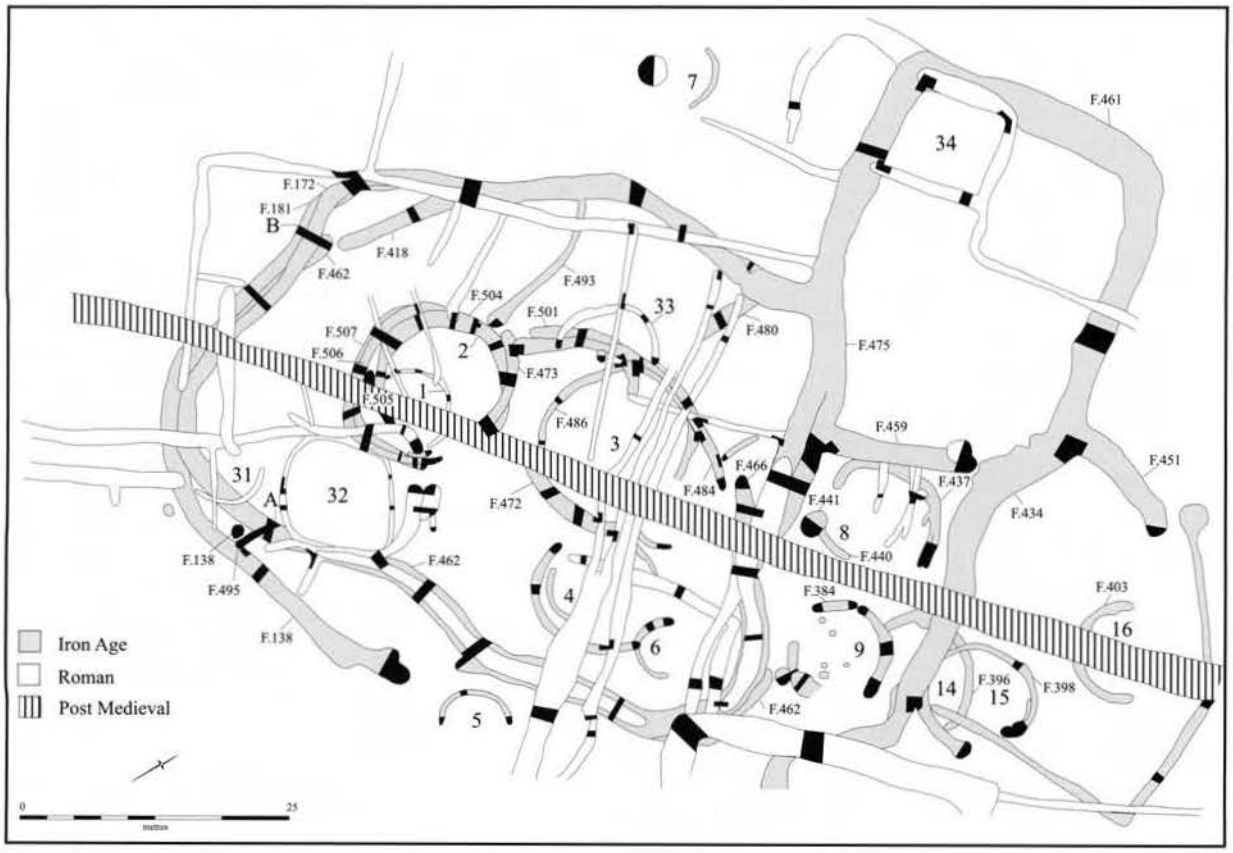

Figure 6. *The Hurst Lane Reservoir Area of Compound A, base-plan showing excavation segments (blackened).*

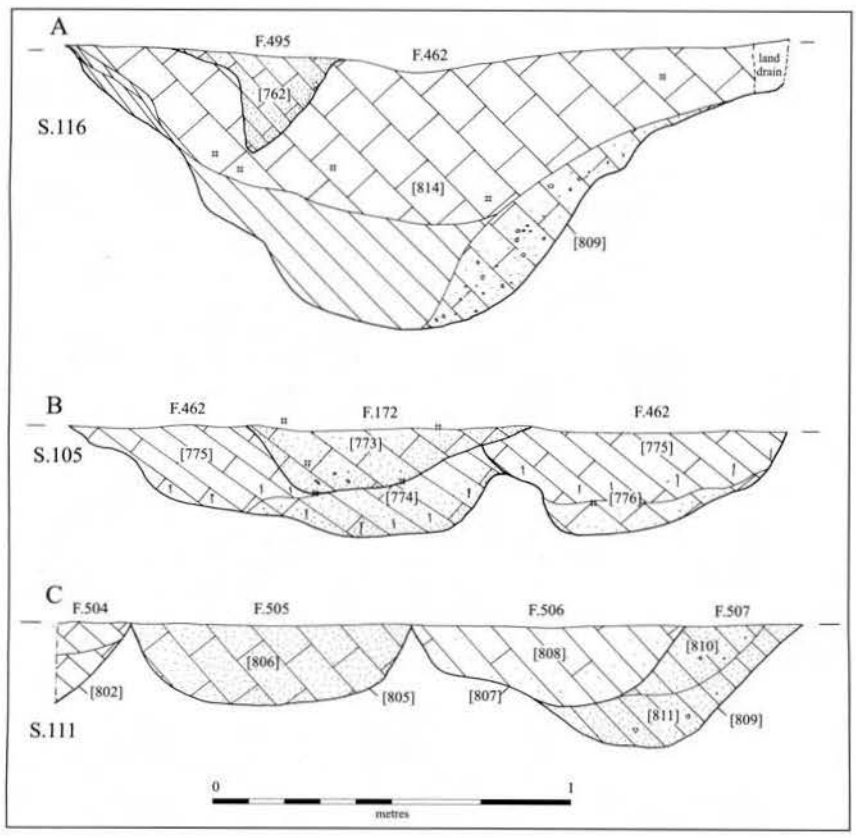

Figure 7. *The Hurst Lane Reservoir Sections (see Figs 6 & 14 for locations).*

layout, the development of the compound's roundhouses must be taken into account. Three, possibly four (see below), eaves-gully-surrounded roundhouses were located within its interior. The two largest – Structures 2 and 3 (with diameters of about 15 metres) – lay centrally, with Structure 4 tucked between Structure 3 and the main perimeter ditch. Based on the arrangement of their re-cut eaves-gullies, the doorways of all three evidently opened eastward (although there is less certainty in the case of Structure 4, which was *c.* 11 metres in diameter). As indicated on Fig. 9, the eaves-gullies of both of the main structures were originally of penannular plan. In the case of Structure 4, its gullies flanked its northern and southern sides but were not 'closed' along the western back side.

The regularity of this layout was altered with the closure of the compound's northern entrance. The interior projection of ditch F. 466 continued in the line of gully F. 484/501 that curved around the north-western side of Structure 3 (truncating its eaves-gully) and terminated at the gully of Structure 2 (Figs 6 & 5.2). Corresponding with this – and the compound's new eastern access – the circles of all of the roundhouses were subsequently redefined by more robust 'ditch/gully' arcs around their eastern, and in the case of Structures 2 and 4, southern, sectors. These developments obviously related to a major reorganisation of the compound's internal space, and the line of ditches F. 466 and F. 484/501, together with the southern arc of Structure 2's gully (F. 506/507), effectively separated off a 'back' interior swathe. Probably relating to the penning of livestock, this 10–13 metre-wide 'rear' crescent appeared to be sub-divided by a spoke-like arrangement of gullies: F. 493 (protruding from the main perimeter and continuing south-east to the line of Structure 6) and, possibly, ditch F. 480 (and also a minor gully length lying ten metres north-east of it). That ditch F. 493 directly conjoined with the compound's perimeter would suggest that the latter was without a substantial interior upcast bank. This, however, might just have been a localised phenomenon, as the approximately two-metre-wide stand-off between Structure 4's eastern eaves-gully and the compound's circuit could, in fact, suggest the line of just such an embankment (Fig. 6).

The 'half gully-circle' (*c.* 5.70 metres in diameter) of yet another structure (6) lay in the interior north-eastern corner of the compound (Fig. 6). It is difficult to be certain of its status. On the one hand, the secondary compound perimeter (F. 466) seemed to respect it and it appeared to be truncated by the end of the re-cut eaves-gully of Structure 4. On the other hand, morphologically it is akin to a series of small, 'half-arc' Early Roman structures that were later sited within the compound (see below; Str. 1, 31 & 33; though all of these cut Iron Age features) and a sherd from a mid-late first-century AD jar was recovered from its fills. Yet comparable sherds were also recovered in association with Structure 2's eaves-gully, and they do no more than suggest that these features were 'open' (if not in use) during the Conquest period. Equally, other comparatively small 'half-arc' structures of definite Iron Age attribution were also present within Cluster I (Str. 5 & 7). Therefore, caveats aside, Structure 6 is also tentatively assigned to the compound's Iron Age usage.

Equally pertinent is whether Structures 2–4 were entirely contemporaneous; while late Conquest-period wares were present in Structures 2 and 6, they were absent from 3 and 4. Yet, given the spatial dynamics and modification of the enclosure's interior, it is unlikely that the relationship between these buildings was only successive (i.e. Structure 2 replaced 3/4). It is, therefore, more plausible that the usage of Structures 3/4 overlapped with 2, and that only some time after the enclosure went through its secondary alterations were Structures 3/4 dismantled. (While ditch F. 484 truncated Structure 4's gully it still respected the building's 'circle', which was then also subject to further recutting of its gully on its eastern side; F. 472.) As remarked upon by Percival below, there can be little doubt that Structure 2 (and also 6) was still standing until, at least, the mid-first century AD.

As our attention must now shift from the Compound A 'core' of Cluster I to its secondary paddocks and the 'exterior' buildings, the inadequacy of the site's excavation becomes more apparent (Figs 4 & 6). Based on those dynamics that have already been recognised, such as 'paired' and/or ancillary buildings (and also the results from other sites; e.g. Evans 2003a and Evans & Hodder 2006), simple patterning, such as large roundhouses necessarily succeeding smaller structures, is not a realistic option. Given this, any analysis of the site's broader settlement pattern must, by necessity, seem arbitrary and lack the subtlety of convincing settlement history.

Apart from a subsequent square Roman structure (34), no buildings whatsoever were found within the interior of Compound B and, similarly, none could be definitely ascribed to Compound E. Of the structures within Compound D, only the northern half-circle of Structure 16 could possibly be contemporary. This, however, seems to have been of 'early' attribution and was unlikely to have stood within the compound as such. Structures 14 and 15 were definitely truncated by the ditch separating Compounds C and D (F. 391). The eaves-gully of Structure 15 cut that of 14, whose southern arc was also truncated by Structure 9 (which lay centrally within the interior of Compound C). Although there is no basis by which to establish any relationship between Structures 9 and 15 (the latter was accompanied by Late Iron Age/Conquest-period wares which were lacking in Structure 9), this three-building overlap suggests a long sequence of re-building and does not seem paralleled within Cluster II.

It is equally difficult to be certain whether Structure 8 was contemporary with Compound C as its western boundary (F. 459) impinged upon that building's eaves-gully. As suggested by the two parallel east-west ditches that cut through the interior of Structure 8 from the F. 459 boundary, the line of

the latter might have, at least in part, been re-cut in Roman times, and this could account for its truncation of the eaves-gully. Yet Structures 8 and 9 were uncomfortably crammed into Compound C and certainly it is likely that the latter – having only Middle Iron Age tradition wares – predated it (if standing it would have blocked the original northward access into Compound A). However, Structure 8 had Late Iron Age/Conquest-period pottery associated with it, and the manner in which the southern arc of its eaves-gully deflected from its circle (i.e. straightened) could well indicate that it was contemporary with this compound and the later phases of the site's Iron Age occupation.

Similarly, and more a matter of speculation than resolution, the site's four largest roundhouses all fell within the area of Cluster I: Structures 2, 3, 10 and 18 (see below). The spacing between the latter three is generally comparable, with the close packing of Structures 2 and 3 being attributable to their location within the interior of the 'horseshoe' compound. It could, therefore, be postulated that all of these 'great' houses were contemporary and that, at its height, the settlement cluster saw four major households in residence (perhaps also with clients or attendants). (The only evidence against this is that the northern boundary of Compound E truncated Structure 18; nevertheless, all four of these main buildings could, theoretically, have been contemporary immediately before the truncation occurred.) Alternatively, it might have been a matter of the successive 'pairings' of two households; Structures 10 and 18 could have at first stood together only to have been shifted and re-built as Structures 2 and 3 within the 'horseshoe' enclosure. Yet this scenario would have been unlikely, as Structure 10 included Late Iron Age/Conquest-period wares and therefore was probably contemporary with Structure 2. Unfortunately there were not the stratigraphic means, nor were the buildings exterior to Compound A excavated in sufficient detail, to establish an artefactual basis by which to determine the exact relationship between Structures 10, 18 and 2/3. Nevertheless, the evidence suggests that unenclosed buildings continued to stand side-by-side with those within the compound system.

House types and artefact densities

The site's Middle/later Iron Age settlement architecture is typical of the region. Consisting of small pits, wells and eaves-gully-surrounded roundhouses, the properties of such components have been thoroughly discussed elsewhere (Pryor 1984; Evans 2003a; Evans & Hodder 2006) and need not be rehearsed here. In many instances, the recovery of the house gullies at Hurst Lane was only partial and their truncation by later features hindered full recovery of their plans. Equally, the intense re-cutting of some of the eaves-gullies makes it difficult to ascertain their original form. In the majority of cases, few, if any, postholes survived in association and, as was also true at Wardy Hill, the uprights of their buildings could not have been deeply footed. In short, this site does little to further understanding of Iron Age roundhouse form.

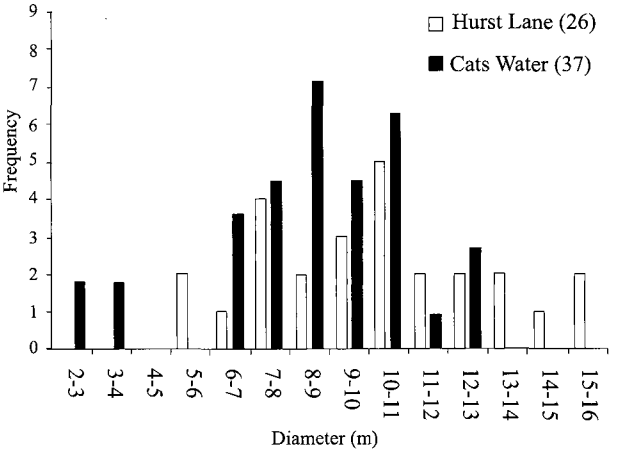

Figure 8. *Comparison of roundhouse diameters from Hurst Lane and Cats Water, Fengate settlements.*

With gullies ranging from about five to 15 metres in diameter (measured from gully mid-points), three main size categories of structure can be distinguished: small (5–8 metres), medium (8–12 metres) and large (12–15 metres; Fig. 8). Not surprisingly, the mid-range buildings are the most frequent (43%), with 25% of the structures attributable to the smallest category. As mentioned, the four largest round structures all occurred within Cluster I and, with diameters of about 15 metres each, Structures 2 and 3 were amongst the largest roundhouses known within the region (see Evans 2003a, p. 228). Interestingly enough, the larger structures displayed a degree of ranked or, at least, successive 'pairing' by settlement-area. At the upper end were Structures 2 and 3 set within the 'horseshoe' enclosure. Thereafter, lying immediately east of Cluster I's compounds, were the unenclosed Structures 10 and 18 with diameters of some 14 metres; the two largest structures within Cluster II – 22 and 24 – both had diameters of about 12 metres.

Variability is apparent in the types of the eaves-gullies surrounding the structures (Fig. 9). Most of those recovered would seem to be of a 'C'-plan, that is defining two-thirds to three-quarters of a circle, and very few were of a 'classic' penannular form (i.e. the gully only being interrupted for the doorway itself, for example Structures 2 & 3). Against this, there were also a number where the gully formed a half-circle or less. Whereas, entirely typical of the period's building traditions, the 'C'- and penannular-plan roundhouses were oriented either east or south-eastwards (e.g. Oswald 1997), the 'half-or-less circle' structures showed greater variation (e.g. Structure 16 oriented north-eastwards and 7 south-westwards).

Given their size and situation, Structures 2 and 3 are potentially 'special'. Attempting to evaluate their status, their total number of finds has been estimated, factoring for the marked differences in the excavation sample of their eaves-gullies (c. 26% and 16% dug respectively; Table 1).

*Table 1. Artefact populations Structures 2 and 3 (*excludes material from pit F. 505).*

	Structure 2	Structure 3
Total pot	319 (7791g)*	82 (1269g)
Pot per metre	31.9 (779g)	12.4 (192g)
Total bone	307 (7998g)*	73 (1786g)
Bone per metre	30.7 (800g)	11.1 (271g)
Estimated total pot	**1246 (30,434g)**	**497 (7691g)**
Estimated total bone	**1199(31,242g)**	**442 (10,824g)**

Due to the relative proportions of their excavated samples, Structure 2's figures are probably the more representative, and its substantially greater numbers are essentially the result of the larger scale (and intensity of re-cutting) of its eaves-gullies. Based on this, Structure 2's estimated pottery population could, for example, be compared to the two 'great' houses at Wardy Hill (Str. I & IV, 931 & 1689 sherds respectively). However, it would have had only about 30–40% of their animal bone (see Evans 2003a, pp. 208–11, tables 59 & 60, fig. 104, see also 248, table 69 for comparison to the Little Thetford buildings).[1]

Again, although surely biased by the much greater amount of excavation accorded it, Structure 2 would seem different on two other accounts. As outlined by Higbee and Clarke below, there is the frequency (and indeed occurrence at all) of pig bone, which in this case represents 15.6% of its faunal assemblage. Within the settlement's context this could suggest a relatively 'elite' diet (see e.g. Davis in Evans 2003a, p. 127). There is also the presence of human bone and, more specifically, of skull fragments (see Dodwell below). The latter were associated with three of the site's roundhouses (Str. 2, 3 & 9; Fig. 15). In the case of Structure 2, apart from a fragment of skull from its eaves-gully (and also human phalanges), there was the evidence of pit F. 505 (Fig. 14). Lying immediately south-east of the gully, the base of this feature had been paved with 'slab-like' sherds from a large storage vessel. Set upon these was the dome of a human skull, which had evidently been detached by a series of severe blows. Therefore, although contingent upon in-field sampling strategies, Structure 2 does seem to have been a 'distinguished' residence, albeit at a lowly level.

Romano-British usage

The two areas of Iron Age settlement were eventually superseded by a Romano-British fieldsystem, whose axes generally 'boxed in' and thus respected the earlier compounds' boundaries (Fig. 3). Although some degree of phasing and expansion or infilling was apparent within the later system, the excavation was not sufficiently intensive to detail this. Suffice to say that the layout of the fieldsystem suggests that the main focus of settlement lay to the south-east (Cluster III), with another possibly lying to the north (Cluster IV), and that in both instances they lay immediately beside the Iron Age foci in these respective areas.

A note of caution (and context) is necessary when evaluating the site's Roman chronology and usage. As outlined below (see Lucas *et al.*), the vast majority of its pottery assemblage dates from the first and

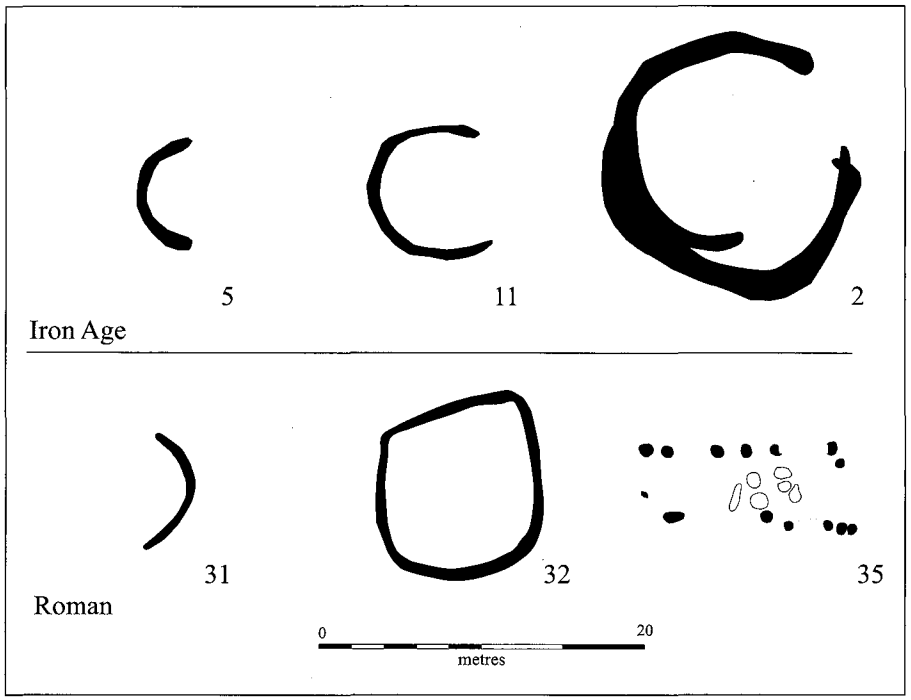

Figure 9. *The Hurst Lane Reservoir main Iron Age and Roman structure types.*

earlier second centuries AD, with very little later Roman material (and no coins whatsoever). Recovery might have been severely biased by the excavation strategy. Focusing on the core of Iron Age Cluster I (where immediate post-Conquest occupation might have been localised within the 'horseshoe' compound), few Roman contexts were investigated beyond this immediate area and where it was thought that later activity could have continued throughout the later second until, at least, the third century AD. As outlined below, it must be relevant that the developed cores of Clusters III and IV are comparable to those at the Prickwillow Road and West Fen Road Roman settlements (see below), which continued to be occupied until Late Roman times. By reference to the latter two sites, it seems unlikely that Hurst Lane's Roman settlement would have been so elaborated or 'complex' had its usage ceased by the mid-second century.

Five structures defined by gullies can be attributed to this period at Hurst Lane (Fig. 3). All of these might have been shed-like and of ancillary status to houses *per se*. Three consisted of only 'half-arc' gullies, 6.70–9.00 metres in diameter (Str. 1, 31 & 33), whereas the other two were of sub-square form (Str. 32 & 34; *c.* 10 x 10 metres). Yet it is notable that four of these fell within the area of the Iron Age 'horseshoe' compound (Str. 1, 31–3; Fig. 6); the upper fills of this compound's north- and south-eastern sides contained quantities of Early Roman finds (and along its south-eastern aspect the compound was not 'boxed' by a Roman boundary). It might be relevant that the 'half-arc' gully buildings located within the compound (Str. 1, 31 & 33) were all later truncated by ditches associated with the main Romano-British fieldsystem. This could, therefore, suggest that these structures and the Romano-British settlement debris in the upper profile of Compound A's circuit (in part backfilled) might actually attest to some manner of post-Conquest interregnum usage, with the main Romano-British system perhaps being laid out in the later decades of the first century AD. In this case, only the two sub-square structures (32 & 34) would have been contemporary with the fieldsystem itself. (This postulated succession could be furthered by the fact that in the south of Compound A one of the 'arc-plan' structures – 31 – was cut by a ditch that extended from the east side of a boundary that framed, and thereby respected, the southern sub-square structure, 32.)

In addition, two possible post-built structures could be tentatively distinguished within the area of Cluster III (Fig. 3). Unexcavated, both could only be generally attributed to the site's Roman occupation (and identified as buildings *per se*). The first, Structure 35, extended over 5 x 12 metres and was aligned with the paddock system of the period in this area (Fig. 9). The other (and more dubious), lying to the north and off-alignment – Structure 36 – extended over about 5.50 x 20 metres.

Iron Age pottery

Sarah Percival (with a contribution by David Williams)

The excavations produced 3659 sherds of pre-Roman pottery (59.5 kilogrammes). Following assessment of the full assemblage, a sample of *c.* 1700 sherds (39.9 kilogrammes) from 121 contexts was selected for full analysis (Table 2). This included contexts known to contain large and well-preserved assemblages, sherds with form or fabric of particular interest, and pottery from structures and other features of significance to the interpretation of the site.

Table 2. *Sherd count and weight of Iron Age Pottery*

Date	Quantity	Weight (g)
Earlier to Mid-Iron Age 500–300 BC	512	10,579
Mid- to Late Iron Age 300 BC–AD 50	902	24,137
AD 50 onwards	281	5100
Total	**1695**	**39,816**

Of the Iron Age sherds that were studied, most were large and well preserved, with an average sherd weight of 23 grammes. The assemblage contained a range of domestic vessels, some with soot and limescale residues, which suggests that they were used for cooking. The majority dated from the later Iron Age, the third to first centuries BC, and included a number of transitional forms indicating that the assemblage was starting to become Romanised.

Pottery was chosen principally from Settlement Cluster I, with a smaller quantity from Cluster II. The sherd count and weight of pottery chosen for analysis from each settlement area is shown below (Table 3).

Table 3. *Sherd count and weight of sherds by site location*

Location	No. of contexts	Sherd count	Sherd weight (g)
Cluster I	85	1254	28,046
Cluster II	24	341	8604
Surface finds	6	58	838
Unattributed	4	44	2294

Fabrics and production

Seventeen fabrics were identified from five main fabric groups. The most numerous were the sandy fabrics, which represented 76.2% of the total Iron Age assemblage (30.33 kilogrammes). Ten quartz sand-tempered fabrics made up the sand-tempered group (Group Q); of these, seven were hand-made and three were wheel-made. Sand-tempered fabrics were used for all the major forms represented at the site with the exception of the largest storage jars, which were manufactured exclusively from shell-tempered fabrics.

Shell-tempered fabrics made up the second most numerous fabric group. Two such fabrics were identified (S1 & S2), both hand-made. These were divided into medium and coarse wares, and were used for a range of medium-sized jars and large scored storage jars. Thin-section analysis of these fabrics indicated that the shell was fossilised and derived from a local fossil-rich clay source (see Williams below).

Flint-tempered fabrics made up a small but significant percentage of the assemblage (6.7%; 2.67 kilogrammes) and were used for a range of medium-sized jar forms. The

presence of such fabrics is of interest as they were commonly used in the earlier Iron Age and might indicate an early element within the assemblage. An early date for at least some of the flint-tempered wares was suggested by the presence of fingernail-impressed decoration, which was applied to the rim top of one vessel in Structure 4 ([372]), although the sherd could have been residual. A degree of residuality was also suggested by the condition of the sherds, 10.4% (278 grammes) of which were abraded or very abraded. It is also possible, however, that coarser inclusions, such as flint-tempering, continued to be used well into the Middle Iron Age (Percival 1996, p. 265).

Organic tempering was present in 3.9% of the assemblage (1547 grammes). The presence of organic-tempered fabrics is often taken to be indicative of 'Belgic' or Aylesford-Swarling style pottery of the later Iron Age and early Roman transitional period. However, both fabrics of this type here were hand-made.

Wheel-made fabrics made up 11.0% of the assemblage by weight (4371 grammes; 15.0% excluding earlier-Middle Iron Age material). A few sherds were identified as possible proto-greywares (56 grammes), which were wheel-made of dense micaceous sandy fabric. The remainder of the assemblage (29 grammes) was of indeterminate prehistoric date.

The assemblage can, therefore, be classified as a sand-tempered assemblage and, as such, is typical of the majority of later Iron Age pottery from the Ely area. The predominance of sandy fabrics shows strong parallels with other later Iron Age sites in and around the Isle of Ely (see below), in particular with West Fen Road (72.9% sandy fabrics), Watson's Lane, Little Thetford (73.8%), St John's Road, Ely (82.3%) and Wardy Hill, Coveney (71.8%).

Evidence for pottery production was limited. One sherd ([374]) from a large, rough wiped coarse ware jar had a large spall missing from the surface just below the rim. Its interior had limescale residues, indicating that it had been used for boiling water. The presence of the spall indicates that the vessel had been misfired, but despite this damage the pot was still put into use, which suggests that it had been made locally and not traded in. Thin-section analysis indicated that, in common with Wardy Hill (Hill & Horne in Evans 2003a) and Haddenham, the majority of the clays for the sand- and shell-tempered wares found at Hurst Lane were from local sources (see Williams below). This suggests there was localised domestic-scale production supplying users within a relatively small area. As such, it falls well within the pattern for pottery production in the Middle to Late Iron Age identified by Morris (1996, p. 45) and indicates that pots did not travel more than 30 kilometres from where they were produced. In addition to the locally made pots, trade or exchange from outside the local area brought in a small number of pots. No sherds from beyond the Isle of Ely and its immediate environs were definitely identified by thin-sectioning, although the Late Iron Age wheel-made rilled vessel sherd was of indistinct provenance and might, therefore, have been non-local (Sample 10; see Williams below).

Petrological Analysis
David Williams

Ten representative Iron Age sherds were thin-sectioned and studied under the petrological microscope for a detailed description of the fabric of each. Ely lies in an area of Jurassic Kimmeridge Clays and Cretaceous Lower Greensands, covered in part by Glacial Sand and Gravel, Boulder Clays, Alluvium and Peat Fen deposits (Geological Survey One-Inch Map of England Sheet No. 173).

The petrological results tabulated below show that in theory the dominant non-plastic inclusion types present in the sample sherds could all have been derived from clays and sands found in the locality of Ely. Glauconite, for example, which was present in eight of the 10 sherds, is commonly associated with Lower Greensand formations. The packed fossil shell of Sherd 9 might have derived from the local Kimmeridge Clays, although of course a source further afield is also quite possible. A likely origin for the predominantly quartz fabric of Sherd 10 is more difficult to predict given the ubiquity of the inclusions.

A comparison with a selection of Iron Age fabrics from Wardy Hill, to the north-west of Ely, and with Haddenham to the south-west, both previously thin-sectioned by the writer, show a number of fabric similarities with those from Hurst Lane (Williams in Evans 2003a and in Evans & Hodder 2006). Sherds with a high calcareous content, mainly fossil shell, sometimes with bryozoa, are common to all three sites, as are Jurassic deposits. Like Hurst Lane, many of the sherds from Wardy Hill and Haddenham also contained glauconitic pellets, with Fabric Q12 at Wardy Hill also having elongated organic voids present (this fabric accounted for 6.6% of the assemblage). However, only at Wardy Hill did there not appear to be glauconitic clays or sands within the immediate vicinity. Moreover, at that site there was a clear fabric distinction between the earlier, hand-made vessels, which did not contain glauconite, and the Late Iron Age wheel-made ones that did. At Hurst Lane, glauconitic fabrics were found in the Middle Iron Age hand-made wares as well as in the later wheel-thrown pottery. At Wardy Hill, there were a number of sherds that included angular pieces of grog. This form of tempering was not recognised in the thin-section samples analysed from either Hurst Lane or Haddenham.

Glauconite

1) [444] <596> **Hand-made pedestal base** (?early Middle Iron Age)
2) F. 505 [917] <1197> **Hand-made sherd**
3) [965] <1301> **Hand-made Type A vessel** (?early Middle Iron Age)
4) F. 440 [360] <436> **Hand-made base**
5) F. 463 [659] <869> **Hand-made rim sherd**
6) SF. 159 <218> **Hand-made sherd from large vessel**
   Thin-sectioning showed that scattered randomly throughout the clay matrix were frequent well-rounded disaggregated oxidized pellets of glauconite. Also present were frequent grains of ill-sorted quartz, mostly monocrystalline but a few with undulose extinction, a number of large organic voids, some still containing carbonised plant remains (also visible in the hand-specimen), the odd piece of flint, a few flecks of white mica and some opaque iron oxide. Samples 5 and 6 were slightly finer textured than the other sherds, containing less quartz and organic voids. Sample 2 also contained a piece of ironstone.
7) [630] <825> **Hand-made Type A jar**
   This was a similar fabric to Samples 1–6, including the large organic voids, but it also contained some small pieces of shell scattered in the clay matrix, which were lacking from the latter group.
8) F. 505 [912] <1197> **Wheel-made rim** (mid–late first century AD)
   This fabric had a similar range of non-plastic inclusions

to Samples 1–6, with the exception that it appeared to lack the distinctive large organic voids that were a characteristic of the latter group. The fabric also contained the odd small piece of cryptocrystalline limestone.

Fossil Shell

9) F. 505 [880] <1128> **Hand-made dense shelly fabric**
Thin-sectioning showed a clay matrix crowded with platelets of fossil shell. Included in this were a relatively high number of pieces of fossil bryozoa skeletal material. This aquatic invertebrate animal occurs in a wide range of geological formations, most notably the Jurassic. Also present in the fabric were a moderate amount of quartz grains and a little opaque iron oxide.

Quartz

10) [125] <168> **Wheel-made, rilled vessel** (mid–late first century AD)
Thin-sectioning showed a groundmass of frequent silt-sized grains of quartz with a moderate scatter of larger grains, average size 0.20–0.50 millimetres. Also present were some pieces of flint of a similar size-range to the larger quartz grains, some flecks of white mica and a little opaque iron oxide.

Form and decoration

The assemblage was recorded using the type series developed by Hill (Hill & Horne in Evans 2003a). No whole vessels or complete vessel profiles were found. The site is characterised by upright-rimmed, slack-shouldered forms and, as such, is typical of other sites excavated around Ely (*ibid.*). The use of these utilitarian-style vessels appears not to have changed for several centuries from at least 300 BC and continued well into the first century AD, when they occurred alongside wheel-made forms (Hill 2002, p. 145).

Slack-shouldered jars (Form A) were the most numerous vessel found on the site representing 35% of the identifiable rims (89 examples). The jars were found throughout, being present in Structures 4, 6, 8, 9, 10, 15, 16, 17, 22, the enclosure ditch of Compound A and that of Compound F in Settlement Cluster II. These jars were also found within the pits that were excavated. Eighteen of the rim sherds were burnished. Decoration was present on three Form A jars: two examples had fingertip impressions applied to the rim top; the third had tool-incised slashes applied to the top of the rim. Such decoration might be an earlier trait. This is interesting in light of the longevity of the slack-shouldered jars, perhaps suggesting that early decorative techniques continued in use along with the earlier vessel form. Sooting occurred on four examples and limescale deposits were found on one. This suggests that the jars were used for cooking and for boiling water. All of the examples were made of hand-made fabrics, mostly with quartz-sand inclusions, although a small number contained flint.

A second slack-shouldered bowl form in hand-made fabrics was also present. This was similar to Form A, but with a flared open-neck (Form D, 12 examples). Unlike the ubiquitous Form A jars, which were widespread over the site, these were only found in the eaves-drip gullies of Structures 2, 3 and 9 and in a pit ([521]). The jars were also found with the earlier trait of fingernail-impressed decoration applied to the rim top (one example) and slashed decoration to the rim top (two examples). The decorated sherds were found in Structures 2 and 3.

Closed bowls with distinct upright rims (Form B) also made up a significant proportion of the assemblage (10%; 26 sherds). These were found both with and without burnishing. The closed bowls were found in the enclosure ditches of Compounds A and F, and Structures 2, 8 and 9. Three examples of a small, undecorated closed bowl (Form C) were also recovered (Str. 15). A single sherd from a small, globular closed bowl with no neck and beaded rim (Form M) was also present. Found in Compound A, the form of this bowl references the 'La Tène'-style bowls found on Iron Age sites such as West Fen Road (Percival in Mortimer, Regan & Lucy 2005) and elsewhere in southern East Anglia. A single decorated sherd (Str. 16, [305] Fig. 10.2) had an impressed dimple surrounded by square-tooth comb impressions. Dimples have been found on earlier Iron Age sherds from Wandlebury (Hartley 1957, fig. 7.1, p. 23), which also produced sherds with dotted or combed decoration (*ibid*, fig. 8.36). The presence of this distinctive 'La Tène'-style pottery suggests an earlier date for Structure 16.

An unusual high-shouldered jar form (K), identified as being unique to Hurst Lane within Cambridgeshire during the assessment of the assemblage (Hill in Evans & Knight 2000a), was found in Structures 2, 10, 15 and 16 in Settlement Cluster I and Structure 27 and in a well ([965]) within Cluster II. This form also has associations with earlier 'La Tène' forms (*ibid.*). Barrel-shaped vessels (Form T) were found in Structures 16 and 26. These can be dated typologically to around 300 BC from parallels found at Danebury (Phases 4 and 5) and, more locally, at Hinchingbrooke Park, Cambridgeshire, where they are dated to the fourth to second centuries BC (*ibid.*). All of these forms were found in hand-made sandy fabrics.

Distinctively later or transitional forms included the hand-made and wheel-made cordoned jars and bowl forms (Form R, five examples; Form Q, six examples). These were relatively finely made and contained no visible residues or soot marks to suggest use in cooking. Rims from the cordoned jars were only found in Structure 2 and as surface finds elsewhere. All but two of the cordoned bowl sherds were wheel-made.

Open globular-style bowls with 'S'-shaped profiles and rounded rims (Form G) made up 17% of the rim forms (42 sherds). The sherds might be from one vessel and were wheel-made. No burnishing or decoration was found on these and no residues diagnostic of use were present. The globular bowl sherds were only found in Compound A. A second globular bowl form – a similar, rounded open bowl with rounded rim-ending – was found in Structure 3 and Compound F (three examples).

Of the 252 rim sherds examined, 97 had measurable rim diameters. The measurements showed a range of vessel sizes between 80 and 750 millimetres in diameter. The majority fell between 180 and 200 millimetres, with 190 millimetres being the most frequent size that was found. The range of vessel sizes is compatible with other Iron Age sites excavated in Cambridgeshire, in particular with Little Paxton Phase 4. There the Late Iron Age/transitional pottery assemblage was found to contain 'extremely large vessels', most commonly with diameters of 120 millimetres, 160 millimetres and 200 millimetres (Hancocks 2003).

Scoring was only present on just under 3% of the sherds (1160 grammes) and was found in Structures 2–4, 8, 22 and 24, within an isolated pit ([384]) and in the ditch of Compound A. Scoring occurred on both shell-tempered and sandy fabrics; Structure 2 produced the largest assemblage (374 grammes).

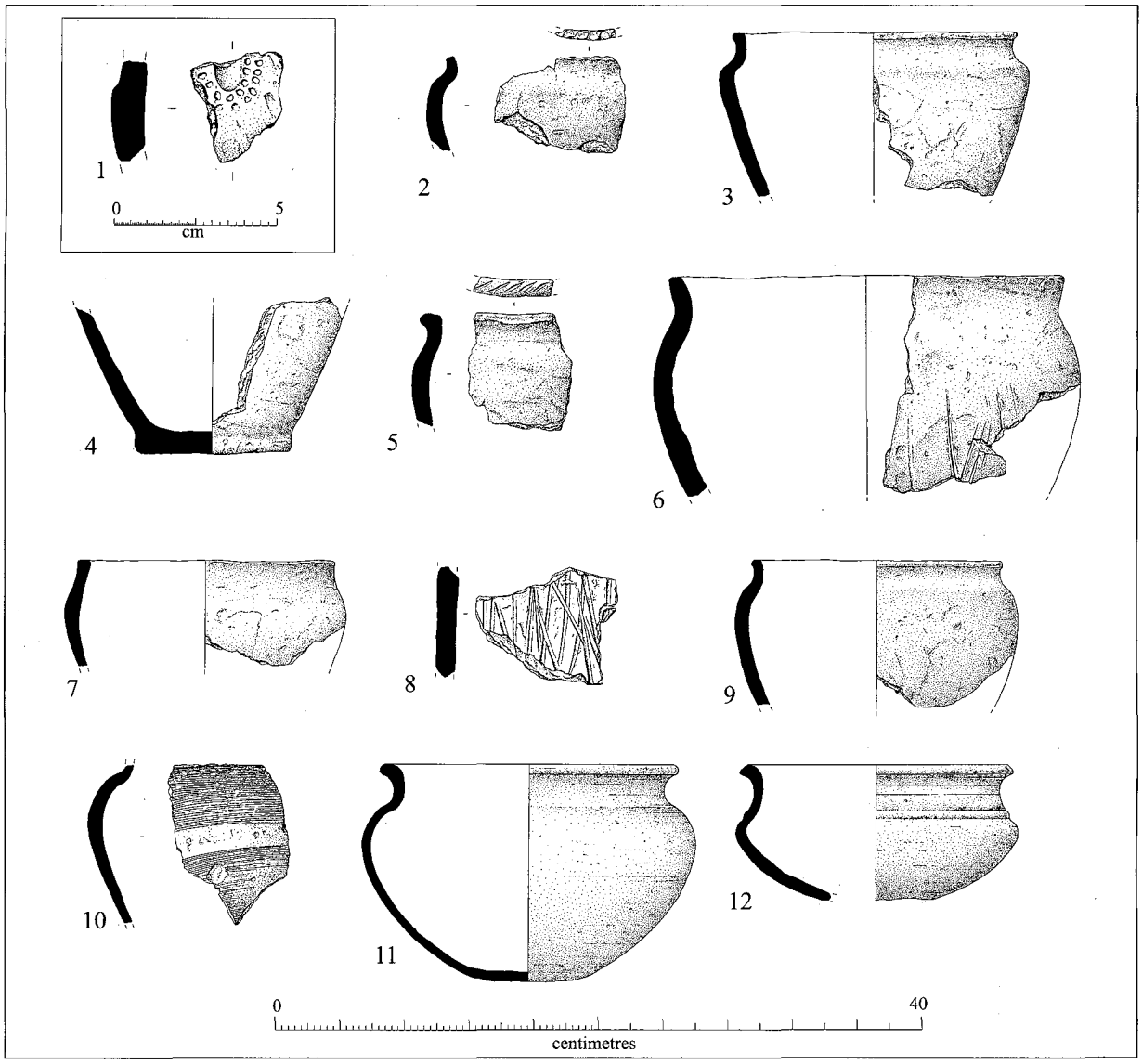

Figure 10. *The Hurst Lane Reservoir Iron Age pottery.*
1) Decorated body sherd, Fabric Q2 ([305], F. 403, Structure 16), earlier Iron Age; 2) Rim, fingertip impressed on top, type A1, Fabric Q9 ([305], F. 403, Structure 16), earlier Iron Age; 3) Rim, type E4, Fabric Q2 ([923], F. 520, pit), earlier Iron Age; 4) Base, type 2 ([928], F. 521, pit), earlier Iron Age; 5) Rim, slashed on top, type A9, Fabric Q1 ([416], F. 455, interrupted boundary), earlier Iron Age; 6) Rim, type A1, Fabric F1 ([058], surface find), Middle Iron Age; 7) Rim, rim type K1. Fabric Q2 ([331], F. 398, Structure 1), Middle Iron Age; 8) Scored body sherd, Fabric Q3 ([395], Structure 22), Middle Iron Age; 9) Rim, type A9, Fabric Q2 ([474], F. 463, Compound A) Middle Iron Age; 10) Decorated body sherd (combed), Fabric Q4 wheel-made ([125], surface find), Late Iron Age/Roman transitional; 11) Rim, type G9, Fabric Q4 wheel-made ([480], Compound A), Late Iron Age/Roman transitional; 12) Rim, type R9, Fabric Q4 wheel-made ([507], Structure 2), Late Iron Age/Roman transitional.

The Hurst Lane assemblage had an average sherd weight of 23 grammes. This was much higher than those noted from contemporary sites, which usually fall around 11 grammes. The high average sherd weight probably resulted from the exclusion from full analysis of the unstratified and redeposited material, as only contexts containing large and *in situ* assemblages were selected for study. Within the settlement, there were some differences in the average weight and condition of sherds. The smallest sherds were found in the enclosure ditches. Those from Settlement Cluster I had an average weight of 18 grammes and those from Cluster II, 15 grammes. However, rates of abrasion varied between the enclosure ditches: sherds from ditches in Cluster II were better preserved than those from Compounds A, B and C. The sherds from the house structures were generally larger. Those from Settlement Cluster I had an average weight of 23 grammes and those from Cluster II, 25 grammes. Small quantities of abraded and very abraded sherds

were also found within the house eaves-gullies. Structures 15 and 27 had particularly abraded assemblages, perhaps suggesting that the pottery found within them was redeposited from a midden or surface deposit. Only a few pits were excavated at Hurst Lane, and only 153 grammes of pottery was recovered from them (excluding F. 505 associated with Structure 2). This suggests that rubbish was not disposed of in pits and was perhaps deposited in middens and only later became incorporated in open features such as eaves-gullies and enclosure ditches. The larger size of sherds in the house gullies could suggest that they had travelled less distance than the smaller sherds found in the enclosure ditches, indicating that the middens were placed close to the houses.

No clusters of diagnostic sherds were observed: rims and base sherds were dispersed through all classes of feature. Sooting and limescale deposits were only found on sherds recovered from the house gullies (Str. 2, 9, 17, 22 & 27) and the fill of one pit, which suggests that cooking had been undertaken within these. Structures with no sooted or limescale-encrusted sherds (Str. 3–8, 10, 15, 16 & 20) might have been used for other purposes, such as craft production, and these generally produced smaller assemblages. Finely-finished burnished sherds were found in small quantities in Structures 2–4, 8–10, 15, 16, 20, 22, 24 and 27. This could suggest that Structures 3, 4, 10, 15, 16 and 20, which contained no sooted and limescale-encrusted sherds but did contain fine wares, might have been used for consuming food and not cooking. Scored Ware was associated with Structures 2, 3, 4, 8 and 22, and also 24, where it was associated with the more finely-finished vessels. The paucity of sherds showing evidence of cooking deposits within the enclosure ditches is curious, if the pottery was transferred there from dwelling-related middens where cooking and eating took place. This could suggest that pottery found in the enclosure ditches derived only from middens or scatters associated with other activities.

Dating of Iron Age pottery based on typological development has its problems and the Hurst Lane assemblage demonstrates a number of these: long-lived vessel forms, a limited range of vessel types and a lack of decoration that could be used to mark stylistic development. The site was deficient in deeply stratified contexts with independently datable associations and much of the pottery appeared to have been redeposited. Nevertheless, the presence of distinctive pottery styles, in particular the La Tène-influenced forms, imply that Structures 10, 15, 16 and 27 belonged to an earlier phase, whilst Structure 2 was the latest or longest-lived Iron Age structure on the site and yielded wheel-made forms alongside hand-made ones.

The earliest pottery found at Hurst Lane is the La Tène-influenced sherds such as the dimple and comb-impressed decorated sherd found in Structure 16 ([305]; Fig. 10.1). Similar decoration is paralleled at Wandlebury (Hartley 1957) where it was dated to the end of the Early Iron Age, 500–300 BC. No distinct focus for earlier activity was discernible from the pottery evidence, although Settlement Cluster I Compound B and Structures 3, 4, 9 and 16 all contained pottery of earlier form and decoration. In Cluster II, Compound F's ditch, Structures 24 and 27, the interrupted boundary and a few isolated pits ([384], [388] & [389]) also appeared to be early.

The Middle to Late Iron Age pottery is primarily an undecorated or plain ware assemblage and is attributable to about 300 BC onwards. The pots were mostly hand-made and occurred in a relatively limited range of forms, chiefly medium-sized jars with some bowls. Few vessels had scored surfaces, which might represent a functional element of the assemblage, perhaps coming from storage jars. It is also possible that whilst the majority of the pots were made locally on the Isle of Ely, pots with scored decoration might not be local and could, therefore, have been imported.

Pottery of the latest Iron Age/transitional Roman phase was found in Settlement Cluster I in contexts associated with Structures 2, 3, 6, 8 10 and 15, and with Structure 24 in Cluster II. The transitional forms show a greater range of forms, with cordoned jars and bowl forms and open globular style bowls with 'S'-shaped profiles. These were in both hand-made and wheel-made fabrics. The contexts where transitional forms were found also contained the slack-shouldered jar forms that characterise the mid-to-Late Iron Age assemblage and suggest that hand-made utilitarian jar forms continued in use alongside the wheel-made bowl forms. The lack of soot or other evidence of use on the wheel-made bowls suggests that they might have formed the tableware component of the assemblage (Hill 2002, p. 147). The presence of tablewares and the increased range of vessel forms could also indicate that the Late Iron Age inhabitants of Hurst Lane chose to incorporate new Roman eating and dining habits at some time during the immediate pre-Conquest period.

Roman Pottery

Gavin Lucas, Gwladys Monteil and Katie Anderson

The excavations produced 1856 sherds of Roman pottery (*c.* 25 kilogrammes; mean sherd weight 13.8 grammes). The majority were small and abraded, but there were some noteworthy groups of medium to large unabraded sherds. The date of the assemblage was, on the whole, of the first or early second century AD, with a few unstratified sherds from machine-spoil contexts dating to the later second to third century (forming less than 1% of the total sherd count). The bulk of the material analysed came from the area of Settlement Cluster I as defined by the earlier, Iron Age enclosure/settlement complex, and the Roman features there were divided into three groups: Iron Age enclosures (upper fills), Roman structures (1, 31–4), and Roman enclosure ditches.

The material from tertiary fills of Iron Age enclosure contexts ([560], [636] & [885]) consisted of first

or early second-century AD pottery and did not have any exceptional characteristics. A gully ([761], cutting the 'horseshoe' enclosure; Fig. 6), located near Roman Structure 32 and adjacent to grave F. 138, yielded an important group of early material. Probably of immediately post-Conquest date, it included a possible imported Gallo-Belgic butt beaker with incised decoration (Fig. 11.3).

Within Compound A there were other sherds that dated to the second century AD, including a greyware shallow dish and a single sherd of Southern Gaulish Samian. Although there was only a small quantity of material, it shows that this area of the site was still in use in the second century.

All of the Roman structures associated with Settlement Cluster I/III (31–4) could be dated to the mid-late first century AD, with a significant quantity of the pottery being of pre-Flavian date. Therefore, it seems likely that these structures were all built within a short space of time. The nature of the pottery in terms of the fabrics and their condition made it hard to distinguish earlier material from later, and thus it was difficult to determine the exact chronological order of these structures. This was largely because the most common fabrics were oxidised and reduced quartz-tempered wares, which were difficult to source and date. However, this could imply a continuation of the Iron Age fabrics into the later period when they were used to make the more Romanised forms. As already discussed, there were some examples of pottery from the second century in this area of the site, which implies that the site was still in use at this time. It, therefore, seems possible that there were local wares of this later date, but because they were non-diagnostic or of a generic form it was not possible to date them more accurately.

Oxidised and grey coarse wares, mostly local, dominated the Roman assemblage. There was a significant number of vessels which appeared to be very similar to products from Horningsea, with a good representation of oxidised storage jars, especially the examples with a typical bifid rim (Str. 33, [707]; enclosure context [215]). There were also several grey and reduced wares, especially some bowls and, again, also large storage jars (enclosure contexts [636], [625] & [215]). This is a pattern seen at a number of other sites in Ely, including Prickwillow Road, where a steady increase in Horningsea pottery occurred over its Roman sequence, peaking in the third to fourth century AD (Mackreth in Atkins & Mudd 2003). The material from Hurst Lane dates to the mid–late first century AD, which is generally earlier than the Horningsea products and which could imply that a different source was making very similar pottery at an early date.

The assemblage included a number of coarse ware jars from the kilns of Harrold (Bedfordshire), which are likely to date from the late first century AD. There were three sherds of ring and dot beakers, one associated with Roman Structure 31 (Fig. 11.4) and another from ditch F. 515 ([886]). All were of a very similar sandy grey fabric with mica. The exact source of these vessels is unclear, but similar fabrics are known in the Cambridge area. The fabric, decoration and other finds from the same context also point towards a mid–late first century AD date. A few buff-ware beakers were also recovered ([102], [125], [150], [225], [560] & F. 137; Fig. 11.2). These, although their production source could not be determined, were most likely to have been produced locally and to date from the mid-first to second century AD.

Two unusual coarse-ware fabrics were identified. One was a thick, heavily flint-tempered coarse ware associated with forms such as storage jars; the other a sandy oxidised hard fabric associated with what could have been a cheese-press (unstratified; Fig. 11.1).

A single sherd of mortarium was recovered, unfortunately from an unstratified surface context. Oxidised with a grey core, with quartz and mica inclusions, it was similar to vessels produced at Hadham (Hertfordshire). It was found with six other sherds, including a late Colchester colour-coated ware. These two sherds are, therefore, important because they date to the mid-second to third century AD and were thus the latest dated pottery from the assemblage. Because they were from an unstratified context they cannot be used to date any specific area of the site, but they are a good source of evidence to show that pottery was still arriving at the site as late as the third century AD.

The overall occurrence of fine wares was very low. Few Samian wares were recovered (ten sherds, or less than 1% of the total number); they only consisted of plain forms (dish forms Dr. 18/31, 31, 31R, 36 and cup form Dr. 33) and came from south and central Gaulish kilns. Stratigraphically they did not show any particular pattern, apart from their near-complete absence from Settlement Cluster I (one sherd in [885]). However, these sherds are still one of the best sources of evidence from the site to show that trade continued into at least the mid-second century AD.

As mentioned, another possible import was a Gallo-Belgic decorated butt beaker (Type Cam 113; Fig. 11.3), probably of a pre-Flavian date, found in gully [761]. Because this was only a single vessel, it has very little impact on the overall understanding of the site. Nevertheless, it is still useful as it shows that the site did have some access to finer 'imported' pottery, even if it was through other means rather than direct trade (i.e. down-the-line exchange).

Jars were the most common vessel forms, representing over 66% of all the rims by count and 60% by weight. The most common form was the necked jar with a small beaded rim, although there were a number of other forms (e.g. Fig. 11.5). The range of jars in the assemblage reflected activities that were taking place on the site, including both cooking and storage. Other vessel forms such as beakers and dishes (although there were only a few examples of the latter) would have been used for the serving and consumption of food and drink. Evidence of use on a number of sherds included sooting and heavy limescale deposits.

This assemblage largely consists of a basic range of domestic wares such as large storage jars, bowls, cooking jars and dishes. The small number of table wares (e.g. beakers), as well as the complete lack of flagons, is noticeable. From a regional point of view, the presence of material from the Horningsea kilns in such early contexts is of importance (see e.g. Gibson & Lucas 2002 for a broader discussion). Yet, perhaps the most intriguing aspect of the Roman material is its relationship to the Late Iron Age assemblage. The

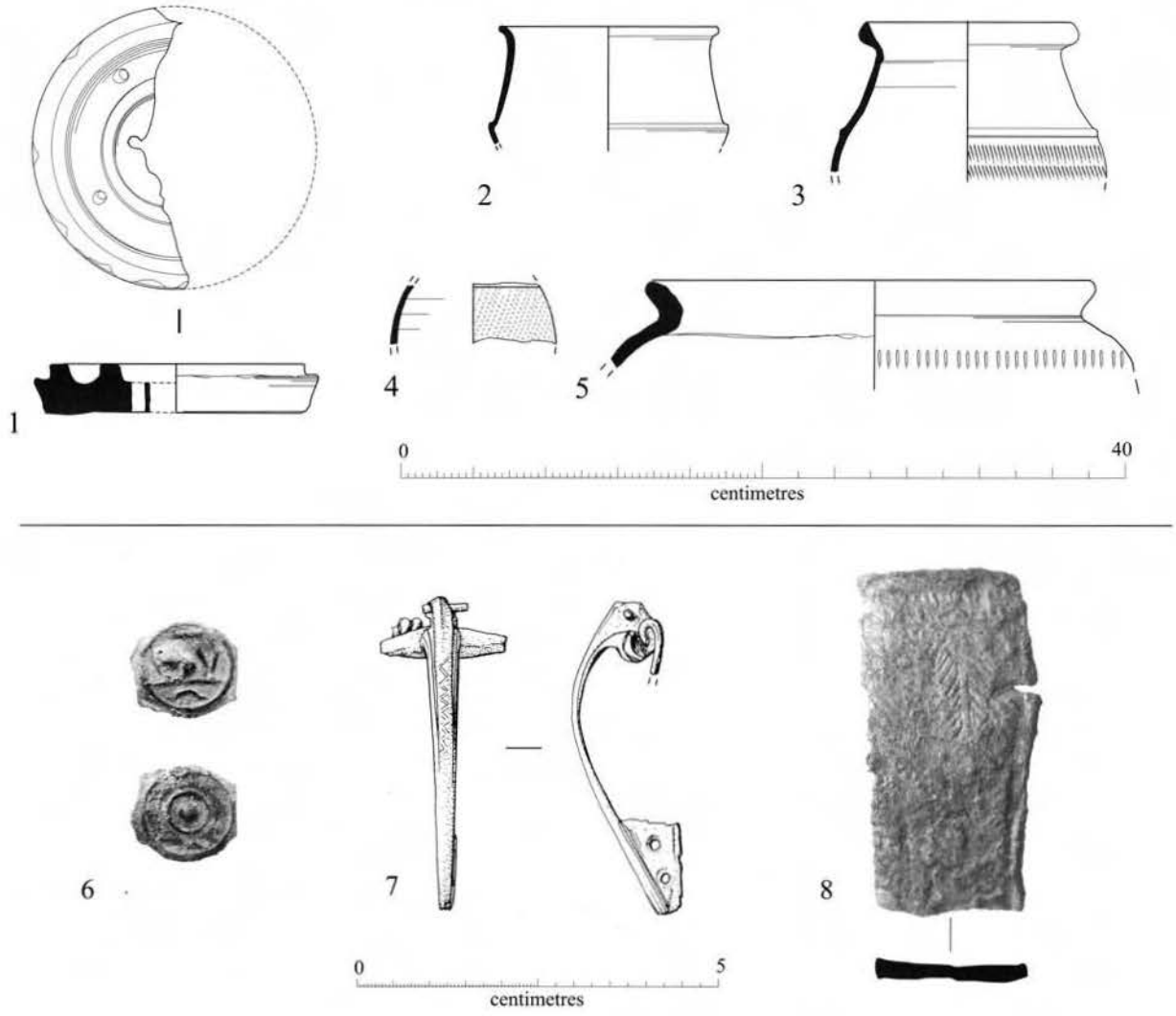

Figure 11.
Top: The Hurst Lane Reservoir Romano-British Pottery.
1) Cheese press, hard, sandy oxidised fabric (<1837> & <1850>, both unstratified contexts); 2) Soft, sandy buff coloured beaker with cordon (F. 171, <1484>); 3) Gallo-Belgic butt beaker with incised decoration (pre-Flavian; [761], F. 495, <992>); 4) Sherd with ring and dot decoration, soft, sandy grey ware with common silver mica (source unknown but probably dated mid–late first century AD; F. 139, <1438>); 5) Large grog-tempered jar with scored line decoration on the body ([894c], <1167>).
Bottom: Small Finds (1:1): 6) potin 7) Colchester Derivative brooch; 8) decorated copper alloy strip.

pottery continued right through the transitional phase and, therefore, it is possible to see any changes on the site that were reflected in pottery types. The pottery shows that Roman influence was having an impact at a relatively early stage and there was a significant number of pre-Flavian wares (including one imported ware from [761]), even if the quantities of such pottery were low. The range of local products began to include more 'Romanised' forms, such as cornice rim beakers and shallow dishes, although these vessel forms never became common at the site. The jars that had been produced in the Iron Age continued to be made in the Roman period with little change in form and many were still hand-made. The lack of imported amphora, as well as the very small quantity of fine wares and imports, suggests a relatively low socio-economic position or low level of Romanisation for the settlement.

Metalwork

Brooch (Donald Mackreth)

Colchester Derivative (<1818>, SF. 44, near F. 356; Figs 11.7 & 15.13) The bilateral spring is held in the Harlow manner: an axis bar through the coils passes through the lower of two holes in a plate behind the head of the bow, the chord is held in the upper hole. The plate is carried over the head as a ridge and runs down the bow where it dies out. The lower part has a groove on each side and

Fabric	Count	%	Wt (g)	%	EVEs
Buff ware with quartz and mica	4	2	85	1	0.59
Buff ware with rare grog and iron	2	1	19	0.3	0.1
Buff ware with quartz	3	1.5	7	0.1	0.18
Gallo-Belgic buff ware	9	4.4	115	2	0.28
Grey ware with quartz and black iron	7	3	354	6	1.12
Grey ware with quartz and mica	11	5	288	4	2.75
Grey ware with quartz & limestone	5	2	177	3	0.3
Grey ware with quartz	9	4	253	4	0.64
Hadham red-slipped ware?	1	0.5	26	0.4	0
Harrold Shelly ware	4	2	143	2	0.1
Horningsea Oxidised ware	21	10	640	10	1.79
Horningsea Reduced ware	9	4.4	224	4	0.63
Horningsea Grey ware	9	4.4	302	5	1.53
Imitation black burnished ware	3	1.5	51	0.6	0.26
Oxidised quartz-tempered ware	30	15	815	13	2.65
Oxidised sandy ware with mica	16	8	475	8	1.13
Oxidised sandy ware with iron and mica	14	7	764	12	1.07
Oxidised ware with pink grog	1	0.5	636	10	0.15
Reduced ware with quartz	9	4.4	149	2	0.46
Reduced ware with quartz and mica	22	11	364	6	1.79
Reduced ware with quartz, mica and grog	5	2.4	79	1	0.59
Reduced ware with quartz, mica and shell	3	1.5	42	0.5	0.1
Reduced, shell-tempered ware	4	2	244	4	1.28
Reduced ware with black iron	4	2	61	1	0.52
Southern Gaulish Samian	1	0.5	4	0.1	0
TOTAL	**206**	**100**	**6317**	**100**	**20.1**

Table 4. *The count, weight and EVEs of all rims and bases*

the front of the ridge is decorated with walked graver work. The rest of the bow is plain and the catch-plate has two circular holes and the relics of a pin-groove.

A member of the Springhead sub-variety of the Harlow Type, this brooch lacks the groove down the upper part of the type as first defined by the writer, but is in all other respects a full member of the group. The distribution of all three versions of the Harlow type is firmly based in Essex and the rest of East Anglia as well as Hertfordshire. The two holes in the catch-plate show that this is a developed form. The date-range for all the examples of the Springhead so far recorded by the writer is, as usual, wide. However, it indicates a *floruit* from the middle of the first century AD. Other examples of the whole family of Harlows indicate that the end of the range is close to AD 80/85; the use of circular piercings in the catch-plate is probably no earlier than AD 50/55.

Iron Age coin (J. D. Hill)

A single Class II potin coin was recovered from F. 373 associated with Structure 18 (FS. 968; Figs 11.6 & 15.14). Uninscribed, it is similar to British Museum 718 (Hobbs 1996). Potins were cast, not struck, coins. They can be divided into two main types, with those of Class I being larger than Class II. Class I potins were probably made, and had their main areas of circulation, in Kent and the lower Thames Valley. The smaller Class II potins are concentrated in Hertfordshire and Essex. Potins fall into Phases 2 and 3 of Haselgrove's chronology for British Iron Age coinage (1993).

Class I potins in Kent and the Lower Thames Valley were clearly being produced from as early as 150 BC, with Class II potins made in southern East Anglia dating slightly later. Hoard finds from Castle Hill Ruffs (Surrey) and Deal (Kent) confirm that potins were possibly being made, but were certainly still in circulation, at the end of the first century BC (Haselgrove 1988). A large hoard of Class II potins was found in the foundation trench of a circular building at the enclosed settlement at Stansted Airport (*c.* 50–25 BC; Haselgrove 1988; Havis & Brooks 2004, pp. 115–20). Unlike Class I potins, Class II coins only occur in small numbers in contexts earlier than 10 BC, and are most common in deposits dating to the early first century AD. This coin could have been minted as early as the later second century BC or as late as the third quarter of the first century BC, and could have been in circulation for some time thereafter.

Potins were probably special purpose money, which was only used in certain kinds of transaction and not as all-purpose early cash (see Haselgrove 1988 for a detailed discussion). Haselgrove has argued that, particularly north of the Thames, they probably featured prominently in long-distance contacts between major settlements, with a strong maritime and riverine emphasis in their distribution. In Hertfordshire and Essex, 77% of potin finds have been found on major defended and nucleated settlements. This may be significant for this find, although many potins outside their normal areas of circulation occur as apparent ritual deposits.

Small Finds (Adrian Challands, Fig. 11)
The 12 metalwork small finds examined consist of eight objects. Aside from a modern enamelled strap, the ironwork comprises various types of nail. Two lead artefacts were recovered: a medieval cloth seal (post-fourteenth century; F. 159 <1825>) and a small weight or sling-shot ([899] <1824>). Of the two copper alloy objects, one was probably a post-medieval lamp fitting; the other, probably Roman:

> Copper alloy decorated strip (F. 514; [883] <1823>; Figs 11.8 & 15.15) The 1.2 millimetres-thick, slightly curved, strip is 23.7 millimetres long by *c.* 11 millimetres wide. One side of the long axis has a beaded edge and the other edge is broken. The short axis has one slightly out-turned edge intact, with the other side broken. A small countersunk rivet is centrally located 3.5 millimetres away from the out-turned edge. The artefact appears to have been cast and, where not obscured by corrosion, decoration may be seen. The decoration consists of a leaf design, located at a right-angle to the out-turned edge, and a slash motif along the long axis broken edge.

Found in a pit dating from the Roman phase, the strip's leaf design is reminiscent of motifs often seen on Samian pottery, although the corrosion meant that a full identification could not be made. The object is probably a small fragment of a larger artefact that might have been part of a binding strip for a stave-constructed bucket or, if bent to a smaller diameter, a wooden drinking vessel.

Other Finds

Both worked and unworked stone was recovered from the site, the majority consisting of burnt pieces (9.5 kilogrammes) probably used as hearthstones or potboilers. Five pieces of worked stone were recovered: three saddle quern fragments, a quern rubber and a whetstone.

Twenty-two kilogrammes of fired clay was recovered (1648 fragments). By weight and count, the majority derives from loomweights. The material occurred across the site, but with the larger fragments coming from features related to structures or pits.

Only five contexts yielded pieces of Roman tile. These consisted of four abraded fragments of tegulae from F. 118, F. 357, [337] and [966], and a fragment of floor tile from F. 38.

Three hundred and eighty pieces of fuel ash slag (6.2 kilogrammes) were recovered from eaves-gully contexts. Although a considerable assemblage, this material was only a by-product of intense burning and not necessarily a type-artefact of industry as such.

Environmental Remains
Chris Stevens

Twenty samples were processed, 19 from Iron Age contexts: Structures 2, 3, 8, 24, 26, 27, and enclosure ditch contexts [429], [486], [601], [638] and [660] from Settlement Cluster I, and [409] and [415] from Cluster II; and one from Roman Structure 31. The residue was collected using a one millimetre mesh, and the flot using a 0.50 millimetre mesh; both were sorted using a low-powered stereo binocular microscope for charred plant remains and molluscs (nomenclature follows Stace 1991).

Molluscan remains
Several molluscs were recovered, several of which are associated with water environments and in the case of *Bathyomphalus contortus* with rivers and/or lakes. Some of the land molluscs, however, might have been relatively modern. Of the water molluscs, only twisted ramshorn (*Bathyomphalus contortus*) could be associated with more permanent riverine environments, and only a few shells were recovered (from both Str. 2 & 3). Of the open country species, *Pupilla muscorum*, a species of disturbed environments, was recovered in quantity from enclosure ditch [601] (Settlement Cluster I), while *Vallonia* sp., a species of long, dank grassland and herbage, that was only grazed periodically, was common in many of the samples.

Plant remains
Of the 19 samples examined, all but two (Str. 26 [923] and the ditch of Compound A [898]) contained cereal remains. Of these, most were chaff, mainly glume bases and predominantly of emmer (*Triticum diccocum*). However, remains of spelt wheat (*Triticum spelta*) and barley (*Hordeum vulgare sensu lato*), probably of the hulled six-row variety, were seen from both grains and rachis fragments from Structure 26 ([880]). A single grain of free-threshing wheat (*Triticum aestivum sensu lato*) was also recovered from Structure 2 [855] and two rachis fragments of the same species from the eaves-gullies of Structures 24 ([938]) and 3 ([757]). Both of these finds were only partially charred and might, therefore, represent possible modern contamination.

Several samples were particularly rich in cereal remains, and contained over 50 items, such as those from Structures 2 ([855], [880] & [897]) and 8 ([631]), and the upper fill of enclosure ditch [415] (Settlement II); the Roman Structure 31 ([886]) was also rich. The primary fill of the enclosure ditches [638] (Settlement Cluster I), and [409] (Settlement Cluster II) yielded reasonable quantities of charred cereal remains, whilst few were found in samples from Structures 24 ([938]) and 26 ([928]), and enclosure ditches [429], [601] and [660] (Cluster I).

Most of the seeds of wild plants came from weeds of arable fields, brought in with the crop. Consequently many were found in high numbers where cereal remains were also high. generally the finds of seeds of wild species far outnumbered those of cultivated species. The most common species remains were those of arable species such as oats (*Avena* sp.), possibly of the cultivated variety, *A. sativa*, but more probably of the wild type (*A. fatua*), and fat-hen (*Chenopodium* sp.) which appeared in all but a few samples. Other common species were orache (*Atriplex* sp.), fig-leaved goosefoot (*Chenopodium ficifolium*; associated with nitrogen-rich arable fields), brome grass (*Bromus* sp.), scentless mayweed (*Tripleurospermum inodorum*), red-shank (*Persicaria maculosa*; associated with arable fields), clover (*Trifolium* sp.), cat's tails (*Phleum* sp.) and meadow grass (*Poa* sp.; associated with poorly tilled fields, or fields recently turned over from pasture/meadow); also common were blinks (*Montia fontanum*

subsp. *chondrospermum*) and spikerush (*Eleocharis palustris*), probably associated with the wetter areas of arable fields. Other wet ground species also included seeds of great-fen sedge (*Cladium mariscus*) from Structure 2 ([880]) and Roman Structure 31 ([886]). Like the ecologically similar spikerush, this might also represent an arable weed of prehistoric fields, rather than having entered the site through collection for fire tinder, wattle and daub and thatch, for example. The species was also recovered from Late Iron Age and Roman samples from Watson's Lane, Little Thetford (Stevens in Lucas 1998; Stevens in Lucas and Hinman 1996; see Evans 2003a, p. 248).

Of those remains that are unlikely to have come in with crop species, the thorns of hawthorn might have been introduced with scrub material used for tinder. The probable fragment of sloe/cherry stone and the bramble seed could either have entered in a similar way, or might reflect the continued exploitation of wild food resources.

The samples reveal much about crop husbandry and storage practices. In most of the samples, the number of crop remains increased in parallel with the seeds of wild species, which suggests that the latter were weeds from the crops, rather than coming in with other sources. The higher number of glume bases than estimated glume wheat grains would indicate that the waste came from the daily processing of grain, as crops were most probably stored in spikelet form. This is largely because the pounding and removal of glumes is very time-consuming to carry out immediately after harvest, and, also, because glumes help to protect the crop whilst in storage from insects, bacterial and fungal damage. The high number of weed seeds that were smaller than the grain also suggests that the crops were stored in a relatively unclean state. The relatively high numbers of rachis fragments of barley compared to grain further indicates that the crops might have been stored unthreshed, possibly prior to winnowing as sheaves, although this is somewhat more speculative. The site then shows that crops were generally harvested with little or no processing carried out immediately after, sometime between June and September, and put directly into storage. On a regular (possibly daily) basis then, crops (mainly consisting of emmer wheat, but occasionally spelt) would have been taken from storage, possibly threshed, winnowed and coarse-sieved, but certainly fine-sieved and pounded; further threshing, sieving and hand-sorting of large weed seeds and chaff would have been carried out prior to their preparation (by, for example, grinding and roasting) as food for consumption.

Such practices compare well with many of the sites of this date in the region from Cambridgeshire. The site, however, differs from the excavations carried out in 1995 and 1999 at West Fen Road (south), especially from the from the later Roman phase (Fig. 12; Mortimer, Regan & Lucy 2005, p. 101). Results from this site would seem to indicate the storage of cleaned grain, suggesting that the organisation and available labour was greater than at Hurst Lane.

The samples are also important in what they indicate about the way in which the crop was managed and harvested, and where fields were located. The presence of seeds of wet ground species – blinks, spikerush and great-fen sedge – indicates that there was considerable wetness in some parts of the fields, the presence of a high watertable in the spring, and the probable near-proximity of ancient or existing stream and river channels. Seeds of *Anthemis cotula* were relatively common at Little Thetford (see below; Stevens in Lucas 1998), although absent from many of the other sites in the Cambridgeshire region of Iron Age date, becoming more common at a local level in the Roman and later periods. The species is characteristic of clay soils and its absence from the Hurst Lane site would seem to indicate that such soils were not exploited in this instance. A few of the species, such as *Montia fontana* subsp. *chondrosperma*, *Stellaria* sp., *Aphanes arvensis* and *Tripleurospermum inodorum*, suggest that the soils were more sandy or gravelly. Meanwhile, it is possible that plants such as *Prunella vulgaris*, *Bromus* sp. and *Plantago lanceolata* might indicate drier, perhaps calcareous, soils.

The main crop that was sown, as stated, would appear to have been emmer. Such a predominance was also seen at Wandlebury hillfort (Stevens unpublished; see Cyganowski & Ballantyne in French 2004), but less so for other sites in the region. Six-row barley is a frequent find from the Late Iron Age, but the higher dominance of grains of emmer and spelt was then much more common (across Britain as a whole), when compared to the earlier and Middle Iron Age (Stevens unpublished).

Where the region is unique is in the high presence of seeds of the Chenopodiaceae compared to seeds of *Vicia* and/or *Lathyrus*. The Hurst Lane site was dominated by seeds of this family, as are a number of the other Late Iron Age sites in the area. Many sites in Britain saw a change in the ratios of these two groups, with an increase in *Vicia* and *Lathyrus* sp. compared with seeds of the Chenopodiaceae from the Middle Iron Age going into the Early Roman period (Jones 1981). Such an increase is only seen at some sites in East Anglia and then during the Roman period (e.g. Little Thetford; see below). At Hurst Lane, no such change is recorded, although some seeds of Vicia/Lathyrus were present. Although Jones (1981) originally suggested that such a rise is connected with a decline in soil fertility (loss of nitrogen), it would seem more probable that it reflected a change in sowing regime from spring sowing to autumn sowing (Stevens 1996). It would then appear that the inhabitants at Hurst Lane were most probably practising spring sowing, although perhaps some autumn sowing was also undertaken. Given the likely location of many of the fields in low-lying areas around the site, which would have been prone to ever-increasing flooding, it is probable that many were unsuited to autumn sowing and that drier fields at higher elevations might have been hard to find within the immediate vicinity of the settlement.

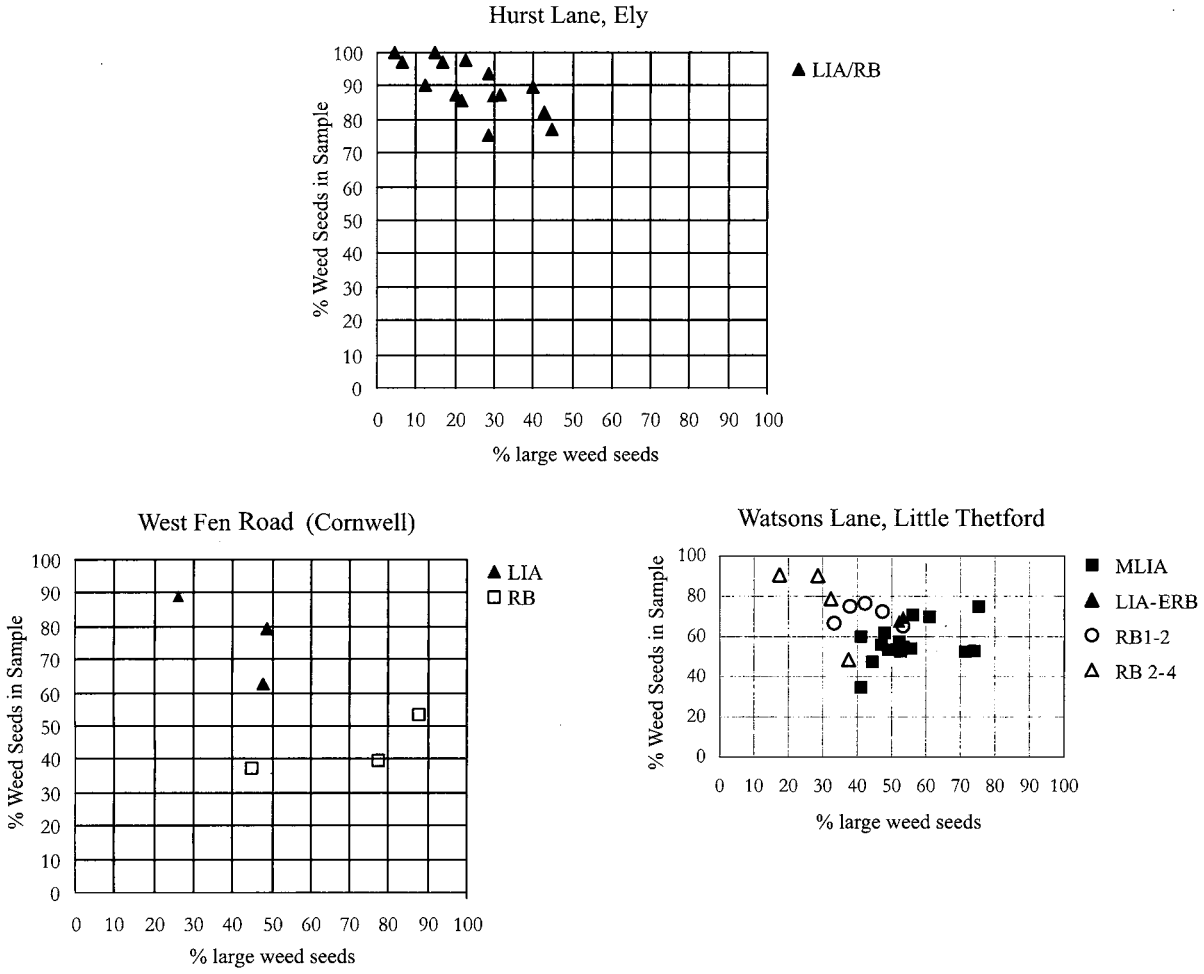

Figure 12. *Comparative plant assemblages showing the percentage of weed seeds (to grain; vertical axis) plotted against percentage of large weed seeds (from a total of all weed seeds) for samples from Hurst Lane, West Fen Road (south) and Watson's Lane, Little Thetford (MLIA, Middle/later Iron Age; LIA-ERB, Later Iron Age-Early Romano-British; RB 1–2/2–4, respectively Early and Late Romano-British phases at Watson's Lane).*

The occurrence of grass seeds, especially of *Phleum* and *Poa* sp. is again common in Britain for this period (Stevens 1996). They, at least, indicate relatively poor tillage by ard, and/or perhaps by hand, and might also suggest that the fields were previously undergrazed grassland. Crops would have been harvested in July to August and, judging from the number of low growing weed seeds, such as clover (*Trifolium*), plantain (*Plantago lanceolata*) and parsley piert (*Aphanes arvensis*), it is probable that they were harvested low on the stem, probably by sickle. The presence of cereal root fragments (basal culm nodes) would further suggest that some of the crop was uprooted, probably unintentionally, during harvesting. As stated previously, after harvesting they would appear to have been gathered and put directly into storage, possibly as sheaves, rather than as semi-cleaned grain. The crops would have then been taken and processed on a regular basis as and when needed.

Lastly, the relatively small number of water molluscs in the ditches would tend to suggest that, unlike the Roman ditches at West Fen Road (south; Mortimer, Regan & Lucy 2005), they were drier and less prone to holding standing water. Also, the absence of woodland molluscs would indicate that the site was much more open; the hedge-element present at the West Fen Road site was not seen here.

Animal Bones

Lorrain Higbee with Andrew Clarke

The total quantity of material recovered was 6179 fragments or 77 kilogrammes of bone. Resulting from the extreme rescue circumstances of the excavation, the majority of bone fragments were from unphased contexts. Phased material included a relatively large sample from Settlement Cluster I and various enclosure ditches of Iron Age date, as well as smaller quantities from the northern Iron Age settlement (II) and Roman contexts. The diagnostic fraction of the assemblage was dominated by domestic species,

particularly cattle (45%) and sheep/goat (41%). Other species identified included pig (9%), horse (3%), dog (1%) red and roe deer, domestic fowl, goose, hare and frog/toad.

As very little material was recovered from Roman contexts, with only cattle and sheep/goat identified, these finds will not be discussed below (nor will the assemblage from unphased contexts).

The majority of the material derived from Settlement Cluster I and its various enclosure ditches. Domestic species dominated the assemblages from the site's sub-divisions and included cattle, sheep/goat, pig, horse, dog and domestic fowl. In addition, fragments of red deer antler and several bones from a frog/toad were recorded from enclosure ditch contexts [636] and [429] respectively. Large samples were recovered from Structure 2, and the enclosure ditches of both Compounds A ([636]) and B ([464]). The assemblages from these were mixed in terms of the presence of bones considered to represent high and low value meat joints. Butchery marks in the form of heavy chops were observed with the greatest frequency on cattle bones and related to primary carcass dismemberment and the reduction of the carcass into meat joints. Fine knife cuts were only observed on the distal articulation of cattle humeri and astragali, and on sheep/goat bones. Skulls were generally recovered in a highly fragmented state. However, with the exception of a virtually complete sheep skull and horn cores from Structure 2 ([894]), in most instances it was possible to see that horn cores had been cleanly removed at the base for further working. Evidence of the utilisation of red deer antler was attested to in the recovery of off-cuts from [636].

Several bones from a lamb and the skull of a three-and-a-half to four-year-old horse were also recovered from Structure 2 ([364]), and, from Structure 10 (F. 367), the articulating forelimb from a calf was recorded. Generally, however, the quantity of bone that could be dated was too limited (at less than 3%) to attempt to reconstruct the settlement's husbandry practices.

There was some evidence that cattle were used for traction, in the form of pathological conditions associated with joint stress and other skeletal abnormalities indicative of repeated mechanical loading. A metatarsal from Structure 2 ([364]) showed early signs of the development of spavin to the proximal articulation, and several other long bones, in particular proximal humeri and metatarsus, were recorded with enlarged muscular attachments (or enthesophytes).

Three bone objects were recovered from structure and enclosure ditch contexts; all were fashioned from sheep/goat long bones. The first was a metacarpal with mid-shaft perforation from Structure 10 (F. 367), the second was a metatarsal from ditch fill [675], which had a perforation through the proximal articulation, and the third object, a tibia from ditch [464], had a highly polished surface from repeated handling.

The low frequency of bone recovered from Settlement Cluster II is largely attributable to the recovery methods that were employed. Material was collected from the surface of features with minimal hand-excavation. The available information is, therefore, greatly limited due to the overall sample size, and even the enclosure ditches on this side of the site yielded little material in comparison with those related to Cluster I. Only bones from the three common domestic species, cattle, sheep/goat and pig, were identified.

Table 6. Settlement Cluster II: number of identified specimens per species (NISP) for selected structures.

	Structure						
Taxon	**20**	**21**	**22**	**24**	**26**	**27**	**Total**
Cattle	1	-	1	3	18	-	23
Sheep/goat	-	-	1	1	7	-	9
Pig	-	-	1	-	-	-	1
Cattle-sized	-	-	-	-	16	1	17
Sheep-sized	-	-	4	-	1	-	5
Unidentifiable	-	1	10	20	24	4	59
Total	**1**	**1**	**17**	**24**	**66**	**5**	**114**

Before discussing the Hurst Lane assemblage, it is worth emphasising that it was recovered under a severely limited excavation strategy. The net result of this means that the assemblage is biased in terms of both the quantity and the types of bone that were recovered. Settlement Cluster I was selected for more intensive excavation than II; hand-recovery skews species ratios in favour of large bone fragments and the bones from larger species (Payne 1975) and this could account for the higher frequency of cattle bones relative to sheep/goat and pig. Further, the assemblage as a whole has only been subjected to an initial assessment (Higbee in Evans & Knight 2000a)

***Table 5.** Iron Age Settlement Cluster I: number of specimens identified to species (NISP) for the enclosure ditches and selected structures.*

Taxon	**Enclosure**	**Structure**								**Total**
		2	3	4	6	9	15	16	17	
Cattle	20	31	2	1	-	4	-	-	4	62
Sheep/goat	13	19	2	4	-	1	2	-	-	41
Pig	-	10	-	-	-	-	-	-	-	10
Horse	2	2	-	-	-	1	-	-	-	5
Chicken	-	2	-	-	-	-	-	-	-	2
Cattle-sized	7	12	-	-	-	-	1	-	1	21
Sheep-sized	3	12	-	1	-	-	-	1	-	17
Unidentifiable	107	88	8	15	1	7	14	4	21	265
Total	**152**	**176**	**12**	**21**	**1**	**13**	**17**	**5**	**26**	**423**

with further work by Clarke on selected features and structures (Tables 5 & 6). Thus, the following discussion is restricted to species ratios and, to a lesser degree, intra-site variability of these. With these caveats in mind, the assemblage is compared to other local sites on the Isle of Ely and other sites in the region.

To date, a number of period (Maltby 1996) and regional reviews (Crabtree 1994; Grant 1984; Hambleton 1999; Huntley & Stallibrass 1995; Knight 1984; Lambrick 1992; Maltby 1994; and Robinson & Wilson 1987) have been published and, of these, Hambleton's is perhaps the most comprehensive. Her study adopts Grant's comparative study of the Wessex and Upper Thames Valley animal bone assemblages and extends it to include a number of site and zooarchaeological characteristics (e.g. mortality profiles and skeletal element representation). Grant's (1984) study took account of OD heights and concluded that sites on higher ground tended to have higher percentages of sheep bones. Hambleton extended this to include underlying geology, settlement type and date and applied it to animal bone assemblages from all regions of Iron Age Britain. For Eastern England and East Anglia, she concluded that there was a great deal of intra-regional variation in species ratio, particularly with regard to the relative importance of cattle and sheep. Further, this variation did not appear to be influenced by geology, topography or type of site, although their date was of some significance with later sites, particularly those that continued into the early Romano-British period. These exhibited significant changes in species proportions, which might reflect Continental dietary preferences and husbandry practices.

The Hurst Lane data have been plotted against the sites used in Hambleton's study, with the addition of a few more recently studied assemblages including those from Ely (Table 7 and Fig. 13), to give a general overview of how Hurst Lane fits with general local and regional trends. The plot shows a dense cluster of sites with high percentages of cattle (40–54%) and sheep/goat (35–48%) and a low percentage of pig (6–12%). The Hurst Lane assemblage falls within this cluster together with two other Ely assemblages, from Prickwillow Road (Deighton in Atkins & Mudd 2003) and West Fen Road (Higbee in Mudd forthcoming; Higbee in Mortimer, Regan & Lucy 2005). Other regional sites within this cluster include West Stow, Bancroft, Cat's Water, Market Deeping, Farningham Hill, Earith and Burgh. By comparison, two other Ely sites, Wardy Hill (Davis in Evans 2003a) and Watson's Lane (Higbee in Lucas & Hinman 1996; see below) are part of a separate cluster characterised by higher percentages of sheep/goat (55–75%) and pig (6–22%) and lower percentages of cattle (18–29%). Other regional sites within this cluster include Edix Hill, Hawks Hill, Haddenham Sites V and VI and Greenhouse Farm. The species ratios represented by sites in this cluster are similar to the assemblages from Wessex and central southern England studied by Hambleton. The separation of the Ely sites into these two clusters does not appear to be influenced by geology, topography, site-type or date. Outliers from the main clusters are characterised by either very high percentages of cattle (e.g. Wavendon Gate and Hartigans) or pig (e.g. Skeleton Green and Puckeridge-Braughing) and, in most cases, date to the Late Iron Age and/or Early Romano-British period; a few, particularly those with high percentages of pig, have strong connections with the continent.

If the broad variation in species ratios between the Ely sites cannot be accounted for by general site characteristics, then what are the factors influencing the choice of animal husbandry? In order to answer this, one needs to look at the mortality profiles and skeletal element representation, but this information is not available for the Hurst Lane assemblage. Further, Davis (in Evans 2003a) in his recent report on the animal bones from Wardy Hill suggests that, in addition to the bias resulting from preservation and recovery, the pattern will be skewed by exchanges between producer and consumer sites. He suggests that prime beef and mutton might have been obtained from surrounding settlements in order to meet the demands of this higher status, local centre. Mortality profiles and skeletal element representation for the other Ely sites suggest that cattle and sheep were managed for a range of commodities, with prime meat animals a priority. Further, at the Prickwillow Road site Deighton (in Atkins & Mudd 2003) suggests that there was some out-sourcing for beef.

In addition to the main livestock species, other domesticates have been identified from the Hurst Lane assemblage, including horse, dog, domestic fowl and goose. These are frequently identified from Iron Age sites in the Fenlands. Wild species are less common, with only deer and hare identified, indicating the limited exploitation of wild resources. This stands in contrast to sites such as Haddenham (Evans & Serjeantson 1988) and Wardy Hill (Davis in Evans 2003a), both of which show some degree of exploitation of Fenland resources.

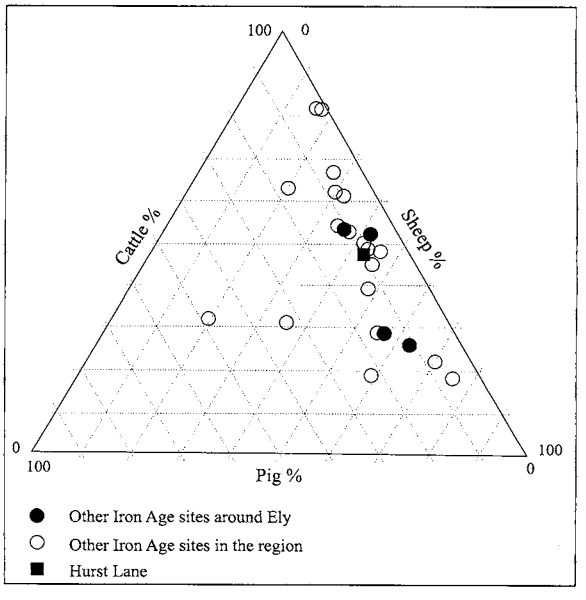

Figure 13. Comparative plot of faunal assemblages.

Analysis of intra-site variations in species ratios is difficult for the reasons already outlined. Tables 5 and 6 quantify the Hurst Lane assemblage recovered from the main enclosure ditches of Settlement Cluster I and from a selection of structures from both settlement clusters. Most of the animal bone recovered from the more intensively excavated Cluster I was from the enclosure ditch and Structure 2. Cattle bones were more common than sheep/goat bones from both. Bones from large species have been shown to have been more common in peripheral areas of settlements (Wilson 1996), whilst bones from medium-sized animals, such as sheep/goat and pig, were more common within the settlement core. This pattern has been seen in the assemblage from Wardy Hill (Davis in Evans 2003a), but does not appear to fit the Hurst Lane assemblage. Interestingly, Structure 2 in Cluster I also yielded the highest proportion of pig bones from the site. Pig accounts for about 7% of the total number of bone fragments from this structure (15.6% NISP). A similar association of pig bones with the main roundhouses was noted at Wardy Hill (Evans 2003a, p. 137).

In conclusion, the Hurst Lane assemblage is broadly similar to other assemblages from Ely and the region in terms of species ratio and intra-site spatial patterning. However, there is also great variation in species ratios within the region that does not appear to be influenced by geology, topography or site-type.

Site	Date of sample	Reference	OD height	% NISP Cattle	% NISP Sheep	% NISP Pig
Bancroft	EIA-LIA	Holmes & Reilly 1994	76-150	53	37	10
Blackhorse Rd	MIA	Legge, Williams & Williams 1988	76-150	67	27	6
Burgh	LIA	Jones *et al.* 1987 & 1988	76-150	40	48	12
Cat's Water	IA	Biddick 1984	0-25	50	42	8
Earith Sites I & II	IA	Higbee 1998a & b	0-25	45	46	9
Edix Hill	LIA	Davis 1998	-	29	55	16
Elms Farm	LIA/RB	Albarella & Johnston 2002	-	63	20	16
Farningham Hill	LIA	Locker 1984	26-75	48	46	6
Greenhouse Farm	EIA-LIA	Higbee 2000	-	18	75	6
Haddenham Sites V &VI	MIA	Evans & Serjeantson 1988	0-25	22	70	8
Hartigans	IA	Burnett 1993	26-75	82	17	1
Hawks Hill	IA	Carter, Philipson & Higgs 1965	76-150	19	59	22
Hurst Lane, Ely	**EMIA-LIA**	**This publication**	**0-26**	**45**	**41**	**9**
Ivinghoe Beacon	EIA	Westley 1968	225+	61	32	7
Market Deeping	MIA-LIA	Albarella 1997	0-25	49	43	8
Pennyland	MIA	Holmes 1993	76-150	62	30	8
Prickwillow Rd, Ely	**LIA**	**Deighton in Atkins & Mudd 2003**	**0-25**	**53**	**36**	**11**
Puckeridge-Braughing	LIA-RB	Fifield 1988	26-75	31	36	33
Skeleton Green	LIA-RB	Ashdown & Evans 1981	26-75	32	19	49
Trinity Lands, Ely	**MIA-LIA**	**Clarke in Masser 2001**	**0-25**	**46**	**47**	**7**
Wardy Hill	**MIA-LIA**	**Davis in Evans 2003a**	**0-25**	**29**	**56**	**15**
Watson's Lane	**IA**	**Higbee in Lucas & Hinman 1996**	**0-25**	**26**	**63**	**11**
Wavendon Gate	LIA	Dobney & Jaques in Williams, Hart & Williams 1996	76-150	82	16	2
West Fen Rd	**IA**	**Higbee in Mudd forthcoming; Higbee in Mortimer, Regan & Lucy 2005**	**0-26**	**52**	**42**	**6**
West Stow	MIA-LIA	Crabtree 1990	-	54	35	11

Table 7. *List of sites plotted in the tripolar graph (Fig. 13; percentages for sites in Ely are in bold). Note that Hurst Lane percentages take account of other species; the majority of regional data (taken as Eastern England and East Anglia) are from Hambleton (1999) and OD height categories also follow Hambleton.*

Human Remains

Natasha Dodwell

Human remains were recovered from 12 contexts, of which three can be dated to the Iron Age and two to Roman usage, with the remainder being without firm attribution (Figs 14 & 15). Both single skeletal elements and articulated inhumations were identified. Of the former, the recovery of 'loose' skull fragments in both unphased and Roman contexts might suggest their Iron Age attribution or origin.

Iron Age

Structure 2 ([880]; Figs 14 & 15.1) The calvarium (dome of a skull) recovered from pit F. 505 exhibits at least two fracture lines. The evidence suggests that the individual, a mature adult, probably received a blow to the back of the head, which has split open the skull from posterior to anterior, and another to the left side. Several cut marks were also recorded on the parietal bones either crossing, or being crossed by, the fracture line. In addition, a fracture line occurs around the circumference of the skull resulting in the detachment of the calvarium. Again, the skull has an unusually polished appearance. Human phalanges were also recovered from a bulk sample taken from the southern terminal of this building's eaves-gully (F. 508, [855]; Fig. 15.2).

Structure 3 ([656]; Fig. 15.3) Left portion of the frontal bone (the metopic suture, located on the midline of the frontal bone is completely retained). The sutures are sharp and distinct, which suggest that the individual was a young adult. The skull is highly polished, both internally and externally.

Structure 9 (F. 383, [422]; Fig. 15.4) Re-fitting fragments (modern breaks) of a parietal bone. The degree of suture closure suggests that the individual was a middle-aged/mature adult. The exterior of the skull is highly polished.

Roman

Re-fitting fragments of a middle-aged/mature adult parietal bone were recovered from F. 149 (Fig. 15.12) and the distal third of an adult left humerus was also recovered (S.F. 536; Fig. 15.11).

Unphased Attribution

This included a crouched adult skeleton within grave F. 138 (Fig. 15.5) and two infant inhumations (both less than four months old, F. 147 & F. 434; Figs 15.6 & 15.7); fragments of the right upper arm and shoulder, ribs, the cervical and upper thoracic vertebrae, skull fragments and teeth were recovered from the enclosure ditch of Compound B (F. 461; Fig. 15.8), and skull fragments from middle-aged/mature adults were in F. 224 and F. 276 (Figs 15.9 & 15.10).

Dating

Due to the limited resolution of the site's excavation (and a paucity of articulated skeletal remains), only three radiocarbon samples were submitted. Two of these involved AMS techniques; unfortunately one failed in the pre-treatment stage. The other, from grain in F. 505, Structure 2, provided an assay of 1990±60BP (cal. BC 190–AD 90; Beta-186937); this is clearly acceptable and reflects that building's Conquest-period status. The third was from human bone in the 'headless' F. 138 inhumation. This provided a date of 2010±60BP (cal. BC 170–AD 110; Beta-195164) and would suggest that it was broadly contemporary.

Comparative sites

Due to the rescue circumstances of the Hurst Lane excavations, and the broad-brush nature of the findings, discussion of its results benefit from a greater sense of context. Apart from the earlier excavations at Wardy Hill (Evans 2003a), over the last decade four medium-/large-scale investigations have occurred of Iron Age/Roman settlements on the eastern side of the island.[2] Of these, the most relevant are those of other neighbouring Cove-side sites at West Fen Road and the Trinity Lands (Fig. 2). The former has, in part, recently been published (Mortimer, Regan & Lucy 2005; Mudd forthcoming); the excavations slightly further afield at Prickwillow Road (Fig. 1) appeared in print two years ago (Atkins & Mudd 2003). Therefore, the results of both only require summary discussion, as do more limited evaluation-related findings and the site at Watson's Lane, Little Thetford. The same, however, is not true of the Trinity Lands site (see though Masser 2001) and, accordingly, its results are reported in greater detail.

The Trinity Lands excavations (TL526804)

Excavated by the CAU in the winter of 2000/2001 in advance of development for housing, the site was located towards the end of a distinct clayland spur along Ely's western side and lay between 9 and 20 metres OD (Fig. 2). The excavations were divided into two main components: a later Iron Age/Romano-British settlement and paddock system (Area I), and more dispersed evidence of earlier prehistoric usage. Facets of the latter have been outlined in an earlier summary (Evans 2002). Apart from the usual ubiquitous artefact-scatter 'background' (130 worked flints and a polished axe, etc.), two ditches of possible Bronze Age attribution were present on the main site (Fig. 16), and a sherd of what was probably Collared Urn was recovered from their otherwise sterile fills. South of the main area of excavation, a large waterlogged pond-like hollow was investigated (Fig. 2). Attesting to its 'early' utilisation, not only did this have deposits of burnt flint associated with it, but also sherds of Late Bronze Age Post-Deverel-Rimbury pottery; a fragment of human skull was also recovered from its fills.

Although the main excavations were confined by the A10 by-pass (Area I), the Iron Age/Early Roman site must continue beyond it. The settlement was entirely unknown prior to the area's trial trench evaluation in the summer of 1999 (Masser & Evans 1999). It was not particularly dense and the focus of both phases of settlement probably falls to the west of the site *per se*; within the area of the excavation, the Iron Age occupation was localised to its extreme north-western corner (Masser 2001). In the main consisting of a sub-rectangular paddock system (Fig. 16.A), its south-eastern side was later extended and minor linear features within it suggests that the interior was sub-divided. The partial arc of a small ring-gully in its southern end (6.70 metres in diameter) was evidence of a minor roundhouse (Str. 2; Fig. 16.2). In the extreme north-western corner of the site was

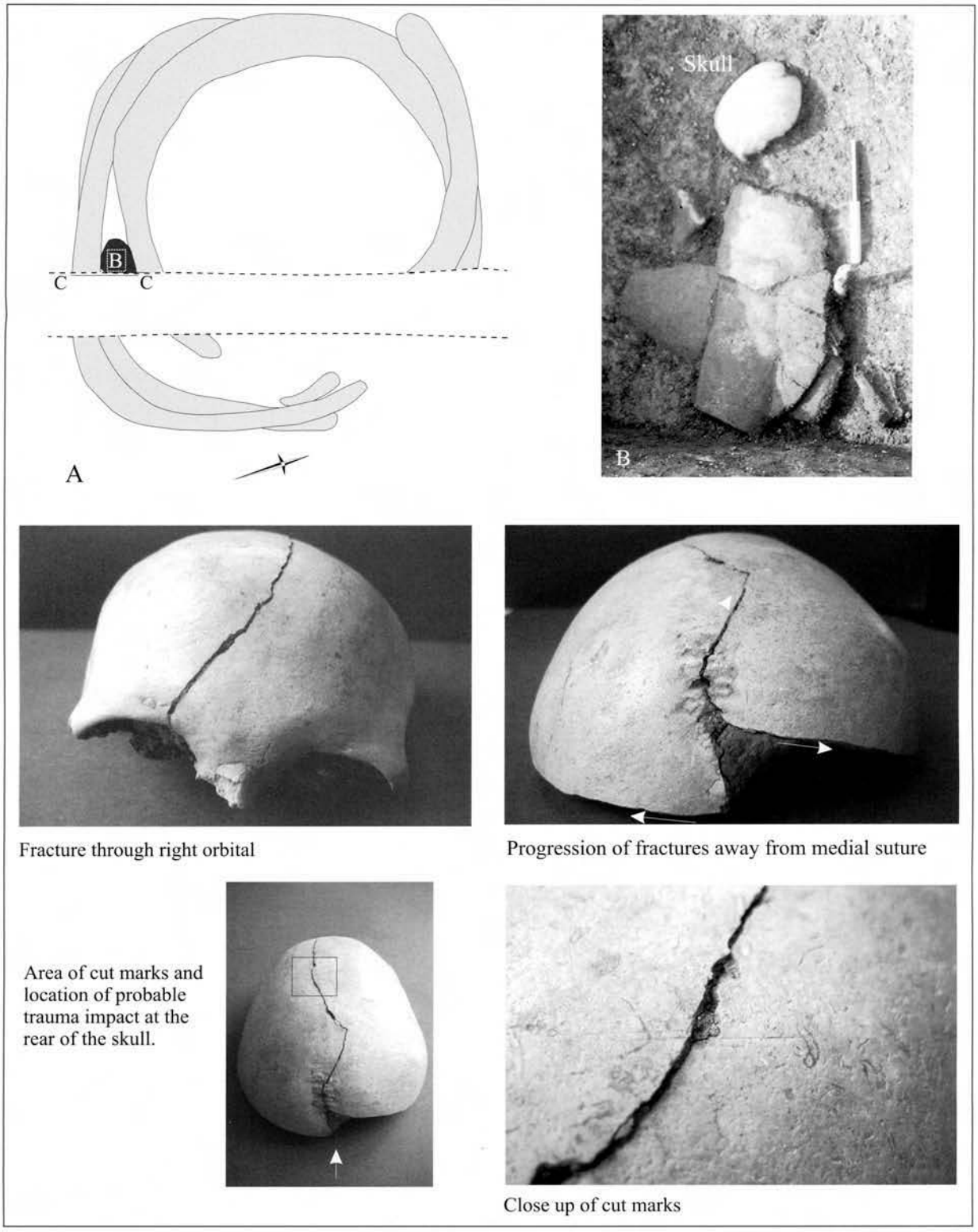

Figure 14. *The Hurst Lane Reservoir Structure 2, pit F. 505 human skull deposits (A; note location of Section C, Fig. 7); B) detail of skull and pottery spread in the base of the pit; below, details of skull trauma.*

what appeared to be the southern half of a much more substantial eaves-gully, approximately 15.50 metres in diameter (Str. 1; Fig. 16.1). Up to 2.00 metres wide and 0.70 metres deep, this showed evidence of re-cutting and its midden-like fill deposits also extended throughout the upper profiles of adjacent features. (It is just possible that, rather than encircling a roundhouse, this marked the south-eastern end of an occupation compound with an irregular plan; this, however,

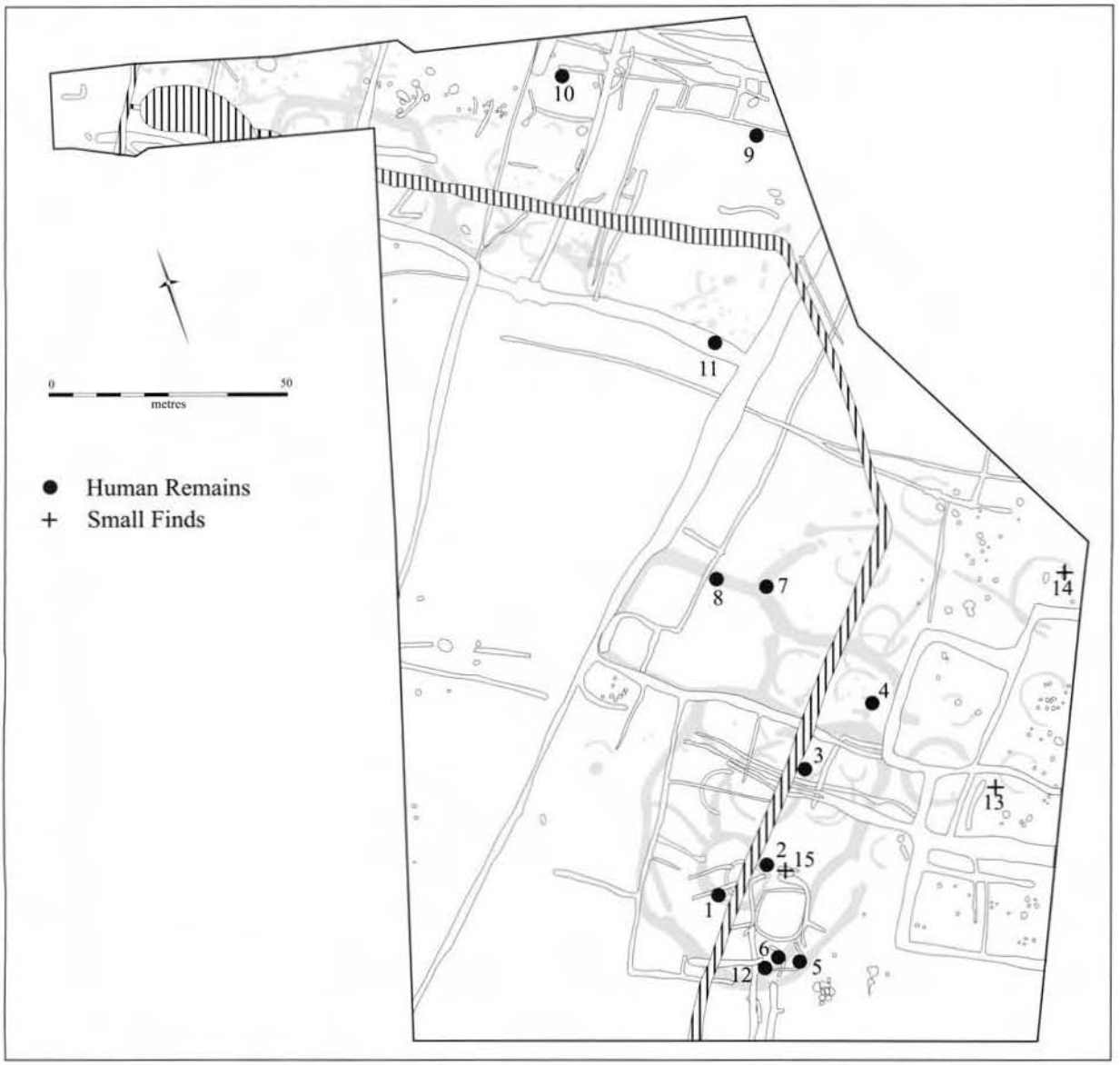

Figure 15. *The Hurst Lane Reservoir: Distribution of human skeletal remains (1–12) and small finds (13–15).*

seems unlikely.) Comparable with practices at Hurst Lane, a fragment of skull (the superior portion of a youthful adult, occupal bone), appearing to have a polished interior surface, was recovered from ditch F. 4049 that ran immediately south-west from the side of Structure 1's eaves-gully.

Thereafter, the ditched paddock system was extended southwards. The most immediate 'block' (Fig. 16.B) also entailed the redefinition of the eastern side of the original Iron Age enclosure. The southernmost paddock (Fig. 16.C) was generally more slightly 'bounded' and could have post-dated 'B'. Its north-eastern corner was subdivided to define a small two-cell rectangle (15.4 x 11.80 metres + 7.9 x 11.8 metres). Although possibly relating to the penning of stock, this might alternatively have defined a building and higher densities of finds were associated with it (Fig. 16.3). As outlined below, first-century AD Early Roman pottery was recovered from Paddocks B and C (although intermixed with Late Iron Age wares). The manner in which these paddocks extended the alignment of the original Iron Age compound and redefined its north-eastern side again suggests direct continuity between the site's Iron Age and Early Roman phases.

The settlement was not particularly distinguished. No Roman tile was, for example, recovered, nor any Iron Age or Roman coins or brooches (despite thorough metal-detecting of features and spoil heaps). Analysed by K. Anderson and L. Webley, the pottery assemblage consisted of about 1400 sherds, of which some 500 were of later Iron Age date. All of the latter probably dates to the first century BC or first century AD, with most coming from the area of Compound A; approximately 20% were wheel-made (*c.* 10% burnished). The Late Iron Age wheel-made pottery generally consisted of jars, often with horizontal cordons or rilling; there were two pedestal bases. The wheel-made vessels were all probably from relatively late in the Late Iron Age, and led directly on to the forms present in the Roman assemblage.

All the Roman pottery can be dated to the first century AD, with the bulk probably coming from the immediate post-

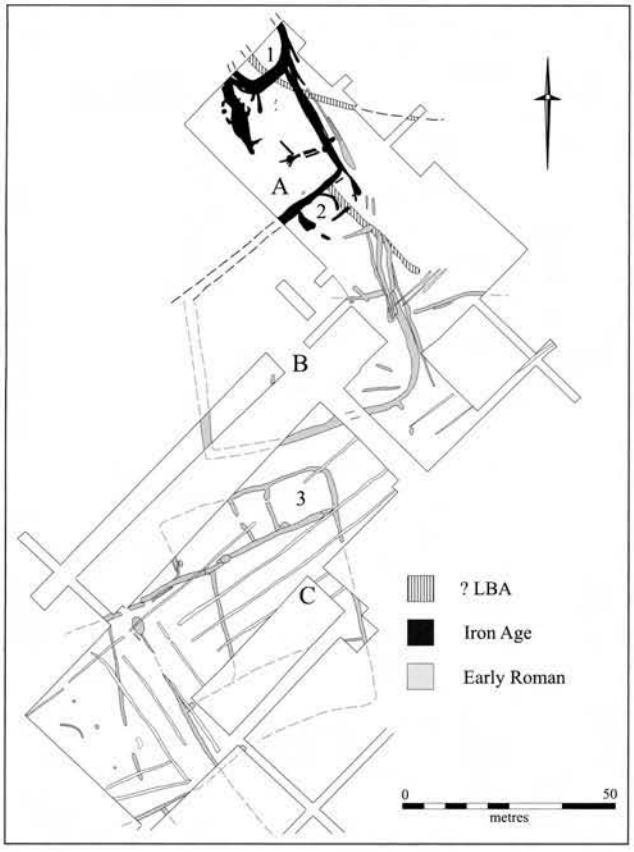

Figure 16. *The Trinity Lands Site Area I phase plan showing Structures 1–3. The rectilinear arrangement of the two southern paddocks (B & C) and their putative building (Str. 3) differs from the layout of its Iron Age settlement. Given the tight dating of this site, either – as was apparent at the Greenhouse Farm/Cambridge Airport site (Gibson & Lucas 2002) – its rectilinear system must be considered a Late Iron Age 'invention', or that initial Romanisation must have had a major impact on its layout. Perhaps furthering the former interpretation is the fact that its 'grid' lies off the common alignment of the island's Roman settlements (Fig. 18) and also off the orientation of Hurst Lane's Iron Age settlement.*

Conquest period (*c.* AD 50–60). The assemblage contained only locally produced coarse ware vessels, with no imported or fine wares, and the fabric types were limited to oxidised and grey wares. The range of vessel forms was very limited with jars dominating and only four rim sherds representing any other type of vessel, all of which were bowls. There were several different types of jar (including cordoned), but plain-necked jars with everted rims were the most common.

A notable feature of this assemblage, both in the Iron Age and Roman periods is the absence of fine wares and dominance of locally made, functional coarse wares. This might, to some extent, reflect the location of the excavations at the margins of the settlement complex. It might also, however, indicate a low status for this site relative to others in the area, and isolation from the distribution networks for fine and imported wares.

Only a small assemblage of animal bone was recovered (452 pieces) and of this only 23% could be identified to species. Whereas in Iron Age contexts cattle and sheep/goat were found in comparable percentages (42.4% and 43.9% respectively), the Early Roman usage appeared to see a rise in cattle (65.7%) with a decline in the number of sheep/goat (25.7%). In addition, four pig bones (6.1%) and two bones each of dog and bird were identified in the Iron Age assemblage. These species were totally absent in the Roman contexts, which, however, included three horse bones (8.6%; only one horse bone was present in Iron Age contexts).

An AMS radiocarbon date was achieved from the upper fills of Structure 1's eaves-gully – 2130±40BP (cal. BC 370–110; Beta-186938) – although somewhat earlier than anticipated, it is considered generally acceptable.

West Fen Road, Ely (TL 530808)

It was the construction of a pipeline along the northern side of West Fen Road in 1996 that first led to the discovery of a substantial later Iron Age settlement (Fig. 2; Gibson 1996; see also Evans 2003a, pp. 245–8). Subsequent house construction on both sides of the road in 1999 resulted in the excavation of a major multi-period complex – with occupation of all periods from Iron Age to medieval times – that might have been determined by the route of a causeway either north to Downham or west to Coveney. While across the southern fields (excavated by the CAU; Mortimer, Regan & Lucy 2005; see Evans 2002 for a summary of pre-Iron Age findings) only limited Iron Age occupation was found in the form of two small sub-square compounds (one having a central roundhouse), the core of the Iron Age complex lay to the north where it was excavated by the Northamptonshire Archaeological Unit (Mudd 2000 and forthcoming).

Of Middle/later Iron Age date, in the main the enclosure complex north of the road seems to have consisted of a large sub-square, deeply ditched enclosure with a more irregular/polygonal compound on its southern side (Fig. 18.1). Three roundhouses were identified within the complex's interior. Three human skull fragments were recovered from the enclosures north of the road, as indeed was another from the main sub-square compound south of it. It is notable that there seemed to be no direct interconnection or ditch-linkage between the southern compounds and the northern enclosure complex. In the context of the Hurst Lane findings, it is relevant that a La Tène-style decorated sherd was present in the pottery assemblage.

The Roman system (dating from the later first to fourth centuries AD) was focused in the area south of the road, and consisted of a network of smaller sub-square settlement paddocks with conjoining larger field blocks to the south (Fig. 18.7). Reminiscent of the Hurst Lane layout, it represents a farmstead of fairly lowly status. One inhumation (in a coffin and with hobnail boots) could be definitely attributed to the Roman occupation, with another crouched burial being of ambiguous status. Twenty-three Roman coins were recovered in total from all phases of the fieldwork. Aside from one Trajanic coin, these dated to the third to fourth century; no Iron Age issues were present. Equally, despite extensive metal-detecting, only three brooches were recovered: a Colchester and a poorly cast Langton Down type (the third was too small to identify).

Prickwillow Road, Ely (TL 553813)

The excavations in 1999–2000 by the Northamptonshire Archaeological Unit across an 1.8 hectare site on the north-eastern side of the city of Ely itself have recently been published (Fig. 1.9; Atkins & Mudd 2003). This Iron Age/Romano-British settlement lay relatively 'high' at about 20

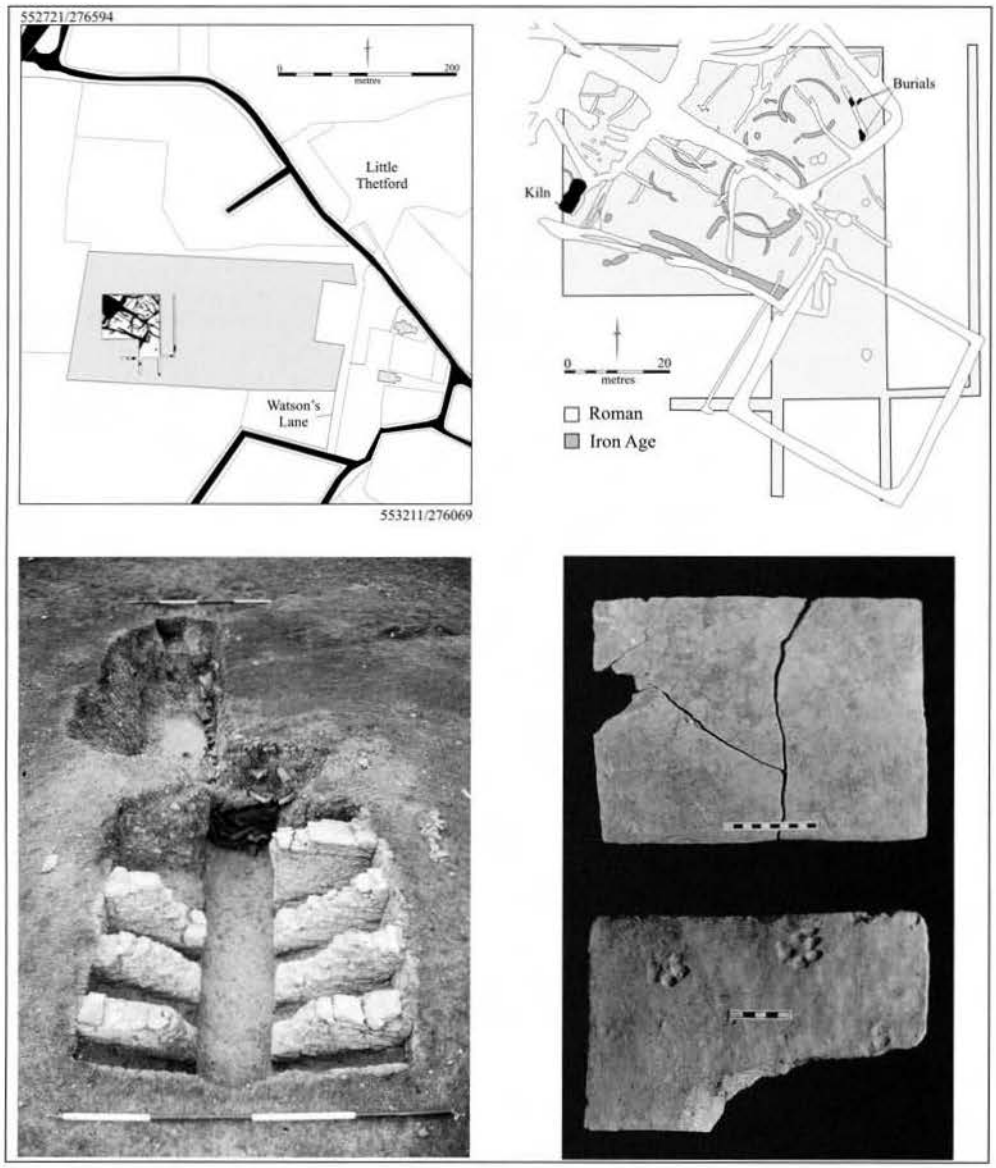

Figure 17. *Watson's Lane, Little Thetford. Top: location and phase plans (note the extension of features beyond area of excavation is based on geophysical survey data); below, photograph of excavated Roman tile kiln (left) and, right, complete and paw-impressed tiles.*

metres OD on land with a mixed geology. Against a later Neolithic/Early Bronze Age background 'presence' (97 flints recovered), the first main phase saw intermittent, earlier Iron Age activity (fifth to third centuries BC) marked by dispersed pits and a single length of ditch. Two crouched inhumations were assigned to this period, and a fragment of a human skull was found in one of the pits.

Thereafter, from the third century BC onwards (Middle Iron Age), the locale saw permanent settlement through to the fourth century AD (Fig. 18.5). At least within the portion of the complex that was investigated, the Iron Age occupation was not particularly intense (only one house gully, set within a larger midden-associated sub-circular enclosure, was recovered) and was localised to only the western third of the area across which the Roman paddock system eventually extended. Although no buildings, as such, were identified in relationship to the latter, a cemetery including five cremations and 15 inhumations, and dated to the third to fourth centuries AD, was excavated. The recovery of kiln bars provided evidence for local Roman pottery production during the first to second century AD, although no kilns were found.

Two Late Iron Age brooches were recovered: a Nauheim type (70/60–30/20 BC) and the other, in iron, a Drahtfibel type (40–60 BC); no Conquest-period or Roman brooches were found. Of the 30 Roman coins from the site, all but three dated to the later third to fourth centuries, the remainder being earlier second-century issues.

Watson's Lane, Little Thetford (TL 528763)

This densely occupied later Iron Age and Romano-British site was located on Kimmeridge and Boulder clays and was excavated by the CAU in 1995 (Figs 1.5 & 17; Lucas & Hinman 1996; Lucas 1998). The later Iron Age settlement consisted of eight roundhouse gullies, not all of which were contemporary, associated with enclosure ditches. As this phase of

the site has been discussed elsewhere (Evans 2003a, p. 248 and fig. 127), the Romano-British occupation will be focused upon here.

The later Iron Age settlement was overlain by a series of linked enclosures around the mid-first century AD. Although some of the enclosure ditches contained only Iron Age pottery, this need not imply a pre-Conquest inception, but rather a lag in the adoption of Romanised ceramics. There was a lack of later first-century AD Roman pottery across the site, most of the material being from the second to third centuries with some dating to the fourth century. Iron Age tradition pottery probably continued for half a century or more into the Roman period, a post-Conquest caesura in occupation seeming unlikely.

No definite Romano-British buildings were found, and the settlement 'core' might have then shifted to the north of the excavated area. Though around 30 kilogrammes of Roman pottery was recovered, there were relatively few fine wares or specialised vessels such as mortaria, suggesting that low-grade ceramic refuse was received from the main settlement. Seven coins were found, all dating to the third or fourth century. Copper alloy objects included a finger ring, nail cleaner, and steelyard; a lead steelyard weight was also found. There were no brooches.

Some of the enclosures were associated with industrial activity. Most notable was a tile kiln, probably constructed in the later second or early third century and abandoned in the fourth century (Fig. 17). The stoke pit contained huge quantities of tile, including unusual structural tiles (lydions, pedales and sequipedales) as well as roof tile (tegulae and imbrices). The unusual tile types indicate the presence of a skilled craftsperson, producing tiles for fairly high status Romanised clients elsewhere, as they did not appear to have been used for buildings within the immediate vicinity. Finds of slag indicated that there was also copper alloy working at the site.

The site changed character in the fourth century, when pottery deposition was reduced and the kiln abandoned. Probably dating to this latest phase of the site was a square enclosure in the south-east that could, on morphological grounds, have been a shrine. The only internal feature of the enclosure was a pit containing fourth-century pottery. In the north-eastern part of the site was a group of three adult inhumation burials (two males and a female) which might also have been Late Roman. None of the burials had grave goods, although the female was probably wearing hobnail boots; one of the males had been decapitated with his head placed between his legs.

Evaluation-related trenching within Ely's environs has also yielded relevant results. Fieldwork on the former Witchford Aerodrome – adjacent to the site of a putative 'Roman Camp' – revealed Late Roman ditches (Crank 2000). Equally, lying 750 metres east of the main West Fen Road complex on the western side of the City itself, evidence of later Iron Age settlement has also been found at St John's Road (Fig. 1.6; Abrams 2000). Whilst no wheel-made wares occurred within its Iron Age pottery assemblage (65 sherds), a Conquest-period Aucissa brooch was recovered. Although a few Roman sherds were present (including one Horningsea ware), no distinct suite of features could be assigned to this period. Earlier, evaluation fieldwork along Ely's north-western margins (falling between the West Fen Road/Hurst Lane and Prickwillow Road sites) revealed a low density background of struck flint and an isolated pit included numerous sherds from two Bronze Age vessels (Robinson & Bray 1998).

Evidence for Late Iron Age and Roman activity has also been found in the centre of Ely proper at Brays Lane and at Walsingham House (TL 541801; Figs 1.7 & 1.8). A single trench at the latter, excavated by the CAU in 1991, revealed a pit and a ditch, both containing wheel-made Late Iron Age pottery with a few Roman sherds (Hunter 1992b). Of a total of 96 sherds of Iron Age pottery from the site, 60 were wheel-made. This is a significant amount of material given the excavation area, and the features uncovered could thus have been part of a substantial Late Iron Age settlement.

The site at Brays Lane, near the centre of Ely (TL 551805), lies on Greensand and was also excavated by the CAU in 1991 (Hunter 1992a). Several phases of activity were revealed (primarily a series of ditched medieval paddocks), although at no stage did the site see intensive settlement. Pre-Iron Age finds (e.g. 146 worked flints) indicated only sporadic activity from the Late Mesolithic through to the Late Bronze Age. The site saw more substantial use in the Late Iron Age, and pits and two ditches were recovered. Although no definite Romano-British features were present, 18 sherds of that date were found (largely local grey wares of first- to second-century AD date). Therefore, the area's usage in Late Iron Age and Roman times is thought likely to have been agricultural rather than settlement-related.

Concluding discussion: continuities and marginalities

The site at Hurst Lane shows clear evidence of continuity from the Iron Age to the Roman period. Not only is this evident from its ceramic sequence, but also from the layout of the successive settlements. Whilst the Romano-British occupation marks a substantial reorganisation – a rectilinear system replaced a much more 'organic' network – the Iron Age compounds also seem to have determined the arrangement of a number of the Roman ditches. As has been outlined, such continuity is also found on other sites of the period in the area. What is singularly important in the case of the Hurst Lane settlement and particularly the occupation of Iron Age Compound A, is the potential evidence of activity in the interregnum. The concurrence of re-cut Iron Age boundaries in the later first century AD suggests more than just vague 'earthwork' determination, but a respect of landholding. Thus far on the island, Early Roman sites seem only to occur on previous Iron Age settlements. Yet, it is equally unlikely that the Conquest was only a matter of generally evolving 'mind-sets' involving negligible economic change, and that sometime between AD 50 and AD 80 the site's inhabitants suddenly decided to adopt *en masse* rectilinear field-systems and buildings. Although by no means sufficiently detailed,

the evidence from the site suggests an interval of decline between about AD 40/50 and AD 70/90 when, in effect, settlement struggled on. Thereafter, the Romano-British layout might have involved continuity of tenancy, but whether this indicates the resurgence of the site's leading Iron Age families or only of their attendants is unknown.

In the light of most of the Cove sites' apparent Conquest-period continuities, the absence of any direct evidence of the Boudiccan rebellion is crucial, as was also recognised at Wardy Hill (Evans 2003a, pp. 270–2). In other words, settlement seems to have continued without any sign of military retribution (i.e. traces of conflagration) in the decade prior to the Flavian era. Nor, in fact, has such evidence been found in association with the Iceni-affiliated communities at Stonea or Langwood (Jackson & Potter 1996; Evans 2003b) and this could suggest that the geography of the revolt lay further to the east. Yet is this really the case? Did, for example, the Trinity Lands settlement actually see a 'Roman phase' at all or was it just a matter of a Late Iron Age site – admittedly receiving Early Roman-type kiln products – continuing until about AD 60–70, with occupation thereafter apparently stopping? Hurst Lane's *interregnum* occupation could equally be assigned to the decade between AD 60 and 70, with the establishment of its more formally Roman system only occurring during the Flavian era. If so, whilst the Rebellion *per se* might not be in evidence, then at least post-Rebellion reorganisation could be apparent. Yet until synthetic studies are forthcoming from other areas of Eastern England it remains difficult to distinguish strictly Rebellion-related dynamics from the processes of Romanisation in general.

Certain factors distinguish the Ely sites. That Iron Age cremations have not been forthcoming from any, further confirms the Aylesford-Swarling border as a distinct archaeological divide (see Hill, Evans & Alexander 1999). Against this, the recovery of 'loose' human bone in the southern Hurst Lane cluster is paralleled on all of the Cove-side settlements. Apart from those remains in terminal phase contexts at Wardy Hill (Dodwell in Evans 2003a, p. 232 and fig. 116), skull fragments were also found on the Trinity Lands site, the West Fen Road settlements and also at Prickwillow Road. Finding skeletal remains has become commonplace on settlements of the period (see Hill 1995), and such deposition clearly reflects a tradition dating back to the later Bronze Age (Brück 1999). However, the frequency at which they occur at Hurst Lane (and their consistency in the other Ely excavations, often despite limited exposure or sampling) could suggest that these practices were taken to a greater extreme on the island than in other adjacent areas and that this might imply some manner of distinct cult activity. Skeletal remains were not found at anything like this frequency at either the Cats Water, Fengate (Pryor 1984), the Upper Delphs, Haddenham or the Colne Fen, Earith settlements (Evans & Hodder 2006). What, aside from their frequency, distinguishes the Hurst Lane human remains is the extreme degree of manipulation and that the F. 505 skull deposit was found in house foundation-circumstances. At Wardy Hill, such 'working' of bone was discussed in terms of violence to the body and the issue was raised whether this could have only been perpetrated upon 'outsiders', be they the vanquished or slaves (Evans 2003a, p. 258). Whilst it could be argued that this might have been too normative an appraisal, the F. 505 skull certainly attests to an extreme degree of trauma; the blow to it could have caused the death of the individual. The skinning cuts upon it would equally suggest that the skull did not derive from excarnation. (This, and the polishing upon it and other fragments of human skull from the site would obviously indicate that it was *skulls* and not heads that were handled.)

Amongst the foremost traits of Ely's sites is the relative poverty of their assemblages. Despite the extensive use of metal detectors on these sites there is, for example, a paucity of brooches: only six or seven Late Iron Age/Conquest-period brooches have been recovered from the five main excavations (and from the evaluation at St John's Road). Even more marked is the absence of later Iron Age coinage. Hurst Lane's potin aside, very few coins of the period have ever been recorded from the island and none from any of the recent excavations.[3] This is in direct contrast to sites further south within the Aylesford-Swarling zone, and to the Iceni-affiliated communities on the central Fenland islands. The latter would include the great Stonea/Stonea Grange 'centre' (Jackson & Potter 1996) and also the Langwood Farm complex on Chatteris (Evans 2003b). Not only has Iron Age coinage been recovered from the Langwood site (of Iceni and Trinovantes/Catuvellauni issue; see Chadburn in *ibid.*), but also much Early Roman coinage, which probably resulted from trade with their army (see Reece in *ibid.*). These mid–later first-century AD Roman coin issues are missing from the Ely sites. This could suggest that the army was not present in any substantive way on the island (i.e. regularly stationed), although the Witcham helmet could belie this (*cf.* Evans 2003a, p. 271). Alternatively, only Iron Age coin-using communities might have received coinage in kind through trade, and exchange with other 'partners' could have been through barter. Be this as it may, the same is equally true for use of brooches in the Late Iron Age and Conquest period/later first century AD. They have been frequently found on the central Fenland sites and south in the Aylesford-Swarling zone, but not on the island.

Yet it might be inappropriate to describe Ely's assemblages only in terms of relative 'poverty'. The deployment of metalwork – coins and brooches – amongst Late Iron Age communities could well have been socio-politically specific. Unlike neighbouring groups to the north and south, Ely's inhabitants might simply not have expressed their identity through these media to any great degree and this could, in turn, have influenced responses to Romanisation.

However 'marginal' it might have been (itself a weighted term), what affinities the island then had would seem to have lain to the south (and south-west

up the Cam Valley). Admittedly this argument is largely one of default rather than of positive attributes. Nevertheless, within the specific context of the Hurst Lane settlement, the potin and Harlow-type brooch, both of which are northern outliers of their core distributions, could be interpreted as expressions of this. The paucity of fine metalwork of the period from the island would argue against an eastward (and later northward) Iceni-affiliation, while the very low level of Scored Ware from all the Ely sites (1.5–4.1%) distinguished its communities from those of the Ouse Valley and western fen-edge (e.g. Colne Fen, Earith and the Upper Delphs, Haddenham; see Table 8 and Hill in Evans & Hodder 2006).[4] Given these evident complexities, it is clearly inappropriate just to view the region's Iron Age in terms of simple tribal identities. Rather, the evidence would suggest shifting multiple 'centres' and, correspondingly, continuously redefined 'margins'.

Modes of enclosure

When taking into account factors of phasing, the Hurst Lane Iron Age settlement(s) do not necessarily provide evidence for particularly intense occupation at any one time. Generally comparable to the Cats Water site (Pryor 1984), no more than three to eight roundhouses need have been strictly contemporary and this might represent, at most, three to five household groupings. Yet, in contrast to the other Ely sites of the period (though in some instances this was clearly determined by factors of preservation), the overall number of round buildings at Hurst Lane suggests a more sustained multi-household occupation. Perhaps this reflects the better-drained sub-soils on which it was located. If so, this could indicate that, although heavy claylands were clearly colonised during the Middle/later Iron Age (see below), light soil-sites might still have been the preferred choice of settlement.

As discussed within the Wardy Hill report (and at Haddenham; Evans 2003a and Evans & Hodder 2006), there was limited reflection of household status amongst the region's Iron Age settlements. Hurst Lane's most obvious candidate to indicate status would have to be Structure 2, which was contemporary with the Settlement Cluster I horseshoe-plan enclosure. By way of parallel with enclosures elsewhere, this could have obvious ramifications in terms of what, by extension, Wardy Hill went on to become. Yet the only apparent difference of its household, apart from building size (which it shares with Structure 3), was the frequency of pig bone; given the site's faunal assemblages relative to structure-size, this might only have been result of the intensity of excavation. Nevertheless, viewed from the perspective of Pryor's 'first-amongst-equals' arguments for Cats Water, Fengate (1984), within a context of low-level distinction this could have been sufficient. In other words, in different circumstances Compound A's resident household could have gone on to have distanced itself further from the rest of the settlement through the construction of a more elaborated form of enclosure. Yet in the case of the ringwork at Wardy Hill, the realisation of this potential is what was crucial, as the 'command of labour' would appear to have been the main distinction of the social status of its inhabitants, regardless of whether this was a matter of purely kin- or client-based relationships. Here, as is so often the case, it is well-nigh impossible to differentiate 'expression' from 'catalyst'. In short, to what degree did perceived threat and its defensive response itself give rise to and/or significantly enhance existing social authority/status?

The question remains whether Hurst Lane's horseshoe compound should itself be described as 'defended'. The ambiguities of this appellation have been addressed elsewhere (Evans & Knight 2002; Evans 2003a, pp. 258–63). Whilst certainly not ranking as a 'fort', it still might qualify as a 'defended farmstead' and the area it enclosed (1850 square metres) is at the upper end of 'domestic-scale' enclosures (*ibid*, table 70). Yet, in opposition to the layout of the compound at Wardy Hill, and more typical of 'domestic' enclosure layout, the buildings of the main Hurst Lane compound were located in its centre and not off to one side to allow any mass gathering (Figs 18.2 & 18.3). It is an inherently domestic-type arrangement: the 'household(s)' commands its core and no meeting space was held in reserve.

That the Cluster A horseshoe compound at Hurst Lane bears such a strong formal resemblance to the innermost circuit of the ringwork at Wardy Hill suggests a domestic origin for what was to become the latter's heavily defended form (Fig. 18.3). The en-

Site	Number (weight)	Wheel-made %	Scored %
Hurst Lane	1183 (29,237g)	15.0	4.0
West Fen Road (south)	656 (7781g)	<1	1.5
Watson's Lane	1212 (13,662g)	4.7	4.1
Wardy Hill	5311 (60,988g)	23.5	1.8
Haddenham V	15,015 (174,055g)	<0.1	25.9
Cats Water, Fengate	11,180 (267,432g)	13.7	52.3*
Werrington	(29,260g)	?	44
Owls End Rd, Bury	156 (518g)	10.0	3.1

Table 8. *Comparative Iron Age pottery assemblages (NB: for Hurst Lane, the early Middle Iron Age phase of site excluded when calculating wheel-made % but included for burnished/scored %. * Maximum percentage by feature; no overall total available).*

closure at Hurst Lane did not see such elaboration and, instead, other small, sub-square 'domestic-type' compounds were appended to its north-eastern side. Whereas insufficient of the plan of the western core of the Trinity Lands enclosure was recovered to determine the settlement's full form, the main West Fen Road enclosure would seem to have been of a much larger scale (Fig.18.1). Though lacking the successively concentric circuits of Wardy Hill and, in the main, of sub-square plan, with ditches 2.50–3.00 metres wide and 1–1.30 metres deep, it might also be classed as defended; the smaller and 'removed' sub-square compounds extending south of the West Fen Road settlement perhaps represented no more than the equivalent of Hurst Lane's appended paddocks (Compounds B–E).

Most Iron Age enclosure systems are relatively 'organic' in their layout and it is often difficult to untangle their sequences. Given the parallels between the horseshoe-plan of Compound A and the inner circuit of the Wardy Hill ringwork, and accepting this as an expression of a local, bounded domestic spatial/settlement 'type', the crucial point is the character of their elaboration and the trajectories of their development. To a greater or lesser degree, both involved principles of concentricity. Yet, whereas the inhabitants at Wardy Hill went on to add an outer circuit (with a 'non-active' swathe between), it was the interior of Hurst Lane's enclosure that was sub-divided and this new swathe was elaborated with further quasi-radial, spoke-like ditch divisions (Fig. 18.2). The former development was made more 'monumental' by adding still larger units of demarcation (which in the case of Wardy Hill were of defensive function), whereas the latter might attest to a more distinctly domestic mode through progressive sub-delineation of the interior. Yet, it is clearly not just a matter of the island having had a single enclosure-type model or that distinct forms of enclosure somehow represented cultural 'blueprints'. The layout of the main West Fen Road North Site's 'square' (with its central roundhouse; Fig. 18.1) had its clearest affinity with the Werrington enclosure near Peterborough (Mackreth 1988) – a Scored Ware settlement. If pushing the evidence, the complex at Fisons Way (Gregory 1991) could be considered a concentric elaboration of this basic form towards the construction of an apparently ritual compound (see Evans 2003a, p. 263 concerning ritual and defensive 'concentricity' and also what distant parallels there are for the form of the Wardy Hill/Hurst Lane enclosures). There is no easy resolution of these issues and certainly the evidence from the island is not, as yet, at hand to advance one overarching explanation.

The social fabric

Across the eastern half of the Isle of Ely, Iron Age/Roman settlement densities are now known to occur at intervals between 500 metres and 1.5 kilometres. There was little excavation prior to the 1990s, but since then the pace of development, at least on the island's eastern side, has led to more intensive fieldwork than in much of the region. How are we to evaluate its settlement patterns as regards issues of continuity and colonisation? There are parallels for this, and the West Cambridge plain would, for example, seem to have hosted comparable densities (Lucas 2002; Evans & Lucas forthcoming) and, too, a contemporary 'uptake' of claylands. Although a more widespread phenomenon, this colonisation of heavy soils would seem not just to have been prompted by population pressure; some areas of lighter sub-soils, that saw intense utilisation during the later Bronze Age, were largely abandoned during the Iron Age (e.g. Barleycroft/Over, see Evans & Knight 2000b). Even if soil exhaustion was a contributing factor, the colonisation of claylands was probably a matter of positive choice, possibly relating to developments in agricultural practices. As discussed in Evans 2003a, within a context of landscape colonisation, rather than just relating to issues of carrying capacity, such high density settlement distributions could equally reflect the operation of social life. The draw of 'neighbours' – both to ensure security and, also, to further a social fabric and a successful 'breeding' population – is something that should not be underestimated.

The dynamics of these landscape incursions are themselves important. Despite the evidence from Wardy Hill and the Trinity Lands, pre-Middle Iron Age usage would largely seem to have been intermittent and probably related to seasonal pastoral and/or foraging activities.[5] These annual cycles of 'going out' from settlement (i.e. transhumance and 'tasking') could have been how Ely's environs became known and, similar to the processes proposed for the Upper Delphs, Haddenham (see Evans & Hodder 2006; *cf.* Evans 1987), eventually settled. These traverses and, by extension, the source of Ely's colonisation during the Iron Age, might not, however, have been over great distances. It is in this context that factors relating to the area's environmental sequence become crucial, as the island's low gravel skirtland – largely inundated during the course of the first millennium BC and thereby isolating the rise – could have been the original 'home' of these communities. This low skirtland swathe has yet to see any substantive investigations and, pending this, such discussion remains speculative.

Against this background, it is difficult to establish any obvious sense of social hierarchy for the island's sites. How is one to evaluate the relative status of Hurst Lane's Compound A household against that of West Fen Road's northern compound? If enclosure itself is a distinguishing trait, then both could have been relatively 'elevated' when compared with the remainder of Hurst Lane's population (or the 'mass' at Watson's Lane, Little Thetford). Yet, this differentiation might have been so materially insignificant as to be largely indistinguishable, and none of these sites seem to have had particularly distinct trade connections. However, the recovery of a Samian platter from the eaves-gully of one of Wardy Hill's main round buildings might reflect some degree of 'privilege' and could correlate with the fact that the ringwork had the highest frequency of both wheel-made Iron Age pottery (23.5%;

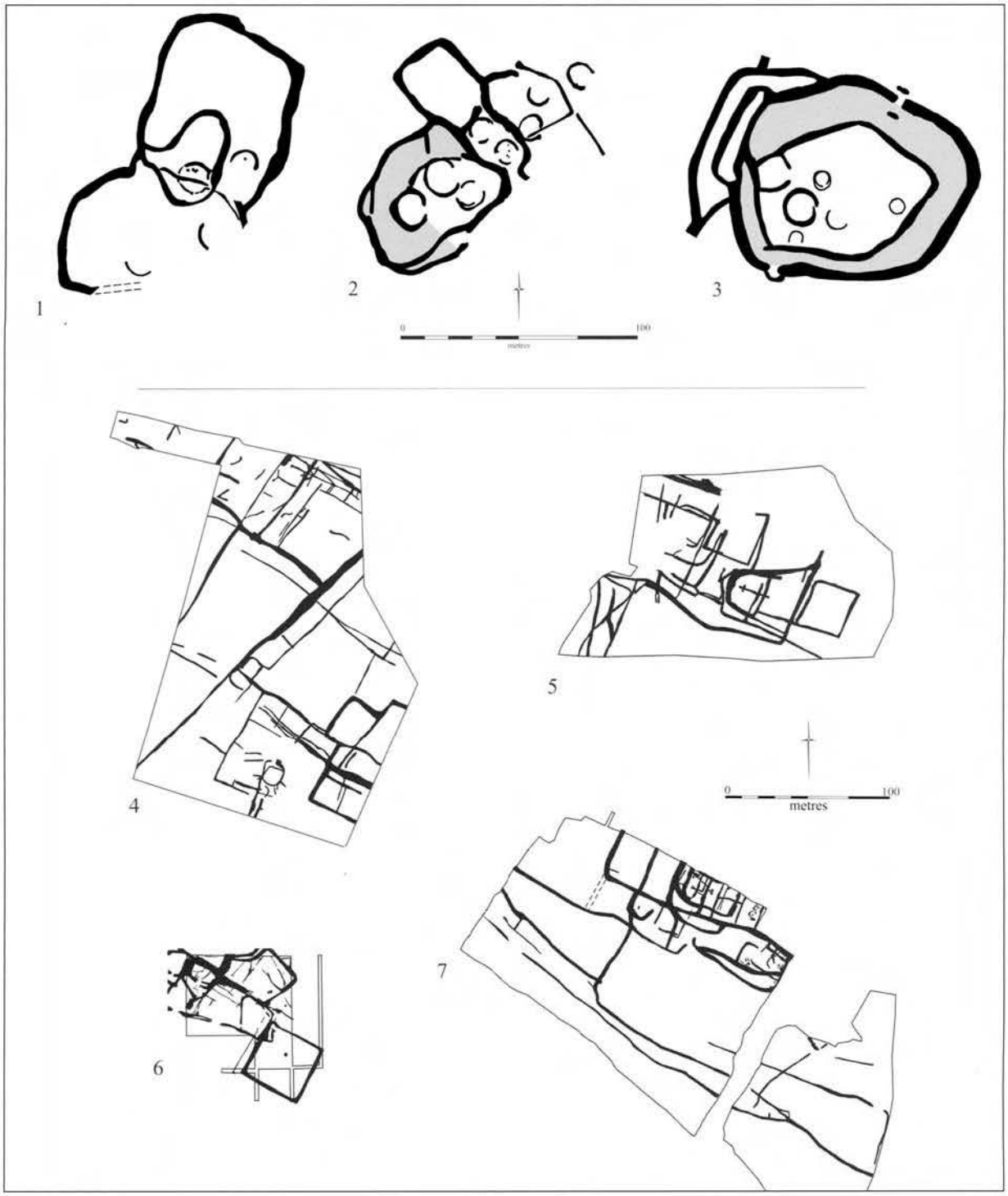

Figure 18. *Comparative enclosures on the Isle of Ely*
Iron Age: 1) West Fen Road (north); 2) Hurst Lane Reservoir; 3) the Wardy Hill ringwork, with grey-toned swathes indicating concentric 'elaboration' (2, internal/domestic; 3, external/'monument');
Roman: 4) Hurst Lane Reservoir; 5) Prickwillow Road; 6) Watson's Lane, Little Thetford; 7) West Fen Road (south; note that all of these sites share the same generic or 'landscape' orientation that probably had its origins in the Late Iron Age or earlier).

Table 8) and pig bone (15% overall; Table 7) from any of the Iron Age settlements investigated on the island to date. Admittedly, these are subtle differences of only a few percentage points within these categories, but it may be in this that status alone was otherwise expressed. This could, equally, relate to the function of these sites. Whereas the West Fen Road (north) and Hurst Lane 'horseshoe' enclosures might rank as 'de-

fended farmsteads', only the ringwork at Wardy Hill could be counted as a 'fort' (albeit of minor proportions). If so, it may well be telling that, aside from the very limited investigations at Walsingham House and St John's Road (i.e. potentially 'incomplete' site-wide representation), only at Wardy Hill was there no kind of continuity into Roman times: there was some manner of 'visitation' or usage, but not continuity of settlement as such.

Over the last 15 years, our picture of the Iron Age communities of the southern Fenlands has become increasingly nuanced and, appropriately, more fragmented. Clearly it was not a matter of shared environmental factors resulting in a uniform cultural tradition. Rather, the picture seems increasingly one of a social mosaic involving diverse burial practices, and metalwork-using and ceramic traditions. With Ely falling just beyond the borders of the Aylesford-Swarling Late Iron Age 'core zone' (and betwixt traditional 'tribal' spheres), simple development models and standard measures of social hierarchy or settlement status surely cannot be mechanically applied to its archaeology.

Acknowledgements

That anything at all was achieved for the Hurst Lane Reservoir Site was entirely the result of inspired co-operation between its diverse partners – T. Goodge (Littleport Drainage Board), S. Kaner (Cambridgeshire County Council) and T. Williams (English Heritage) – and also of the sterling efforts of the much-pressed site staff of the CAU. Latterly, the perseverance of Kath Buxton of English Heritage has also been instrumental in the fruition of this report. The fieldwork at Trinity Lands was sponsored by Ashwell Developments Ltd, and we are grateful for the support throughout of P. Thwaites and T. Bluff.

We are particularly grateful to those specialists whose contributions are only summarised herein: R. Ballantyne, C. Conneller and C.A.I. French. The paper's illustrations reflect the skills of A. Hall and M. Brudenell. R. Mortimer, A. Mudd and S. Lucy are to be thanked for the provision of data relating to their sites, as is also D. Hall for matters relating to Ely's distributions in general. Professor C. Haselgrove's comments on the potin were much appreciated and S. Bryant, R. Havis and I. Thompson variously provided information and comment. Finally, what framing there has been of Ely's sequences has greatly benefited from the long thrashing out of issues with J. D. Hill and Gavin Lucas.

The Cambridge Antiquarian Society is grateful to English Heritage for a grant towards the cost of publishing this paper.

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Endnotes

1 The artefact densities within Compound A's perimeter – mean of 19 pieces of bone and 11.5 sherds per metre segment – is relatively low compared with the inner circuit of the Wardy Hill ringwork, having respectively 40% and 71% less pottery and bone (see Evans 2003a, pp. 212–14, table 60).

2 This study was written prior to the issuing of the report by Hertfordshire Archaeological Trust (now Archaeological Solutions) on the site they excavated in 2003 at Haddenham village on the south-western side of island (Fig. 1.10; Grassam 2005; Phillips & Grassam 2006). This involved the excavation of a second- to fourth-century AD Roman settlement, apparently without any Iron Age predecessor. It would, however, appear that only a small portion of a much larger settlement complex was excavated and so this cannot be known with certainty.

3 Only seven coins are known from the island (as listed in the Celtic Coin index). They are, indeed, a mixed group and consist of three Iceni issues, two Atrebates and single occurrences of Corieltauvi and Trinovantes/Catuvellauni issues. In addition, Hall (1996, p. 68) cites the earlier recovery of an Iron Age coin from Haddenham.

4 As indicated in Table 8, the frequency of wheel-made pottery at Hurst Lane (15%) would be in keeping with its occurrence in other assemblages within the region, with only Wardy Hill having a higher percentage on the Isle of Ely (23.5%; see Hill & Horne in Evans 2003a). Despite extensive efforts, it has proven impossible to obtain comparative percentage-based figures for later Iron Age assemblages within the Aylesford-Swarling core-zone.

5 The votive deposition of later Bronze Age metalwork in wet deposits might, therefore, have occurred in a context of seasonal gatherings; the meeting of diverse groups in 'off-site' circumstances could itself have promoted the performance of 'display rituals'.

Prehistoric, Roman and Saxon activity on the Fen hinterland at Parnwell, Peterborough

Leo Webley

with contributions by Paul Booth, Dana Challinor, Sharon Clough, Kate Cramp, John Crowther, Denise Druce, Emily Edwards, Emma-Jayne Evans, Hugo Lamdin-Whymark, Richard Macphail, Diana Mahoney, Rebecca Nicholson, Sylvia Peglar, Cynthia Poole, Kristopher Poole, Ruth Shaffrey, Alex Smith and Dan Stansbie; illustrations by Helen Crossman, Sarah Lucas, Julia Moxham and Magda Wachnik

In the winter of 2004–5, Oxford Archaeology carried out an excavation and watching brief on a 12.2-hectare site at Parnwell, Peterborough. This provided a rare opportunity to investigate an extensive area of the clay hinterland adjacent to the gravel terraces surrounding Flag Fen. The earliest occupation took the form of a cluster of Early Neolithic pits. Subsequent activity in the Early Bronze Age was represented by a looser scatter of pits, which contained Collared and Biconical Urn pottery. A small area of later Iron Age settlement was found at the southern edge of the site, with occupation probably continuing without a break into the Roman period, when a more substantial enclosed settlement was established. Features associated with the Romano-British settlement included a corn-drier, which had been used for roasting malt. The settlement lay within an extensive field system, which also contained a small cremation cemetery. Pollen evidence suggests that there was some regeneration of scrub or woodland following the abandonment of the settlement in the third century AD. Anglo-Saxon features consisted of 57 pits with burnt fills scattered across the site, radiocarbon dated to the seventh to ninth centuries cal AD. These were probably associated with charcoal production, with no evidence of contemporary settlement in the immediate area. Cropmarks indicating ridge-and-furrow cultivation show that the site was cleared and put under arable use at some point in the medieval or early post-medieval periods.

The gravel terraces surrounding Flag Fen form one of the most important archaeological landscapes in southern Britain. A series of excavations on the western edge of the Flag Fen basin, in the Fengate area of Peterborough, has produced extensive evidence for the development of the prehistoric and Romano-British landscape. Sites investigated have included Neolithic and Bronze Age ritual monuments, Bronze Age field systems and Iron Age and Romano-British settlements (Pryor 1974, 1978, 1980, 1984, 1993, 2001). In contrast, much less fieldwork has taken place on the higher ground adjacent to the gravel terraces. In this context, excavations by Oxford Archaeology (OA) at a site at Parnwell, Peterborough, are of particular interest as they provided a rare opportunity to investigate an extensive area of the clay 'hinterland' adjacent to the fen-edge gravels. Extensive multi-period remains were uncovered, including Early Neolithic, Early Bronze Age and later Iron Age occupation, a Romano-British settlement and field system, and evidence for probable charcoal production in the Anglo-Saxon period. This paper will explore the significance of the 'hinterland' evidence from Parnwell to our understanding of long-term landscape development around the Flag Fen basin. The key issue to be addressed is the relationship between the use of the fen-edge terraces and the adjacent higher ground, and how this changed through time. A longer version of this report, containing more details of the stratigraphic sequence, artefacts and environmental evidence from the site, will be published on the OA website (www.thehumanjourney.net).

The site: location, topography and archaeological background

The excavations at Parnwell were carried out between December 2004 and April 2005, for CgMs Consulting on behalf of Raven Group Developments Ltd, in advance of warehouse construction. The 12.2-hectare site is located at the north-eastern edge of the city of Peterborough, on land immediately to the east of Parnwell Way (centred on TF 220 011: Fig. 1). It is situated on a low rise, lying slightly above Flag Fen to the south. From the centre of the site, which lies at 6.6 metres OD, the ground slopes down gently in all directions to a minimum of 4.0 metres OD (Fig. 2). The superficial geology consists mainly of Oxford Clay, although this is overlain by second terrace gravel at the south-eastern edge of the site. Prior to excavation the site was under arable cultivation.

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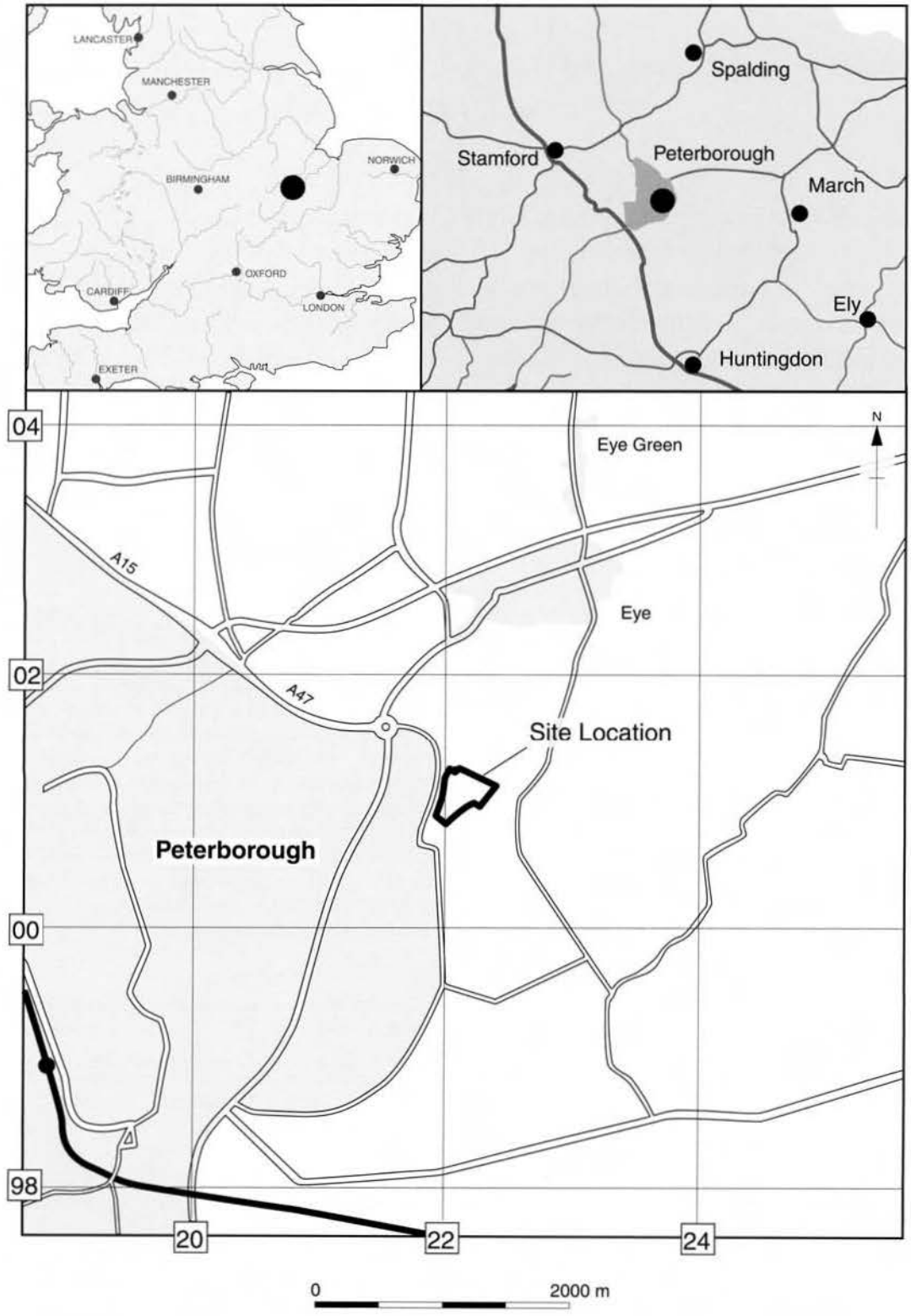

Figure 1. Site location.

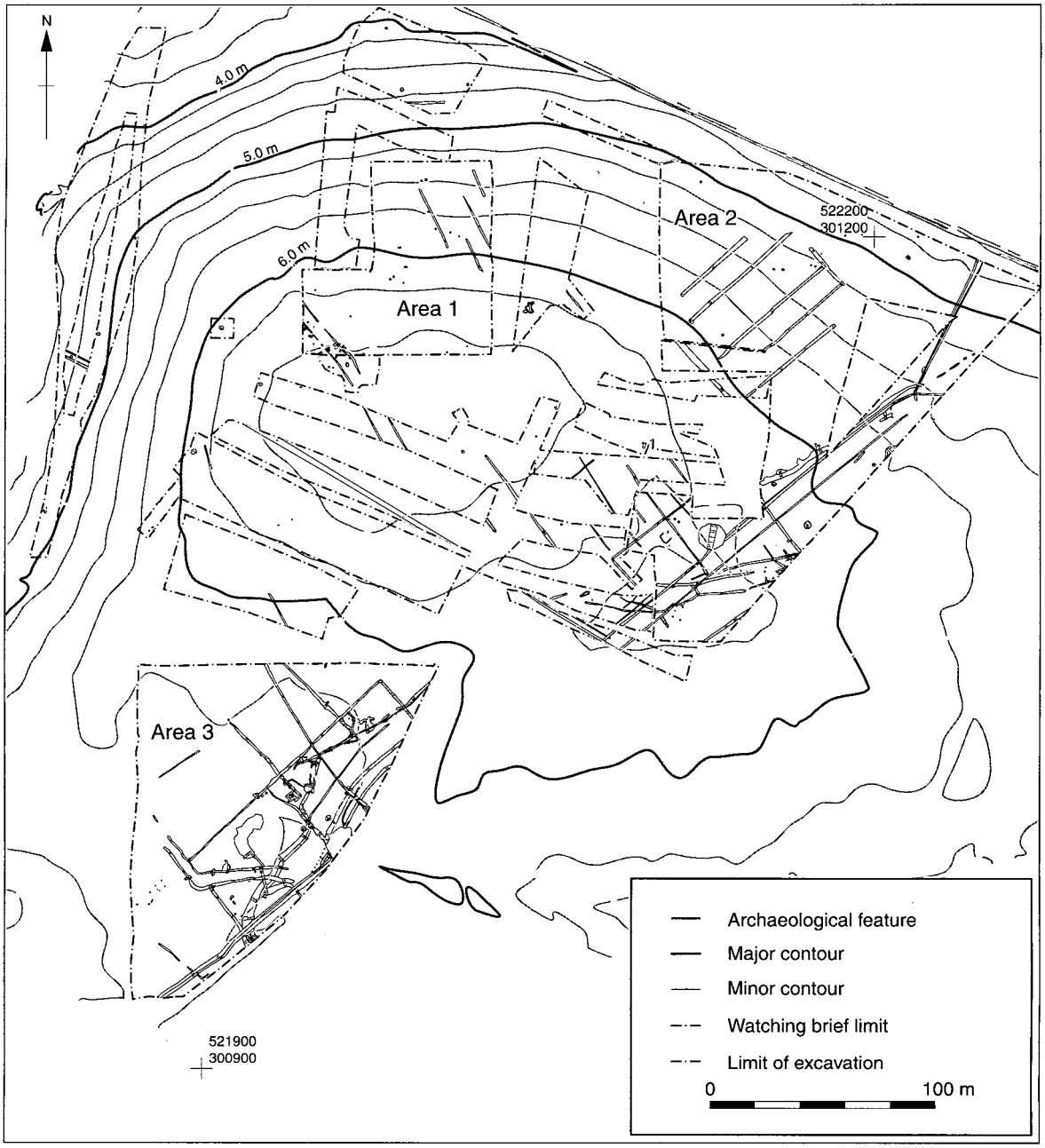

Figure 2. Plan of all features.

The environmental history of the local area has seen intensive study (eg Waller 1994), showing that the edge of Flag Fen advanced closer to the site over time. Thus it lay at least 2.5 kilometres to the south-west during the Neolithic period, but had reached to within 500 metres of the site by the later Iron Age (Hall 1987, figs 42–4). It is thought that a narrow fen inlet only about 150 metres from the northern edge of the site then developed during the Romano-British period, which persisted until the drainage works of recent centuries (Hall 1987, figs 45–6).

The site lies 2.5 kilometres to the north of the renowned excavations in the Fengate area referred to above. In addition, a number of developer-funded excavations have recently taken place further to the north along the gravel terrace, within one kilometre of the site. At Oxney Road, 500 metres to the south-east, Bronze Age ditches and pits have been uncovered (Britchfield 2002). At Edgerley Drain Road, 800 metres to the south, Neolithic and Bronze Age pits and a Middle Bronze Age field system have been found (Beadsmoore 2005). Successive field systems from the Bronze Age and Late Iron Age/Romano-British period have been found at the Broadlands, 800 metres to the south-south-west (Vaughn & Last 1999; Hounsell 2002; Wotherspoon 2003). There has been less work in the areas immediately to the west and north-west of the site, although a small Romano-

British settlement has been excavated at Paston, 3 kilometres to the north-west (Coates, Hancock & Ellis 2001). The Roman canal or drainage work known as the Car Dyke passes 700 metres to the west (RCHM 1969, pp. 40–3).

The archaeological background of the site itself has been examined in an unpublished 'desk-based assessment' (CgMs 2004). This showed that cropmarks of ridge-and-furrow cultivation cover the site (Cambridgeshire Sites and Monuments Record, now the Historic Environment Record HER 03022), masking any evidence of pre-medieval activity. However, cropmarks suggestive of later prehistoric or Romano-British settlement could be identified directly adjacent to the southern edge of the site. Further evidence for Romano-British activity in the vicinity of the site was provided by eight copper alloy coins or coin fragments found by a metal detectorist in an area centred around TF 2199 0095 (HER 51244). The coins included a pierced sestertius of Marcus Aurelius (AD 161–80), two probable late third-century radiates, and a pierced coin of Constantine I (AD 306–36).

Evaluation trenching was carried out on the site in 2004 by the Cambridge Archaeological Unit (CAU). Although a residual Early Neolithic leaf-shaped arrowhead was found, the earliest features encountered were pits and gullies grouped along the south-eastern edge of the site, containing worked flint and undiagnostic sherds of prehistoric pottery. A concentration of Romano-British settlement features was uncovered in the southern part of the site, producing pottery of the second to third centuries AD. Features were much sparser in the central and northern parts of the site, although some linear ditches were encountered, and were interpreted as part of a Romano-British field system fanning out from the settlement (Williams & Webley 2004). A second evaluation by the CAU in the field immediately to the south of the site has shown that the Romano-British settlement continued in this direction, which corresponds with the evidence from cropmarks. Ceramics again dated the site to the second to third centuries AD, although two Middle to Late Iron Age pits were also found (Williams 2004).

Excavation methodology

Based on the results of the evaluation fieldwork, three discrete areas totalling 5.14 hectares were targeted for excavation (Areas 1–3: Fig. 2). The topsoil overburden, which had a depth of 0.45–0.60 metres, was machine-stripped under archaeological supervision. Discrete features were half-sectioned (and some completely excavated), while a minimum of 10% of all linear ditches and gullies were excavated. The features within Area 3 were subjected to survey by a metal detector, although this only produced finds from post-medieval contexts. A watching brief was simultaneously maintained over most of the remainder of the development area.

Site sequence

Archaeological features were exposed across most of the site, although these had clearly suffered from significant truncation by medieval and post-medieval agriculture.

Phase 1: Early Neolithic

The Early Neolithic occupation consisted of a discrete group of 11 pits at the south-eastern edge of Area 2, extending over an area of 35 metres by 12 metres (Fig. 3). It is likely that these features form part of a larger area of occupation continuing beyond the limit of excavation. Finds associated with the pits included worked flint and pottery in the decorated bowl tradition ('Mildenhall Ware').

By far the largest of these features was pit 2289, which produced a substantial finds assemblage (Table 1). The first three fills of the pit appear likely to have been deposited largely through natural processes of silting and erosion, and contained few finds. The pit was then back-filled with a series of dumped deposits, which contained pottery, animal bone and worked flint; environmental samples produced moderate amounts of charcoal, charred cereals and hazelnut shell. Micromorphological analysis by John Crowther and Richard Macphail has identified hearth debris and possible butchery waste, and suggests that these fills were deposited fairly rapidly, with no

*Table 1. Early Neolithic pits. * = Pit group 2315.*

Feature	Diameter (m)	Depth (m)	% Excavated	Pottery (g)	Worked flint (no.)	Animal bone (g)
2289	3.25	1.18	100	1517	105	3587
2365	0.52	0.10	50	15	-	-
2374	1.18	0.40	50	8	-	-
2399	0.90	0.35	50	19	5	-
2283*	0.71	0.16	100	20	26	2
2285*	1.06	0.20	100	95	3	11
2287*	0.74	0.18	100	31	9	4
2303*	1.00	0.11	100	17	-	-
2305*	0.86	0.12	100	-	-	-
2307*	0.60	0.19	100	-	3	-
2309*	0.76	0.14	100	-	-	-

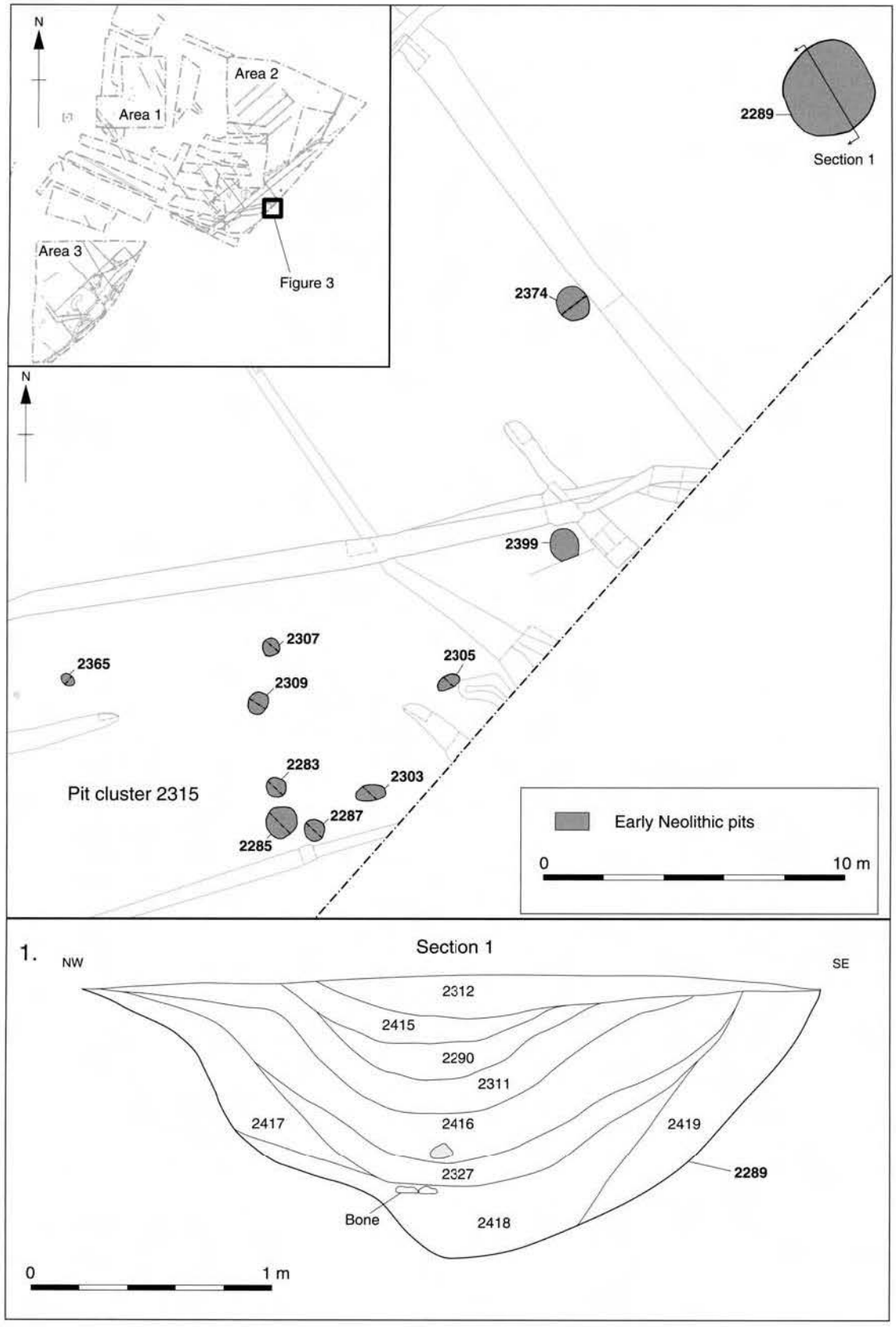

Figure 3. *Early Neolithic pit group.*

significant hiatuses between them (see web report for full data). This latter point is supported by the presence of pottery refits between some of the upper layers. Radiocarbon determinations on charred hazelnut shell from middle layer 2311 and lower layer 2418 produced almost identical date ranges of 3635–3375 cal BC (NZA 24077: 4736 ± 35 BP) and 3632–3375 cal BC (NZA 24076: 4728 ± 30 BP) respectively (Table 2).

Lying to the south-west of pit 2289 was a V-shaped arrangement of seven smaller pits (pit cluster 2315), which had each been back-filled with a single charcoal-rich deposit, sometimes containing pottery and worked flint. Three further pits (2365, 2374 and 2399) with paler back-fill deposits lay to the north and west. A small quantity of residual Early Neolithic pottery and worked flint was also recovered from Area 3, perhaps deriving from features obliterated by the Romano-British settlement.

Phase 2: Early Bronze Age

Early Bronze Age activity took the form of a group of six irregular pits and hollows, dispersed across the high ground in the north-western part of the site (Fig. 4). These produced modest quantities of worked flint and pottery in the Collared Urn and Biconical Urn traditions. The largest of these features was a shallow hollow or possible tree-throw hole, 1086, measuring 4.4 metres across and 0.20 metres deep. A radiocarbon determination on charcoal from the upper fill of this feature produced a date range of 2009–1776 cal BC (NZA 24073: 3558 ± 30 BP).

Phase 3: Middle to Late Iron Age

Three features clustered together at the south-western edge of Area 3 were associated with handmade Scored Ware pottery, and can thus be dated to the Middle to Late Iron Age (Fig. 5). These consisted of a shallow, concave pit (3218), and two short gullies (3221 and 3223), which might have formed part of a single feature, conceivably the southern side of a truncated eaves-gully to a roundhouse. Small quantities of pottery and animal bone were the only finds recovered.

A four-post structure, 3294 (3.0 metres x 3.5 metres), was located immediately to the north-east of these features, but produced no finds. A short distance to the south, ditch 3985 contained a single sherd of grog-tempered Late Iron Age pottery. It could thus either be contemporary with, or slightly later than, the features to its north.

Further evidence for activity in this period is provided by a few sherds of residual Middle and Late Iron Age pottery recovered from Romano-British features in Area 3. It is in fact possible that the earliest phase of the Romano-British settlement enclosure had a pre-Conquest origin; this issue will be discussed below.

Phase 4: Romano-British period

Romano-British features extended across most of the excavated area (Fig. 6), with a concentration of activity in Area 3 where an enclosed settlement was partially uncovered. Cropmark evidence shows the continuation of the settlement beyond the limits of excavation to the south-east (Fig. 7). A field system extended across the areas to the north and north-east of the settlement. A small cremation cemetery was located within this field system. There might also have been a second, subsidiary area of occupation to the north of the settlement in Area 1, represented by a trackway (III) and a group of pits. Dating evidence from both the settlement features and the cemetery indicates that the main period of activity was in the second and early third centuries AD.

Settlement Enclosure A

Stratigraphic evidence indicates that the settlement enclosure underwent two distinct phases with differing layouts (Figs 8–9). The earlier Enclosure A was curvilinear in form, and defined by ditches up to 1.00 metre deep (Fig. 8). The internal area was divided into sub-compounds by ditches 3719 and 3854. The only artefacts recovered consisted of small amounts of pottery and fired clay, most of which came from the middle and upper fills. This pottery largely dates to the second century AD, although the absence of

Table 2. *Radiocarbon determinations.*

Lab no.	Context	Radiocarbon age BP	$\delta^{13}C$ (‰)	Material	Context type	Calibrated date range (68% confidence)	Calibrated date range (95% confidence)
NZA 24073	1084	3558 ± 30	-26.6	Charcoal (Betulaceae)	Upper fill of Phase 2 hollow 1086	1941–1882 cal BC	2009–2000 cal BC/ 1974–1870 cal BC/ 1844–1812 cal BC/ 1801–1776 cal BC
NZA 24074	1028	1220 ± 30	-27.1	Charcoal (non-*Quercus*)	Sole fill of Phase 5 pit 1027	cal AD 726–737/ cal AD 771–874	cal AD 689–890
NZA 24075	2010	1288 ± 30	-25.6	Charcoal (non-*Quercus*)	Upper fill of Phase 5 pit 2008	cal AD 672–724/ cal AD 739–771	cal AD 661–778
NZA 24076	2418	4728 ± 30	-24.3	Charred hazelnut shell	Second fill of nine, Phase 1 pit 2289	3627–3582 cal BC/ 3530–3509 cal BC/ 3423–3381 cal BC	3632–3494 cal BC/ 3457–3375 cal BC
NZA 24077	2311	4736 ± 35	-24.1	Charred hazelnut shell	Sixth fill of nine, Phase 1 pit 2289	3629–3562 cal BC/ 3534–3511 cal BC/ 3420–3382 cal BC	3635–3494 cal BC/ 3458–3375 cal BC

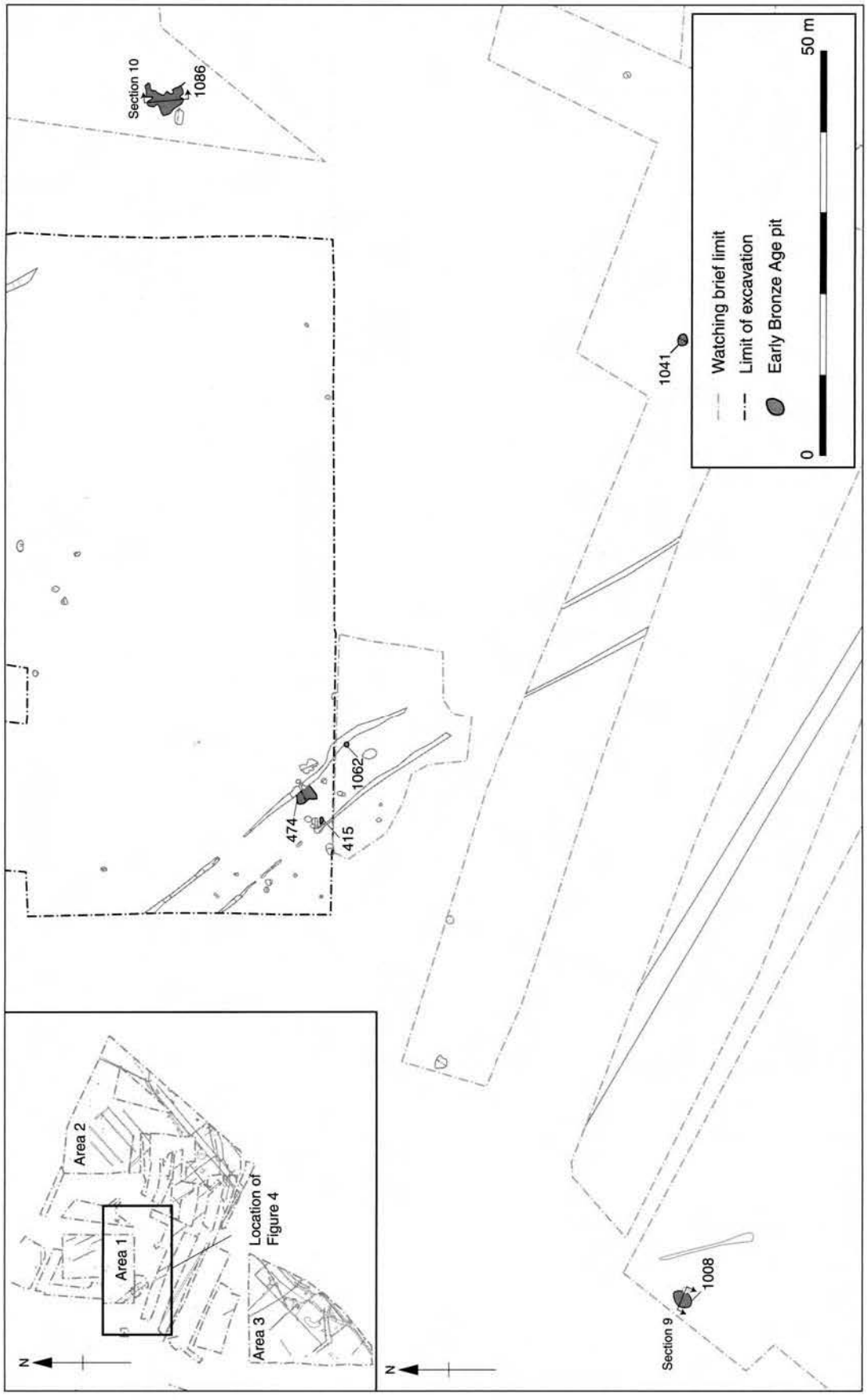

Figure 4. Early Bronze Age pit group.

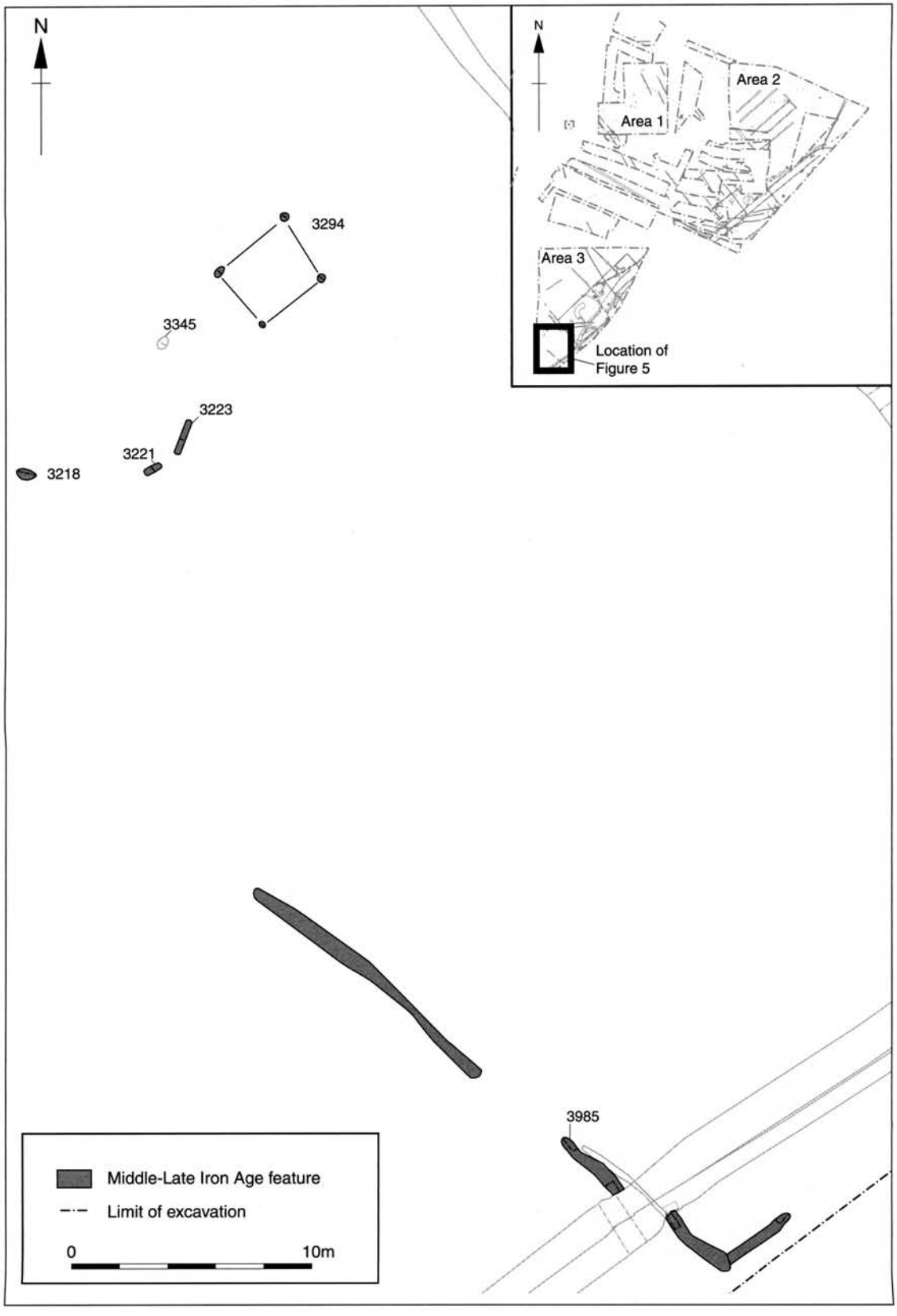

Figure 5. *Middle–Late Iron Age features.*

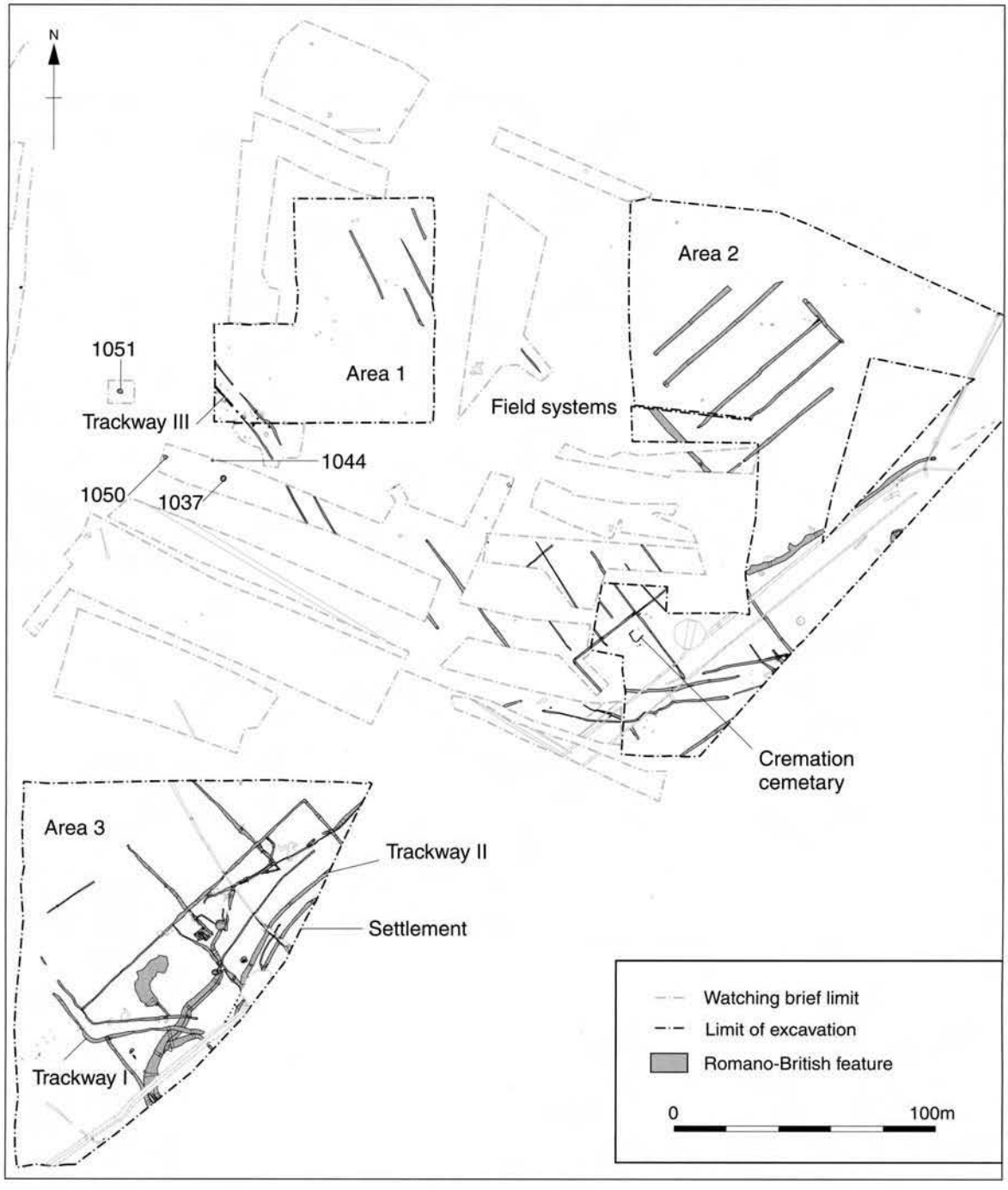

Figure 6. *Romano-British features.*

closely datable finds from the lower fills of the enclosure ditches means that a pre-Conquest origin for the enclosure system remains possible.

Significant amounts of animal bone were recovered from ditches in Enclosure A, particularly at the western end of the enclosure circuit. In addition, adult human cranium fragments were recovered from the upper fill of ditch 3854. These might derive from an inhumation burial placed within the ditch and later disturbed, as fragments of adult human pelvis and ulna were found in pit 3897, which cut this section of the ditch. No other features can be demonstrated to have been contemporary with Enclosure A.

Settlement Enclosure B

Enclosure A was subsequently overlain by Enclosure B (Fig. 9), which formed a rectangle, measuring 120 metres long north-east to south-west by at least 45 metres wide from north-west to south-east (ditches 3170 and 3713, up to 0.64 metres deep). The south-eastwards continuation of this enclosure is clearly visible in the cropmark plot (Fig. 7). Access to the

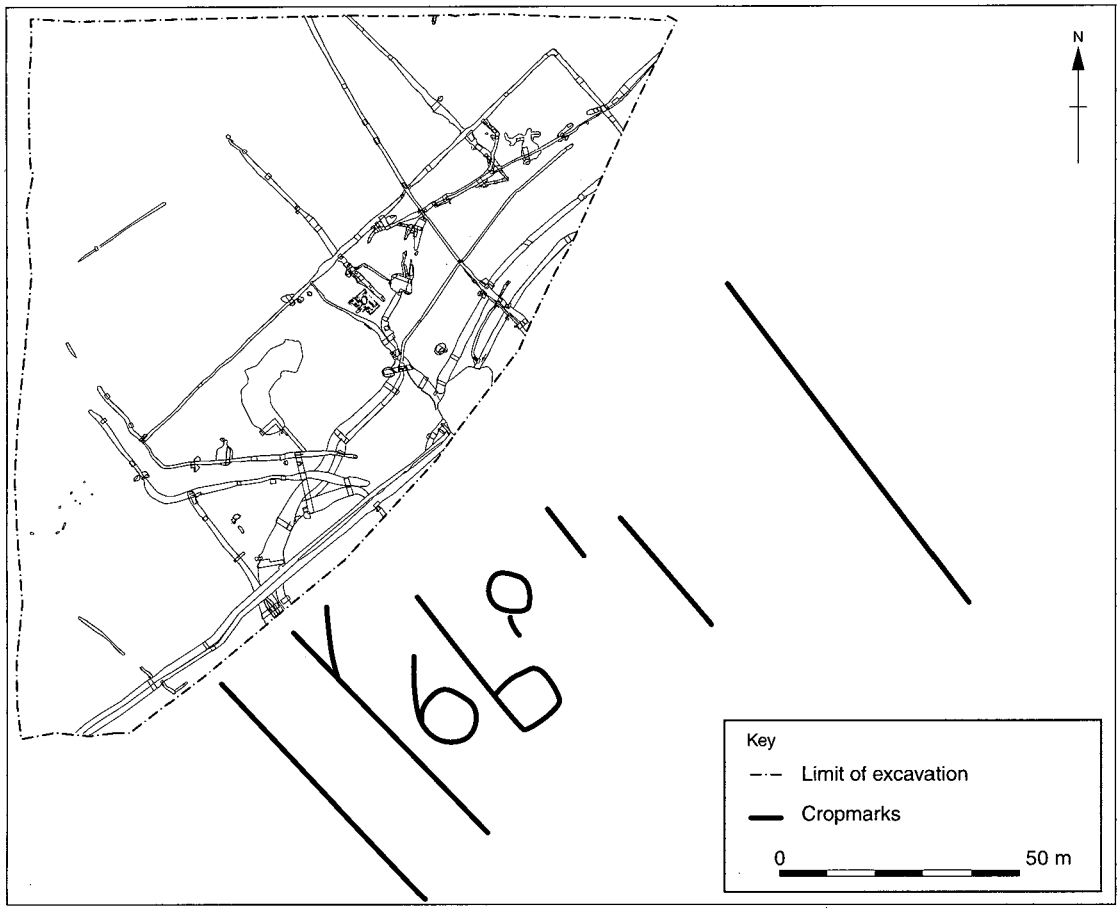

Figure 7. Romano-British settlement: cropmark evidence.

interior of the enclosure was provided by a pair of double-ditched trackways (I and II). Further ditches served to sub-divide the enclosure into a series of irregularly-shaped compounds. Features within the enclosure included a corn-drier (3548; see below), two inhumation burials (3412 and 3523; see below), a large waterhole (3716) and a few shallow pits.

Finds from Enclosure B and its associated features included pottery of the second and (to a lesser extent) third centuries AD, animal bone, a few pieces of brick and tile, and an iron ladle. Two ditches within the enclosure contained possible 'placed' or 'ritual' deposits. The southern terminus of ditch 3852 contained a complete jar-beaker placed at its base, while the upper fill of the southern end of ditch 3710 contained a partial dog skeleton.

Corn-drier

Corn-drier 3548 was a substantial structure, with sunken stone-lined flues (Fig. 10). Although the corn-drier had suffered from later truncation, its overall layout is clear. The two flues (I and II) were placed at right angles to each other, sharing a common stoking area at the southern end of the structure. Both flues had walls made from rough limestone slabs, laid flat in some parts of the structure and pitched in herring-bone fashion in others. Flue I was also paved with limestone slabs laid flat. The area where the two flues met was heavily scorched, demonstrating that this was the fireplace of the structure. Adjacent to the fireplace was a concave pit (3539), 0.20 metres deep, with an ashy fill. This could represent the truncated base of a stoking pit, although it was eccentrically placed in relation to Flue I. Samples taken from Flue I and the possible stoking pit were both rich in sprouted wheat, demonstrating that the structure was used for roasting malt.

Dating evidence from the corn-drier was limited to a few pottery sherds from the fill of Flue I, broadly datable to the late second to fourth centuries AD. However, the structure was almost certainly contemporary with Enclosure B, on the grounds of its alignment and the fact that large amounts of charred sprouted wheat grain had been dumped into the terminus of adjacent ditch 3852. This grain layer contained a small amount of mid-second-century pottery, providing some indirect dating evidence for the use of the corn-drier. After the corn-drier had gone out of use, part of Flue I was truncated by a large, irregular pit (3530).

Inhumation burials

The two inhumation graves (3412 and 3523) were located close together at the western edge of the

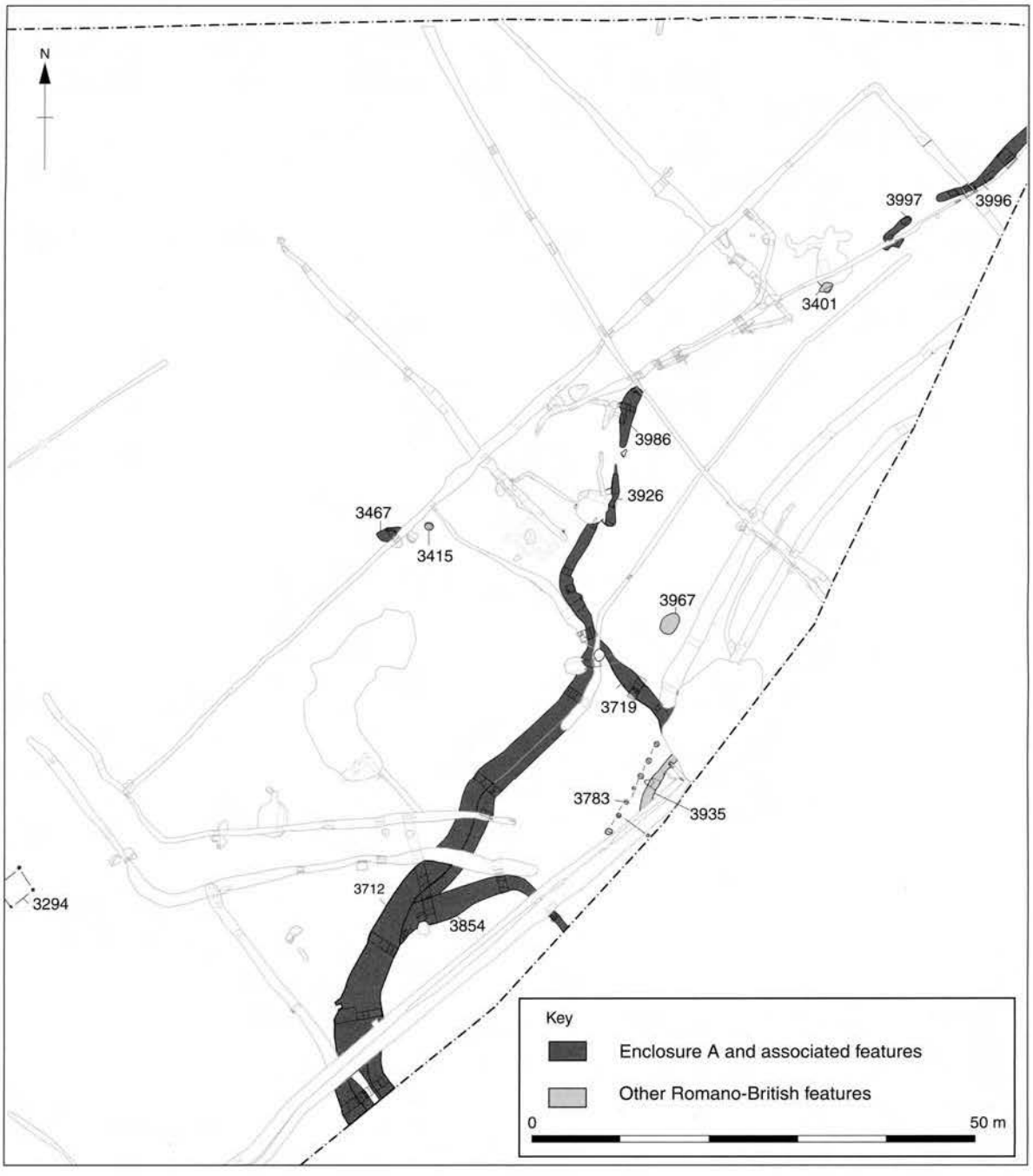

Figure 8. *Enclosure A and associated features.*

settlement (Fig. 9). Although the burials cannot be closely dated, their placing alongside and aligned with ditch 3713 suggests that they were interred while Enclosure B was in use, or was at least still visible as an earthwork. Both of the individuals were adults of undetermined sex, placed in a supine position. Burial 3523 can be more precisely aged to 26–40 years, and showed evidence for dental enamel hypoplasia, suggesting poor nutrition or disease during childhood (see web report for full osteological data). A few sherds of generic Roman pottery were recovered from both burials, although these were probably incidental inclusions rather than the remains of grave goods. A sample taken from grave 3412 produced an unusual charred plant assemblage, including rose charcoal and possible ears of wheat.

Structure 3783

Post-built structure 3783 was located within the area of the Romano-British settlement, although the absence of associated finds means that its dating is uncertain. The layout of the structure had been confused by later truncation. The main surviving element was a row of seven postholes, 11.5 metres long, on a north-east to

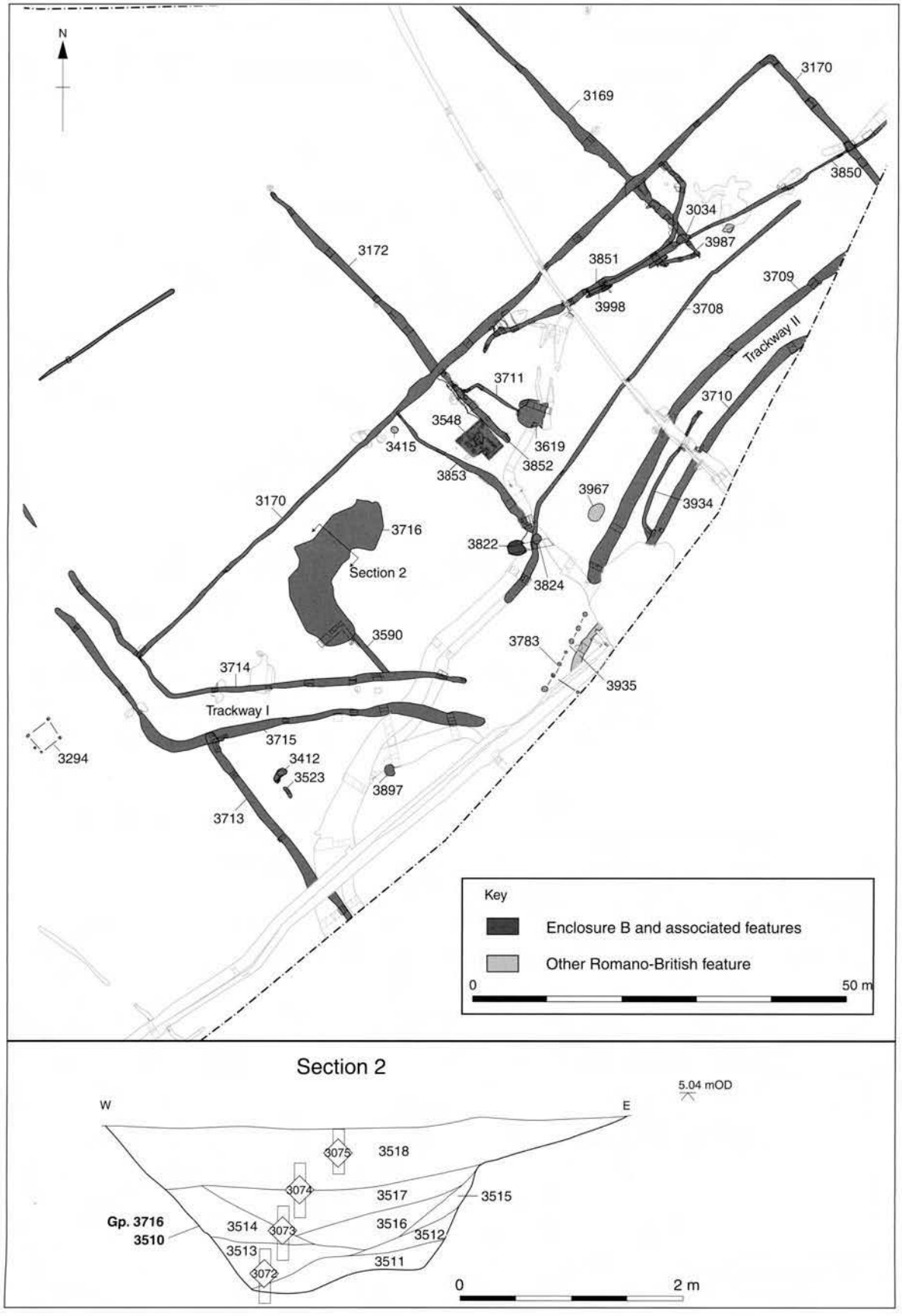

Figure 9. *Enclosure B and associated features.*

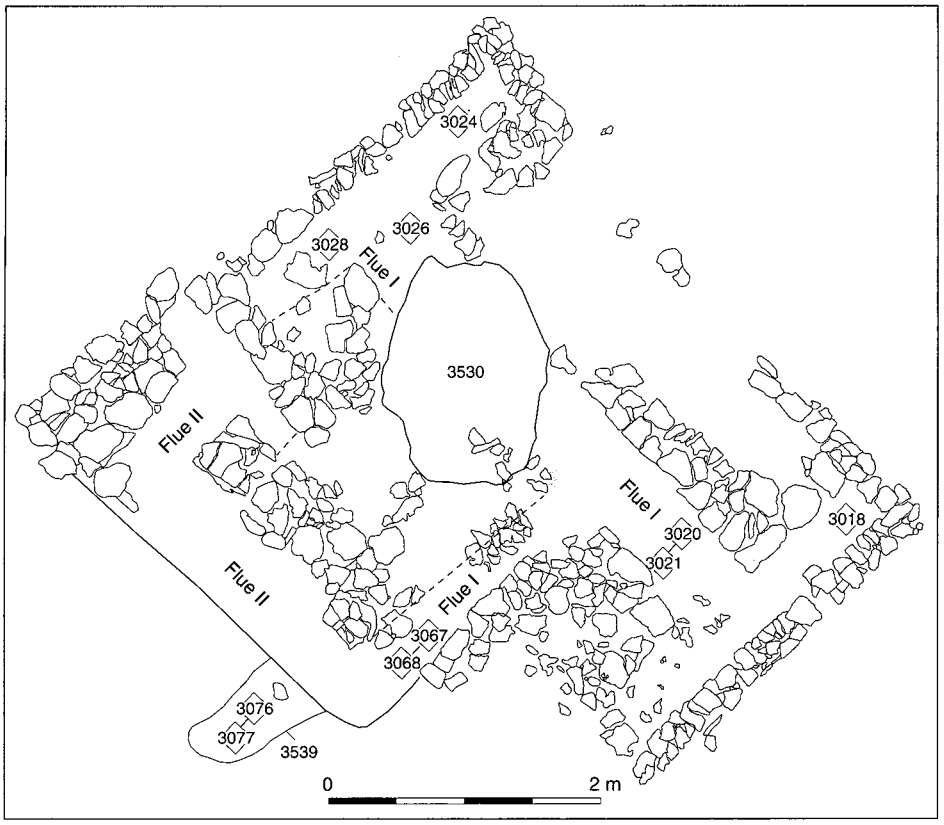

Figure 10. *Corn-drier 3548, showing location of environmental samples.*

south-west alignment. A single further posthole to the south-east might have been all that survived of a second parallel row of posts. This could suggest that the structure was a small, aisled building with a nave width of 4.0 metres.

Trackway III and the northern occupation area

To the north of the main settlement area, Trackway III crossed the highest part of the site on a north-west to south-east alignment, and could be traced for a distance of 85 metres (Fig. 6). A dispersed group of four pits (1037, 1044, 1050 and 1051) was uncovered in the watching brief area to the south-west of the trackway, which produced significant amounts of pottery, dating mainly to the second century AD. A copper alloy hairpin was also recovered from pit 1051.

Field system

The ditches extending across the northern and north-eastern parts of the site can be divided into two groups (Fig. 6). In the southern part of Area 2, there were roughly parallel, sinuous ditches on an east-west alignment, which on the grounds of morphology and orientation might be associated with the curvilinear Enclosure A to the south-west (see above). To the north of these features lay an extensive rectilinear system of boundary ditches on an identical alignment to Enclosure B. This strongly suggests that these ditches were contemporary with those to the south, although there were no stratigraphic relationships present to prove that the rectilinear field system was later than the curvilinear ditches to the south, and the small quantities of pottery that were recovered cannot be dated precisely enough to resolve this issue.

While the overall plan of the rectilinear field system is somewhat fragmentary, it is clear that rather than enclosing large fields, the ditches often demarcated relatively narrow 'strips' of standardised width. Within Area 1 and the southern part of Area 2 these strips were about eight metres wide and followed a north-west to south-east alignment. In the northern part of Area 2, meanwhile, there was a discrete rectangular block of strips on a north-east to south-west alignment, each about 70 metres long and 11 metres wide.

Cremation cemetery

The cremation cemetery was located within the rectilinear field system in Area 2, 135 metres to the north-east of the main settlement area (Fig. 11). A cluster of three burials was found (2037, 2041 and 2046); details of the osteological analysis of the human remains can be found in the web report.

Burial 2037 was contained within a shell-tempered jar, buried in a pit just large enough to accommodate the vessel. The remains have been identified as a female aged between 40 and 50 years. A rib fragment showed evidence for pulmonary or respiratory disease, while a vertebra showed signs of mild degenerative joint disease. Pyre goods found amongst the ashes consisted of domestic fowl bone, 79 hobnails and tiny fragments of colourless glass. An iron nail was recovered from the fill surrounding the vessel.

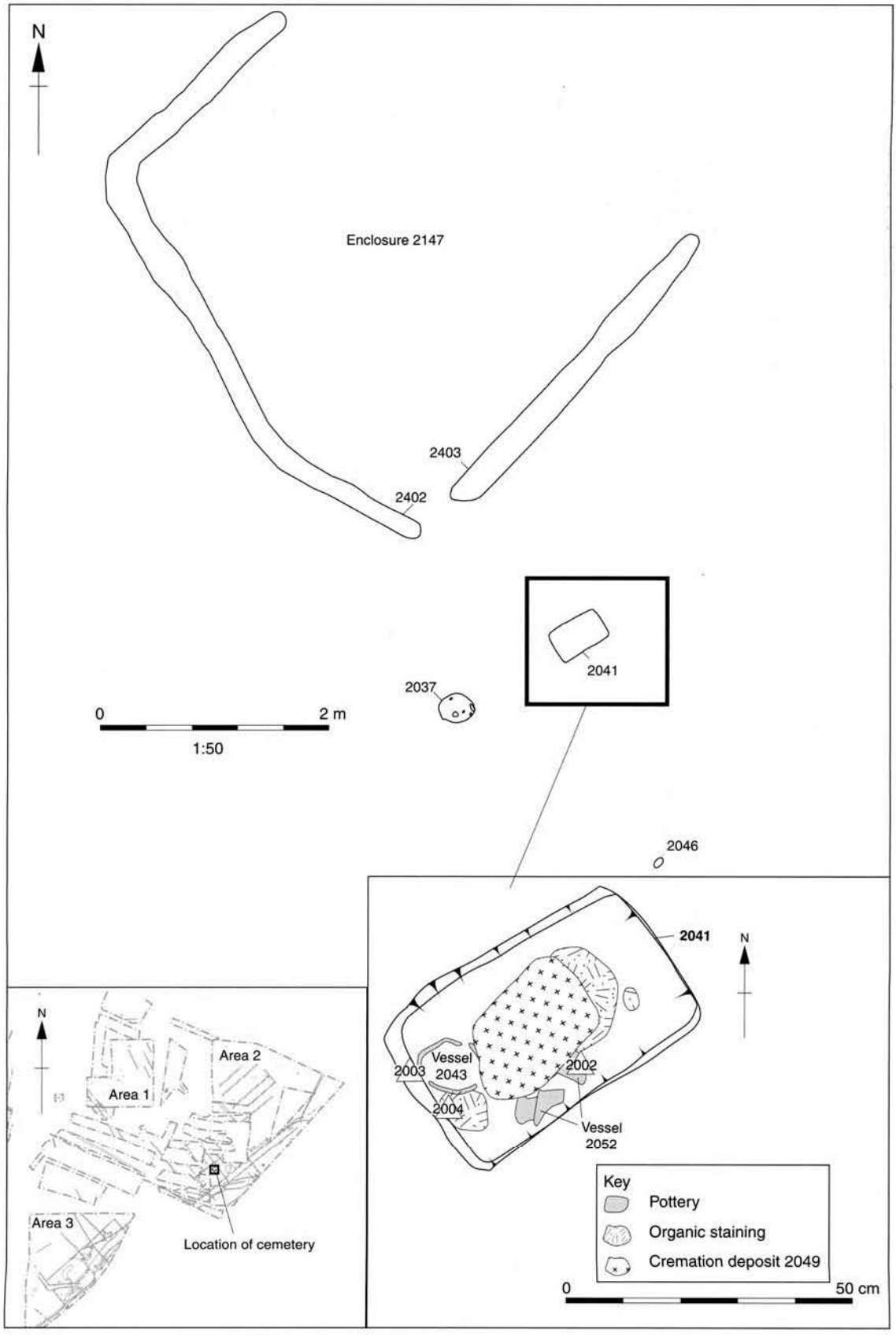

Figure 11. *Romano-British cremation cemetery.*

Burial 2041 had been interred within a rectangular grave cut, measuring 0.50 metres north-east to south-west by 0.30 metres north-west to south-east. The remains, which belonged to a mature or ageing individual of undetermined sex, were spread across the centre of the grave, overlain by an inverted grey ware bowl and a copper alloy coin. Further grave goods lay at the southern end of the grave, comprising a second pot, a copper alloy trumpet brooch, and an iron nail. Patches of dark staining at the base of the grave may suggest that the burial had been enclosed within an organic container such as a wooden casket. The burial can be attributed to around the mid-second century AD (coin: AD 145–175; brooch: early-mid second century AD).

Burial 2046 was heavily truncated, with only the base of the urn surviving. Insufficient bone survived to determine the age or sex of the individual. Other burials in the area might have been entirely destroyed. A small square enclosure (2147) immediately to the north of the cremation group could perhaps have surrounded a burial that had been removed in this way. The shallow, truncated gully of this enclosure produced only a single sherd of undiagnostic pottery.

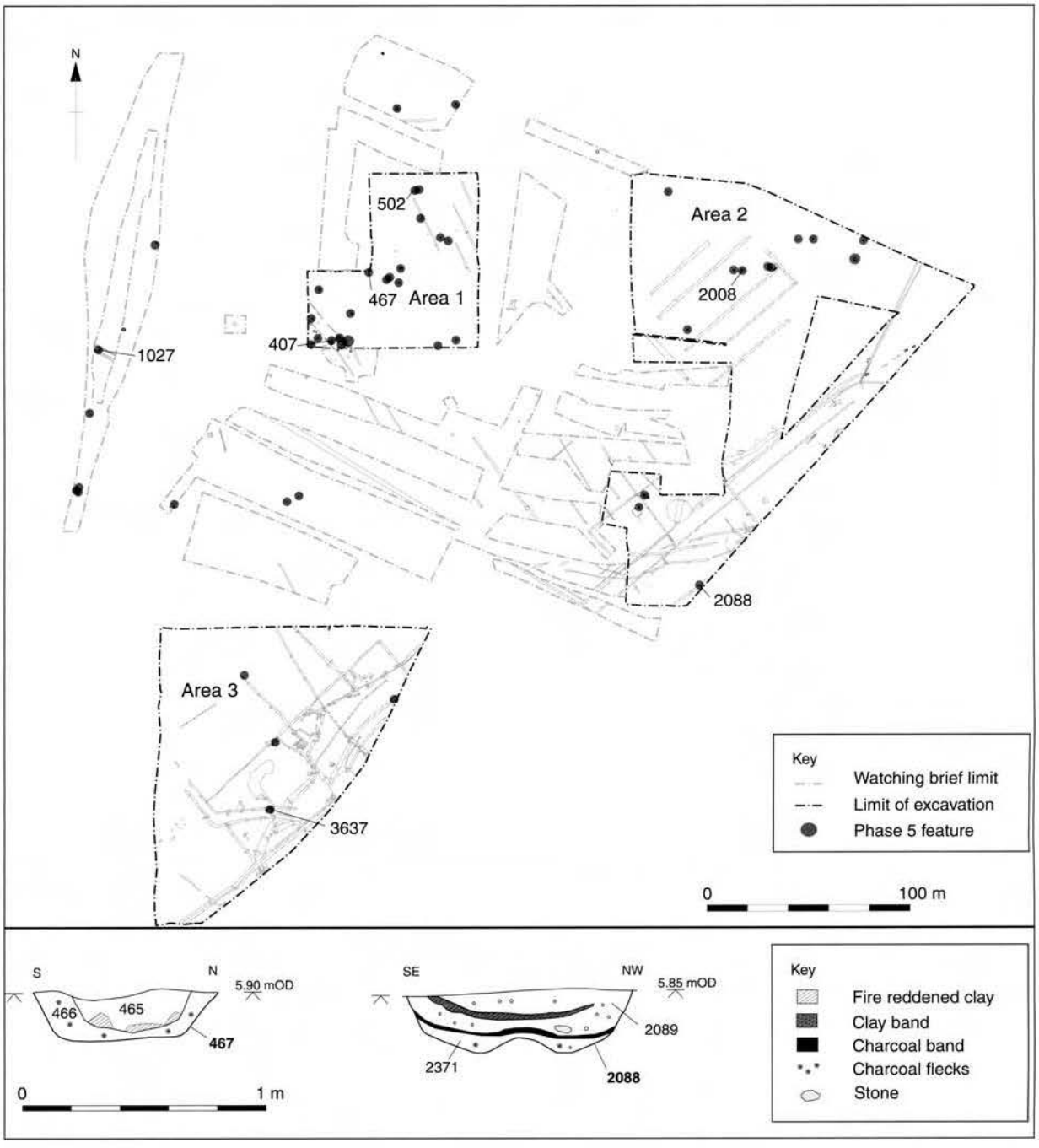

Figure 12. Middle Saxon pits.

Phase 5: Middle Saxon period
Anglo-Saxon activity was represented by 57 small pits with dark fills, rich in oak charcoal (Fig. 12). These were widely scattered across the whole site, though with a concentration in Area 1. Datable finds were absent, but it is notable that several of the pits cut Romano-British ditches, and might in fact have been placed so as to utilise these surviving earthworks. Radiocarbon determinations on charcoal from pits 1027 and 2008 produced date ranges of cal AD 689–890 (NZA 24074: 1220 ± 30 BP) and cal AD 661–778 (NZA 24075: 1288 ± 30BP) respectively.

Scorching of the pit base or sides could be seen in several cases. Charcoal from the pit fills was typically quite fragmented, although in some cases (e.g. pit 502) large pieces up to 40 millimetres long were recovered. Artefacts were largely limited to pieces of fired clay, most of which are likely to have formed in situ, although possible 'oven plate' fragments were recovered from pit 407 (identified by C Poole). While the function of these pits is uncertain, it is possible that they played a role in charcoal production (see Discussion below).

Phase 6: Medieval and post-medieval periods
No medieval finds were recovered, which is consistent with the evidence from cropmarks that the site was used for ridge-and-furrow cultivation. Post-medieval features included a trackway visible on the Peterborough enclosure map of 1821 (Peterborough Central Library), and field boundaries and ponds which first appear on the Ordnance Survey first edition map of 1889–91 and remained extant until recent years. Further details can be found in the web report.

Artefacts

Flint
Kate Cramp with Hugo Lamdin-Whymark
One hundred and ninety-seven struck flints and 216 pieces (141 grammes) of burnt unworked flint were recovered (Table 3). Most of the assemblage dated to the Early Neolithic period, and derived from the Phase 1 pit group at the south-eastern edge of the site. A small amount of flintwork was associated with the Early Bronze Age pit group. The remainder of the assemblage was thinly scattered across the site, mainly occurring as isolated residual finds in later contexts.

The raw material took the form of small pebbles, probably originating from a single source. Where present, cortical surfaces were usually abraded and discoloured, suggesting the exploitation of tertiary deposits, such as the fen-edge gravels. The flint was probably of a reasonable knapping quality, although the small size of the nodules appears to have directly influenced the size of the products, with very few flints exceeding 60 millimetres in length. Two polished axe flakes of Langdale stone were also recovered from pit 2289 (fill 2290).

Early Neolithic
The Early Neolithic flint assemblage represents an accomplished blade-based industry, involving careful preparation and removal using a soft percussor, such as an antler hammer. Platform edge abrasion was regularly used and is present in remnant form on the platform edges of numerous flakes. Cores were shaped and maintained by the removal of rejuvenation flakes, represented by three pieces. Blades, blade-like flakes and bladelets (31 pieces) account for 27.9% of all unretouched removals (excluding chips), a figure that falls securely within the range predicted for earlier Neolithic assemblages (Ford 1987, p. 79).

A single core, aimed at the production of narrow flakes from multiple platforms, was recovered from pit 2289 and illustrates the small cobble form of the raw material (Fig. 13.1). Elsewhere on site, cores were equally rare. The general paucity of cores and chips suggests that knapping was not one of the main activities undertaken on site.

The retouched component makes a significant contribution (23.3%) to the overall lithic assemblage and is dominated by serrated flakes (nine pieces) and simple edge-retouched flakes (five pieces), with lower numbers of piercing tools (Fig. 13.2) and scrapers (Fig. 13.3). Five of the serrated flakes exhibit silica gloss on the back of the teeth (Fig. 13.4), indicating the working of silica-rich plants, such as rushes or reeds, possibly for the production of fibres for textiles (Juel Jenson 1994, p. 62). Serrated flakes were well represented elsewhere on the site (three pieces) and, if assumed to be broadly contemporary, might indicate a wider spread of this particular Early Neolithic activity. A single arrowhead (Fig. 13.5), probably of leaf-shaped form, was recovered from the uppermost fill of pit 2289.

Early Bronze Age
The small Early Bronze Age assemblage was mostly flake-based and contained a limited number of retouched pieces, including one notched flake on a reused blank. A plano-convex knife was recovered from pit 1062 (Fig. 13.6). The knife was probably intended to be lunate in form, but a poor blank and mediocre knapping skills led to irregularities in its appearance. A second possible plano-convex knife fragment (Fig. 13.7) was recovered from hollow 1086. This piece had been finely and invasively retouched on one side, but had been re-worked following breakage with a few small removals along the broken edge. The intended result was unclear.

Neolithic and Bronze Age pottery
Emily Edwards
Five hundred and ninety-one sherds (2423 grammes) of Neolithic and Bronze Age pottery were recovered. The assemblage was dominated by Early Neolithic 'decorated bowl' pottery, and a smaller number of Early Bronze Age sherds was also recovered, including fragments of both Collared and Biconical Urns. The remainder of the assemblage (49 sherds, 162 grammes) comprised undiagnostic fragments, which were more difficult to date.

Early Neolithic pottery

Five hundred and one sherds (1852 grammes) of Early Neolithic pottery were recovered, representing a minimum of 39 vessels. Most of this (461 sherds, 1722 grammes) was recovered from the Phase 1 pit group, the remainder being found as residual material in Area 3. The pottery was generally in poor condition, with a mean sherd weight of four grammes. Sherd refits were present between the upper three fills of pit 2289, but no inter-feature refits were found.

Most of the material was in shelly fabrics, presumably deriving from the local Jurassic clays, although a few sherds containing sand, flint and sand, or no visible temper, were also found. Vessel forms mainly comprised bowls, with round-bodied, baggy (Fig. 14.7) and carinated (Fig. 14.8 and 14.10) profiles. The bowls showed a variety of rim forms: 11 were externally expanded (Figs 14.2, 14.6–7 and 14.11), three everted (Figs 14.5 and 14.10), two squared (Fig. 14.13), two thickened (Fig. 14.1), two rounded (Fig. 14.9), one T-shaped (Fig. 14.3) and one flattened, with a pre-firing piercing (Fig. 14.12). Rim diameters ranged from 100 millimetres to 360 millimetres, with a cluster at 250 millimetres. In addition to the bowls, one small cup with a pointed rim (diameter 70 millimetres) was also recovered (Fig. 14.4). No charred residues were noted.

Some 30% of vessels (12 vessels of the 39) were decorated. Incised diagonal lines were noted on seven rims. In addition, there was one vessel decorated on its body with diagonal impressed lines filling the spaces between horizontal incised bands (Fig. 14.8).

The assemblage at Parnwell is largely comparable in form and decoration to that from the Etton causewayed enclosure, 10 kilometres to the north-west (Kinnes 1998). However, the highly decorated bowl

Table 3. *Flint, summary of assemblage.*

	Early Neolithic features			Early Bronze Age features	Later features/ unstratified	Total
Category	Pit cluster 2315	Pit 2289	Pit 2399			
Flake	10	53	5	10	6	84
Blade	4	7		1	3	15
Bladelet	2	3		1		6
Blade-like flake	6	9		1	1	17
Core face/edge rejuvenation flake		1				1
Other rejuvenation flake	1	1			1	3
Irregular waste	2	7		1		10
Chip		5			1	6
Sieved chips	9	5		2	6	22
Multi-platform flake core		1				1
Levallois / other discoidal flake core					1	1
Unclassifiable / fragmentary core					1	1
Partially-worked nodule					1	1
Retouched flake	3	2			2	7
End-and-side scraper	1					1
Other scraper		2				2
Notch	1			1		2
Serrated flake	2	7			3	12
Piercer		1				1
Spurred piece					1	1
Plano-convex knife				1		1
Other knife				1		1
Unclassifiable / fragmentary arrowhead		1				1
Total	**41**	**105**	**5**	**19**	**27**	**197**
No. of burnt unworked flints	1	2		1	212	216
Weight (g) of burnt unworked flints	1	2		6	132	141
No. of burnt struck flints	9			1	1	24
No. of broken struck flints	2			4	7	60
No. of retouched flints (excluding chips)		13			6	41

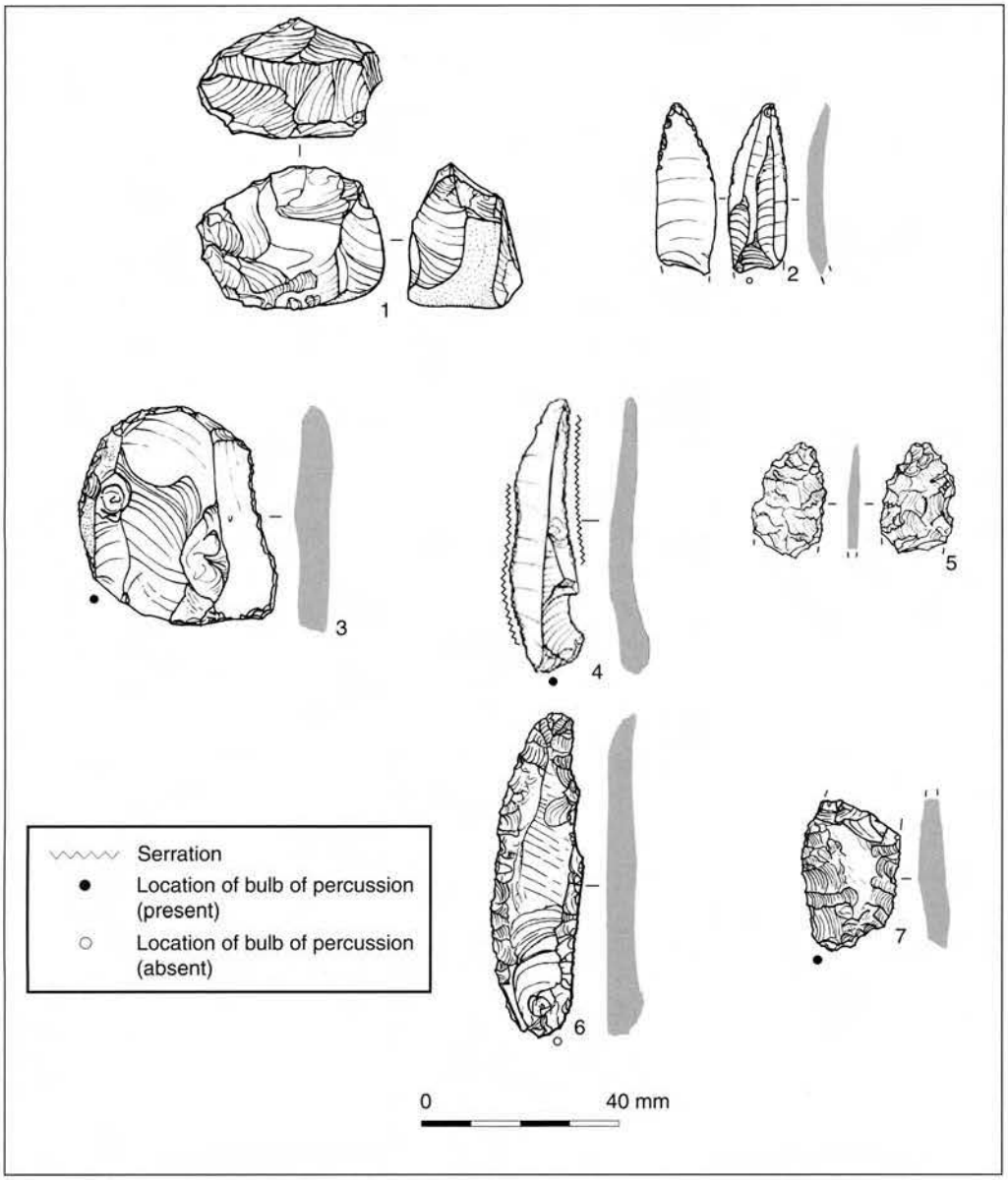

Figure 13. *Worked flint.*

1 Multi-platform flake core. On small cobble of ?boulder clay flint. Neatly worked but with a few step-terminated scars. Several blade-like removals. 32g. Early Neolithic. Pit 2289, context 2311. Phase 1.

2 Piercer. On blade, dorsal blade scars, slight inverse retouch to distal point. Utilised. Early Neolithic. Pit 2289, context 2290. Phase 1.

3 End-and-side scraper. Abraded gravel cortex. Soft hammer. Platform edge abrasion. Fine semi-abrupt retouch. Slight retouch along right-hand side. Utilised and burnt. Early Neolithic. Pit 2283, context 2284. Phase 1.

4 Serrated flake. Fine blade, good serrations along both edges and visible gloss on the reverse of the teeth. Early Neolithic. Pit 2289, context 2312. Phase 1.

5 Re-flaked ?leaf-shaped arrowhead. Appears to be part of a well-flaked leaf-shaped arrowhead, with an abortive attempt to re-flake. Some of the edges have been turned. Early Neolithic. Pit 2289, context 2312. Phase 1.

6 Plano-convex knife. Made on blade, but an example that has been struck at an unusual angle. Flaking of a reasonable quality, but clearly not the product of an exceptionally skilled flint-worker. Utilised. Probably Early Bronze Age. Pit 1062, context 1063. Phase 2.

7 Re-flaked ?plano-convex knife. Probable plano-convex knife, incomplete, with invasive retouch on dorsal surface only. Snapped (during use?), and re-worked with a few small removals from snap platform. Probably Early Bronze Age. Hollow 1086, context 1084. Phase 2.

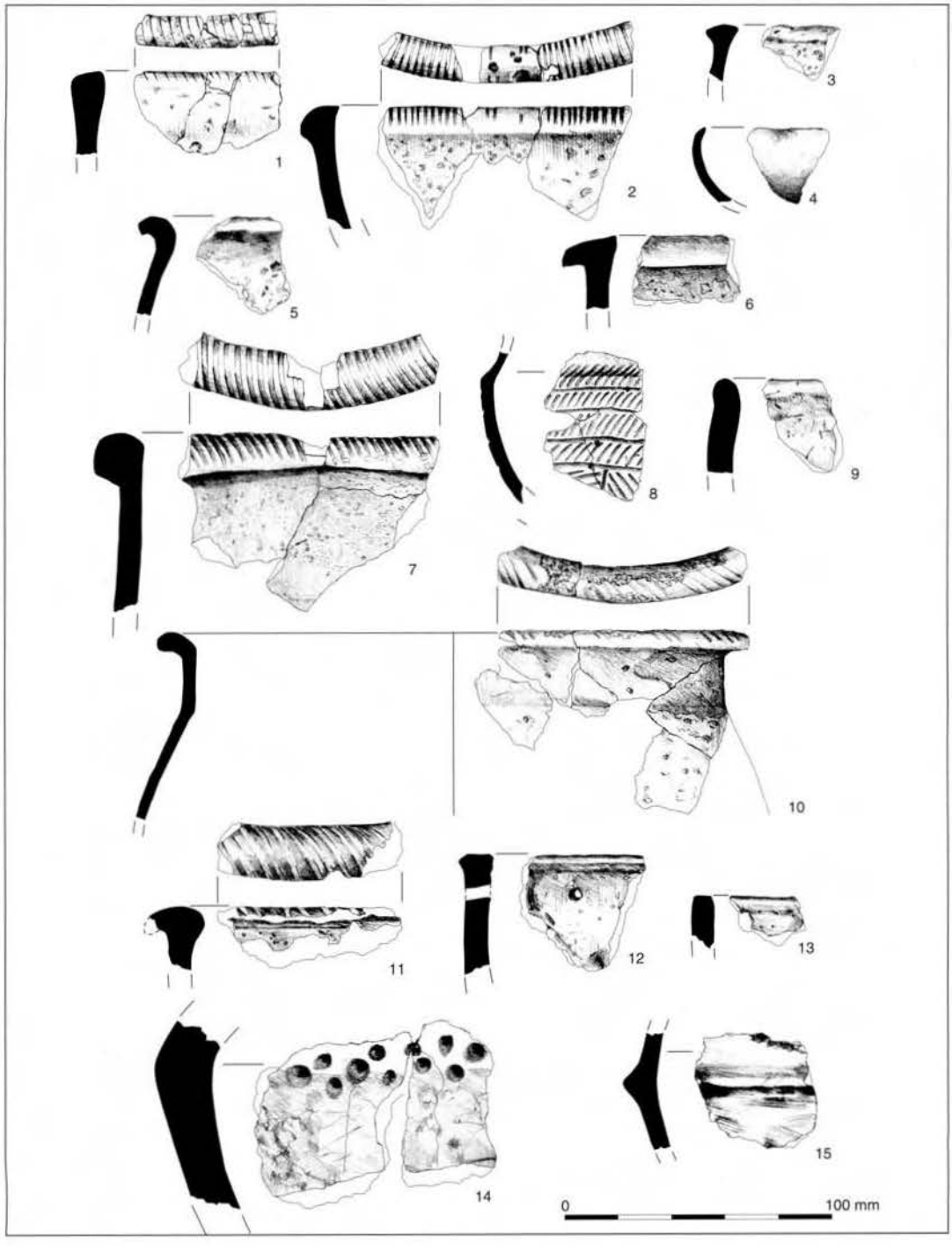

Figure 14. *Neolithic and Early Bronze Age pottery.*

Neolithic

1 Thickened rim. Shelly fabric. Pit 2283, context 2284. Phase 1.

2 Externally expanded rim. Shelly fabric. Pit 2285, context 2286. Phase 1.

3 T-shaped rim. Shelly fabric. Pit 2289, context 2312. Phase 1.

4 Pointed rim from a small cup. No visible inclusions. Pit 2289, context 2312. Phase 1.

5 Everted rim. Shelly fabric. Pit 2289, context 2312. Phase 1.

6 Externally expanded rim. Shelly fabric. Pit 2289, context 2415. Phase 1.

7 Externally expanded, decorated rim. Shelly fabric. Pit 2289, contexts 2290 and 2311. Phase 1.

8 Body sherd with incised decoration. Shelly fabric. Pit 2289, context 2311. Phase 1.

9 Rounded rim. Shelly fabric. Pit 2289, context 2311. Phase 1.

10 Everted rim. Shelly fabric. Pit 2289, contexts 2311 and 2312. Phase 1.

11 Externally expanded, decorated rim. Shelly fabric. Pit 2289, context 2416. Phase 1.

12 Flattened rim with pre-firing hole. Flint-tempered fabric. Pit 2289, context 2416. Phase 1.

13 Squared rim. Shelly fabric. Pit 2289, context 2419. Phase 1.

Early Bronze Age

14 Collared Urn. Grog-tempered fabric. Hollow 1086, context 1084. Phase 2.

15 Biconical Urn. Grog-tempered fabric. Pit 1008. Phase 2.

(Fig. 14.8) seems more unusual, and no close parallels have been identified.

Early Bronze Age pottery
Forty-one sherds (409 grammes) of Early Bronze Age pottery were recovered from Phase 2 pits and hollows, representing a minimum of five vessels. The pottery was in better condition than the Early Neolithic material, with a mean sherd weight of 11 grammes. The fabrics contained grog, sand or no visible temper.

The vessels included at least three Collared Urns, from pit 1042 and hollow 1086 (e.g. Fig. 14.14). One of the Collared Urn fragments from hollow 1086 was decorated with incised lines on the cavetto zone. The other had rows of impressed fingertips on the shoulder (Fig. 14.14), a form of ornamentation also noted on vessels from Newark Road, Fengate, 2.5 kilometres to the south (Pryor 1980, fig. 59.27). Pit 1008 produced the shoulder from a Biconical Urn, ornamented with a cordon (Fig. 14.15). Charred food residues were present on this sherd.

Iron Age and Roman pottery
Dan Stansbie
One thousand four hundred and fifty-four sherds (20.2 kilogrammes) of Iron Age and Roman pottery were recovered. The assemblage spanned the Middle to Late Iron Age through to the end of the Roman period. However, the majority of the material dated to the early and middle second century AD, with smaller amounts from the late second to third centuries, and only a few sherds from the fourth century. Pottery was recovered from 153 contexts in total. Of these less than 1% produced more than 100 sherds and 7% produced between 30 and 100 sherds. The average group weighed 133 grammes and the mean sherd weight was 14 grammes. One hundred and forty-three identifiable vessels were preserved.

The pottery has been divided into four broad ceramic phases: Middle to Late Iron Age (400 BC–AD 20), Late Iron Age to Early Roman (AD 20–75), Early Roman (AD 75–200) and Late Roman (AD 170–400).

Middle to Late Iron Age pottery
Handmade Middle to Late Iron Age pottery accounted for 2.8% of the assemblage by weight. The small quantities of pottery were characterised by a variety of shell and limestone fabrics, along with sandy and shelly fabrics and some sand and grog-tempered fabrics. Recognisable forms comprised slack-shouldered bowls/jars.

Thirty-three sherds (361 grammes) were scored. Handmade later Iron Age pottery assemblages from the Peterborough area almost always include a substantial component of Scored Ware (Elsdon 1992). This style of pottery appears to have continued in use well into the first century AD in the lower Nene and Welland Valleys (Elsdon 1992; D. Knight 2002, p. 134). If this is the case at Parnwell, and the Scored Ware in fact represents Late Iron Age activity, then the relative paucity of 'Belgic' style grog-tempered wares may be at least partially explained.

Late Iron Age to Early Roman pottery
A small quantity of wheel-thrown grog-tempered pottery was recovered, which has been ascribed a Late Iron Age to Early Roman date. The only recognisable form was an everted rim jar.

Roman pottery: fabrics
Early Roman pottery accounted for the greatest proportion of the overall assemblage at 47% by weight. Shelly wares dominated the assemblage, accounting for 47% by weight. Also common were sandy reduced wares and Lower Nene Valley grey ware. Fine and specialist wares along with regional and continental imports were scarce.

The Late Roman groups contributed a broader range of fabrics to the assemblage than that seen in the Early Roman period, taking the second largest share of the assemblage by weight at 33%. In contrast to the Early Roman groups, the Late Roman groups were dominated by Lower Nene Valley grey wares, which contributed 42% by weight. Unsurprisingly, the fine and specialist wares were dominated by Nene Valley colour-coated wares, contributing 10% by weight.

Roman pottery: forms
The changing functional composition of the assemblage over time is shown by Table 4. The Early Roman phase was heavily biased towards jars, which represented 50% by estimated vessel equivalent (EVE),

Table 4. *Roman pottery, functional analysis of assemblage by phase in %EVEs.*

	LIA/Early Roman	Early Roman	Late Roman	Unphased Roman
Storage jars	-	-	-	58
Jars	100	54	37	42
Flagons	-	19	8	-
Dishes	-	10	25	-
Bowls	-	4	12	-
Beakers	-	3	11	-
Cups	-	3	1	-
Mortaria	-	3	1	-
Lids	-	4	1	-
Other	-	-	5	-
Total EVEs	0.04	10.27	12.23	0.38

although flagons and dishes also made a significant contribution and there were some beakers, cups, mortaria and lids. In the Late Roman phase, jars declined in favour of dishes and bowls, although they were still fairly strongly represented at 37% of EVEs. Beakers also increased significantly, although cups, mortaria and lids declined. This is unexpected and might perhaps be related to the small overall numbers of vessels involved. There was also a jar/bowl and part of a cheese press in the Late Roman period, types that were not found earlier in the sequence.

Discussion

If Parnwell is compared with other Roman sites in the area, such as Haddon, Orton Hall Farm and Tort Hill East (Evans 2003, pp. 105–6), it is immediately apparent that there are broad similarities between the sites. Jars declined over time at all sites, although at no site did they go completely out of use in the third and fourth centuries. Conversely tablewares such as dishes and bowls tended to increase over time, and were consistently at relatively high levels when compared to rural sites elsewhere in the Midlands (Evans 2003, p. 104). Cups and beakers seemed to decline over time at all sites including Parnwell, a fact that is surprising given the ubiquity of beakers from the Nene Valley industry in the third and fourth centuries. The explanation might lie with the social status of the inhabitants, although if this were the case then one might expect a corresponding lack of other forms of tableware such as dishes and bowls.

At all the sites discussed by Evans the numbers of mortaria increased over time. However, at Parnwell the opposite is true, with mortaria accounting for 3% of EVEs in the Early Roman phase and 1% in the Late Roman phase. This is the only real anomaly and is best explained by the small numbers of mortaria found at the site. The cheese press found at Parnwell can be matched at many other sites in the area.

Pottery supply to the site was typical of similar sites in the region. In the Late Iron Age to Early Roman period the assemblage was dominated by grog-tempered and grog and shell-tempered wares which, like the similar material from Haddon, Orton Hall Farm and Tort Hill, was probably made locally (Evans 2003, p. 105). In the Early Roman period, pottery supply was dominated by shelly wares and sandy grey wares, with Nene Valley grey wares beginning to make an impact and samian wares of southern and central Gaulish origin also present in small amounts. This pattern also matches very closely that from Haddon and other local sites. It is possible that at least some of the shelly material found at Parnwell was manufactured in the kilns at Haddon, although some might also have come from the Water Newton area (Evans 2003, p. 107). Other locally produced material in this phase came from Longthorpe, comprising two mortaria and some oxidised ware. The presence of a flagon in Much Hadham white-slipped oxidised ware from a late second-century group was the only indication apart from the samian ware of supply to the site from a long distance in the Early Roman period.

Pottery supply in the Late Roman phase was dominated by Lower Nene Valley grey ware, with shelly wares still very important and Nene Valley colour-coated wares making an impact. Once again this pattern of supply fits very well with that seen at Haddon (Evans 2003, p. 107). The nearest known kilns producing Nene Valley grey and colour-coated wares at this time were at Stanground, just 4.5 kilometres to the south (Dannell *et al.* 1993). A single sherd of Dorset black-burnished ware from a Late Roman group indicates that pottery supply was not entirely insular in the Late Roman period. However, for the most part pottery consumption appears to have been resolutely focused on local products. Overall, the ceramics indicate that the socio-economic status of the Romano-British settlement was modest.

Roman ceramic building material

Cynthia Poole

The assemblage of Roman ceramic building material, which amounts to 63 fragments weighing 9.3 kilogrammes, is relatively small and fragmentary. The most notable feature of the assemblage is the dominance of brick and tegulae. The absence of imbrices suggests that the tegulae were not being used for roofing. The distribution of the ceramic building material was mainly across the western half of the settlement, and it might perhaps have been used in the superstructure of the corn-drier.

Other Roman artefacts

Paul Booth, Cynthia Poole, Ruth Shaffrey and Leo Webley

The assemblage of small finds from the Romano-British settlement was relatively modest (Fig. 15). There were two copper alloy dress accessories, comprising a simple hairpin and an imported disc brooch with millefiori glass inlay. Utilitarian metal items consisted of a possible iron ladle and three iron nails. Two pieces of worked stone were recovered, a possible saddle quern fragment and a probable rubber. A small assemblage of fired clay (80 fragments, 1706 grammes) included fragments of oven structure and furniture, probably associated with a range of small-scale domestic activities.

The cremation cemetery also produced a small assemblage of metalwork. Burial 2041 contained a copper alloy trumpet brooch and an iron nail. It also contained a coin, possibly a dupondius, datable to AD 145–75. Burial 2037 contained a further iron nail, along with 79 iron hobnails. The same burial also produced nine tiny fragments of colourless glass (2 grammes) from its sieved residue. The placing of glass vessels on cremation pyres was fairly common during the Roman period (Philpott 1991).

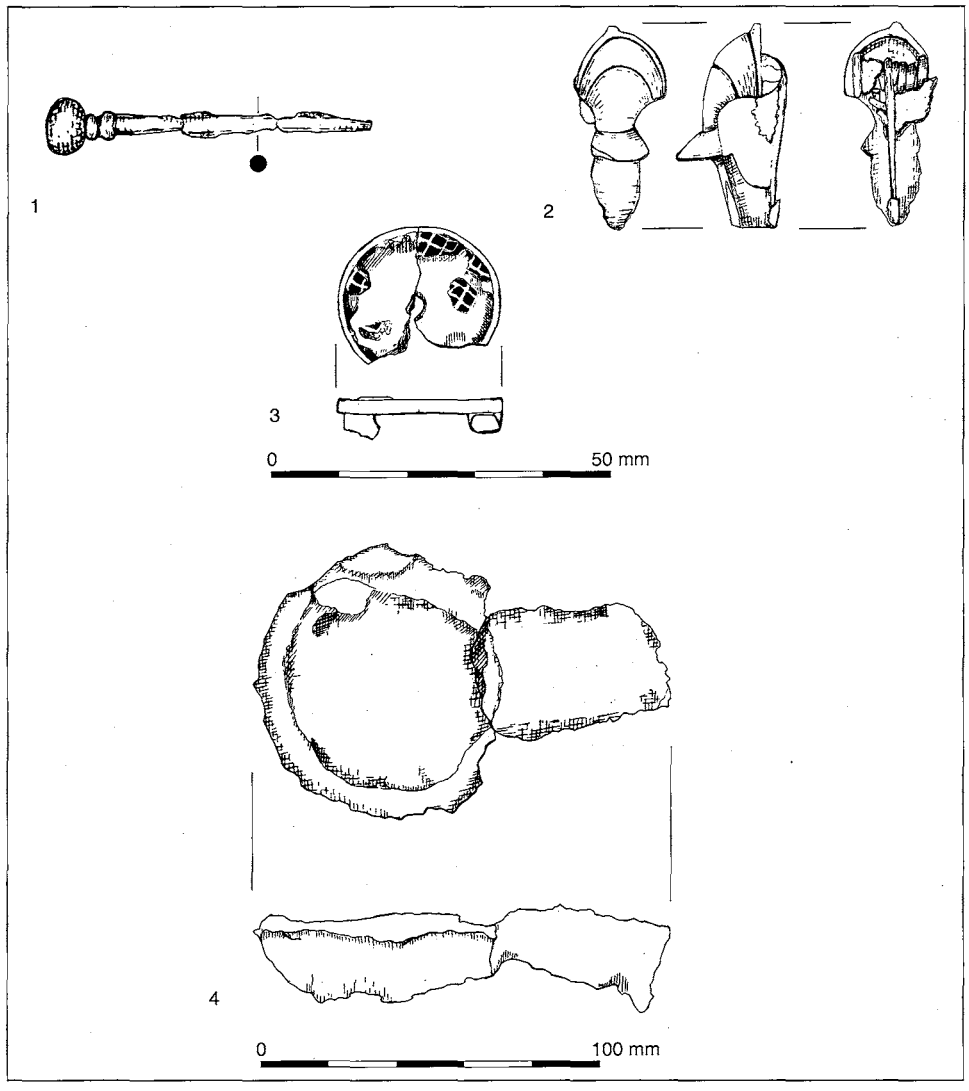

Figure 15. Roman metalwork.

1 Hairpin. Copper alloy pin of 'button and cordon head' type (Cool group 6). Late first–early second century AD (Cool 1991). Pit 1051, context 1053.
2 Trumpet brooch. Copper alloy trumpet brooch of Hull's 'Alcester' type (Hull Type 162: Bayley & Butcher 2004), ornamented with two lateral grooves at the top of the head. The pin appears to be made of iron. Early–mid second century AD. Cremation burial 2041, context 2042.
3 Disc brooch. Two fragments of an imported copper alloy disc brooch with millefiori glass decoration set into the single circular cell (Hull Type 256: Bayley & Butcher 2004). The brooch has a central circular perforation (cf. Bayley & Butcher 2004, no. 372). Brooches of this kind were probably manufactured in northern Gaul or the Rhineland and date to the late second–early third centuries AD. Pit 3897, context 3900.
4 Possible ladle. Heavily corroded iron implement resembling a ladle with a broken handle. Ditch 3710, context 3921.

Environmental analyses

Faunal remains

Kristopher Poole with Emma-Jayne Evans and Rebecca Nicholson

One thousand and eighty-one refitted fragments (18,019 grammes) of animal bone were recovered (Table 5). Most of the material came from Early Neolithic and Romano-British contexts. Hand recovery accounted for 869 fragments, and sieving of environmental samples for the remainder.

Only a small amount of the Early Neolithic bone could be identified to species, with cattle predominating. The vast majority of the bone came from pit 2289, and all parts of the skeleton were represented. Based on size, the cattle bone probably came from domestic animals. Dental ageing from mandibles highlights the presence of one animal aged 18–30 months at death, one young adult, and one old adult, whilst two loose molars came from young adults. Epiphyseal fusion suggests that most cattle were skeletally mature at death, although some immature elements were noted, including a foetal/neonatal femur and humerus. The

presence of a number of adult cattle could suggest that milk was important to the community. A sheep/goat mandible was from an animal between six and 12 months old, and a pig fused distal tibia came from an animal at least two years of age at death. The only butchery observed was a chop mark on the medial side of a cattle metatarsal diaphysis, towards the distal end.

All cattle elements from the Early Bronze Age were teeth, except a fused distal humerus from an animal at least 15–20 months old at death. Cattle were represented in the Middle–Late Iron Age by a proximal metatarsal, which had skinning marks around the articulation, and sheep/goat by four maxillary molars.

The Romano-British assemblage mostly came from the settlement area, with small numbers of bones recovered from the outlying field system. The assemblage is fairly typical of rural sites of this period. Cattle and, to a much lesser extent, sheep/goat were the main food animals at the site, although cattle, being much larger, would have supplied the bulk of the meat. However, the greater proportions of cattle may at least partly be due to the location of deposition, as evidence from other sites indicates that larger animal carcasses often tended to be processed and dumped on the outskirts of settlements (Maltby 1985; Wilson 1996). The importance of horse has probably been unduly inflated by the large number of loose teeth that were recovered. Minor domestic species included dog and domestic fowl, the latter only found as a pyre good in cremation burial 2037.

Epiphyseal fusion suggests that most cattle were allowed to reach adulthood before slaughter, with around 80% of elements from animals killed after reaching four years of age. Evidence from dental attrition largely agrees with this, although one animal had died at an age of between one and eight months. The presence of a small number of foetal or neonatal cattle, sheep/goats and pigs hints at some on-site breeding of livestock.

A few examples of wild species such as red deer, hare, goose, mallard, snipe and fish suggest that limited hunting, wildfowling and fishing took place. The red deer element was a metatarsal, exhibiting cut marks around the proximal end, possibly associated with skinning. A number of small mammal bones (mouse, vole and shrew) were found in association with the corn-drier, perhaps indicating a problem with vermin.

Charred plant remains

Denise Druce

Following assessment, 21 samples containing relatively abundant charred plant remains were selected for full analysis. Five of these came from Early Neolithic pits, and 16 from Romano-British features, including the corn-drier, various pits and ditches, and an inhumation burial.

Table 5. *Faunal remains, Number of Identified Specimens (NISP) by phase. *=35 bones from a single articulated skeleton.*

Species	Early Neolithic	Early Bronze Age	Middle–Late Iron Age	Romano-British	Middle Saxon	Unphased	Total
Cattle	71	-	1	66	-	13	155
Horse	-	-	-	54	-	1	55
Sheep/goat	1	-	4	36	1	2	44
Pig	4	-	-	3	-	-	7
Dog	-	-	-	38*	-	-	38*
Cat	-	-	-	1	-	-	1
Red deer	-	-	-	1	-	1	2
Hare	-	-	-	1	-	-	1
Domestic fowl	-	-	-	2	-	-	2
Goose	-	-	-	1	-	-	1
Mallard	-	-	-	1	-	-	1
Crow/rook	-	-	-	1	-	-	1
Snipe	-	-	-	1	-	-	1
Fish	-	-	-	1	-	-	1
Field/wood mouse	-	-	-	1	-	-	1
Mouse	-	-	-	1	-	-	1
Cf. Water vole	-	-	-	3	-	-	3
Field vole	-	-	-	3	-	-	3
Mouse/vole	-	-	1	14	-	-	15
Shrew	-	-	-	1	-	-	1
Frog/toad	-	-	-	4	-	-	4
Snake	-	-	-	5	-	-	5
Large	145	1	3	145	-	35	329
Medium	36	6	7	35	-	3	87
Small	-	-	1	20	-	-	21
Unidentified	538	17	44	530	2	107	1238
Total	**821**	**28**	**61**	**932**	**3**	**136**	**1981**

Early Neolithic pits

Although the charred plant assemblages from the Early Neolithic pits were limited in extent (Table 6), the evidence is consistent with other similar sites in Britain, and indicates that a combination of both cultivated and wild food plants were being utilised. As is typical, the most ubiquitous plant remains were of hazelnut, with over 500 shell fragments coming from one of the samples (pit 2283). The only other certain wild food plant present was crab apple, which is also commonly found in Neolithic pits. Although cereal remains were present in all of the samples, poor preservation meant that identification to species level was difficult. A single grain of barley was identified, however. A spelt wheat glume base from pit 2283 is presumed to be intrusive, as this crop has not previously been attested in Neolithic Britain. Fat-hen was also present in some of the samples. This is a common weed of waste or cultivated ground and might have been introduced into the pits along with the cereal grain, although it was also used as a foodstuff in the past.

Romano-British features

Ten samples came from various locations within corn-drier 3548 (Fig. 10), and further samples were taken from nearby ditch terminus 3852 and pit 3619, believed to contain dumped waste material generated during the use of the drier (Tables 7 and 8).

The evidence from the corn-drier suggests that, like many sites of this period in central and southern Britain, the chief wheat crop under cultivation was spelt. In addition, the presence of bread wheat grains suggests that this might have also been cultivated, perhaps as a minor crop. The presence of barley, rye and oat grains hints that these crops might also have been cultivated to a limited degree. Although only a small number of grains in the corn-drier samples had germinated, the very abundant detached coleoptiles, especially in the stoking pit, suggests that the actual number was, potentially, far greater. Van der Veen (1989) argues that where 75% or more of a cereal assemblage has germinated it is highly likely that it represents material from malting. This process involves the roasting of the 'green malt' (or germinated grain) in order to halt the process of germination at a given stage, the resultant germinated grain forming the raw material in brewing. An assemblage similar to that from Parnwell was discovered from a corn-drier at the Roman villa site at Bancroft, Milton Keynes, and the high number of detached coleoptiles in this example was interpreted as the waste product of malting. Similarly, corn-drier assemblages from Tiddington, Warwickshire, were interpreted as the waste material produced from malting, which was used to re-kindle the ovens (van der Veen 1989).

It is possible that the thousands of spelt glume bases in the corn-drier samples are the waste product from a different activity, which was subsequently utilised to fuel the corn-drier. However, earlier evidence from 21 other Romano-British corn-driers suggests that in over half the cases the charred plant assemblages were dominated by the remains of spelt wheat (van der Veen 1989). At Catsgore, Somerset, nine out of the ten corn-drier samples contained germinated spelt wheat, which was interpreted as the remains of malt production (Hillman 1982). In addition, the abundant wood charcoal, spelt glume bases and weed seeds in one of the stoking pit assemblages at Catsgore were believed to represent the remains of fuel, which had become mixed with grains when the ovens were cleaned out. A rich assemblage of spelt grains, spelt chaff and detached coleoptiles at Springhead, Kent, was interpreted as the waste by-product resulting from the removal of husks and sprouts of malted grain. Although, as at Parnwell, there were very few germinated grains in the assemblages, Campbell (1999) concluded from the association of the sprouts

Table 6. *Charred plant remains from Early Neolithic pits. Figures given are actual counts.*

	Feature	2283	2287	2289	2289	2289
	Context	2284	2288	2311	2327	2416
	Sample no.	2034	2036	2333	2087	2060
	Sample size (litres)	30	20	40	40	40
Charred cereal grain						
Triticum sp.	Wheat	1				
Hordeum vulgare	Barley					1
Cerealia indet.	Indeterminate grains	2	3	2	1	1
Cerealia indet. frag.		105	6	9	1	5
Charred cereal chaff						
Triticum spelta	Spelt wheat glume base	1				
Other charred edibles						
Corylus avellana frag.	Hazelnut shell frag. >2mm	79	16	29	8	2
Corylus avellana frag.	Hazelnut shell frag. >1mm	c. 500	5			
Malus sylvestris	Crab apple		2			
Charred weed seeds						
Chenopodium album	Fat-hen	1		1		1
Other						
Poaceae floret base	Wild grass	1				

Table 7. *Charred plant remains from Romano-British features. Figures given are actual counts.*

	Feature	1051	3412	3548	3548	3548	3548	3548	3548
	Context	1054	3414	3475	3475	3521	3521	3521	3522
	Feature type	Pit	Grave	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I
	Sample no.	1001	3413	3067	3068	3018	3020	3021	3024
	Sample size (litres)	40	10	10	10	10	20	10	10
CHARRED CEREAL GRAIN									
Triticum sp.	Wheat		98	46	70	2	3	7	7
	Wheat, coleoptile impressions		2		3				1
	Wheat, coleoptile attached		1	5					
Triticum dicoccum/spelta	Domestic emmer/spelt wheat		24	3	3				
	Domestic emmer/spelt wheat, coleoptile attached			2					
Triticum c.f. *dicoccum*	Domestic emmer-type wheat		10						
Triticum aestivum	Bread wheat	5	5	9	8				
	Bread wheat, coleoptile attached		1						
Hordeum vulgare	Barley undiff.		1		1				
	Barley undiff, coleoptile attached				1				
Secale cereal	Rye			1					
Avena sp.	Oats			2	2				
	Oats, coleoptile attached				2				
Cerealia indet.	Indeterminate grains	7	65	119	127	17	24	27	24
	Total cereal grain	**12**	**207**	**187**	**217**	**19**	**27**	**34**	**32**
Cerealia indet. frag.		>100	>100	>1000	>1000	>100	>100	>100	>100
Detached coleoptiles			4	48	65		1	2	
CHARRED CEREAL CHAFF									
Triticum spelta	Spelt wheat glume base	2	35	1000	1000	14	3	2	5
Triticum spelta	Spelt wheat spikelet forks		11	12	45				
Hordeum vulgare	Barley rachis	1			5				
Culm nodes		1	5	3		3			
Stem frag		1	20						
	Total chaff	**5**	**71**	**>1000**	**>1000**	**17**	**3**	**2**	**5**
Triticum sp.	Wheat glume base frag.	6	40	>1000	>1000	10	21	5	12
Palea/lemma frag			>100						
CHARRED WEED SEEDS									
Ranunculus flammula	Lesser spearwort	2							
Chenopodium album	Fat-hen			6					1
Agrostemma githago	Corncockle			2	3				1
Stellaria media	Common chickweed	1							
Fallopia convolvulus	Black-bindweed	1							
Polygonum aviculare	Knotgrass	2		1	3				
Rumex obtusifolius	Broad-leaved dock	5	1	18	24				
Rumex acetosa	Common sorrel	2		7	12				1
Rumex acetosella	Sheep's sorrel	4	1	4	9			1	1
Rosaceae	Rose family	1							
Brassica sp.	Cabbages	1		1					
Fabaceae <4mm	Pea family	3		21	54	3			2
Apiaceae	Carrot family				3				1
Plantago lanceolata	Ribwort plantain		1	1					
Galium aparine	Cleavers			2					
Galium palustre	Common marsh-bedstraw	3	1						
Asteraceae	Daisy family			2			1		1
Anthemis cotula	Stinking chamomile				3				
Chrysanthemum segetum	Corn marigold				3				
Lapsana communis	Nipplewort			1					
Tripleurospermum inodorum	Scentless mayweed	1							
Carex trigonous	Sedges- three sided	4		2					
Carex lenticular	Sedges- two sided	2		2					
Isolepis	Club-rushes	1	1	4					
Juncus sp.	Rushes	1							
Eleocharis palustrus	Common spike-rush	18	2		3				
Poaceae <2mm	Grass family	5			12				
Poaceae 2-4mm	Grass family	9		40	42				
Poaceae >4mm	Grass family		1	6		1			
Bromus spp.	Bromes	1	6	225	138	1		1	
	Total charred weed weeds	**67**	**14**	**345**	**309**	**5**	**1**	**2**	**8**

continued

Table 7 continued. *Charred plant remains from Romano-British features. Figures given are actual counts.*

	Feature	1051	3412	3548	3548	3548	3548	3548	3548
	Context	1054	3414	3475	3475	3521	3521	3521	3522
	Feature type	Pit	Grave	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I	Corn-drier Flue I
	Sample no.	1001	3413	3067	3068	3018	3020	3021	3024
	Sample size (litres)	40	10	10	10	10	20	10	10
OTHER									
Poaceae awn frag.	Wild grass		8	9	2				
Fabaceae seed pod frag.	Pea family			10	1		1		
Raphanus cf Ssp. *raphanistrum* capsule	c.f. Wild radish	1							

and spelt wheat chaff that spelt wheat was being used for brewing. Within East Anglia, flue features containing sprouted spelt wheat at Stebbing Green, Essex, have been interpreted as belonging to a 'malt house' (Bedwin & Bedwin 1999). Although barley has historically been considered the preferred grain for brewing, the brewing of spelt wheat appears to have been widespread in Roman Gaul, where the resulting wheat beer was 'drunk by the poorer classes' (Strabo, cited by Hillman 1982).

The weed seeds that accompanied the corn-drier cereal remains are likely to have originated from plants that had been harvested along with the malting crop. Nearly all of the weed seeds are associated with waste or cultivated ground, and the very abundant brome seeds, historically a dominant crop weed in wheat fields (www.igergru.bbsrc.ac.uk), suggest that it was particularly invasive at the site. In addition, there is evidence that brome has also been cultivated as a fodder crop in the past.

The samples taken from the terminus of Flue I contained very limited charred plant remains compared to those from the southern end of the flue and the stoking pit. This could imply that the actual working platform or 'floor' of the kiln was well cleaned following its final use and subsequent collapse.

Similar charred plant assemblages were recovered from the nearby ditch terminus 3852 and pit 3619. However, one noticeable difference was the lack of weed seeds in the pit, which suggests that some form of taphonomic process prevented their introduction into the feature.

Aside from the corn-drier and associated features, a number of other Romano-British features contained abundant charred plant remains. Pit 3897 was dominated by wheat grains and, unlike the features associated with the corn-drier, contained very little cereal chaff or weed seeds. Given the lack of processing waste it is possible that the material either represents fully processed grain that was accidentally charred during cooking and subsequently thrown into the pit, or that it represents stored grain, which had been subsequently charred during the cleaning of the pit (Hillman 1981).

Pit 1051, meanwhile, contained very few cereal remains but abundant seeds of weeds associated with waste or cultivated land and damp/wet ground. It is likely that the charred remains from this pit represent those of plants growing in the outlying area, which were cleared, burnt and then subsequently dumped in the pit. The abundant seeds from plants of wet/damp ground suggest that some of this land, or at least the field boundary ditches, were flooded.

The charred plant remains associated with the inhumation burial (3412) were remarkably well preserved, and, like the other features from the site, were dominated by wheat/spelt wheat with lesser amounts of bread wheat. In addition, however, this sample contained ten possible 'emmer-type' wheat grains. The abundant chaff fragments (including glume bases, spikelet forks, culm nodes and palea/lemma fragments) and the pristine nature of the cereal grains suggests that the material represents ears of wheat, which were charred at a controlled temperature. Subsequently very little distortion occurred, and unlike many other charred cereal assemblages, parts of the whole ear survived. It is tempting to suggest that these remains represent a ritual token, which was preserved through gentle charring and then placed with the body. A symbolic significance might also be suggested by the presence of possible emmer-type wheat in this assemblage, as emmer wheat was not present in any of the other Romano-British contexts.

Charcoal

Dana Challinor

Twenty-five samples from features ranging in date from the Neolithic to the Middle Saxon period was examined. The full data will be presented in the web report.

Early Neolithic

Quercus (oak) was present in all assemblages, and *Fraxinus* (ash) was also well represented. The other species tended to be shrubs or hedgerow types, with the exception of *Clematis* (traveller's joy), which is a climber and might have entered the assemblage accidentally with fuel wood from a larger tree. The picture that emerges from the charcoal assemblages is that a range of wood was used. Most contexts produced four different species, indicating that gathering wood for fuel was probably on an ad hoc basis, reflecting what was easily available. Given the evidence for coppicing and pollarding from other contemporary sites in the

Table 8. *Charred plant remains from Romano-British features, continued. Figures given are actual counts.*

	Feature	3548	3548	3852	3852	3539	3539	3619	3897
	Context	3522	3522	3532	3537	3538	3607	3621	3900
	Feature type	Corn-drier Flue I	Corn-drier Flue I	Ditch	Ditch	Corn-drier stoke pit	Corn-drier stoke pit	Pit	Pit
	Sample no.	3026	3028	3069	3070	3076	3077	3089	3414
	Sample size (litres)	10	10	40	40	20	10	40	10
CHARRED CEREAL GRAIN									
Triticum sp.	Wheat	24	1	96	6	40	6	10	103
	Wheat with coleoptile impression			3		8			
	Wheat, coleoptile attached			6		4	1		
Triticum dicoccum/spelta	Domestic emmer/spelt wheat			5	1	11	2		5
	Domestic emmer/spelt wheat, coleoptile attached					3			
Triticum aestivum	Bread wheat			18		4	7	12	
	Bread wheat, coleoptile attached			1					
Hordeum vulgare	Hulled barley								2
Hordeum vulgare	Barley undiff.				1				
Avena sp.	Oats								1
Cerealia indet.	Indeterminate grains	43	34	112	1	210	26	19	54
	Total cereal grain	**67**	**35**	**241**	**9**	**280**	**42**	**41**	**165**
Cerealia indet. frag.		>100	>100	>1000	>100	>1000	>1000	>100	>100
Detached coleoptiles				31	1	247	3	2	
CHARRED CEREAL CHAFF									
Triticum spelta	Spelt wheat glume base	4	2	>1000	126	>1000	16	270	2
Triticum spelta	Spelt wheat spikelet forks					>100	2	4	1
Culm nodes						1			3
	Total chaff	**4**	**2**	**>1000**	**126**	**>1000**	**18**	**274**	**6**
Triticum sp.	Wheat glume base frag.	20	7	>1000	>100	>1000	>100	>1000	
CHARRED WEED SEEDS									
Papavar rhoeas	Common poppy						1		
Chenopodium album	Fat-hen			16					
Chenopodium/Atriplex	Goosefoots/oraches						2		
Agrostemma githago	Corncockle					5			
Stellaria media	Common chickweed						1	1	
Fallopia convolvulus	Black-bindweed			5		20			
Rumex obtusifolius	Broad-leaved dock			29	2	40			
Rumex acetosa	Common sorrel			16		3	2		
Rumex acetosella	Sheep's sorrel					3			
Brassica sp.	Cabbages					1			
Fabaceae >4mm	Pea family						2		1
Fabaceae <4mm	Pea family	4	1	1		35			
Apiaceae	Carrot family						1		
Plantago lanceolata	Ribwort plantain				2	1			
Asteraceae	Daisy family		1				9		
Anthemis cotula	Stinking chamomile						3		
Cirsium sp.	Thistles			1					
Tripleurospermum inodorum	Scentless mayweed					3	2		
Carex trigonous	Sedges- three sided			1					
Isolepis	Club-rushes			4		2	14		
Juncus sp.	Rushes						2		
Eleocharis palustrus	Common spike-rush						1		
Schoenoplectus sp.	Club-rushes			2					
Poaceae <2mm	Grass family			4					
Poaceae 2–4mm	Grass family			4	2	35	7	7	
Poaceae >4mm	Grass family			7		10	7		
Bromus spp.	Bromes	1		510	8	297	10	3	
Indet.	Unknown seeds						1		
	Total charred weed seeds	**5**	**2**	**600**	**14**	**455**	**65**	**11**	**1**
OTHER									
Poaceae awn frag.	Wild grass			4		6			
Poaceae floret base	Wild grass					1			
Fabaceae seed pod frag.	Pea family					40	3		
Papavar c.f. *somniferum* capsule lid	c.f. Opium poppy					1			

region (e.g. Etton in Taylor 1988), it is likely that there was a successful woodland management regime operating here.

Early Bronze Age
Only two features from the Early Bronze Age had identifiable charcoal, and *Quercus* was clearly dominant, with lesser quantities of other species. The assemblages are not dissimilar from the Neolithic pit samples, suggesting that the woodland resources were essentially unchanged.

Romano-British period
This period produced the greatest range of species; there was noticeably less *Quercus* than in the earlier periods (present in only four of the eight assemblages). The use of more typical wetland species such as *Alnus glutinosa* (alder) and *Frangula alnus* (alder buckthorn) suggests a change in collection practices and/or local resources. Given that *Alnus* does not burn well (Edlin 1949), it seems plausible that the charcoal assemblage reflects the fact that the fen edge was closer to the site in the Romano-British period than in the Bronze Age (Hall 1987). The extensive use of fenland peat-cuttings for fuel at other sites indicates pressure on the woodland resources in this period (Murphy 2001), but there are no indications that this was the case at Parnwell.

The composition of the corn-drier samples was similar and the quantity of *Fraxinus* (ash) in the possible stoking pit (3539) suggests that this was the primary fuel wood. In addition, there were *Prunus* type thorns and charred buds in the assemblage. All of the Roman assemblages were very mixed, which suggests a lack of careful selection of fuel wood. This is not unusual in domestic contexts of this period (Challinor 2003).

Middle Saxon period
The charcoal assemblages from seven pits dating to the Middle Saxon period solely consisted of Quercus (oak). Both heartwood and sapwood fragments were identified and two samples (from pits 502 and 3637) also contained burr wood pieces. Burrs are produced in oak trees in two situations: either the tree has been pollarded or the tree is very old (Mark Robinson Pers. comm.). The occurrence of burrs suggests that either very mature and valuable oak wood was used, or that trimmings from large trees, cut for timber, were used for charcoal. Indeed, the absence of any domestic or industrial debris suggests that these features might have been charcoal-making pits.

Pollen
Sylvia Peglar
Monoliths from an Early Neolithic pit (2289) and a Romano-British waterhole (3716) were submitted for palynological analysis.

Early Neolithic pit 2289
Pollen from the sediments of the pit was very sparse and generally badly preserved. Total pollen sums were very low, and indeterminable values were high. However, the assemblages were mainly dominated by the pollen of herb taxa, particularly grasses (Poaceae) and dandelion-type (Asteraceae (Lactucoideae)), characteristic of meadows and pastures, suggesting an open environment during the time of fill. Some grains of trees and shrubs suggest that there was some woodland or scrub nearby.

Romano-British waterhole 3716
Pollen was generally sparse and of variable preservation. The pollen assemblages were dominated by herb pollen taxa (more than 90%) except for the two upper samples. This suggests that the local environment was very open at the time the sediments were laid down, possibly with some growth of secondary woodland/scrub by the time of the uppermost fill (context 3518). The decrease in herbs and concomitant increase in pollen values of trees and shrubs, particularly oak (*Quercus*), hazel (*Corylus*), and fern spores, provides evidence for this growth. This might mark the partial abandonment of the site, although some cereals were still being grown in the vicinity.

The dominant herb pollen taxon was grass (Poaceae), but there is evidence for arable cultivation with the occurrence of cereals including wheat and/or oats (*Triticum/Avena*), and barley (*Hordeum*-type). The taxon *Triticum* included those grains with very large pore + annulus diameters: spelt or emmer (*Triticum spelta/T. dicoccum/T. compactum*) (Andersen 1978). Weeds characteristic of arable fields were also present. There was no evidence of any other crops, but these are small, limited pollen assemblages. The high grass (Poaceae) pollen values together with the occurrence of dandelion-type (Asteraceae (Lactucoideae)), daisy-type (Aster-type), ribwort plantain (*Plantago lanceolata*), sorrel (*Rumex acetosa*-type), and meadow buttercup-type (*Ranunculus acris*-type) are indicative of areas of meadows and pastures. Other taxa are characteristic of ruderal plant communities of waste and rough ground and waysides. The presence of the pollen of obligate aquatic taxa shows that the feature had standing water.

Discussion

Early Neolithic
Landscape context

The discovery of the Early Neolithic pit complex at Parnwell fills a lacuna in the prehistoric occupation sequence of the Flag Fen basin and its immediate hinterland. Earlier Neolithic features from the Fengate investigations have been relatively sparse, and mainly limited to evidence for funerary ritual. This includes the Site 11 'mortuary enclosure' (Pryor 1993), the 'funerary house' at Padholme Road (Pryor 1974) and the multiple burial and 'mortuary structure' at Cat's Water (Pryor 1984, 2001). The only possible 'settlement' evidence takes the form of two small pits at Newark

Road (Pryor 1980) and a third at Edgerley Drain Road (Beadsmoore 2005). Notably, all of the pottery from the Fengate sites is of plain bowl or 'Grimston' type, in contrast to the decorated bowl ('Mildenhall') wares seen at Parnwell. This might imply that the Parnwell occupation belongs to a later stage of the period than the Fengate sites, although our understanding of Neolithic ceramic development in East Anglia is not strong enough for certainty on this point.

Although Parnwell thus stands alone as the only site of its type in the local area, similar 'pit settlements' with decorated bowl associations are well known in other parts of East Anglia, particularly in Norfolk and Suffolk. Recent work has shown that such sites are invariably found on gravel or sand, and typically occupy locations that are low-lying but elevated over river valleys (Garrow 2006). The Parnwell settlement conforms to this pattern, being strictly confined to the gravel band at the south-eastern edge of excavated area, and not extending onto the clays. Current understanding of the local Neolithic environment suggests that the site was located just to the north of, and slightly above, alluvial deposits belonging to the Nene/Cat's Water river system. The fen edge would have lain at least 2.5 kilometres to the south-east of the site (Hall 1987; French & Pryor 1993, fig. 42).

Pollen evidence from pit 2289 suggests that the site was located within a largely open, grassland environment, with some woodland or scrub in the vicinity. The charcoal assemblage suggests that there was no pressure on woodland resources. This is consistent with the environmental evidence from the Fengate investigations, which indicates that a combination of woodland and grazing land developed during the Neolithic period, with only a minor element of arable cultivation (French 2001, p. 400).

The settlement

The full extent of the occupation at Parnwell is unclear. The pit complex was located very close to the eastern limit of excavation, and hence is likely to have continued beyond it. Small amounts of residual Early Neolithic pottery and flint (including a leaf-shaped arrowhead from the evaluation) were recovered from Area 3, about 200 metres to the south-west of the pit group, and might derive from further features which had been obliterated by the Romano-British settlement. This would suggest that occupation from this period was either very extensive or had more than one focus. Some Early Neolithic settlements elsewhere in East Anglia comprised over 200 pits spread over comparably large distances of 50–170 metres, as at Hurst Fen, Suffolk (Clark 1960) and Kilverstone, Norfolk (Garrow, Beadsmoore & Knight 2005).

Most of the pits were fairly small, and had been rapidly back-filled with a single homogeneous deposit. These fills often had a high charcoal content, and contained mixed assemblages including pottery sherds, worked flint, animal bone, and charred nuts, grains and seeds, suggesting that they represent redeposited 'midden' or 'occupation' material. Similar small pits back-filled with occupation material are an ubiquitous feature of Early Neolithic settlements in southern England (Thomas 1999; Garrow 2006). As no 'practical' function can be identified for these pits, it is difficult to avoid the conclusion that they were dug in order to receive the material that was deposited within them.

Much more unusual was large pit 2289, which measured 3.25 metres in diameter and 1.18 metres deep and had a more complex depositional history. Early Neolithic pits elsewhere in East Anglia are almost always significantly shallower than this (Garrow 2006), with pits above one metre deep only previously recorded at Broome Heath, Norfolk (Wainwright 1972). There, the pit had been left open for a period, to partially fill through silting and erosion, before it was rapidly back-filled with 'occupation material' in a similar way to the smaller pits.

Recent discussions of Early Neolithic settlement have emphasised the extent of residential mobility. The general lack of evidence for robust structures, combined with the shallow and short-lived nature of most pits, has suggested that individual sites were typically occupied for short periods at a time (Whittle 1997; Edmonds 1999; Thomas 1999). It is argued that the digging and filling of pits at these sites served to commemorate particular events or periods of occupation, to 'render activity memorable' and 'give meaning to place' (Thomas 1999, p. 72). In East Anglia, it has been argued that the individual pit clusters within the large 'pit settlements' each represent a single discrete episode of occupation. This is supported by the fact that close similarities in pottery types, or actual sherd joins, often occur between pits within a single cluster but not between those from different clusters (Healy 1988; Garrow 2006; Garrow, Beadsmoore & Knight 2005).

At Parnwell, pit 2289 does not entirely fit this model. It would have required a significant investment of effort to construct, and appears to have had a relatively lengthy life-cycle before its ultimate infilling. Perhaps it marked a different kind of event, or a longer episode of occupation, than was typical for sites of this type. Although pit 2289 is unusual, it is not unique. It is similar to many of the pits from Broome Heath, which were up to 1.60 metres deep with complex sequences of fills, and in some cases showed evidence for recuts (Wainwright 1972). The large features from Parnwell and Broome Heath remind us that Early Neolithic settlement dynamics are unlikely to have conformed to any single, simple model. While brief, small-scale visitations might have been the norm, certain sites could also have seen other forms of occupation.

Finds and activities

The finds from the pits suggest that various activities were carried out at the site. The pottery assemblage comprises vessels of varying sizes, including one unusual small cup. The flint assemblage similarly includes a range of tool types, including a notable number of serrated flakes with silica gloss, suggesting use in plant working. The relatively low numbers

of cores and chips do, however, imply that flint knapping was not a major activity at the site. Two flakes from polished axes of Cumbrian origin represent the only objects that can be recognised as non-local. Artefact types found at some other contemporary sites in East Anglia but absent from Parnwell include hammerstones, querns and quern rubbers. However, given the relatively small number of features excavated, these absences may not be significant.

Due partly to acid soil conditions, animal bone is scarce or absent from most Early Neolithic sites in East Anglia, and the faunal assemblage from Parnwell is thus of some interest. As in other regions of southern Britain, cattle were clearly of importance, with smaller numbers of sheep/goats and pigs also consumed. Wild animal remains were absent. The charred plant remains show a mix of wild and cultivated foodstuffs typical for the period. Assessing the relative dietary importance of wild and cultivated plant foods is difficult, however, due to potential issues of differential preservation.

Bronze Age

The Early Bronze Age occupation consisted of six pits and hollows dispersed across an area of 125 metres on the highest part of the site, associated with Collared Urn and Biconical Urn ceramics. Again, the limitations of the excavated area mean that the full extent of the occupation is unclear. Intriguingly, Bronze Age remains including 'Beaker hut sites, Bronze Age cinery urn and cremation ditches etc.' were reportedly found just 200 metres to the south-east of the site by the early twentieth-century antiquarian George Wyman Abbott, but no further details of this discovery are known (RCHM 1969, p. 8).

The discovery of the Parnwell pit group alters our understanding of the local Early Bronze Age landscape, as it was previously thought that occupation was restricted to the gravels and cornbrash, with the clays not colonised until the Iron Age (Hall 1987, p. 60). However, despite its unusual topographic location, the occupation at Parnwell appears to be fairly typical of the period. Similar groups of pits associated with Collared Urn pottery have been found dotted around the Flag Fen basin and its immediate hinterland, including sites on the Fengate terrace at Edgerley Drain Road (Beadsmoore 2005), Newark Road (Pryor 1980) and Third Drove (Evans & Pryor 2001, p. 31); on the higher ground to the west of Fengate at Peterborough Prison (M Knight 2002); on the Eye peninsula at Tanholt Quarry (Patten 2003, 2004); and on Whittlesey island at Bradley Fen/King's Dyke West (Gibson & Knight 2002; M Knight forthcoming). The pits from these sites vary widely in size, but have typically produced only modest quantities of finds; there is no evidence for other associated structures. These traits are typical of Early Bronze Age occupation sites within East Anglia as a whole (Healy 1995; Garrow 2006). In most cases, the pits are fairly dispersed and unfocussed in their distribution, although discrete circular clusters of pits occur at Edgerley Drain Road and Bradley Fen/King's Dyke West. Activity was particularly dense at the latter site, where the pits were found in association with ring ditches and cremation burials. The pattern that might thus be emerging is that activity was generally dispersed in character, but became more intense where there were monuments to act as a focus (Mark Knight Pers. comm.). Perhaps occupation of Parnwell and most other sites was relatively short-lived and involved fairly small groups of people, while some favoured monumentalised places were returned to repeatedly, or were venues for larger gatherings. This would fit with current models derived from other areas of southern Britain, which suggest that the Early Bronze Age was similar to the Neolithic in being characterised by a significant degree of residential mobility (Brück 1999).

The Early Bronze Age features at Parnwell show wide variation in their size, form and fills. The shallow, irregular feature 1086 might represent use of a natural hollow or tree-throw hole. The remaining features can all be characterised as pits but, as with the Early Neolithic occupation, suggesting specific 'functions' for these features is difficult. Some of the pits might have silted up naturally, although at least one (1008) appears to have been deliberately back-filled. There are few indications of the nature of the activities that took place on the site, as artefacts were limited to modest amounts of pottery and worked flint, and preservation of animal bone and charred plant remains was poor.

One notable absence from Parnwell is any trace of the later Bronze Age field systems that have been found extending across large areas of the gravel terraces around Flag Fen (Pryor 2001). Recent excavations have suggested that the well-known field system complex at Fengate extended much further north, reaching as far as Edgerley Drain Road, 800 metres south of the site (Beadsmoore 2005), and probably Oxney Road, only 500 metres to the south-east (Britchfield 2002). While it is possible that Bronze Age field boundaries at Parnwell could have been completely removed by truncation, the survival of the Romano-British field system suggests that the absence is real. The negative evidence from Parnwell might thus define the northern edge of the Fengate field system, suggesting that the clays were avoided when this ordered landscape was laid out.

Middle to Late Iron Age

Only a small area of Middle to Late Iron Age occupation was found, although this might have formed part of a larger settlement, as two further pits of this date were found 90 metres to the south-east during the evaluation by the CAU of the adjacent field (Williams 2004). Furthermore, a pre-Conquest origin for the earliest phase of the Romano-British settlement enclosure cannot be ruled out, given the lack of datable finds from its lower fills. It is therefore possible that occupation at the site continued without a break from the later Iron Age into the Roman period, with the core of the Iron Age settlement perhaps lying beyond the limits of the excavation. The Parnwell settlement forms part of a pattern of fairly dense later Iron Age

occupation around Flag Fen (Hall 1987, fig. 44), including excavated sites such as Cat's Water (Pryor 1984) and Bradley Fen (M Knight forthcoming).

Romano-British period

The character of the settlement and its setting in the landscape

The early phase of the Romano-British settlement (Enclosure A) had an organic, curvilinear form. The absence of diagnostic artefacts from the lower fills of this enclosure makes its date of construction uncertain, but it seems to have been abandoned at an early stage of the second century AD. The general paucity of finds other than animal bone from the excavated part of the enclosure suggests that it was somewhat peripheral, with the core of occupation at this time perhaps lying to the south.

The settlement was subsequently remodelled as the more regular, rectilinear Enclosure B, which produced a larger finds assemblage, predominantly dating to the second century. The evidence from cropmarks suggests that the total size of this enclosure was 120 metres by at least 140 metres, although its full extent to the south-east is masked by modern buildings (Fig. 7). The excavated part of the enclosure was dominated by two double-ditched trackways, which suggest a concern with demarcating the proper paths of movement of people or livestock into and through the settlement. The area to the north of the trackways was divided into sub-compounds by a series of ditches and gullies. Features present within these sub-compounds were fairly sparse, including a few shallow pits, a corn-drier and a large 'waterhole'. The apparent 'emptiness' of many of the sub-compounds could suggest that paddocks or horticultural plots were present within the enclosure. More likely, however, is that it reflects the use of building techniques that lacked deep earth-fast foundations, and hence were susceptible to truncation. Pottery distributions show a concentration in the north-eastern corner of Enclosure B, which could imply that this area was a focus of occupation, despite the absence of evidence for structures. Alternatively, however, it could simply have been an area of middening. The distribution of tile was markedly different, focusing on the western half of the enclosure, suggesting that much of this material derives from the superstructure of the corn-drier.

The extensive rectilinear field system is assumed to have been contemporary with Enclosure B, given their identical alignment. A small cremation cemetery lay within this field system, to the north-east of the settlement. To the north of the settlement, meanwhile, a trackway and a cluster of pits was uncovered, perhaps representing a subsidiary area of occupation. Dateable artefacts from the cemetery and the northern occupation area mainly belonged to the second century AD, suggesting that they too were contemporary with the settlement.

The evidence suggests that the settlement was inhabited by a small community, perhaps an extended family group (Hingley 1989) engaged in mixed agriculture. Evidence for other activities was sparse, with residues of crafts such as textile working, potting and metalworking all absent from the excavated part of the settlement. Forms of material culture traditionally regarded as indicating 'wealth' or 'status' were also very scarce. The pottery assemblage was modest and dominated by local wares, and few items of metalwork were recovered, despite the fact that the settlement was surveyed by a metal detector. The small amounts of brick and tile recovered are unlikely to derive from a 'high status' Romanised building. It is of course possible that the excavated part of the settlement was a peripheral area, and that the apparent poverty of the finds is thus misleading. However, the evaluation by the CAU of the southern part of the settlement produced an equally modest finds assemblage (Williams 2004).

The pollen evidence indicates that the settlement lay within a very open landscape of meadows and arable fields, mirroring the picture gained from the Fengate investigations (French 2001, p. 403; Boreham 2005). The edge of Flag Fen lay about 500 metres to the south-east of the site at this time, with a narrow fen inlet only about 150 metres from the northern boundary of the site perhaps developing during the course of the Roman period (Fig. 16; Hall 1987, p. 34). Excavation and survey work have shown a pattern of dense settlement during the Roman period around Flag Fen and on the higher ground to the west (Fig. 16; Hall 1987; Pryor 2001). A number of modest enclosed farmsteads similar to Parnwell have been excavated in the area, including Cat's Water (mid to late second century AD; Pryor 1984), Tower Works (late second to fourth centuries AD; Brudenell 2005) and Paston (late second to early fourth centuries AD; Coates, Hancocks & Ellis 2001).

The agrarian base

Although the plan of the field system is somewhat fragmentary, it seems to be characterised by relatively narrow linear strips, between eight and 11 metres wide. Superficially, this differs from the patterns of rectangular fields dated to the later Iron Age and Romano-British period which have been identified elsewhere around the Flag Fen basin (Pryor 2001). However, excavation of one such field system at Tanholt Quarry, Eye (dated to the second to third century AD) has shown that one of the rectangular plots was divided into a series of similar strips, measuring 48 metres long and 8 metres wide (Patten 2004). This form of field division must presumably have been associated with arable rather than pastoral use. While its specific purpose is unclear, it could perhaps relate to some form of horticulture. It is uncertain whether it represents a similar form of land use to the so-called 'lazybed' cultivation of very narrow strips (about four metres wide) seen at Romano-British sites elsewhere in Cambridgeshire at Godmanchester (Green 1978) and Cottenham (Clark 1949).

The charred plant remains from the settlement suggest that, as at other sites in the local area, spelt wheat was the main cereal crop. The weed flora suggest that

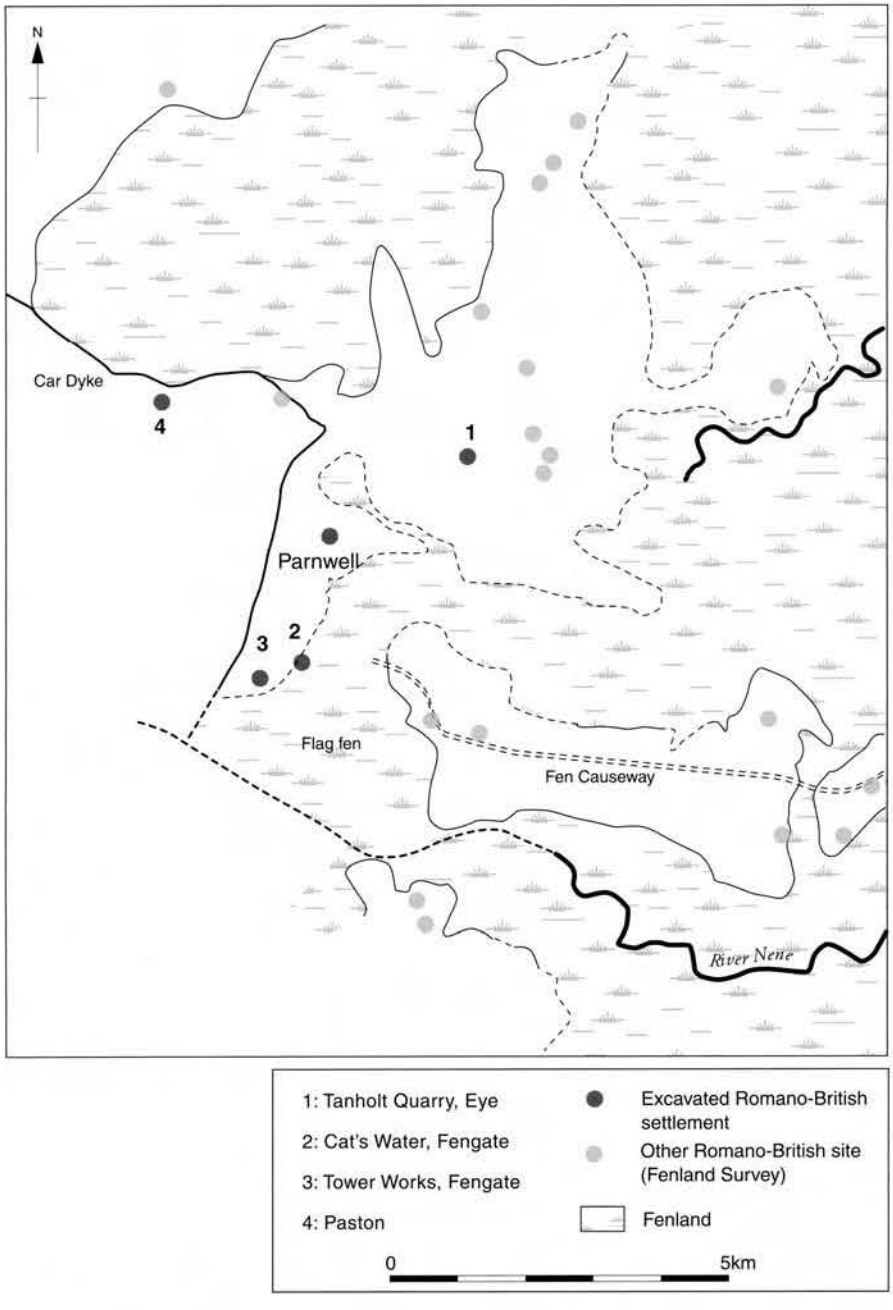

Figure 16. *Romano-British settlement around Flag Fen. Based on Hall 1987, fig. 45.*

not only heavy clay soils, but also lighter well-drained soils were under cultivation. The farmland associated with the settlement might thus have extended beyond the clays and on to the surrounding gravels.

The significance of cereals to the economy of the site is underlined by corn-drier 3548, a substantial structure built from limestone slabs. The nearest outcrops of limestone lie some 1.5 kilometres to the south-west of the site, although it is of course possible that the stone could have been reused from an earlier structure, rather than brought in specifically for this purpose. Comparable stone-lined corn-driers have been found at a number of rural settlements in the Peterborough area dating from the late second/early third century onwards (Table 9). They show a wide diversity of forms, suggesting piecemeal local adoption of this innovation rather than construction by specialists; Wild's (1974, p. 155) comment that 'each farmer had his own ideas' about how a corn-drier should be built still seems apposite. The most similar example to the Parnwell drier is that from Phase 4 at Orton Hall Farm (*c.* AD 300/325–375), which also had an arrangement of two flues meeting at right angles and sharing a single stoking area (Mackreth 1996).

Romano-British corn-driers are argued to have been multi-functional structures, used both for

roasting malt for the purposes of brewing, and for parching grain for storage or consumption (van der Veen 1989). At Parnwell, the charred plant remains show that the drier had been used to roast malt in the form of germinated spelt wheat. Unfortunately, few botanical analyses are available from the other corn-driers in the region. However, those from Barnack (Simpson 1993) and Haddon (Fryer 2003) both contained mixtures of spelt grain and chaff along with detached embryos of indeterminate species, suggesting that they too were involved in malting. The production of wheat beer might thus have been a common activity for rural communities in the area.

The small size of the faunal assemblage from Parnwell prevents any detailed reconstruction of animal husbandry practices. However, it can be noted that cattle were the most numerous species, in common with several other rural settlements in the area such as Paston and Tower Works, but in contrast to sites further east in the Fens proper, where sheep are typically dominant (Malim 2005, p. 169). Some evidence for dairying is provided by a single ceramic cheese press. The unusually high frequency of cheese presses at sites within the Fenland region as a whole might suggest that cheese-making formed a particularly important part of the subsistence economy (Hancocks, Evans & Woodward 1998, p. 78; Evans 2003, p. 104).

Despite the close proximity of the fen edge, evidence for the use of wetland resources was limited. The charcoal assemblage indicates that alder carr woodland was used for gathering fuel. Although individual fish, goose, mallard and snipe bones were present, it would seem that fishing and fowling made little contribution to the economy of the settlement. The frequencies of wetland species are similarly low in faunal assemblages from other contemporary sites around Flag Fen and its western hinterland (e.g. Baxter 2003). It would appear that local rural communities followed 'typical' Romano-British mixed farming regimes, in which the fenland played only a peripheral role, except (presumably) as an area of summer pasture.

Abandonment

The ceramic evidence from both the excavated area of the settlement and the evaluated area to the south suggests that activity might already have begun to decline in the late second century AD, and largely ceased at some point during the third century. Pollen evidence from the uppermost fill of waterhole 3716 – which contained some of the few pieces of fourth-century pottery from the site – suggests the growth of secondary woodland or scrub, particularly oak and hazel. This might suggest that we are not simply dealing with a shift in settlement location over a short distance, but actual abandonment of the area.

The reasons for the abandonment of the settlement could have related to the biography of this particular residential group rather than to any wider trends. However, there are also indications of settlement abandonment on the Fengate terrace at this time, with occupation at Cat's Water and the neighbouring Storey's Bar Road site going into decline in the late second century AD (Pryor 1984). It has been suggested that these sites were abandoned due to increasing wetness, with occupation shifting to the higher ground to the west, to sites such as Tower Works (Pryor 2001; Brudenell 2005). Certainly, the sites at Cat's Water and Storey's Bar Road were subsequently overlain with freshwater flood deposits during the mid third century, and show no evidence for activity beyond that time. This formed part of a wider flooding episode in the Fenland region, in which extensive areas up to the three-metre OD contour became at least seasonally wet (French 2001). Recent excavations just 500 metres to the south-east of Parnwell at Oxney Road have identified flood deposits probably associated with this episode (Britchfield 2002). Lying at about five metres OD, the settlement at Parnwell would have been safe from inundation, but any associated farmland on the surrounding lower ground might have become wet at this time, potentially weakening the economic base of the community.

The late second-century decline and third-century abandonment of the Parnwell site could thus have been related to a wider episode of disruption to local settlement and socio-economic networks. While there has been much discussion of the role of wetter conditions in causing these problems, it should be remembered that flooding can be a consequence as much as a cause of social disruption if, for example, drainage works cease to be properly maintained (Malim 2005).

Table 9. *'Corn-driers' from Romano-British rural settlements in the Peterborough area. * = not stone-lined.*

Site	No. of flues	Date	Reference
Barnack	1	AD 250–300	Simpson 1993
Barnack	1	AD 300–400	Simpson 1993
Haddon*	1	AD 275–350	Hinman 2003
Longthorpe	1	AD 150–250	Dannell & Wild 1987
Lynch Farm	1	Romano-British	Wild 1974, fig. 5
Orton Hall Farm, Phase 3	1	AD 225–300/325	Mackreth 1996
Orton Hall Farm, Phase 4	2	AD 300/325–375	Mackreth 1996
Orton Hall Farm, Phase 5	1	AD 375+	Mackreth 1996
Parnwell	2	*AD 150–250*	*This report*
Plant's Farm, Maxey	1	AD 250–350	Gurney, Neve & Pryor 1993

Anglo-Saxon period

The discovery of features radiocarbon dated to the seventh to ninth centuries cal AD was unexpected, as very little evidence for Anglo-Saxon activity has hitherto been found around the Flag Fen basin (Hall 1987; Pryor 2001). The activity at Parnwell was, however, of a limited and specific kind. The 57 charcoal-rich pits from this period contained virtually no artefacts, indicating that there was no permanent settlement in the immediate vicinity. Furthermore, the scattered, unfocused distribution of the pits is suggestive of sporadic or seasonal use of the site, rather than of concerted occupation. In the absence of metalworking slag, briquetage or other evidence for a specific craft or industrial function, the most likely interpretation of these features is that they represent the truncated bases of pits or clamps used in charcoal production. This is supported by the exclusive use of oak in the pits, a wood historically favoured for charcoal making (Harris, Harris & James 2003). The presence of burrs in some of the charcoal would be consistent with woodland management in the form of pollarding. The identification of charcoal production at this site is significant for our understanding of local landscape development, as in combination with the pollen evidence from waterhole 3716 it suggests regeneration of woodland during the Late Roman or post-Roman period.

Evidence for charcoal production prior to the Middle Ages has hitherto been scant, but evidence comparable to that from Parnwell has recently been found at some other sites in southern England, suggesting that the industry was quite widespread during the Saxon period. The nearest example is 19 kilometres to the west at Cross Leys Quarry, Wittering, Cambridgeshire, where several clusters of charcoal-filled pits have been found, radiocarbon dated to about cal AD 520–660 (Abrams 2002; Abrams & Wilson 2004). At Mayton Wood, Norfolk, 27 shallow pits containing significant amounts of charcoal and evidence of in situ burning have been suggested to relate to charcoal burning, and have again produced radiocarbon evidence for a Middle Saxon date (Gurney & Penn 2005). Further afield, at Bestwall Quarry, Dorset, nearly 1000 oak charcoal-filled pits have been found scattered across a wide area, with radiocarbon determinations indicating use between about cal AD 700–850 (http://www.bestwall.co.uk). At both Wittering and Bestwall, the pits were associated with contemporary ironworking features, indicating that the charcoal was used to fuel furnaces. As this was not the case at Parnwell, the purpose of the charcoal manufacture is unclear. Production might simply have been carried out for domestic use within the local community and perhaps for small-scale trade, although the foundation of Peterborough Abbey (3.5 kilometres to the south-west) in AD 655 might also have provided a stimulus for the industry.

Conclusion

The evidence from Parnwell has made a significant contribution to our understanding of the long-term development of the landscape around the Flag Fen basin. It is clear that this part of the fen 'hinterland' had a long and complex history of occupation, although it might also have been avoided at certain times in the past, for example when the field systems of the later Bronze Age were laid out across the gravel terraces below. As development work continues around Peterborough at a rapid pace, further excavation is likely to shed more light on this important archaeological landscape.

Acknowledgements

Many thanks are due to Raven Group Developments Ltd for funding the excavation and publication. Paul Chadwick (CgMs Consulting) and Ben Robinson (Peterborough Council) are also thanked for their work in facilitating the project.

The fieldwork was directed by Andy Simmonds and managed by Annie Bingham. The post-excavation work was managed by Alex Smith, who also edited this report. The human osteological analysis was carried out by Diana Mahoney and Sharon Clough, and the soil chemistry and micromorphology analyses of pit 2289 by John Crowther and Richard Macphail. Thanks are due to the numerous other OA staff who worked on the project, whether in the field or at the post-excavation phase. Denise Druce would also like to thank Jacqui Huntley and Elizabeth Huckerby for their assistance with the charred plant analysis. Emma Beadsmoore and Mark Knight at CAU kindly provided unpublished information.

The Cambridge Antiquarian Society thanks Raven Group Developments Ltd for a grant towards the cost of publishing this article

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Anglo-Saxon and medieval boundaries and burials at the former Oblic Engineering site, Church Street, Litlington

Thomas Woolhouse

with contributions from Peter Thompson, Nina Crummy, Carina Phillips and Val Fryer

An excavation carried out on land adjacent to Litlington parish church found boundary ditches dating from the sixth to the tenth centuries AD (Anglo-Saxon period) and eleventh-thirteenth centuries AD (early medieval). Three undated inhumation burials are thought to be broadly contemporary with the earliest ditches, which may have demarcated the eastern limit of a burial ground connected to an earlier church.

Litlington is a village on the southern county boundary of Cambridgeshire, some 20 kilometres south-west of Cambridge. The opportunity for archaeological investigation of a site in Church Street (TL 3100 4270; Fig. 1) arose in 2003–5. The excavation, whose results are detailed in this report, followed earlier stages of investigation comprising a desk-based assessment (Doyle & Harris 2005) and trial trench evaluation (Grant & Keir 2003).

Human activity is attested in the area from the Mesolithic onwards (Cambridgeshire Historic Environment Record (HER) 03071 on Fig. 2) and two important prehistoric communication routes, the Icknield Way and Ashwell Street, pass through the parish. There are numerous Bronze Age burial mounds along the route of the Icknield Way, although many are plough-damaged and survive only as ring ditches. By the Late Iron Age, a settlement of some kind existed in Litlington and Iron Age features have been uncovered at Manor Farm, to the south-east of the site at Church Street (Fig. 2; HER 11752).

A Romano-British cemetery, Heaven's Walls (Fig. 2; HER 03262), was discovered in 1821 during gravel extraction to the south of the village and is arguably the finest in Cambridgeshire. It contained approximately 250 inhumations and at least 80 cremations in an area enclosed by a flint and brick wall. It was in use between the first and fourth centuries AD and yielded rich grave goods including coloured glass vessels and jewellery. It might have been related to a villa that stood just a few hundred metres to the north, discovered and excavated in 1829, which is believed to have included about 30 rooms, hypocausts, a bath, and at least one mosaic pavement (Fig.2; HER 03186; Taylor 1997, pp. 79–80).

A detailed study of the Anglo-Saxon and medieval development of the village has recently been conducted by Susan Oosthuizen (2002). In the Middle Saxon period, Litlington seems to have formed part of the 'warland' of a large multiple estate centred on Steeple Morden. There is no evidence that there was a manorial centre in Litlington at this time and the estate tenants are likely to have lived in dispersed hamlets and farmsteads. Litlington was probably granted away as an independent estate following the West Saxon reconquest of Cambridgeshire in 917. By the late tenth century, it was the centre of an estate of some 20 hides, with a probable manorial centre in the area defined by Church Street, South Street, Meeting House Lane and Cage Lane (Fig. 2). The population lived in planned settlement blocks to the south-east and west of this enclosure.

Oosthuizen argues that after 1066 the Anglo-Saxon manorial demesne was abandoned and new manorial centres were laid out for the two Norman subtenants of the new king, at what would later become Huntingfields and Dovedales manors. The villagers and smallholders continued to live in the old planned settlement areas until direct control by the two manors slackened in the early to mid-fourteenth century (Oosthuizen 2002, p. 60). The manor of Huntingfields, immediately to the south-east of the site discussed below, acquired its name in the mid-thirteenth century when its heiress married Roger of Huntingfield, lord of the Boxworth manor. The manor house that stood in its grounds was first recorded in 1337 (Taylor 1997, p. 80).

A church is first mentioned in the village in 1168 (Wright 1982, p. 63) and the earliest parts of St Catherine's Church, located immediately north-west of the site, date to the twelfth century (HER CB14887). In 1336, the church was given to the University (later Clare Hall, Cambridge), and Clare Hall built a house for the priest on the rectory gardens, which included a hall, kitchen and two upstairs rooms. It was still extant in the late eighteenth century, but was generally

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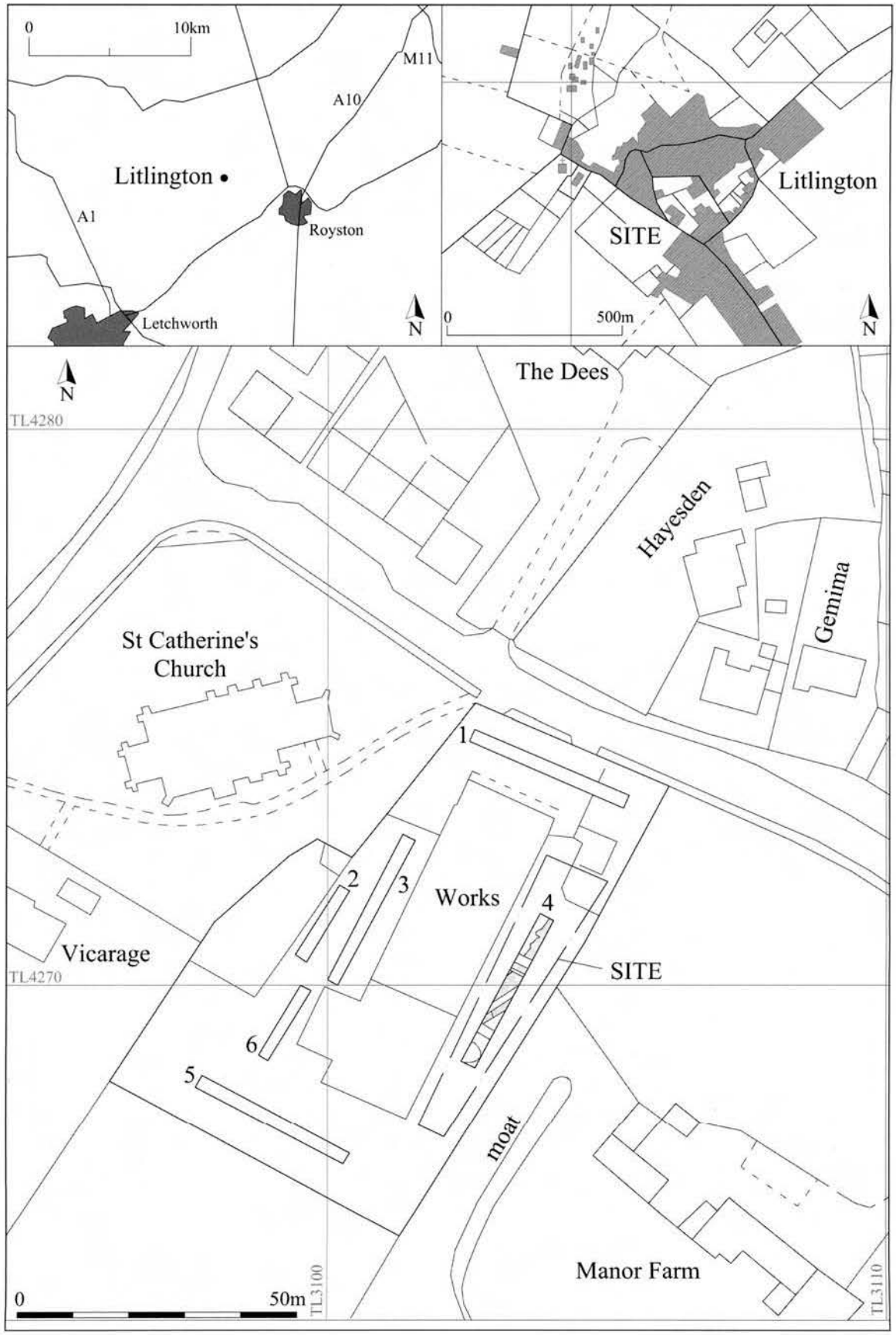

Figure 1. *Site location.*

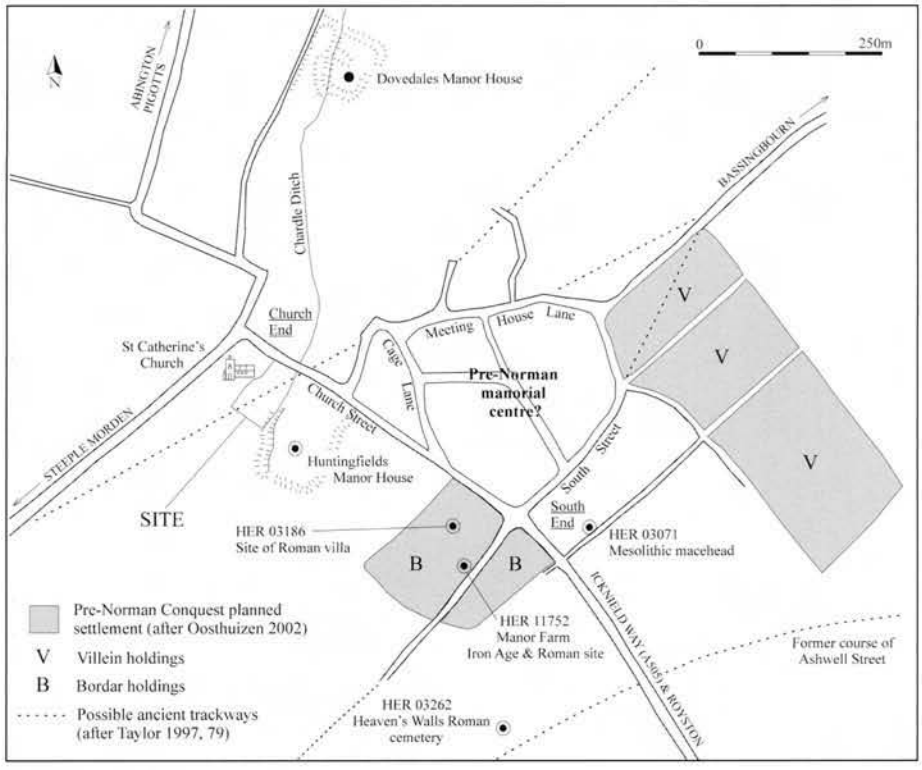

***Figure 2**. Archaeological sites and finds in Litlington.*

unoccupied. In 1816, the Reverend Dr William Webb, Master of Clare College, started to build a new vicarage, which is still extant adjacent to the site. The village's economic base remained predominantly agricultural into the modern period.

The 1830 Enclosure Map (Cambridgeshire Record Office Q/RDc46) shows the site as a sub-rectangular plot south-east of the vicarage. It contained nine buildings and was owned by Clare Hall. Part of the site was granted by Clare College for the construction of a new National School in 1857; a schoolroom and teacher's house had been built by 1859. The 1886 Ordnance Survey map (1:2500) shows that six buildings were demolished and four more constructed during this development. By 1950, the school had been moved to a disused RAF hut and the old schoolroom was sold in 1965 (Wright 1982, p. 66). Prior to the trial trench evaluation in 2003, the site was occupied by the Oblic Engineering Works, the front part of which had been part of the old school house. The engineering works were until recently in use as a garage. The rear of the site contained storage yards, metal containers and hardstanding, with a range of concrete and brick buildings extending along the central spine of the site, surrounded by reinforced concrete roadways.

The excavation (Fig. 3)

The excavation found three inter-cutting ditches dated to the sixth to tenth century, two ditches dated to the eleventh to thirteenth century and three inhumation burials tentatively assigned a date broadly contemporary with the ditches. These features are discussed in detail below. Other post-medieval or modern features comprised field drains, and modern building foundations in the northern corner of the site. These had caused some truncation to earlier features.

The uppermost deposits encountered related to the construction, use and demolition of the former Oblic Engineering Works. The construction of the factory buildings had also involved substantial ground reduction across the site. Consequently, the natural drift deposits, comprising chalky clay with patches of clayey chalk, were encountered at a shallow depth.

Anglo-Saxon and early medieval ditches

Feature F2003 (Fig. 3) was a large curvilinear ditch (0.90–1.70 metres wide x 0.58–0.72 metres deep). In the north-eastern corner of the site, it was aligned north-east to south-west, but it gradually curved to a north to south alignment, before bending to an east to west orientation at its southern end. The ditch was re-cut as ditch F2005, which was of similar dimensions and followed the same sinuous alignment. Both ditches displayed similar steeply-sloping bowl-shaped profiles.

Both of the ditches contained sixth- to tenth- or eleventh-century pottery; small fragments of abraded medieval flat roof tile in an oxidised sand-tempered fabric were also found in ditch F2003. Ditch F2003 also contained intrusive medieval and post-medieval sherds, but was cut by two ditches, F2005 and F2012,

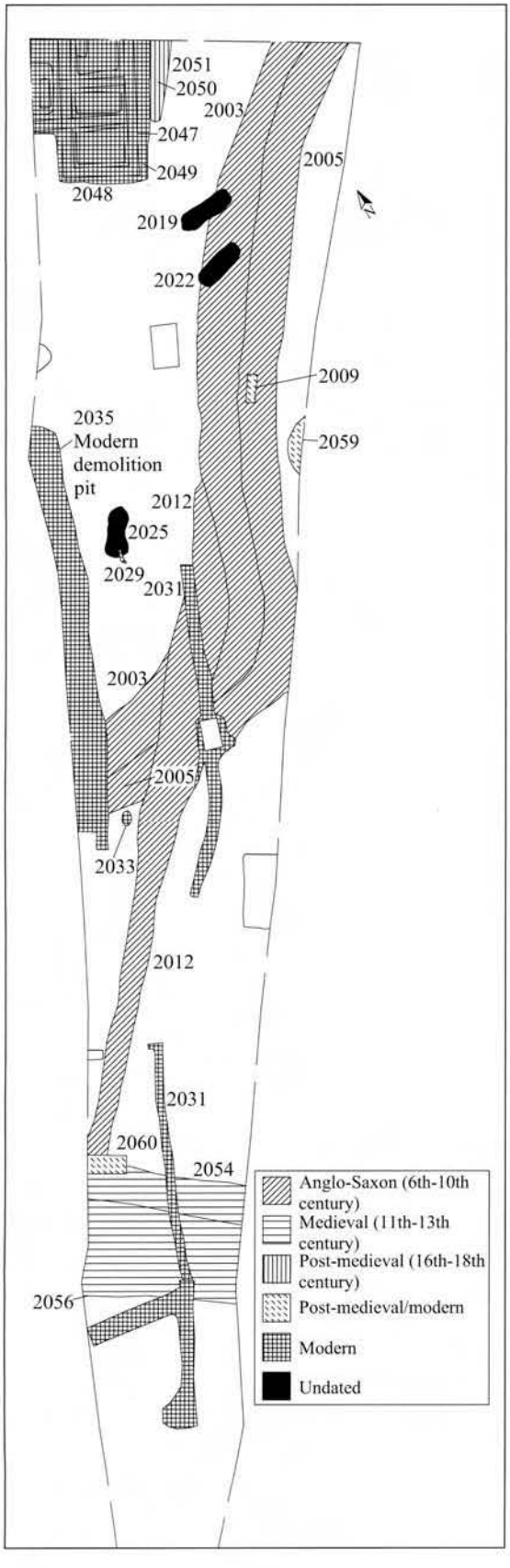

Figure 3. *Phase plan.*

which contained only sixth- to tenth-century pottery, with no later finds. In addition, the sixth- to tenth-century pottery recovered from ditch F2005 was in good condition, suggesting it was a primary deposition. Both F2003 and F2005 were cut to the south by ditch F2012, which had a similar profile to the earlier ditches and ran for more than 15 metres from north-east to south-west across the centre of the excavation area. Its southern terminus was obscured by a modern pit (F2060). Sherds of sixth- to tenth-century pottery were recovered from segments dug along the length of ditch F2012.

Towards the southern end of the site, two north-west to south-east aligned ditches were excavated. Both were very large (up to four metres or more wide), but shallow (*c.* 0.32 metres deep), with stepped sides and flat bases. There was one twelfth- to thirteenth-century sherd in ditch F2054. Ditch F2056 appeared to be a re-cut of F2054 and contained a large assemblage of eleventh- to thirteenth-century pottery (47 sherds) and 21 fragments of animal bone, as well as a fragment of human tibia. An environmental sample taken from the basal fill of F2056 suggested that the ditch had been filled with water on at least a semi-permanent basis and that it had been situated in an area of turfed grassland, although its banks might have been overgrown with weeds and shrubs (Fryer, this report). Both ditches contained fragments of Romano-British building materials, including fragments of tegula and imbrex roof tile and flue tile, with traces of mortar indicating re-use in a later structure (identification by Andrew Peachey). Ditch F2056 also contained a damaged, but distinctive, metal plate, probably dated to the thirteenth century (Crummy, this report).

The graves (Fig. 4)

Two graves (F2019 and F2022), which had been identified during the earlier trial trench evaluation and left *in situ*, were located close together towards the north-eastern corner of the site. Both cut F2003, the earliest of the ditches. Both graves were shallow (0.05–0.07 metres deep) and severely truncated. They were sub-rectangular and aligned east to west. The skeletons were oriented so that the head would have lain to the west and the feet to the east. Their east to west orientation suggests a Christian funerary rite and their relationship to ditch F2003 indicates a date no earlier than the sixth century AD. Grave F2019 contained four fragments of tenth- to eleventh-century pottery, although this might have derived from ditch F2003, into which the grave was cut.

Approximately nine metres to the south-west was a third inhumation (F2025). This was less regular in plan than F2019 and F2022 and was aligned north-east to south-west, with the fragmentary skull at the south-western end. A modern pit, F2029, cut the grave to the south, truncating the skeleton. The skeleton lay in an extended supine position, with a large flat-sided stone apparently placed between the legs and another smaller stone placed at the foot of the burial.

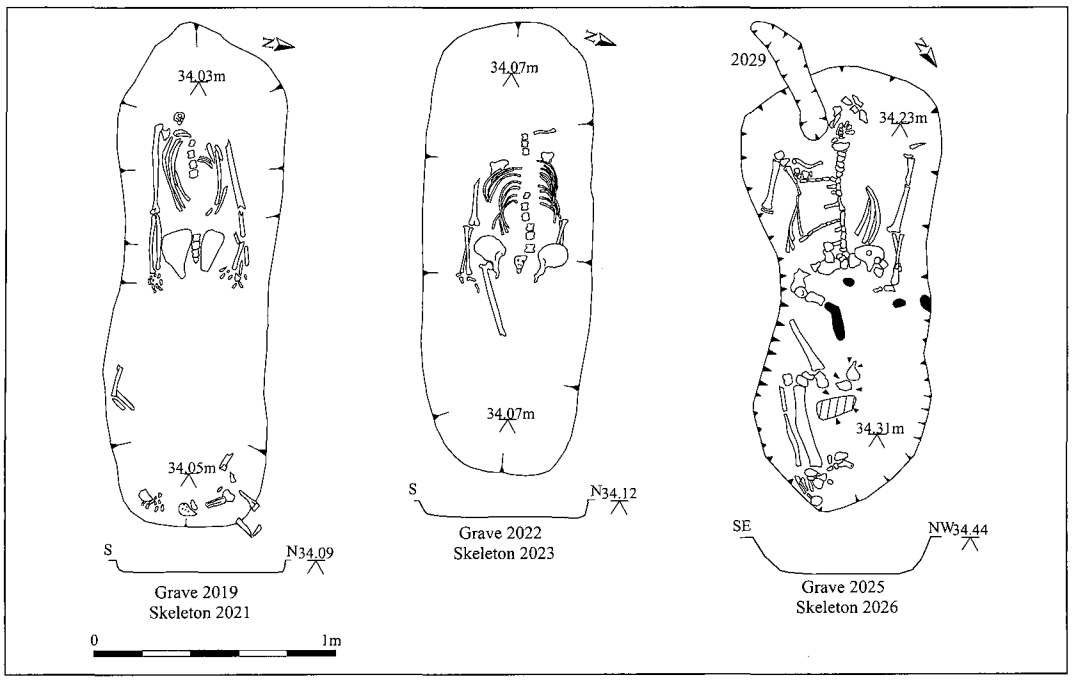

Figure 4. The graves.

The alignment of the grave parallel to ditch F2012 might suggest a broadly contemporary sixth- to tenth-century date.

The relatively poor condition of much of the bone and the incompleteness of the skeletons restricts detailed analysis of the sex and state of health of the individuals. The recovery of a disarticulated tibia fragment from ditch F2056 in the south of the site could suggest the former presence of other Anglo-Saxon or early medieval graves, obliterated by the digging of this ditch, probably in the thirteenth century.

The pottery

Peter Thompson

The excavation recovered 81 sherds (1.007 kilogrammes) from seven features, with the largest assemblage recovered from ditch F2056 (47 sherds/ 58% of the site total). The condition of the pottery is mixed: assemblages from some contexts are quite heavily abraded, but that from F2056 is in a generally good state of preservation and includes four rim sherds and an almost-complete profile. The pottery is almost all datable to between the sixth and thirteenth centuries AD. The sherds have been quantified according to context, by sherd count, sherd weight and fabric type. The ware types/fabric descriptions are given in Table 1.

The majority of the pottery from the three earliest ditches (F2003, F2005 and F2012) cannot be closely dated. A burnished rim sherd to a small cooking pot was found in ditch F2005 (Fig. 5.1); pots such as these are common forms throughout most of the Anglo-Saxon period (Hurst 1961, 254). The use of organic temper (grass or chaff), seen in sherds from these three ditches, is suggestive of a late fifth- to ninth-century date, but the fabric might have continued into the eleventh century (Hurst 1976, p. 309). However, at the large well-studied Saxon settlement and cemetery of Mucking in Essex, it is noted there was a marked increase in the use of grass tempering during the sixth and seventh centuries (Hamerow 1993, p. 31). Thick sherds in coarse gritty fabrics were present in ditch F2005 and also fit a broad fifth- to ninth-century date.

A Developed St Neots-type rim sherd from ditch F2056 (Fig. 5.2), with a clubbed, almost squared rim, has affinities with twelfth-century Developed St Neots Ware and twelfth- to thirteenth-century grey Medieval Sandy Ware forms from Ashwell, Hertfordshire (Hurst & Hurst 1967, fig. 11 no. 13 & fig. 12 no. 38). The calcareous wares (MCII) do not appear to have parallels with Ashwell, but at nearby Therfield motte and bailey castle, a similar sandy ware with limestone inclusions was dated to the eleventh century (Biddle 1964, p. 70). Such calcareous wares comprising shell, chalk, or limestone, although more common in the tenth to twelfth centuries, are known to continue in use into the thirteenth to fourteenth centuries in areas where calcareous sources are present (Turner-Rugg 1995, p. 46). The complete profile of a bowl with sagging base (Fig. 5.3) and a fairly upright, expanded rim suggests a date centred on the twelfth century.

The bulk of the pottery comprises sandy, sometimes gritty, dark to mid grey wares with mid to light grey or pale buff surfaces. The pottery assemblage from Litlington probably most closely parallels the 'Developed Early Medieval' and 'Rough Medieval'

Site specific code	Ware description	Approximate date range
ORG	Organics (grass or chaff temper)	500–900/1000 AD
SHORG	Fine shell and organics	500–900/1000 AD
SORG	Sand with organics	550–1000/1050 AD
CSORG	Coarse sand and organics	550–1000/1050 AD
NEOT	St Neots Ware (shell temper)	850–1150 AD
MCI	Late Saxon/early medieval sandy coarseware	850–1150 AD
DVNEOT	Developed St Neots-type. Mid grey fabric with paler grey surfaces. Early medieval forms	1150–1250/1300 AD
MCIIa	Medieval coarseware. Moderate to common angular to sub-rounded quartz and sparse to common rounded calcareous chalk or limestone. Grey or brown cores; grey surfaces	1000–1200/1250 AD
MCIIb	Moderate to common coarse to very coarse rounded to sub-angular quartz and sparse to moderate rounded limestone with voids, rare angular flint, and harder white inclusions, possibly calcite	1000–1200/1250 AD
MCIIIa	Medieval coarseware. Mid to pale grey fabric, slightly micaceous with moderate to common sub-angular to sub-rounded quartz and sparse to moderate very coarse grog	1050–1300 AD
MCIIIb	Buff/grey/red/brown surfaces; brown cores with common coloured fairly well-sorted quartz	1050–1300 AD
MG	Medieval Glazed Ware (oxidised)	1225–1450/1500 AD

Table 1. *Ware types and fabric descriptions.*

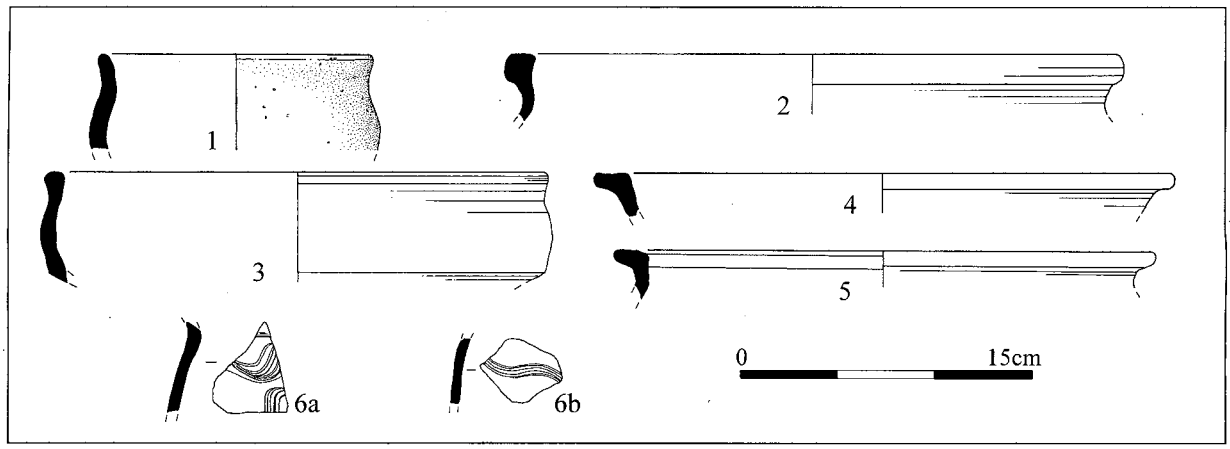

Figure 5. *Pottery illustrations.*

5.1 F2005 L2041: Burnished rim sherd to small sixth- to tenth-century cooking pot. Black fabric with sand and organics.
5.2 F2056 L2057: Developed St Neots-type cooking pot. Grey fabric with shell and sand.
5.3 F2056 L2057: Bowl profile. Grey/brown fabric with sand and chalk inclusions.
5.4 F2056 L2057: Flanged bowl rim. Sandy grey ware.
5.5 F2056 L2057: Flanged jar rim. Grey sandy fabric; buff surfaces.
5.6a F2056 L2057: Incised decoration. Light grey sandy ware with darker surfaces.
5.6b F2056 L2057: Incised decoration. Light grey sandy ware with darker surfaces.

fabrics from Northolt Manor, dated to 1100–1250 (Hurst 1961, pp. 261–3); although, unlike at Northolt, no flint-gritted wares were found (Hurst 1967, p. 81).

Other sherds found at Litlington have parallels in the region. Two sherds from ditch F2056 (Figs 5.6a & 5.6b) have incised wavy line decoration comparable to a mid-twelfth century example from Therfield Castle, whilst another twelfth-century example is from a decorated cooking pot from Northolt Manor (Biddle 1964, p. 77; Hurst & Hurst 1961, p. 266). The two wheel-made flanged rims, from a bowl and cooking pot (Figs 5.4 & 5.5), are probably a little later in date, from the thirteenth or fourteenth centuries. At Northolt Manor, similar rim forms were introduced in around 1300 (in Surrey ware) and at Ashwell, flanged forms (although with squared rims) appear in thirteenth-century contexts (Hurst 1961, pp. 273–4; Hurst & Hurst 1967, p. 79). However, the gritty bowl rim (Fig. 5.4) in a slightly friable fabric could be a little earlier and flanged rims appear at Denny Abbey and Therfield Castle in contexts dated to the second half of the twelfth century (Coppack 1980, p. 225 no. 12; Biddle 1964, p. 77).

Another sherd from ditch F2056 is in a fine, sandy, oxidised ware with glossy green glaze with darker speckling. This may be late medieval Hertfordshire Glazed Ware; at St Albans these first appear from the mid-fourteenth century, having been preceded by other glazed pottery from the early thirteenth century (Turner-Rugg 1995, pp. 48, 52). It is therefore likely that the Litlington sherd is either a late Hertfordshire Glazed Ware, or a precursor. If the former, and not intrusive, this sherd would date ditch F2056 to the fourteenth or fifteenth centuries, but the balance of the evidence suggests a thirteenth century date.

The metal and glass objects

Nina Crummy

The remains of a lead-alloy (pewter) plate (diameter 180 millimetres), with a shallow decorated rim (height 17 millimetres), were found in the fill of ditch F2056 (Fig. 6, Plate 3). The rim is plain at the top, which is slightly thickened and everted; the lower part is decorated with incised triangles alternately containing diagonal grooves and/or a semicircle. The base had a concave centre with a slight bead around the edge, matched on the underside by concentric tooling applied on a lathe. The centre is partly missing and has clearly been subjected in antiquity to a series of blows from a round-headed hammer applied from both sides. The plate might have been a household vessel. Alternatively, it might have been made in imitation of a silver communion paten to accompany a priest's burial, as was the custom in the thirteenth century following an instruction issued in 1229 by William of Blois, Bishop of Worcester (Oman 1990, p. 790). Lead-alloy does not survive well in most soil conditions, but in burials where both a paten and chalice survive the cup had been placed upright and covered with the paten, suggesting that the cup would have held consecrated wine and the plate consecrated bread (Bruce-Mitford 1976, p. 138; Biddle & Kjølbye-Biddle 1990, p. 793; Ottaway & Rogers 2002, pp. 2942–4; Crossan 2004, p. 110). The damage to the centre of the plate found at Litlington might be an indication that a pair of such vessels had been disturbed, deliberately damaged and discarded separately.

The form of the plate, with low raised rim, wide flange and dished centre, is quite unlike patens found in Winchester and York, which are generally smaller (100–160 millimetres in diameter), shallow and dished, often almost concave, although some also have broad flanged rims (Biddle & Kjølbye-Biddle 1990, figs 231–2; Ottaway & Rogers 2002, fig. 1509). The difference in the form of the plate found at Litlington suggests that it might instead have been a lid. When inverted, it displays the decoration on the rim to greater effect and the concentric tooling on the underside becomes visible. Were such an interpretation correct, the object could then be linked to four lidded lead coin hoard containers found at Colchester and Winchester, which range in date from the late eleventh to the mid-thirteenth century (Brooks, Crummy & Archibald 2004, pp. 132, 138). However, the underside of the plate is much less corroded, indicating that it has been in contact with the soil for a shorter period than the top, a situation appropriate for a plate set face up in a grave, but contrary to the object's use as a lid. Identification as a paten is therefore preferred and the proximity of graves dating from the sixth to thirteenth centuries adds further weight to this interpretation.

The only other metal and glass objects found on the site were a small post-medieval or later bead (in ditch F2003) and two post-medieval nails (in drain F2009).

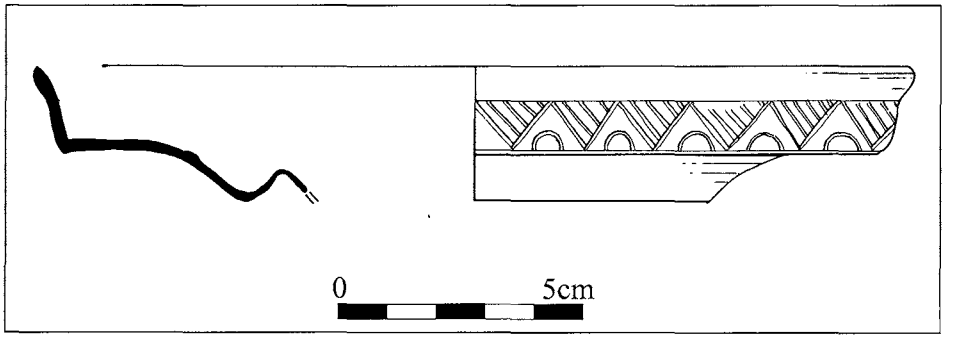

Figure 6. Pewter plate from ditch F2056.

The human bone
Carina Phillips

Three human skeletons and a disarticulated fragment of a human tibia were recovered from Church Street, Litlington. The skeletons were in moderate condition but all were less than 50% complete. Surface erosion had affected all the bone (stage 3 surface erosion; Brickley & McKinley 2004) and fragmentation occurred frequently. Skeletons SK2021, SK2023 and SK2026 were recovered from graves F2019, F2022 and F2025, respectively (Fig. 4).

Each skeleton was examined in order to determine sex, age, height and to record any pathology. Sex estimates were assigned based on sexual traits present in the pelvis and cranium (see Buikstra & Ubelaker 1994 and Ferembach, Schwidetsky & Stloukal 1980 for details). Age estimates for adult skeletons were based on the pelvic features of the auricular surface and pubic symphysis and on cranial suture. Ages based on dental attrition in adults were considered following Miles (1963). Dental eruption (Buikstra & Ubelaker 1994), bone fusion (Buikstra & Ubelaker 1994) and long bone length (Ubelaker 1999) were used to assign immature ages. Measurements were taken when possible and have been converted to stature estimates for the adult remains following Trotter (1970). Preservation was also recorded using the stages defined in Brickley & McKinley (2004).

Fragmentation and surface erosion had affected the bone of skeleton SK2021 (stage 1–2 surface erosion). A small fragment of the occipital was the only part of the skull present. Fragments of thoracic and lumbar vertebrae, ribs and pelvis were present in small numbers. Most long bones were present, but fragmented, hindering the estimation of height. The incompleteness and fragmentation of the skull and pelvis restricted estimation of sex. The fusion of the bones present indicates the individual to have been aged 14–24 years at death.

The skull and upper cervical vertebrae of skeleton SK2023 were missing, as were the left humerus, femur, tibia, fibula and both feet. The radii and ulnae were the most complete bones present, enabling estimation of a height of 163 ± 4.24 centimetres; this falls in the range for this date suggested by Roberts & Cox (2003, p. 195). Pelvic traits suggest that the skeleton was probably female. The bone fusion points observable indicate the individual to have been an adult. Observations of the auricular surface indicate the individual to have been in middle adulthood (40–49 years), although this is only based on one pelvic trait.

One small fragment of the skull, part of the mandible and small fragments of vertebrae were present in skeleton SK2026. Some long bones were present, but none were complete, hindering length measurement and estimation of height. Bone fusion indicates the individual to have been adult and dental attrition indicates an age of 35–45 years; however, dental attrition is not considered to be the most reliable age indicator due to differences in diet between populations affecting the rate of attrition.

A fragment of the shaft of a right human tibia was identified in ditch F2056. The bone was adult-sized, but age cannot be determined. It cannot be associated with skeletons SK2021 or SK2026, as these both had their right tibiae. The right tibia from skeleton SK2023 was missing, but the fragment cannot be associated with it with any certainty.

The animal bone
Carina Phillips

The animal bone assemblage consisted of 134 fragments. The majority of the bone (78%) came from features of sixth- to tenth-century date. A small number of fragments (16%) came from early medieval features and only five came from post-medieval features. Four fragments came from undated features. The bone is of good to moderate preservation, suffering from no surface erosion, but is brittle, which has resulted in fragmentation. The small size of the animal bone assemblage has affected detailed analysis and consequently little can be said about the bone with regard to husbandry practices, butchery and utilisation.

Bones were identified and recorded by species and skeletal element when possible. No mandibles were sufficiently complete to enable estimation of age. One horse skull was aged using the dental eruption ages stated in Sisson & Grossman (1953). Measurements, and bone fusion state, were recorded when possible, as was evidence of butchery, burning or gnawing. It was not possible to calculate heights for any bone. Fragments that could not be identified to a particular species were recorded under the categories of 'large-sized', consisting of cattle (*Bos* sp.), horse (*Equus* sp.) and large deer, 'medium-sized fragments' and 'small-sized', consisting of sheep/goat (*Ovis/Capra* sp.), pig (*Sus* sp.) and dog (*Canis familiaris*) bone fragments (Table 2). Unidentifiable bone fragments were recorded as such.

Cattle, horse, sheep/goat and dog were identified in both the Anglo-Saxon and early medieval assemblages. In the Anglo-Saxon assemblage cattle was the most frequently identified species and was therefore probably most frequently utilised. (the other assemblages are too small to consider quantification). Horse was the second most common species. The large-sized and small-sized counts in the assemblages support this dominance of the larger species, cattle and horse. The presence of more horse bones than sheep/goat bones is unusual, but it may be biased by the deposition of a number of horse bones in ditch F2003 (the bones from at least two horses were present in this feature). A horse skull from ditch F2012, which was less than 50% complete, was noted to have come from an animal aged approximately two-and-a-half years at death. One of the horse metacarpals exhibited scrape marks on the medial shaft. These are likely to have been caused by the removal of flesh and skin from this bone (R. Jones Pers. comm.). This is surprising, considering that very little meat would have been present on the metacarpal. If the flesh was being

removed, it is likely that the skin would also have been utilised. In the Anglo-Saxon period, horse meat was consumed (Wilson 1991, p. 76). However, based on the presence of one bone at Litlington, it can only be inferred that the horse carcass was utilised in this one instance and conclusions about the purpose can only be speculative.

The charred plant macrofossils and other remains

Val Fryer

Samples for the extraction of plant macrofossil assemblages were taken from the fills of graves F2019, F2022 and F2025 and from the basal fill of ditch F2056.

Charred plant remains are extremely scarce, comprising oat (*Avena* sp.) and wheat (*Triticum* sp.) grains and small charcoal fragments. It is assumed that all are derived from scattered refuse and were accidental inclusions within the contexts.

The de-watered assemblage from ditch F2056 appears to be indicative of an accumulation of material within a ditch that had been filled with water at least semi-permanently. The ditch was probably situated within an area of dry, short-turfed grassland and the sides were possibly partially overgrown by colonising weeds and shrubs. Waterlogged root/stem fragments are abundant and seeds of ruderal weeds, aquatic plants and tree/shrub species are also common. Taxa noted include hemlock (*Conium maculatum*), henbane (*Hyoscyamus niger*), stinging nettles (*Urtica dioica*), duckweed (*Lemna* sp.) and elderberry (*Sambucus nigra*).

Although specific sieving for molluscan remains was not undertaken, shells are present in all but the sample from grave F2019. However, the material from grave F2025 is almost certainly modern in origin as the shells are extremely well-preserved, with excellent surface structuring. The most notable assemblage is that from ditch F2056, where all four of the ecological groups of terrestrial molluscs described by Evans (1972) are represented, along with numerous shells of the freshwater obligate species *Gyraulus albus*.

Discussion

The ditches dating from the sixth to tenth centuries (F2003, F2005 and F2012) found during the excavation constitute important evidence of earlier activity at what would become one of the centres of the village after the Norman Conquest. They could date from as early as the sixth century AD. If so, this raises the interesting possibility of an early post-Roman settlement close to what had been a sizeable rural settlement or estate centre in the Late Roman period. The longevity of the villa complex 300 metres to the south-east of the site (Fig. 2, HER 03186) is uncertain, but Heaven's Walls Roman cemetery (Fig. 2, HER 03262) certainly remained in use into the fourth century, attesting to the continuing presence of a Romano-British population in the area.

There are numerous other examples throughout Cambridgeshire and the wider region of Anglo-Saxon settlements and burial grounds lying adjacent to, or reusing, prominent Roman remains (Taylor 2000). At Cardinal Distribution Park, Godmanchester, for example, a fifth- to seventh-century Anglo-Saxon settlement grew up close to the ruins of the Roman town (Gibson with Murray 2003). At Gallows Hill, Swaffham Prior, it seems that several sixth- to seventh-century inhumations were deliberately interred within the remains of a Romano-British temple complex (Malim 2006). A Romano-British farmstead at Orton Longueville was taken over, without a break in occupation, by people using Anglo-Saxon pottery and living in timber halls and sunken huts (Mackreth 1996). A range of factors probably played a part in the decision to settle adjacent to or to reuse a Roman building or settlement. These might have included practical considerations such as the possibility of making use of good stone buildings that were still standing, or of field boundaries that were still visible. However, less everyday concerns, such as a desire on the part of new settlers to associate themselves with the local ancestors, or to legitimise power by reference to the past, might have also been important (Malim 2006, p. 112; O'Brien 1999, p. 60).

All of the ditches (F2003, F2005, F2012, F2054 and F2056) were fairly prominent features and were probably originally larger, having been truncated during

	Anglo-Saxon		Medieval		Post-medieval	
	NISP	MNI	NISP	MNI	NISP	MNI
Cattle	24	3	3	1	2	1
Horse	12	2	2	1	1	1
Sheep/goat	6	1	5	1	0	0
Dog	1	1	1	1	0	0
Large-sized	33	-	7	-	2	-
Small-sized	8	-	2	-	0	-
Unidentifiable	20	-	1	-	0	-
Total	**104**	-	**21**	-	**5**	-

Table 2. *Number of Identified Specimens/fragments (NISP) and Minimum Number of Individuals (MNI).*

the erection of the former factory buildings. It seems likely that the ditches were boundaries, although exactly what they served to demarcate cannot be determined with certainty. They may have been connected to earlier precursors of the nearby late twelfth-century parish church, 50 metres to the north-west, or of the post-Norman Conquest manorial centre of Huntingfields immediately to the south-east (approximately 40 metres away). A connection with an earlier church seems particularly likely in the case of the three earliest ditches (F2003, F2005 and F2012), which appear to curve around to enclose an area to the north-west of the site (beyond the limits of the excavation), where St Catherine's Church is located (Fig. 3). Their stratigraphic and spatial relationships with the three inhumations also lend weight to this suggestion as, although graves F2019 and F2022 cut the earliest ditch (F2003), they respect the line of its re-cut (F2005) and are located within the area enclosed by it. Grave F2025 had no stratigraphic relationships by which it could be dated, but its alignment parallel to ditch F2012 might suggest that the grave was positioned with respect for the boundary ditch. These relationships suggest that the sixth- to tenth-century ditches could have formed the eastern boundary of a burial ground, perhaps the cemetery of an earlier church.

There is some slight evidence that other graves were originally present. The fragment of residual human bone found in ditch F2056 might be from another burial, disturbed when this ditch was dug, probably in the thirteenth century. In addition, the pewter plate found in the basal fill of the ditch is possibly a replica communion paten originally accompanying a priest's burial. Again, this might have come from a grave disturbed by the cutting of the ditch. It is of course possible that these residual finds originated in one of the three graves which were identified on site. However, the excavated graves were all located some 25 to 35 metres away from ditch F2056 and the process by which their contents could have been transported this distance is unclear. It can therefore be tentatively concluded that the three surviving inhumations represent the remains of what was originally a larger burial ground. Other burials were probably destroyed by the digging of ditches F2054 and F2056 in the eleventh to thirteenth centuries, as well as during ground levelling for the late twentieth-century engineering works. A relatively long period of use might be inferred from the need for the cemetery boundary ditch to be re-cut three times.

The presence of an earlier church on the site of St Catherine's would accord with Richard Morris's suggestion (1997) that most parish churches were in existence in some form by around 1000 AD. Many of these buildings would probably have been of timber and so have left little archaeological evidence of their existence, particularly if subsequent re-builds in stone occupied approximately the same footprint. The pottery associated with the cemetery ditches does not allow close dating of when this earlier church might have been in use; it could have been at any time between the sixth and tenth centuries.

Several early churches excavated elsewhere in Cambridgeshire never developed into full parish churches in the formal sense. A possible Middle Saxon timber church with an associated burial ground has been investigated at Gamlingay (Murray with McDonald 2005, p. 264). Here, the site was abandoned by the late eighth century and there is no evidence of a church in the village until the twelfth century, when a parish church was established several hundred metres to the north. A similar small timber church associated with a large inhumation cemetery has been excavated at Cherry Hinton (Last 2000). Burials continued at this site into the eleventh century, but then shifted to the site of a new parish church some 400 metres away (Taylor 2001, p. 175). The exact processes by which some early churches became parish churches, while others failed to make the transition, require further investigation. The development of a churchyard consecration rite from around 900 and of laws ensuring payment of dues to churches (e.g. the laws of Aethelstan, 925–39), were probably important factors (Taylor 2001, pp. 168–9).

The three partially complete skeletons found during the excavation tell us little about the structure and state of health of Litlington's sixth- to tenth-century population. Two of the individuals were in middle adulthood (aged 35–45 and 40–49), while the third, SK2021, was an adolescent or young adult aged 14–24. Only one skeleton, a female, could be sexed (SK2023). Only this skeleton was complete enough to estimate her height, being around 163 ± 4.24 centimetres tall, in the usual range for women of this period. Grave F2025 was notable for the apparent placement of a large flat-sided stone between the legs of skeleton SK2026 and another smaller stone at the foot of the burial. While the grave had clearly been subject to significant truncation and these stones might have been intrusive, it is equally possible that they were part of the original grave furniture. The placement of stones around the head is not uncommon in later Anglo-Saxon burials (Hadley 2001, p. 98). Pillow stones were found in three of the seventh- to eighth-century graves at Gamlingay (graves 12, 83 and 112) (Murray with McDonald 2005, p. 265). At Cherry Hinton, pillow stones included large stone blocks decorated with interlaced ornament (Taylor 2001, p. 175). However, the placement of stones between the legs or at the foot of the body is more unusual. One possible explanation is that grave F2025 was originally stone-lined and that the two stones noted during excavation were all that remained of this. A stone lining might have been a mark of status, having been used, for example, in a priest's grave at St Leonard's hospital, Chesterfield (Hadley 2001, p. 113).

Ditches F2054 and F2056 might have also been related to the cemetery. Although there is some evidence that they were dug through pre-existing burials in the area, this does not necessarily indicate that the cemetery was disused: careless treatment of earlier internments is a fairly common feature of early medieval burial grounds (Hadley 2001, pp. 107, 119). However, it is perhaps more likely that the ditches were

associated with the manorial centre at Huntingfields, 40 metres to the south-east. Although a house on the site is first mentioned in the early fourteenth century (Taylor 1997, p. 80), there are strong indications that the manorial centre was first laid out shortly after the Norman Conquest for one of Litlington's two new Norman lords (Oosthuizen 2002, p. 56). Until the early nineteenth century, Huntingfields was enclosed by a rectangular moat (Taylor 1997, p. 80), which now only survives as a wider part of the Chardle Ditch stream (Fig. 2). Ditches F2054 and F2056 were both large features (over four metres wide), although they were very shallow as a result of ground levelling for the former engineering works. An environmental sample taken from the basal fill of ditch F2056 suggested that it had been filled with water on at least a semi-permanent basis. The possibility thus arises that the eleventh- to thirteenth-century ditches represent a northern arm of the moat, perhaps surrounding ancillary buildings outside the main moated enclosure. Such an arm, following a similar alignment, is shown close to the southern edge of the site on the 1830 Enclosure Map (Cambridge Record Office Q/RDc 46). Ditches F2054 and F2056 might have been earlier demarcations of this part of the moat.

No evidence was found of domestic structures, but both the sixth- to tenth-century and eleventh- to thirteenth-century ditches contained debris suggesting that there might have been dwellings nearby. The debris included, for example, sherds of St Neots ware from F2056 with soot from use in cooking. Small quantities of Romano-British building materials were also recovered from both the later ditches (F2054 and F2056). Several fragments bore traces of mortar on all surfaces including the breaks, suggesting re-use in later structures. These almost certainly derived from the large Roman villa (Fig. 2, HER 03186), excavated in the early nineteenth century, which lay approximately 300 metres to the south-east of the site. Its ruins would presumably have provided the early medieval villagers with a cheap and readily available source of good building material. Although there was no clear evidence of exactly when these Roman building materials had been re-used, the fact that they were stratified within ditches F2054 and F2056 suggests a date no later than the thirteenth century. However, the ground disturbance caused by construction of the engineering works could mean that these finds were intrusive within the ditches. In contrast with the evidence from the finds, which suggested occupation near the site, environmental samples indicated that ditch F2056 was situated within an area of dry, short-turfed grassland, and that the ditch sides were possibly partially overgrown by colonising weeds and shrubs. This is perhaps more consistent with a location on the periphery of a settlement.

In the post-medieval period, the northern portion of the former Oblic Engineering Site appears to have been occupied by buildings extending back from Church Street. The clunch foundations uncovered in the far northern corner of the excavation area correspond well with the locations of buildings depicted in the vicinity on the 1830 Enclosure Map (Cambridge Record Office Q/RDc 46) and the 1842 Tithe Map (Cambridge Record Office P108/27/1).

Conclusion

The remains of a sixth- to tenth-century burial ground excavated on site suggest that an earlier church preceded the twelfth-century parish church located 50 metres to the north-west. It has previously been argued (Oosthuizen 2002) that the tenth-century settlement at Litlington was focused around a manorial enclosure some 300 metres to the east, in the area defined by Church Street, South Street, Meeting House Lane and Cage Lane. The manor at Huntingfields and St Catherine's Church, between which the site lies, were thought to have developed after the Norman Conquest. In contrast, the excavation has shown that this part of the village was already a centre of activity by the tenth century at the latest.

The burial ground on site could date from as early as the sixth century AD. If so, this highlights the possibility of an early post-Roman settlement close to the Romano-British villa and cemetery a short distance to the south-east. This fits with the growing body of evidence from elsewhere in Cambridgeshire of Anglo-Saxon settlements and burial grounds lying adjacent to or reusing prominent Roman remains.

Acknowledgements

Archaeological Solutions (AS) would like to thank DFW Litlington Ltd for commissioning and funding the evaluation and excavation. AS gratefully acknowledges the advice and input of Cambridgeshire Archaeology Planning and Countryside Advice team, particularly Kasia Gdaniec. AS is also grateful for the assistance of Sarah Poppy at the Cambridgeshire Historic Environment Record Office, and staff at Suffolk Record Office, Bury St Edmunds. The author is grateful to Gill Shapland (Cambridge County Record Office) and Isobel Elmer for their help.

The excavation was carried out by Paul Harris on behalf of AS; the project was managed for AS by Jon Murray. Finds were coordinated by Claire Wallace. Ceramic building materials were analysed by Andrew Peachey. Illustrations are by Caroline George and graphics by Tansy Collins and Kathren Henry.

The site archive can be accessed at the Cambridge County Archaeological Store. A grey report containing full specialists' reports is available at the Cambridgeshire Historic Environment Record and the National Monuments Record.

The Cambridge Antiquarian Society thanks D F W Litlington Ltd for a grant towards the cost of publishing this paper.

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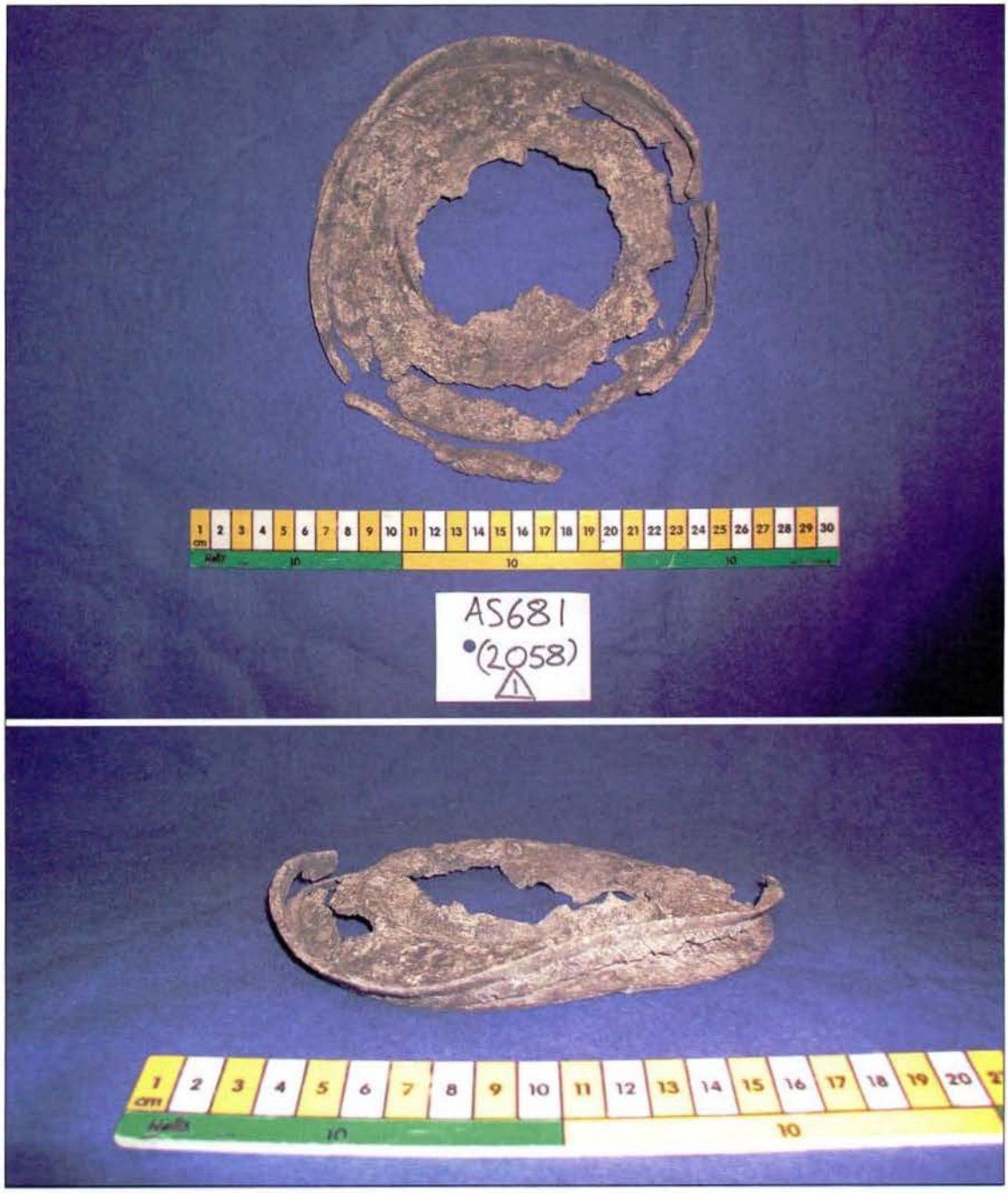

Plate 3. *The remains of a lead-alloy (pewter) plate or lid with a shallow decorated rim found in the fill of ditch F2056 at the former Oblic Engineering site, Church Street, Litlington.*

Mid-Saxon burials at Barnwell Road, Cambridge

Andrew A. S. Newton

with Nina Crummy and Carina Phillips

In September and November 2005, Archaeological Solutions carried out an excavation and a watching brief at land to the rear of 1–23 Barnwell Road, Cambridge, following an evaluation carried out at the site earlier in the year. The excavation identified two graves, which between them contained three burials, as well as a pit and a linear feature. Three further burials were identified during the watching brief phase of the project. A copper-alloy buckle similar to others found elsewhere in sixth-, seventh- and eighth-century contexts – and of a type considered typical of the period when English people were converting to Christianity – found with one of the burials has dated one individual to the Anglo-Saxon period. By association, the other burials on the site have been tentatively dated to the same period. The site contributes to the body of information regarding Middle Saxon activity in the Cambridge area.

In September 2005, Archaeological Solutions Ltd (AS) conducted an excavation at land to the rear of 1–23 Barnwell Road, Cambridge (NGR TL 4790 5928), covering an area of around 200 square metres approximately three kilometres east of Cambridge city centre (Fig. 1). This was followed in November 2005 by a watching brief carried out to observe ground works for proposed development of the site. An evaluation had already been carried out by Cambridgeshire County Council Archaeological Field Unit (Kenney 2005), which revealed the eastern end of a grave, within which the lower legs and feet of a human skeleton were visible. The evaluation concluded that the burial was probably of Iron Age or Roman date.

The burial was, however, unlikely to have formed part of a cemetery as Roman cemeteries tended to be situated close to roads and there are no known Roman roads close to the site. During the later Romano-British period, the Romans also practised isolated burial, often associated with field systems, and usually without grave goods; the skeleton found at Barnwell Road could have been such a burial. Roman period activity has been identified at former allotments 500 metres east of the Barnwell Road site, where structures and finds indicating both domestic and industrial activity have been recorded (Casa-Hatton 2001). Roman inhumations were discovered in the 1870s at Coldham's Common, to the south-west of the site, during coprolite digging (Cambridgeshire Historic Environment Record (HER) 05067a). There was a second- to fourth-century villa to the south-east and a later Romano-British settlement around two kilometres to the east (Heawood 1997).

However, there was also Saxon activity in the area and this affects the interpretation of the Barnwell Road site. A single Saxon burial has been found alongside those of Roman date at Coldham's Common (HER 05067b) and burials with grave goods have also been found within High Ditch (part of Fleam Dyke), to the north of Barnwell Road, during road works (Taylor 1998, p. 31). The pattern of Saxon cemetery distribution in Cambridgeshire indicates that settlement was concentrated on the Cam valley, but the relationship between settlement and cemetery is complicated as many villages may have used the same cemetery, which could therefore have been at some distance from their habitation sites (Taylor 1978, p. 20). On the western side of Cambridge, at King's Garden Hostel, an Early to Middle Saxon cemetery was excavated by the CAU in 2000 (Dodwell 2001). The cemetery contained 21 burials within 20 graves (Dodwell, Lucy & Tipper 2004) and, although only five of these burials were furnished, the general picture points to this being a cemetery dating from the seventh century (Dodwell 2001, p. 29). A Middle to Late Saxon execution cemetery was excavated at the corner of Chesterton Lane in 2001 (Mortimer & Regan 2001). In the area immediately surrounding the Barnwell Road site, two parallel ditches excavated at the former allotment site to the east may represent a droveway, part of a small enclosure or field boundaries, and have been dated to the Anglo-Saxon period by pottery contained within their fill (Casa-Hatton 2001).

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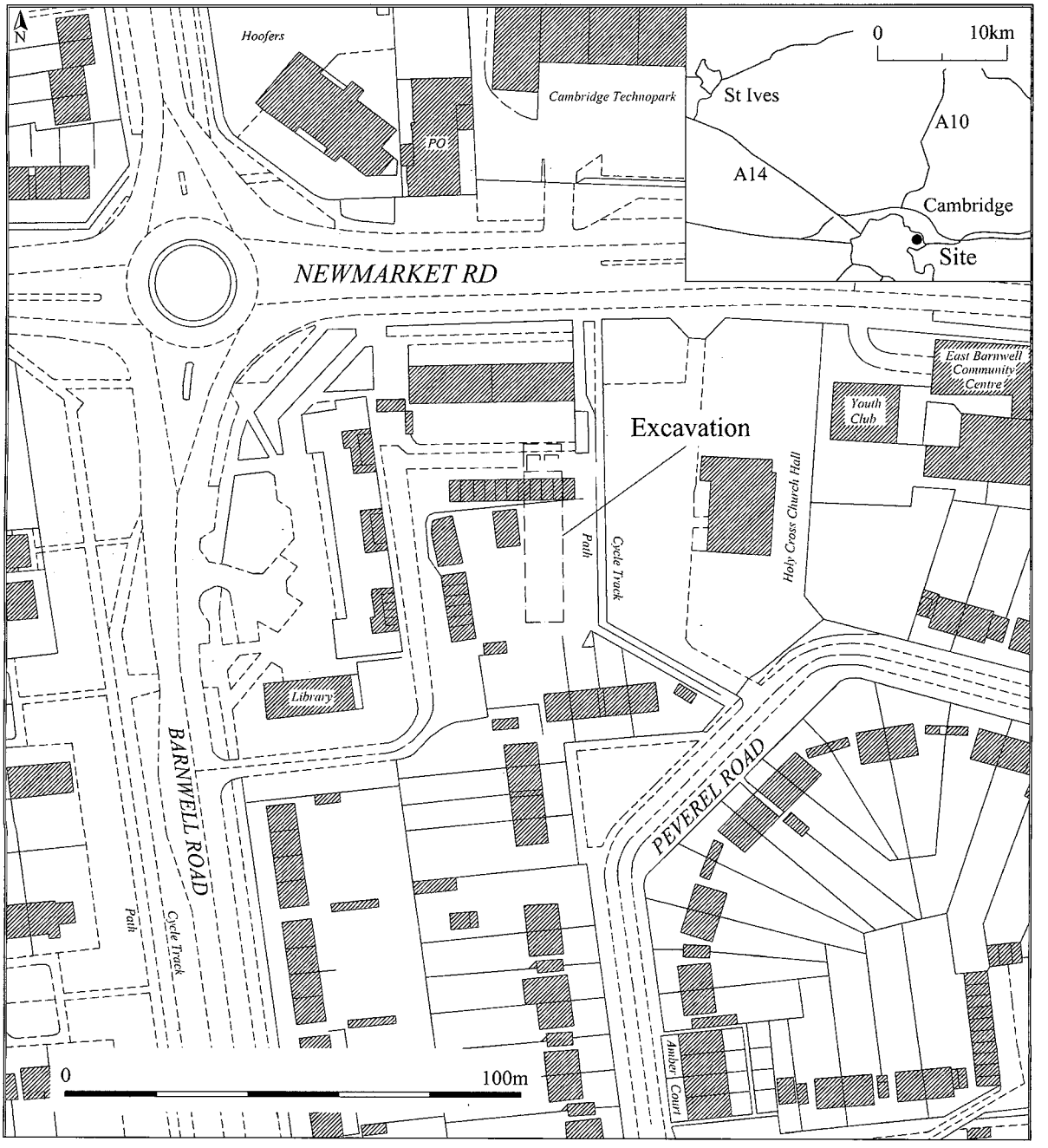

Figure 1. *Site location.*

The excavation

An area measuring 35 metres x 8 metres was excavated, expanding the area investigated during the preceding evaluation (Kenney 2005). In addition, a watching brief observed ground works associated with the development of the site.

The excavation revealed four archaeological features: two graves, an elongated pit and a ditch. The watching brief identified the legs and feet of two further inhumations, located at the western side of the area under observation, and a further truncated burial in the north-western corner of this area (Fig. 2).

Information given here about the skeletons has been extracted from the human bone report contained in the site grey report, which is available through the Cambridgeshire Historic Environment Record. It has not been possible to establish a relative chronology between the features because they all cut the natural deposits and shared no stratigraphic relationships.

Grave F2006 (Figs 3 & 4) was the most southerly of the identified features. It was comparatively wide for a grave, around 0.90 metres, and contained two bodies. The first of these, SK2007, was an adult, possibly in middle adulthood and around 5 feet 6 inches to 5 feet 8 inches tall. The skeleton was poorly preserved

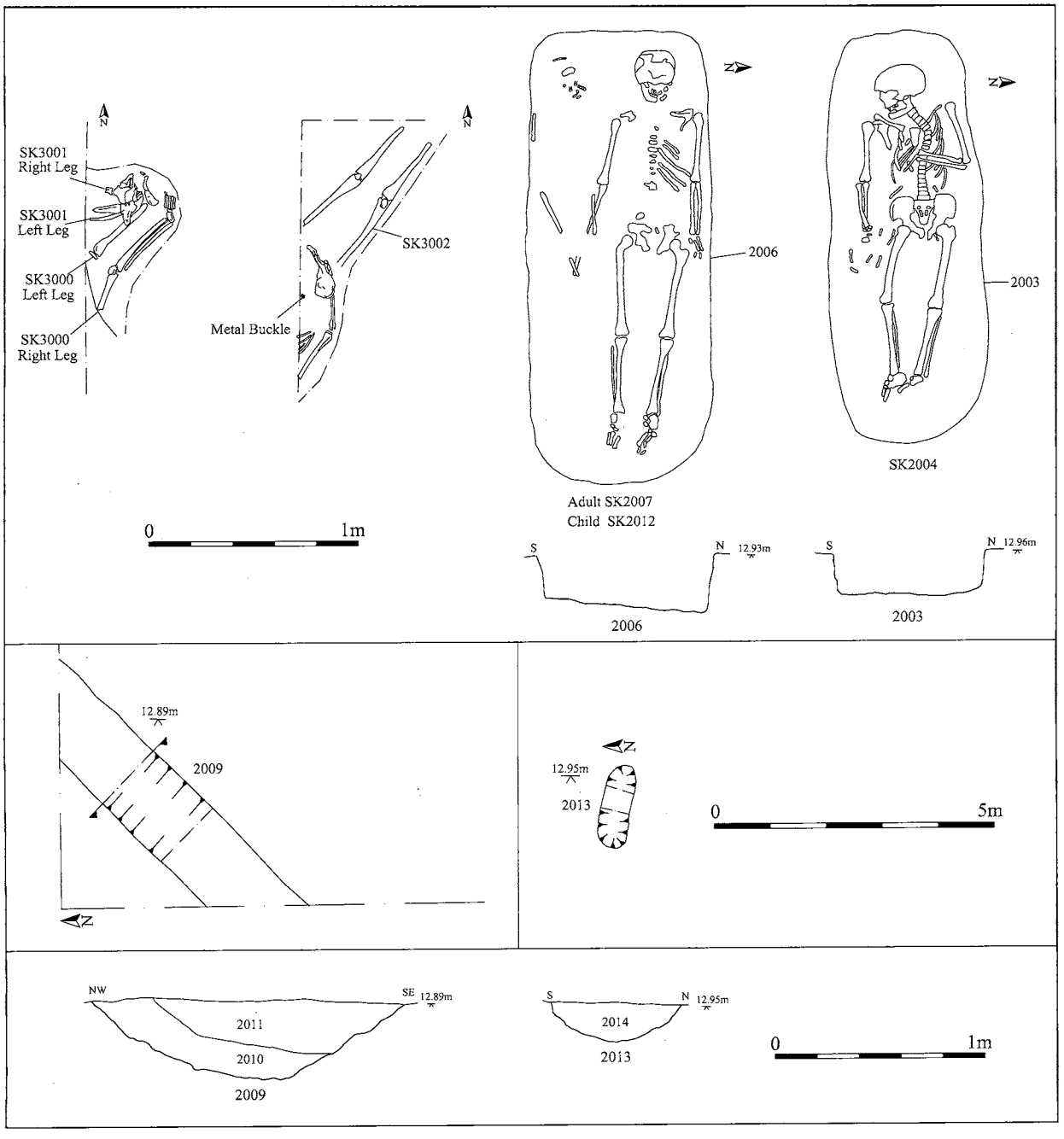

Figure 3. *Plans and sections.*

rather than two rivets, occur in Anglo-Saxon graves, for example from two eighth-century male graves at Southampton, and from both male and female graves in the sixth- to seventh-century cemetery at Edix Hill, Barrington, near Cambridge (Hinton 1996, pp. 6–7, fig. 2, 20/9; Malim & Hines 1998, fig. 3.44, 27/1, fig. 3.51, 54/4, fig. 3.64, 109B/9). The buckle is of Marzinzik's type II.24a, described as typical of the sixth to eighth centuries (2003, pp. 51–2, plates 130–7, 302, map 28).

About 1.5 metres to the north of grave F2003 was a small sub-oval pit, F2013 (Fig. 3). This was shorter and slightly narrower than either of the graves but was similarly aligned. The pit's similarity in position and alignment to F2003 and F2006 suggest that it might have been a simple grave cut, which contained the skeleton of a child whose immature bones have not survived. The concave profile of the pit is, however, unlike the profiles of the graves, suggesting that it was dug in a hurry, that little care was taken over its construction, or that it is not a grave at all. Kenney (2005) suggested that the pit might have been dug earlier than the graves, as it was sealed by the subsoil through which they were cut. However, the relationship between the graves and the subsoil was

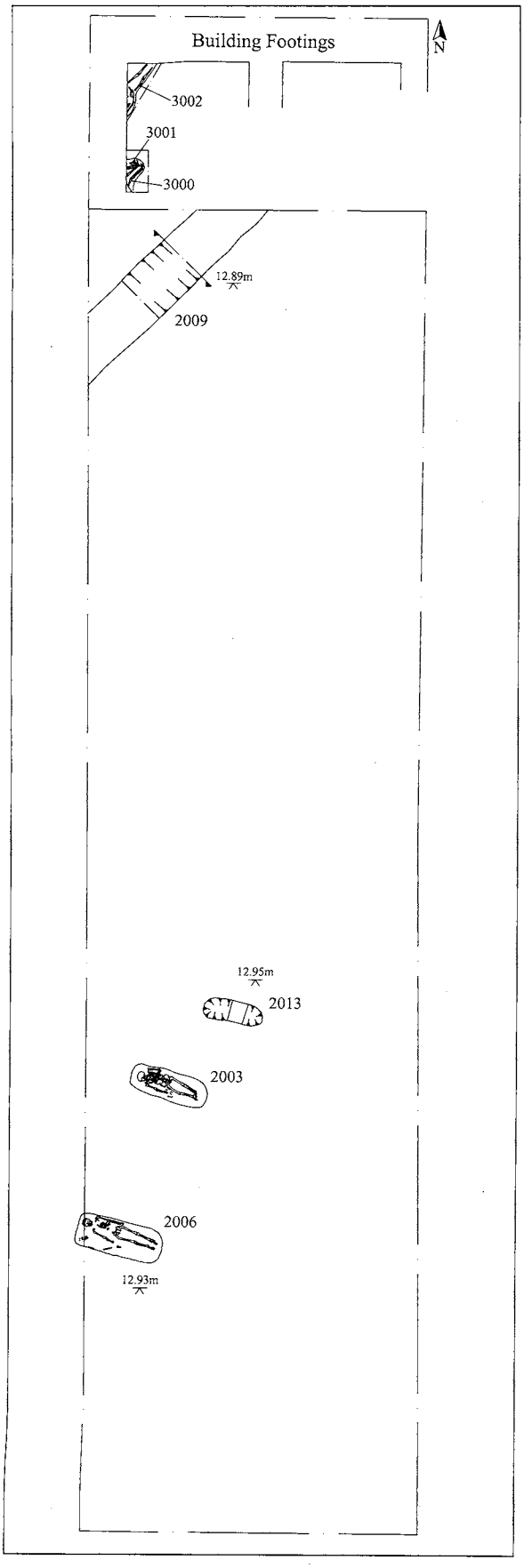

Figure 2. Site plan.

and incomplete, hindering identification of its sex. There was no evidence of skeletal pathologies, but the poor preservation of the bone may have destroyed pathological evidence or hindered observation.

Lying on the right-hand side of this skeleton was a second burial within the same grave; this was SK2012, a child aged around six to seven years old. The grave was on an east to west orientation and, although the child's skeleton was too poorly preserved to be entirely certain, it is thought that both skeletons lay in a supine extended position.

No finds were identified with either of these burials but the orange-brown sandy silt fill of the grave contained a Neolithic or Bronze Age flint scraper (identified by Tom McDonald) and two sherds of prehistoric (probably Late Iron Age) pottery (identified by Peter Thompson), all thought to be residual.

Grave F2003 (Figs 3 & 5) was north-east of Grave F2006. The eastern end of the grave had been revealed during the preceding evaluation (Kenney 2005). As with F2006, no grave goods were identified, although three residual sherds of prehistoric (probably Late Iron Age) pottery (identified by Peter Thompson) and two metal items (including one which may have been part of a dress accessory) were present. Skeleton SK2004 was much more complete than those in the other grave and was identified as a probable female in young to middle adulthood. She stood about 5 feet 2 inches to 5 feet 4 inches tall and had poor dentition, with five caries and an abscess present on the surviving teeth. Four teeth had also been lost before death. Unusually, the canines and second premolars were congenitally absent from the maxilla.

Samples of the fills of Graves F2006 and F2003 contained low density scatters of burnt refuse of unknown origin (analysis was by Val Fryer).

Skeletons SK3000 and SK3001 (Figs 3 & 6) appear to have been buried at the same time and in the same grave as one another. SK3000 was aligned south-west to north-east, whereas SK3001 was aligned east to west. SK3001 seems to have been buried with its feet crossed and it appears to have been placed into the grave after SK3000 as its left foot partially lay on the left leg of SK3000. Only the lower legs and feet of these two burials survived the ground works at the site; it was not possible to determine their sex and assessment of age was difficult. However, both skeletons appear to have been more than 14 years old, probably adults, at the time of death.

The final burial, SK3002 (Figs 3 & 7), was more complete than the others identified during the watching brief, and most of the right side of the torso and both legs were recovered. The bones were adult-sized and no pathologies were observable. As can be seen in Fig. 2, SK3002 was, like SK3000, aligned south-west/north-east. This was the only burial at the site associated with any finds: there was a copper alloy buckle just above the pelvis (Fig. 8). The oval loop is plain and was attached to a narrow leather strap by a folded buckle-plate secured by two copper-alloy rivets; part of the back of this plate is missing. Buckles of much the same form and size, sometimes fixed by three

Figure 4. *Grave F2006, skeletons SK2007 and SK2012.*

Figure 6. *Skeletons SK3000 and SK3001.*

Figure 5. *Grave F2003, skeleton SK2004.*

Figure 7. *Skeleton SK3002.*

observed during the excavation to be ambiguous, owing to the similar compositions of the subsoil and grave fills, and so it is still possible that the pit was contemporary with the graves.

The final feature identified was a ditch (F2009), about 1.4 metres wide, that ran south-west to north-east across the north-western corner of the site (Fig. 3). The excavation identified five metres of its length and it appeared to continue outside the excavated area. Of the feature's two fills only the lower contained any finds: a small fragment of ceramic building material (identified by Andrew Peachey) and three fragments of animal bone from a cattle/horse sized animal (identified by Carina Phillips). It is not possible to say whether or not this ditch was contemporary with the inhumations, although its alignment parallel to the apparent alignments of SK3002 and SK3000 might indicate that this was so. It might represent a boundary but, given the short length of the section revealed within the excavated area, this also cannot be confirmed.

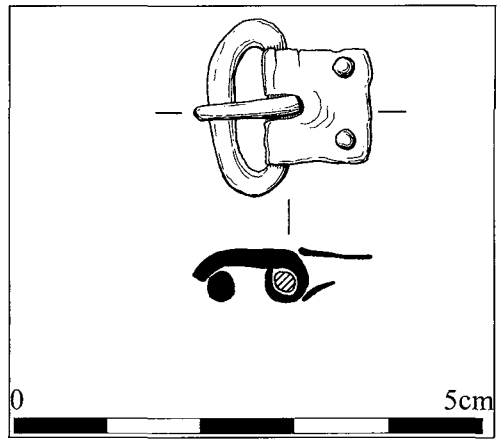

Figure 8. Copper-alloy buckle.

The date of the burials

It is possible that the remains from Barnwell Road date from the Iron Age or Romano-British period, as suggested by Kenney (2005) based on the presence of settlement evidence of these periods in the vicinity of the site. A later (Christian) date within this period may be more likely than an earlier one.

However, the presence of the sixth- to eighth-century copper-alloy buckle with SK3002 throws the possible Romano-British date into doubt. This suggests that SK3002 dates from the Middle Anglo-Saxon or later period. As there is no evidence to the contrary, it is suggested that the burials and other features were approximately contemporary with one another, and so an Anglo-Saxon date (consistent with the buckle associated with SK3002) is tentatively proposed for them.

The lack of intercutting between the graves (or other features) suggests that the individuals who dug them were aware of the existence and locations of others in the area, possibly reinforcing the suggestion that they were all contemporary with each other. Apparent ease of recognition of graves (either to avoid disturbing a previous burial or to locate a grave in which to place another family member) is a regularly observed feature of Anglo-Saxon burial (Taylor 2001, p. 144).

Certain characteristics of the Barnwell Road burials can be used tentatively to refine the sixth- to eighth- century date range given by the buckle. It was normal in the sixth century for women to be buried in a Germanic style of costume, but this practice declined from the early seventh century (Geake 2002). There was no evidence to suggest that SK2004 (probably female) had been buried in such costume (although evidence may not have survived), and this burial is thus consistent with a post sixth-century date. Indeed, the absence of grave goods from the burials is consistent with an eighth-century or later date (cf. Hadley 2001, pp. 92–3).

A seventh- to eighth-century date for the buckle would make it broadly contemporary with, or slightly later than, the cemetery excavated at King's Garden Hostel in Cambridge. Use of this cemetery is considered to have been restricted to the seventh century because of the variable orientations of the graves, the variations in the body position of the burials and the premise that after the seventh century flexed burials and burials on their side became rarer and grave orientation became more uniform (Dodwell, Lucy & Tipper 2004). However, it seems that burial practice in the seventh century was characterised by its oddness and uncertainties rather than by its own distinctive character (Geake 2002). In comparison to the King's Garden Hostel burials, those at Barnwell Road display a slightly more uniform orientation, with four aligned east to west and two aligned south-west to north-east. Those burials at Barnwell Road that were complete enough for body position to be identified were supine and extended. Although the evidence is limited, this comparison might indicate that the Barnwell Road burials are later than the seventh century and thus fall towards the end of the date range suggested by the buckle.

The significance of the burials

The copper alloy buckle belongs to a type group typical of the period during which Christianity was being adopted in Anglo-Saxon England (the 'conversion period'). This date does not define it as Christian, but indicates that it was buried at a time when the prevalence of Christianity was increasing in Anglo-Saxon England. The east to west orientation of Graves F2003 and F2006 should not be seen as indicative of Christian practice, as earlier Saxon inhumations on this alignment are also known. Similarly, the absence of grave goods does not necessarily indicate Christian burial practice: it is possible that inclusion of grave-goods was such a fundamental aspect of burial that

it was not abandoned by those who converted to Christianity (Crawford 2004), especially as this practice was never condemned by the Church as being pagan (Blair 2005, p. 234). Rather than the spread of Christianity and Christian burial practice, the decline in the occurrence of grave goods in the seventh century may reflect the emergence of better established social hierarchies which did not require demonstrations of power and status through elaborate funerary displays (Hadley 2001, pp. 92–3).

The discovery of the site at Barnwell Road adds to the number of Anglo-Saxon burial sites identified in the Cambridge area in recent years and, being located further east, extends the area over which such sites have been reported. Other burial sites have recently been discovered towards the eastern side of Cambridge at Chesterton Lane Corner (Mortimer & Regan 2001), at King's Garden Hostel (Dodwell 2001) and at the new Institute of Criminology building on the University of Cambridge's Sidgwick Site (Armour, Evans & Tipper 2003, p. 1). Dating of the burials at Chesterton Lane indicates that there is a high probability that they were contemporary with the East Anglian/Mercian settlement that existed at Cambridge until 875 (Cessford & Dickens 2005). The Middle Saxon period date suggested for the Barnwell Road burials may therefore make them broadly contemporary with the Chesterton Lane Corner execution cemetery. Although this indicates human presence in the Barnwell Road area at broadly the same time as the East Anglian/Mercian settlement, the nature of that presence cannot be extrapolated from such a small group of burials.

Considered as a whole, if small, cemetery, the Barnwell Road site can be seen to display some characteristics that may be regarded as common to burial grounds of the conversion period. A variety of burial practices existed during the Middle Saxon period, including both continued use of some older cemeteries and also burial in small groups, such as the one described here. Such burials are overtly indicative of neither pagan nor Christian funerary rites, and may reflect practices that were just as strongly influenced by social and political changes as by religious factors. In fact it may be that the burial rite was deliberately chosen to symbolise socio-political links or to highlight differences (Williams 2006, p. 43). Geake (2002) indicates that conversion period burial sites can be broadly divided into three categories. The Barnwell Road burials would appear to fall into the second of these, termed 'churchyard type'. These are cemeteries with very few grave-goods, perhaps a single item in one grave only, or none at all. They are difficult to date accurately and are mostly located around a known church, although in some cases (as at Barnwell Road) the excavated area has been too small to ascertain whether a church was present and in a few cases it is unlikely that the cemetery was ever associated with a church (Geake 2002). These latter cases may represent pagan burial grounds where burial practices similar to contemporary Christian ones were practised, although in some parts of later-converted northern Europe churchyards coexisted for several centuries with traditional village cemeteries, were accepted by the clergy and were possibly even consecrated (Blair 2005, pp. 228–9). It seems that the Barnwell Road site may be considered to be of the type of seventh-century and later unfurnished cemeteries from which Geake (1997, p. 135) considers churchyards to have developed.

Conclusions

The site contributes to the evidence for Saxon activity in the Cambridge area and adds to the number of Saxon burial sites that have been recorded within the city in recent years. The presence of the Anglo-Saxon period buckle with SK3002 suggests that this burial is of sixth- to eighth-century date, or slightly later. The other burials at the site are tentatively dated to the same period, in the absence of any evidence to the contrary. The burial group displays characteristics consistent with this date, although nothing was recovered from the excavation or the watching brief to rule out completely the interpretation of the burials as Romano-British, as put forward in the report of the initial evaluation of the site (Kenney 2005).

There was little evidence of the social or religious groupings to which the individuals in these burials belonged. Circumstantial comparative evidence may suggest that these burials were slightly later than those excavated at King's Garden Hostel and at the Institute of Criminology site, and almost contemporary with the execution cemetery recorded at Chesterton Lane Corner. This suggests that the Barnwell Road burials were interred late in the time frame suggested by the presence of the copper-alloy buckle, towards the end of the conversion period. This may be regarded as increasing the probability that the individuals excavated here were Christian, although this supposition cannot be supported by any archaeological evidence recovered from the site. Based on the characteristics of the burials and the presence of the buckle, the site may be tentatively suggested to fall into the group of conversion period burial sites that Geake (2002) terms 'churchyard type', the seventh-century and later unfurnished cemeteries from which churchyards developed (Geake 1997, p. 135).

Acknowledgements

Archaeological Solutions Ltd would like to thank Oxbury and Company, in particular Ben Mitchell, for commissioning this project on behalf of their clients Flagship Housing Group. AS is also grateful for the support and advice of the Cambridgeshire Archaeology, Planning and Countryside Advice team. The excavation was directed by Phil Weston and the watching brief by Andrew Ginns, both on behalf of AS; the project was managed for AS by Jon Murray. Struck flint was analysed by Tom McDonald, pottery by Peter Thompson, small finds by Nina

Crummy, ceramic building material by Andrew Peachey, human and animal bone by Carina Phillips and environmental samples by Val Fryer. Finds were co-ordinated by Claire Wallace. Illustrations are by Tamlin Barton. The site archive can be accessed at the Cambridge County Archaeological Store. A grey report containing full specialists' reports is available at the Cambridgeshire Historic Environment Record and the National Monuments Record.

The Cambridge Antiquarian Society is grateful to the Flagship Housing Group for a grant towards the cost of publishing this paper.

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Early Saxon and medieval remains adjacent to the round moat, Fowlmere

Paul Spoerry and Mark Hinman

with contributions by Paul Blinkhorn and Adrian Popescu

An Early Saxon building containing a noteworthy assemblage of pottery was found next to a horse burial. These, together with the remnants of other buildings and a network of ditches, begin to suggest early settlement of the area, with implications for the understanding of Fowlmere's origins.

Fowlmere's round moat lies within the historic core of the village, to the south of the High Street on the west bank of Fowlmere Brook (Fig. 1). The settlement appears to have been a relatively prosperous medieval centre, growing from 36 'households' in Domesday Book to about 100 by 1279 (Hitch 1993). This growth was sufficient to warrant a Market Charter by 1207 (Keeling 1982, p. 160). Population declined in the fourteenth century following the general pattern of economic hardship and disease at the time. Fowlmere's later recovery was, however, good with more than 70 households mentioned in several mid- to late fifteenth-century sources (Keeling 1982, p. 155).

Although the round moat is believed to have been occupied in the medieval period, its origins may well predate the Norman Conquest. Round moats have received limited investigation and verifiable dating has not advanced much beyond the situation that enabled Jean Le Patourel to state in 1978 that they, as a type, might be of twelfth century date, pre-dating the general masse of rectilinear moated sites attributable to the thirteenth to early fourteenth centuries (Le Patourel 1978, p. 41). To this suggestion must be added evidence for fortified enclosures of the Late Saxon period, as excavated at Goltho, Lincolnshire (Beresford 1987), which represent an alternative dating and descriptive grouping for 'round moats' in the Eastern counties.

The layout of settlement in Fowlmere suggests that the village was originally centred on the round moat and church, but that the location of the manor at the west end of the High Street from the early fourteenth century (Keeling 1982, p. 157), allied with the increasing importance of the commercial activities along this road, resulted in a shift of focus to the north-west, away from the moat. Maps and local documentary evidence indicate that both of the historic properties on the High Street that lie within the evaluated area were occupied by buildings from at least the mid-nineteenth century onwards.

The large bank and ditch of the round moat would have provided effective protection during times of stress and conflict, although it is not certain for whom. It is also likely that it performed non-defensive functions: it might have originally been an administrative centre, perhaps an earlier location for the manor, and could have served both as a domestic site and an agricultural store. If this was the case, then it would be expected to find evidence of activity quite close to the exterior of the bank and ditch, something that would be unlikely in a purely defensive or military site.

A. C. Yorke, in an early investigation of the earthwork, suggested that the entrance to the moat was on the north-western side, based on observation of existing earthworks at the time (Yorke 1909). If correct, this would indicate that the original access to this point from the east might have been more direct before the High Street was fully established. Such an earlier routeway might have traversed part of the development site that is the subject of this paper. Alternatively an eastern entrance to the round moat might have existed, for which a trackway might also be sought.

Yorke noted that the round moat is recorded on the parish enclosure map (1848; Cambridgeshire Record Office (CRO) Q/RD c 70) as 'White's Close' and that a Robert White had appeared on the 1447 rent roll (British Library Addit. Charters 27338). In 1887, when the owner of the moat, Mr Edward Wedd, planted a number of trees on the central platform within the enclosing bank and ditch, a surface paved with cobblestones and a well containing a large amount of 'broken drain-pipes' were unearthed. Yorke reported that around the turn of the century the moat was cleaned out on its northern side so that it could be used as a fishpond; the reference is unspecific, however, and has been taken to refer to the apparently embanked area to the north-east of the moat.

Yorke observed a hole across the entrance to the east side of the moat. While the nature of the moat silts is not recorded, he noted that they were six feet

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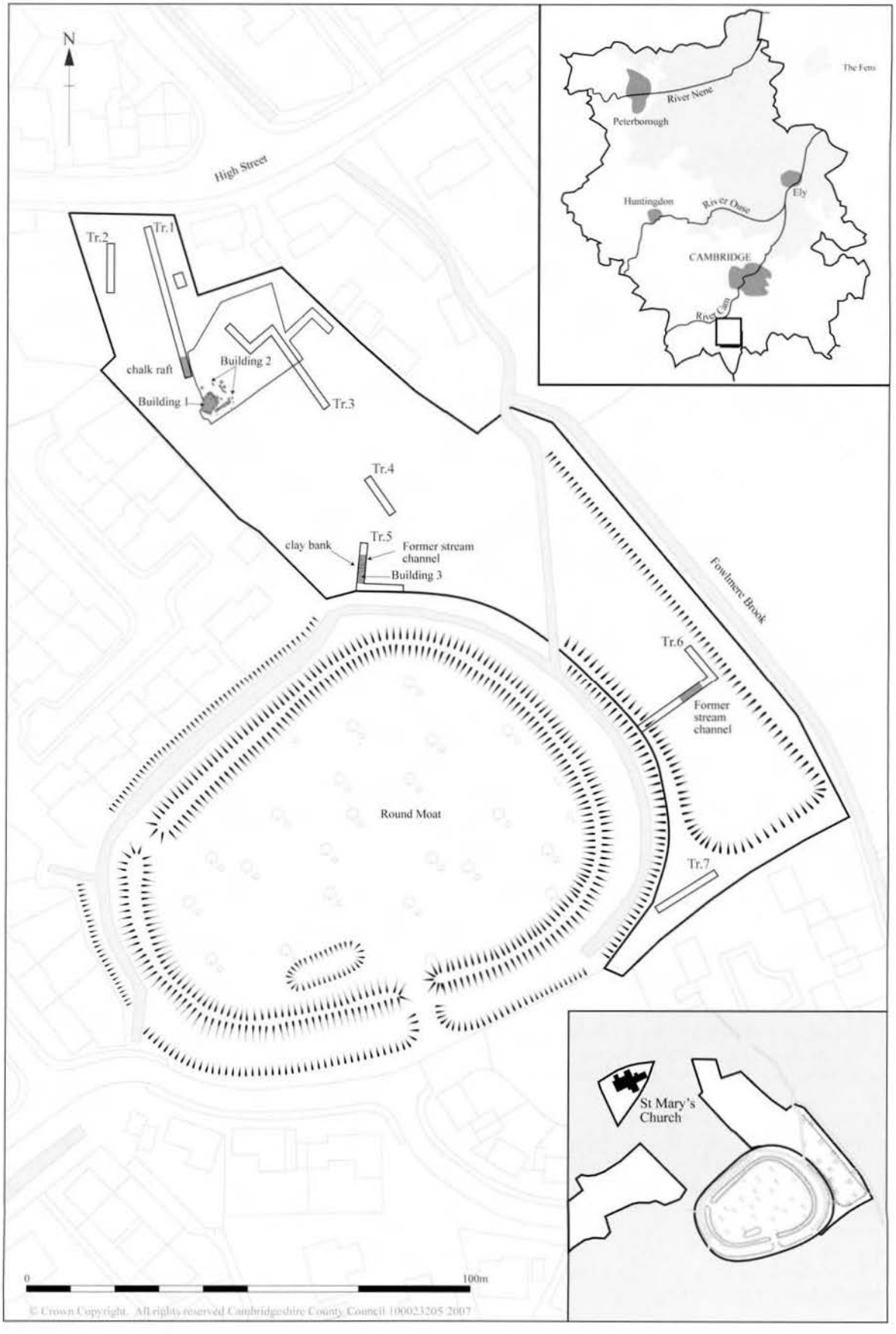

Figure 1. *Site location.*

thick, at which depth the excavators reached the bottom of the moat and also struck water. Although the pottery recovered during these excavations may be early medieval in date, Yorke's work reveals little about the age and character of the site.

More recently, a small excavation in 1975 took place in the area adjacent to the moat, between its north-western side and the parish church, where houses now stand. This produced a large quantity of medieval pottery dating from between the eleventh and fourteenth centuries, with most sherds attributable to the thirteenth century. Some residual Roman buff and grey-ware bases, together with some sherds of Samian ware, were also recovered (Murphy 1975, p. 71).

In 1992, further small-scale work sought to establish the depth and state of preservation of the silts within the north-eastern sector of the round moat, many of which proved to have been removed by the cutting of drainage ditches during the late nineteenth century (unpublished archive held by CAM ARC; formerly the Archaeological Field Unit). The subsequent investigations carried out by CAM ARC in 1993 and 1999 occurred to the north and east of the moat (TL 4235 4590) and were necessary because of development for housing. Seven evaluation trenches were placed across the site, with the later excavation trench (and a smaller secondary trench) to the north.

Early Saxon remains

A sunken featured building (SFB; Building 1; Fig. 2) was found in the western part of the excavated area. It was sub-rectangular in plan, measuring roughly 4.50 metres east to west by 3.65 metres north to south. Internal post and slot impressions indicate the presence of wall and roof supports, although there were no apparent deposits associated with the habitation or primary usage of the structure. In addition to a varied ceramic assemblage indicating an Early Saxon date, which was scattered throughout the fills, subsequent infilling contained a moderate amount of animal bone, including bones from young cattle and sheep, which indicate the consumption of lamb and veal as well as of mutton and beef. Some of the sheep long bones had been split to extract the marrow. Along with domestic food waste, two sawn ram's horn cores and a fragment of worked and burnt red deer (*Cervus elaphus*) antler were recovered, suggesting craft working.

A large pit immediately to the east of the building contained the complete articulated skeleton of a small pony, buried on its right hand side with its head pointing towards the south and its legs flexed. Although undated, the burial's position in relation to the SFB suggests that the two might have been contemporary. Specialist examination of the animal's lower incisors suggests an age at death of seven years (Barone 1980), which is largely confirmed by the crown heights of

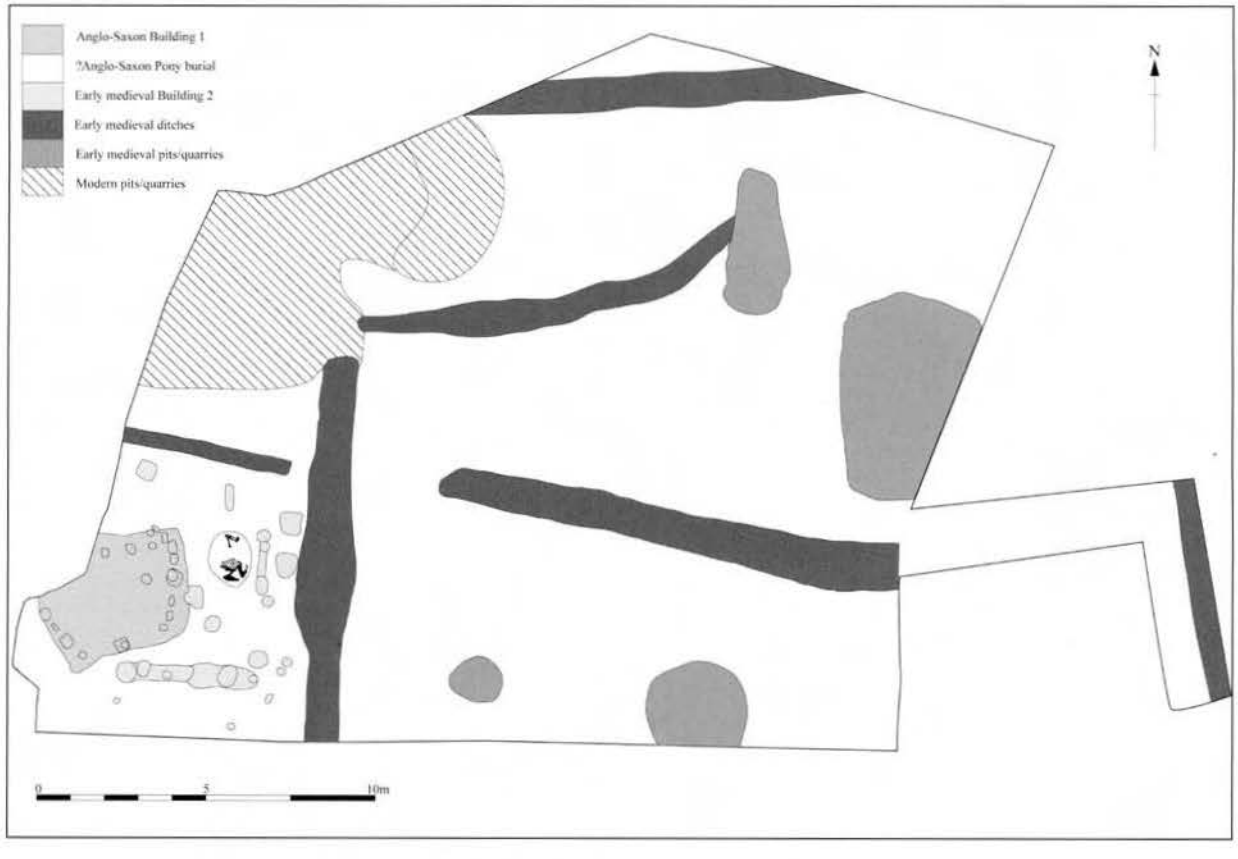

Figure 2. *Plan of features found during 1999 excavation.*

the loose grinding teeth (Levine 1982). Withers height calculations (after Kiesewalter 1888) indicate that the pony stood approximately 114.6 centimetres high at the shoulder or just under 12 hands. The mandible possesses vestigial canines but none were recovered from the fragmented cranium, suggesting a mare (Sisson & Grossman 1953, p. 399).

Saxo-Norman and medieval remains

Elements of a second structure (Building 2) appeared to surround the SFB, although the apparent association between the buildings is assumed to be circumstantial since no parallels for this arrangement are known. This structure, built with posts, was roughly rectangular in plan, although its layout remains uncertain due to the high degree of root disturbance affecting this part of the site. No dating evidence was retrieved: while the similar alignment of the structure to that of a Saxo-Norman ditch to the east may suggest a contemporary origin, the building may well be earlier than the ditch. Post-in-slot foundations for timber buildings appear in this region to be a construction technique used from the Late Saxon period (later ninth century) onwards.

The western edge of another post-built structure (Building 3), which appears to have contained floors or occupation deposits rich in charcoal and organic matter, was found sealed beneath levelling deposits near the northern ditch of the round moat during the evaluation. This structure might have been bounded to the north by a clay bank, on the other side of which ran a channel, possibly a stream. Building 3 was overlain by a sequence of yard surfaces or abandonment layers, perhaps equivalent to those that sealed the SFB and thereby indicating a possible early origin. The limited available evidence suggests that Building 3 had fallen from use by the twelfth century at the latest.

Four ditches aligned roughly east to west were identified within the two excavated areas. Two others ran north to south, one of which contained two partial piglet skeletons. The recovery of small fragments of pottery suggests a Saxo-Norman date. The features probably served as field or strip boundaries or as drainage ditches flowing into the brook immediately to the east of the site.

With the exception of the easternmost of the north to south ditches, none of the features correspond, in terms of alignment, with the pattern of development along the High Street. This, together with the low densities of finds recovered from their fills, suggests that the site was now either at or beyond the limits of core settlement. A series of irregularly shaped and undated pits might result from small-scale quarrying for flint, chalk and gravel.

Evaluation trenches along the High Street frontage revealed medieval layers surviving to 0.30 metres deep while, closer to the round moat, a 3.5 metre-wide chalk rubble feature of relatively recent origin was found (Fig. 1). This might indicate the position of a yard or footing of a building, or possibly the former line of a metalled track.

Evidence from trenches placed between the round moat and the brook suggests that this area never served as a fishpond, although it does appear to have formed a wet marshy area. Its deceptively embanked appearance results from the fact that the area is surrounded by other landscape features: on its north-eastern, western and north-western sides by the embankment of the brook, by the round moat outer 'bank' or upcast zone, and by its outfall channel respectively. In more recent times, the area appears to have contained a watercourse on its north-eastern side, presumably a pre-canalised line of the brook, which might have been a deliberate attempt at drainage. It therefore seems likely that the eastern approach to the round moat was in earlier times very wet and perhaps impassable.

Examination of the south-eastern edge of the round moat suggests that the ground level here was increased (up to 0.50 metres), perhaps in the Late medieval period and more recently further layers have been been deposited here. The north-eastern edge of the round moat similarly contains much made-up ground (up to 1.5 metres), including further layers that probably resulted from clearing the moat. These deposits extend some 20 metres or more from the round moat ditch itself, suggesting deliberate efforts to raise and dry out the ground.

Pierced Roman coin

Adrian Popescu

A Late Roman coin with a deliberate hole was recovered from spoil created by machine clearance, but is known to have come from the area above Building 1. No Roman features were found during the excavations. The hole was probably made after the coin ceased to be currency, indicating the strong possibility that it was used as an adornment, probably as a pendant, in the early Anglo-Saxon period when this practice was relatively common (King 1988, pp. 224–5; Moorhead 2006, p. 100). Most holed Roman coins have, however, been found in burials (White 1988, pp. 98–101). The position of the hole on the coin found in Fowlmere, in front of the bust, indicates no intention that it was to be worn suspended in such a way as to show the emperor's bust or the deity on the reverse. Since the coin was not found in stratified deposits, the date it was lost is difficult to establish but it can be assigned, with the necessary reserve, to the late fifth to sixth century (White 1988, p. 101). The custom of using Roman coins as adornments seems to have declined significantly after the end of the sixth century (Geake 1997, p. 32).

Constantine I (306–337)
Obv. IMP [CO]NSTANTINVS [P F A]VG
Rev. [SOLI] INVI-C-TO COMITI, T-[F]//PLN
AE V 3.76g; 22mm; holed in front of bust (3 o'clock)
RIC VI, p. 133, no 122, London, *c.* mid 310

The pottery

Paul Blinkhorn

The small ceramic assemblage consisting of 79 sherds (1.137 kilogrammes) is dominated by Early Saxon and later material. The Early Saxon fabrics comprise a range of chaff- and mineral-tempered pottery, typical of the handmade Anglo-Saxon ceramics of the period. They can be paralleled at numerous sites in East Anglia and the south Midlands, such as West Stow (West 1985). Two of the decorated vessels from Fowlmere (Fig. 3, nos 1 and 4) are in a fabric with sandstone inclusions and comprise most of the small group of sherds in this fabric type from the site. This suggests that such clays might not have been local and that the pots were the work of a 'specialist' potter from outside the immediate locality. Decorated sherds from at least three vessels were present.

The most remarkable sherd has long-bosses and incised designs (Fig. 3, nos 1 and 1a). Such vessels are said to be typical of those found in East Anglia and examples of variants of the style are known from many areas of eastern England, including Yorkshire, the north and east Midlands and East Anglia (Myres 1977, figs 218–88). As a result, they are considered to be typical of the areas settled by people of Anglian origin (Myres 1986, p. 64 and fig. 3), but they also occur outside these areas, such as the vessel from Eynsham Abbey, Oxfordshire (Blinkhorn 2003), and can also be found outside the 'Anglian' areas of the Continent.

The form of the vessel is very distinctive, with sharply carinated shoulders. These vessels have close affinities with contemporary Norwegian pottery (Myres 1977, 43b). Myres stated that bossed vessels with long necks are particularly well represented in Cambridgeshire and West Suffolk (*ibid.* 10b), although this vessel does not possess this distinctive feature. It is, however, very close in style to other vessels from Cambridgeshire, such as those from Little Wilbraham and, in particular, from Linton Heath (Myres 1977, fig. 260). The latter vessel (corpus no. 2619) was found in association with a spear head dated to *c.* 500 AD (*ibid.* 44a) and Myres dates long-boss vessels generally to the first half of the sixth century (*ibid.*).

It is difficult to ascribe anything other than a general date to the stamped sherd (Fig. 3, no. 4), although vessels with decoration like this can be given a date that falls within the range suggested by the bossed vessel. Stamped vessels are known from the fifth century, but most date from the sixth century (*ibid.* 19–22). This sherd has four complete and two partial stamped impressions of Briscoe type 5g iv and a fragment of an incised line, which suggests that the original vessel might have been decorated with stamped pendant triangles, a common East Anglian decorative scheme of the sixth century (*ibid.* 53a).

Three small sherds were noted with fragments of combed linear decoration. Due to the small sherd size, the overall decorative scheme could not be identified and thus it is only possible to give the sherds a general fifth- or sixth-century date.

Two sherds were noted with scored surfaces (e.g. Fig. 3, no. 5). Vessels with such surface enhancement are rare finds on Early Saxon sites; their few locations are widely distributed and occur at places such as Mucking, Essex (Hamerow 1994) and Eynsham Abbey, Oxfordshire (Blinkhorn 2003). Vessels like these can only be dated to within the Early Saxon period, although the technique was used on both British and Continental pottery of the pre-Roman Iron Age (Hamerow 1994, p. 31).

All of the pottery of diagnostic form (illustrated in Fig. 3) occurred within the fill of the SFB and all of the sherds were from jars or bowls. A total of 14 rim sherds were noted, of which eight were from jars and six were from small bowls. All of the vessels are typical of those from settlement sites and the jars, apart from the decorated vessels, were all baggy forms with no remarkable features (e.g. Fig. 3, no. 2). The bowls are similarly undistinctive, with the exception of that illustrated in Fig. 3, no. 3. This vessel is exceptionally well-made, with thin walls and a well-smoothed and burnished outer surface.

Catalogue of illustrated sherds

1 Long-boss vessel. Dark grey fabric with variegated light brown and dark grey outer surface. Both surfaces are smoothed and lightly burnished. Fabric: crushed sandstone grains up to 2mm, some calcite cemented, rare ferruginous grains. Moderate sub-angular free quartz grains *c.* 5mm.
2 Rim and shoulder from jar. Mid-grey fabric with buff and dark grey variegated outer surface. Both surfaces are unfinished. Fabric: sparse sub-rounded white and grey quartz up to 2mm. Very rare ferruginous and/or calcite-cemented sandstone, ironstone and red quartz up to 1mm, very rare angular chalk up to 3mm. Very rare gold mica platelets up to 1mm. Rare rounded quartz pebbles *c.* 5mm.
3 Bowl. Uniform black fabric with well-finished, smoothed and burnished outer surface. Dense sub-angular white and clear quartz up to 1mm, most 5mm or less. Some larger polycrystalline grains, rare rounded chalk up to 1mm.
4 Stamped sherd. Uniform black surface. Fabric as No. 1.
5 Incised sherd. Dark grey fabric with brown outer surface. Fabric as No. 3.

Conclusions

The recent work at Fowlmere has produced the first direct evidence for the Early Saxon origins of the village. The SFB is the first to be identified locally and others might survive nearby. Soil thrown up from cleaning or recutting the round moat was found to contain only abraded Romano-British finds. This material seals earlier timber structures, implying that the occupation history here is complicated. Although the excavation was limited in scope, it is tempting to suggest a zone of Early Saxon settlement between the round moat and the position where the parish church was later placed. The key to better understanding lies in future excavation.

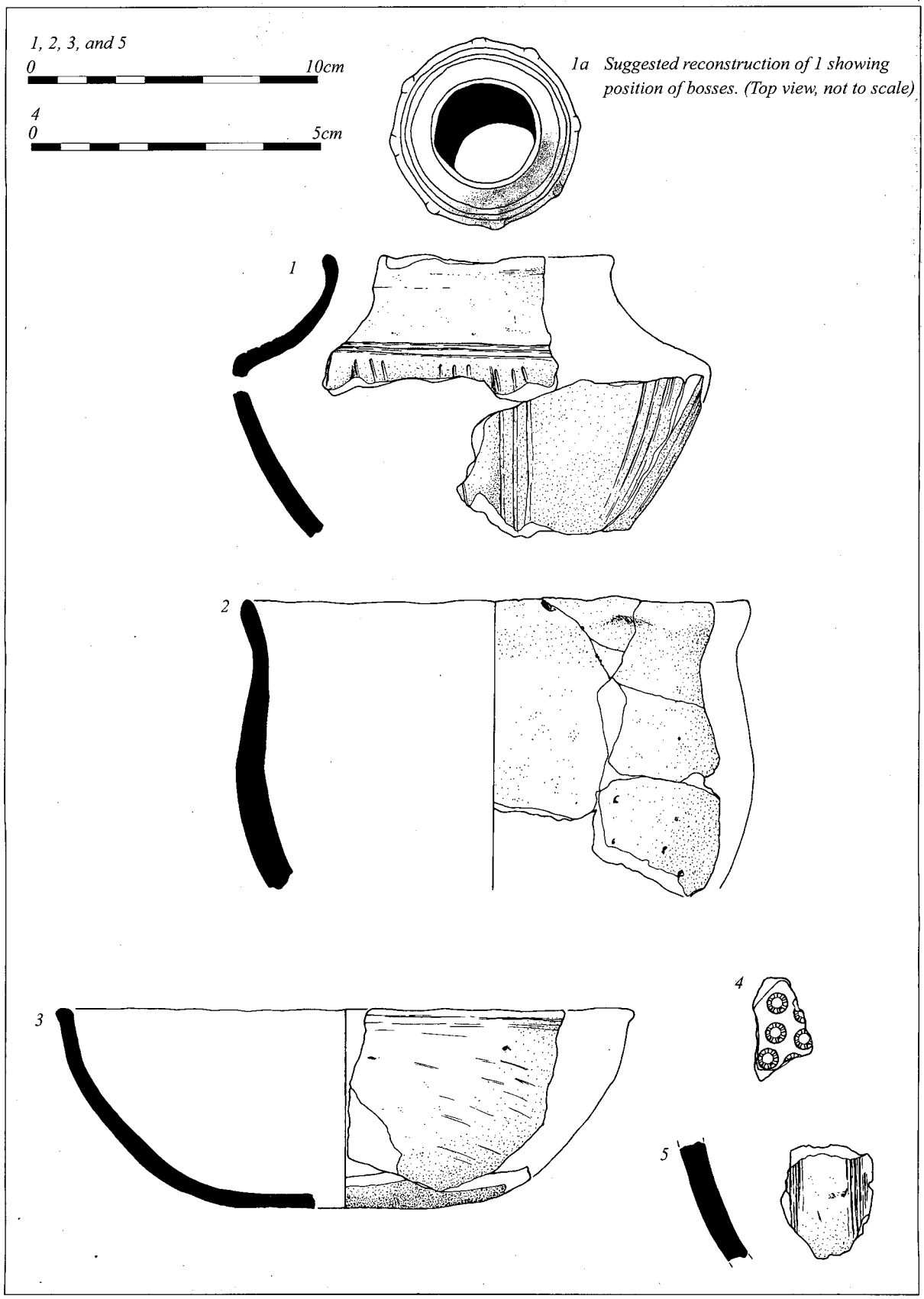

Figure 3. *Early Saxon pottery. 1a shows the suggested positions of pushed-out bosses.*

The relationship between the other buildings and adjacent ditches remains unclear, although a degree of continuity is implied by their common alignment. It does appear, however, that by the thirteenth century the area had reverted to open ground since no later finds were recovered from the upper fills of these ditches: the whole of the excavated area was subsequently covered by a single grey clay silt layer beneath topsoil.

A shift in habitation is indicated by the abandonment of the network of Saxo-Norman ditches and relative paucity of finds, suggesting that the area was given over to agricultural use, which perhaps occurred as early as the twelfth century. If the results of this excavation are taken to imply a wholesale shift in settlement core, this would be considerably earlier than the previously suggested date of the shift of the settlement, which has been linked to the establishment of a manor on higher ground to the north of the church in the early fourteenth century. An alternative time for this reorganisation might have been when lands were transferred following the Norman Conquest, with the ditched enclosures recorded in the excavation ceasing to be maintained from then onwards. In either case, the emphasis of the settlement changed from a spread of occupation adjacent to the round moat – which might have been used as a Saxon proto-manorial centre and towards which the line of Ashwell Street appears to have been kinked – to a village with a High Street and properties arranged along it.

The new findings also provide information about the topography of the site and, in particular, the position of possible watercourses. These have implications for local ground conditions and access routes to the moat, as is perhaps reflected by the possible chalk surface found between the High Street and the earthwork. Finally, the embanked area adjacent to the moat can now be discounted as a fishpond, its origins evidently being an accidental grouping of banks serving various functions.

Acknowledgements

The authors would like to thank the client for the evaluation (the United Reformed Church, URC) for its financial support, and the client's agent (Lewis Patten Chartered Architects) for their professional involvement. Thanks are also extended to the Minister of the Fowlmere URC, the Revd R. Rooke, who visited the site during the evaluation and also to Mr J. Ison who represented the Fowlmere URC's interests with regard to the management of the land itself and freely gave useful historical information about the site. Thanks are offered to the evaluation team: Paul Stevens, Duncan Schlee, Judith Roberts, Bob Hatton and others.

Thanks are also given to the client for the excavation phase, the Ashwell Group Ltd, and in particular to Mr P. Thwaites who commissioned the project. Thanks are also due to Simon Kaner and Andy Thomas of Cambridgeshire Archaeology and Planning Advice section, who provided the brief and monitored the work. Finally, thanks are extended to the excavation team: Spencer Cooper, D. Curry, Scott Kenney and Chris Montague. The faunal remains were identified by Ian Baxter, who is warmly thanked. This report was prepared and edited for publication by Elizabeth Shepherd Popescu.

Cambridge Antiquarian Society is grateful to CAM ARC, Cambridgeshire County Council for a grant towards the publication of this paper.

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The East Fields of Cambridge

Mary Hesse

Of the three large medieval fields of Cambridge borough (West and East Fields, and Chesterton Field), only the West Field has been comprehensively mapped, using early copies of a fourteenth-century terrier. Using other archive terriers, this study completes as far as possible the mapping of the fourteenth-century East Field. Although this Field is now almost entirely built upon, striking correspondences emerge between the patterns of the medieval furlongs and the modern streets. The reconstruction of the fourteenth-century field pattern shows strip-cultivation extending as far as the waterlogged fenland at its eastern boundary. There is, however, evidence to suggest that arable cultivation in the late eleventh century occupied only about half the fourteenth-century area, with a wide arc of common, pasture and moorland within the eastern and southern boundaries. The possible pre-conquest origins of the open-field system are also discussed.

Cambridge town fields

Much has been written on the history of the City and urban surroundings of Cambridge, particularly within the medieval borough between the river and the King's Ditch. Much less, however, has been said about the whole area of the Cambridge parishes up to their boundaries with the surrounding villages: Girton, Madingley, Coton, Grantchester, Trumpington, Hinton, Fen Ditton and Chesterton. The total area within these boundaries (as measured at enclosure) is about 2700 acres, of which the medieval town accounts for only about 80 acres, or 3% of the whole. Almost all the rest was the agricultural hinterland which supported the economics of the town, but, when reading many of the classic histories of Cambridge borough, it might seem that no such land existed. Even Domesday Book dismisses it with a couple of remarks: the burgesses lent their ploughs to the Sheriff (Picot) three times a year, and the Sheriff had taken away some common pasture and destroyed many houses.[1]

In the usual Domesday entries for rural vills in Cambridgeshire, the amounts of arable land are measured in numbers of ploughlands. These, however, are not entered for Cambridge itself, and it is rare to find them entered for boroughs and county towns elsewhere. Because of the importance of trade, defence and sanctuary in time of war, boroughs often had special tenurial and taxation relationships with the King, and these were concerned with the burgesses' messuages in the towns rather than with their arable holdings. Even where hidages are assigned to boroughs in Domesday Book, these are unhelpful in determining amounts of arable. In the entries for the vills of Cambridgeshire, for example, there is often a rough correspondence between numbers of hides and ploughlands, with between one and two ploughlands per hide (Hart, 1974), and the Cambridgeshire ploughland is generally taken to be about 60 field acres.[2] Cambridge borough itself is a Hundred, assigned 100 hides, but this assessment is clearly a value for taxation rather than land-area purposes: as a measure of arable it would imply a quite unrealistic area of between 6000 and 12,000 acres.

The earliest comprehensive evidence for the Cambridge fields is to be found in the archives of the Cambridge colleges. From the time of their foundation until the nineteenth century the colleges owned most of the tithes, and therefore kept a wealth of records of landholding from the later middle ages. These documents began to come to public light in the late nineteenth century, and interest developed in the twentieth century with the beginnings of the study of landscape history. The chief pioneers were Frederick Maitland, the Downing College historian and professor of law, who published *Township and Borough* in 1898; H. P. Stokes, an early follower of Maitland, who mapped part of the East Fields in 1915; and Hall and Ravensdale, with *The West Fields of Cambridge* 80 years later in 1976. *West Fields* contains the reproduction of a plan of the Fields drawn in 1789 and based on a terrier of about 1360 in Corpus Christi College, together with detailed maps of furlong boundaries and names.

These pioneers, however, left the mapping of Cambridge East Field unfinished. To fit Cambridge into currently burgeoning research on the development of early field systems, the first step must therefore

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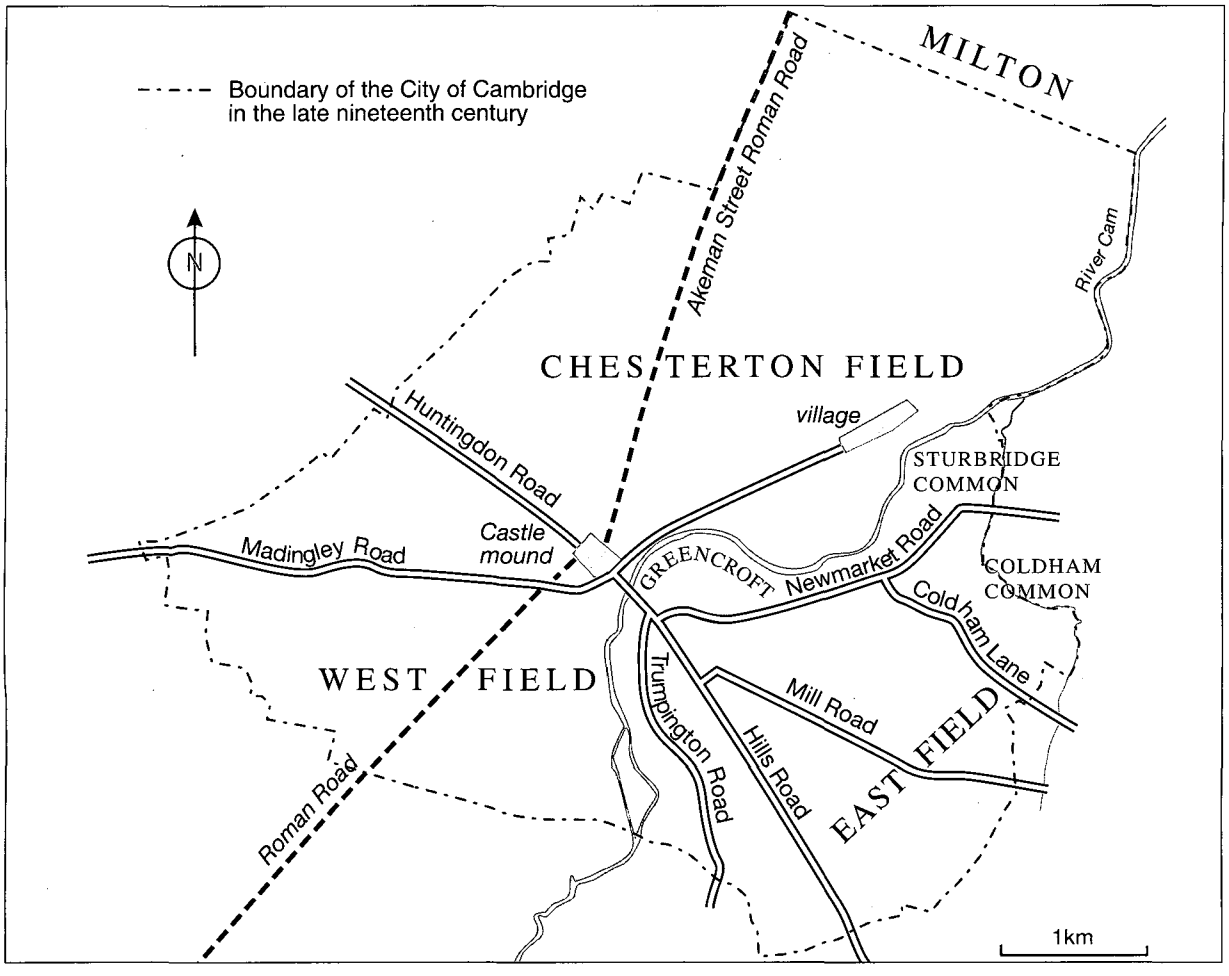

Figure 1. *The three open fields of Cambridge (from Maitland 1898, p. 54, and Bryan & Wise, 2005, p. 22.*

be to complete the mapping of the medieval system as described in extant terriers of the East Field. The earliest of these is in Corpus Christi College, and is similar in style and date to that of the West Field. In other colleges there are copies of various later dates. These appear to be re-workings of the original, brought up-to-date and sometimes with comments relevant to the specific interests of particular colleges. It is not always easy to disentangle the later additions from the fourteenth-century original, but there is enough consistency among the sources to support the construction of most of the remaining parts of the fourteenth-century map. The reconstructions to be described below are largely based on two such copies: one from the Jesus College archive, transcribed by Dr Caryl, Master of the College in the late eighteenth century, and the other from Cambridge University Library 'by Alderman Wm Brightone, 1575', transcribed in 1645. The copy in Jesus College has detailed acreages assigned to strip holdings, which provide essential information for the construction of a map. Most of the other copies depend on selions (actual strips) for an indication of size. But since selions vary in area between about one rod and one acre, they are virtually useless for mapping.

Before describing the results of the reconstruction, something must be said about the medieval field system in the context of the township and its earlier history. Maitland drew what he called a 'rough sketch' of the West and East Fields of Cambridge on either side of the River Cam. This can be supplemented (Fig. 1) by including the parish of Chesterton to the north of the river and the Huntingdon Road (a Roman road). The resulting boundary of Cambridge with Chesterton has been compared with that of a Roman 'territorium' (land controlled directly from the fort), such as the one postulated by Stephen Bassett (1989, p. 25) around Great Chesterford in north Essex, where neighbouring parish boundaries form a rough ellipse around the fort.[3] The parish of Chesterton has an anomalous-looking rectangular extension in the north-east, but if this is disregarded, the resulting boundary forms a rough circle measuring about three miles across. This appears to be centred on the Norman castle (the site of the Roman fort), with known Roman roads radiating from it. The rectangular extension into the neighbouring parish of Milton in the north was apparently already part of Chesterton's field system by 1300.[4] It might have been acquired while Chesterton was a royal demesne of the late Anglo-Saxon and early

Norman kings, before it was granted to Barnwell Priory by King John in 1200 (Clark 1907, p. 76).

There may well have been such a territorium, but even disregarding the north-eastern extension of Chesterton, the medieval boundary is unlikely to follow exactly its Roman predecessor. This is because there are significant zig-zags in the line of the parish boundaries between the West Field and Coton and Girton, and between Chesterton and Impington, suggesting that these were drawn across the furlongs of earlier open fields continuing beyond Cambridge. We shall also see below, from the details of the medieval fields, that even the smoothly curved parts of the Cambridge boundary are unlikely to be ancient.

Maitland's sketch shows the West and East Fields, each subdivided into three main smaller fields as the basis of three-year rotations (Maitland 1898, pp. 107–8). The divisions in the East Field are Bradmore, Middle and Ford fields, and at the periphery there are also Swinecroft and Sturbridge fields, which were linked to Ford field in the rotation, and Clayangles, which was linked to Bradmore. The East Field is also called Barnwell Field, after the Priory that was founded in 1092 and located from the early 1100s between the river and the Newmarket Road. The Priory had substantial landholdings throughout the East Field until the Dissolution. There are three commons: Greencroft, Coldham and Sturbridge. In 1915, Stokes constructed an open-field map of Swinecroft, Ford and Middle fields in his *Outside the Barnwell Gate*, to which we shall return later. Meanwhile, Bradmore, Clayangles and Sturbridge fields have not previously been mapped and remain a challenge.

Bradmore, Clayangles and Sturbridge fields

The earliest printed maps of the whole of the East Field with any detailed internal boundaries are the enclosure award map of 1806 (Fig. 2), Baker's map of 1830, and the tithe map of 1856. The enclosure and tithe maps are not initially very helpful. The

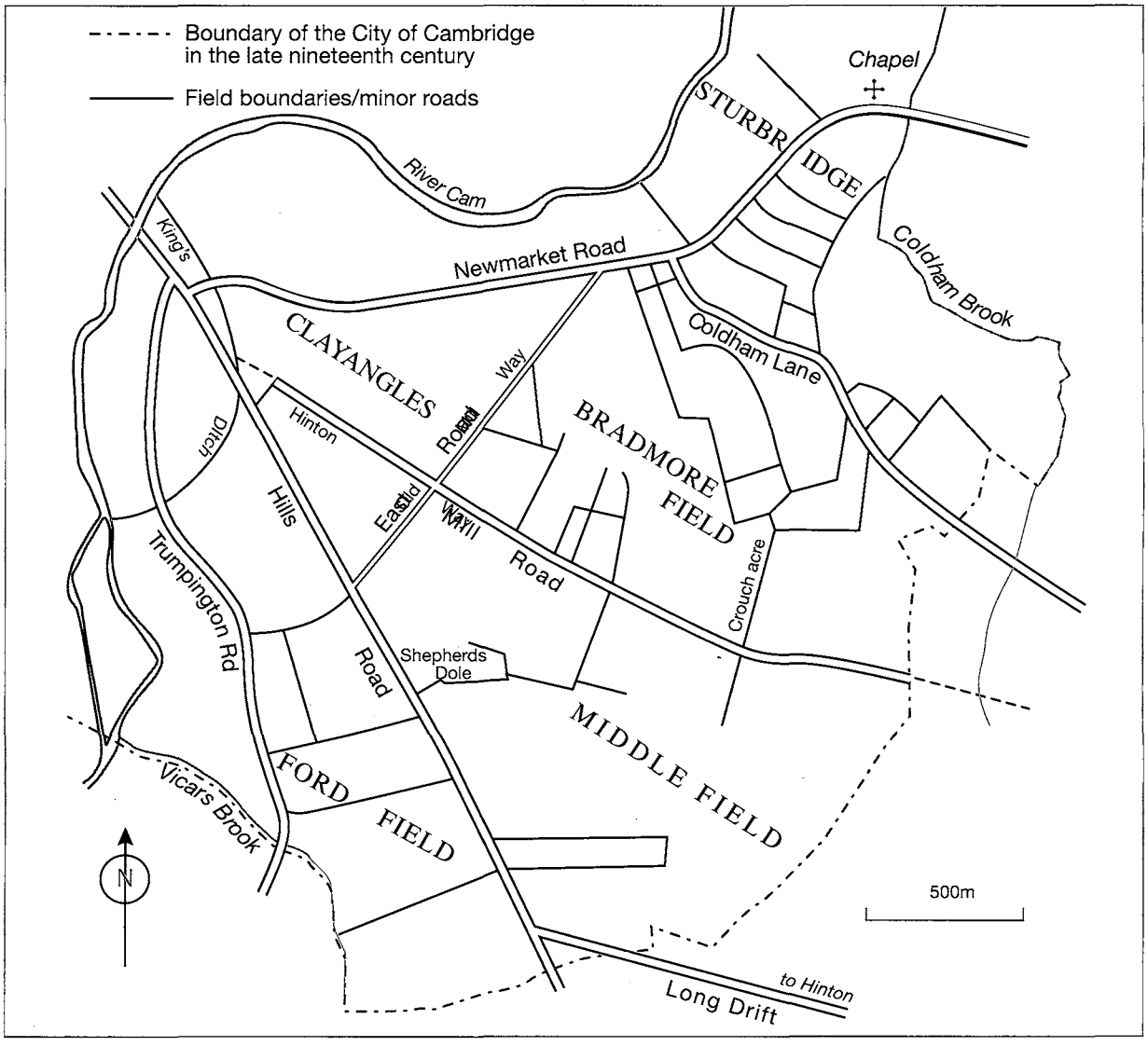

Figure 2. Outline of the East Field from the enclosure map, 1806.

enclosure map leaves most of the East Field empty of furlong boundaries, because of the large allotments to individual holders. The tithe map is more complete, showing boundaries of some strips as well as furlongs; but these tend to indicate the complexities of tithing (some of it clearly post-medieval), rather than the overall shape of ownership and land use. This is the first map showing the newly-built main railway line, indicating major destruction of the medieval pattern as the line crosses from north-east to south-west.

We are very fortunate, however, to have Baker's map of 1830, drawn before the advent of the railway. This is the first relatively complete map of the boundaries of the East Field, including arable fields as well as the growing suburbs of the town. Part of this map, with Bradmore field, is reproduced in Fig. 3. Note how even in 1830 the suburbs have hardly spread beyond East Road. From this map and the early terriers, it has proved possible to reconstruct the furlongs of Bradmore and Clayangles fields almost completely in their fourteenth-century form (Figs 4–5; detailed mapping of the strips has not been attempted). In these figures, furlong numbers are those in the terriers, and the complete set of field names in the terriers is given in Tables 1–2. It turns out that Baker's field boundaries fit the fourteenth-century descriptions almost down to the last acre,[5] leaving only a few problematic cases. In addition to this it is found that, between the Newmarket and East Roads (Old Mill Way), modern streets and property boundaries coincide precisely with most of the medieval furlong boundaries in the terriers. Sturbridge field is more difficult to map, because in Baker's time it had largely become occupied by brick yards and gas works, in place of the clay pits that were described in the terriers along with the medieval arable (Fig. 6). Parts of Sturbridge field have long been, and largely remain, a commercial landscape. However, the principal road of the great medieval Sturbridge fairground, called Garlic Row, survives, and there is a plan of the Fair, surveyed in 1725,[6] which assists in locating the arable furlongs to which the land reverted between Fairs. The medieval Leper Chapel appears in Furlong 4, which has the alternative name 'Timber Furlong'. This name, together with the 'Holt' shown on Baker's map in the angle between the river and Coldham Brook, suggests a medieval source of timber in this area.

It could be objected that the method of reconstruction of medieval fields from Baker's map involves uncritical copying of his mostly straight boundaries, and therefore ignores the fact that the strip furlongs would have had 'aratral curve' shapes. This might indeed have resulted in small errors in the reconstruction, but it should be noted that, on the large scale, the enclosure map (pre-Baker) and the tithe map (post-Baker) both show in fragmentary form what can only be skeletons of strip furlongs. In any case, the main reason for accepting Baker as the best indicator of earlier furlongs is the remarkable coincidence, particularly in Clayangles and Bradmore fields, of

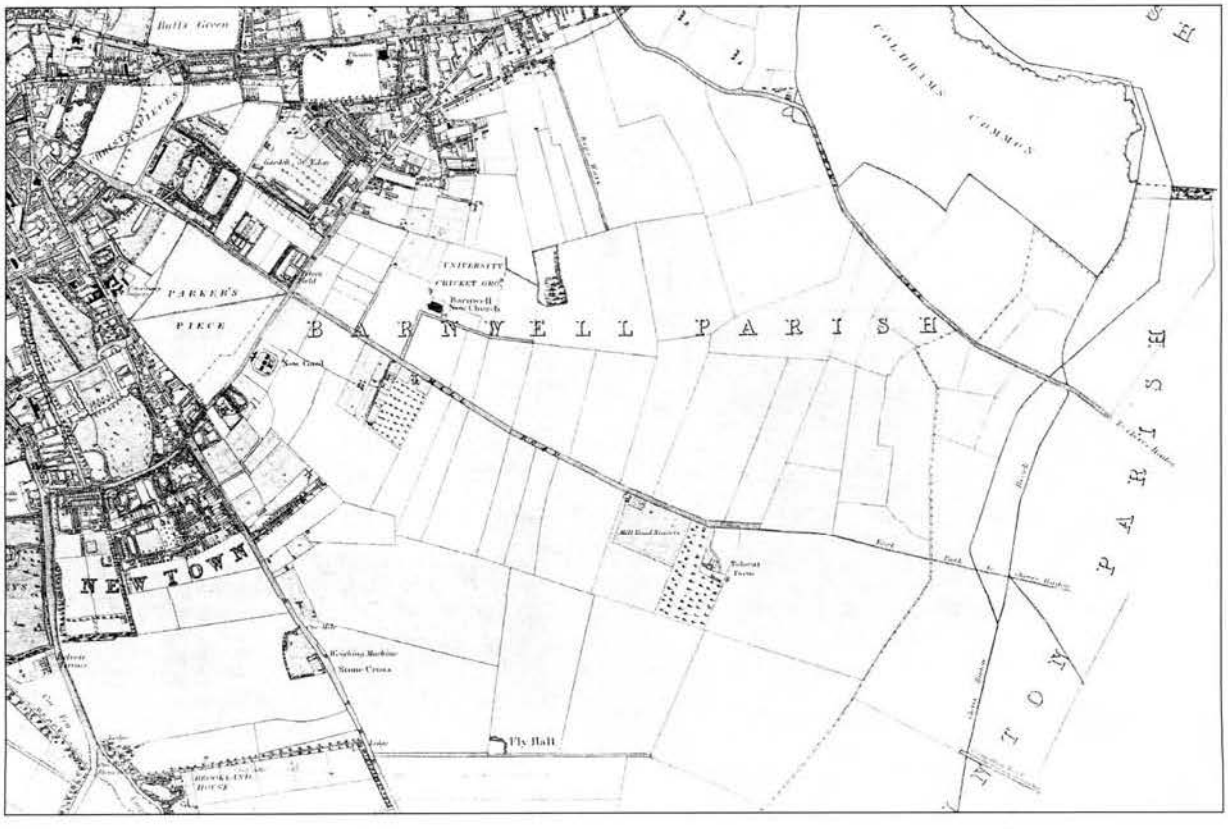

Figure 3. *Portion of Baker's map, 1830, showing Bradmore field.*

the abuttals and acreage measures shown on his map with what is derived from the terriers. These coincidences are too great to be accidental, and leave no doubt that the reconstruction is a generally accurate pattern of the medieval furlongs. Some of the striking instances are described below. It is perhaps ironic that a medieval reconstruction turns out to be easier for those parts of the East Field where the nineteenth-century development of town suburbs was comparatively early. It seems that the furlong boundaries in Bradmore and Clayangles fields were retained more-or-less intact through the period of enclosure, until the laying out of the new street pattern in the later nineteenth century. The correspondence between furlong boundaries and streets is vividly illustrated by a section of the modern Cambridge street map shown in Fig. 7. In most of Middle and Ford fields, on the other hand, urban development was later, and even before enclosure the medieval pattern seems to have been largely destroyed by the formation of large rectangular fields.[7]

There are particular points of interest about Bradmore field. First, its name, which means 'Broad Moor'. Apart from naming the whole field, there is a specific site within it also called 'Bradmore' in the terriers (Figs 4, 7 and distinguished hereafter from the field by the use of inverted commas). This site is located near the centre of the field, now bordered by the backs of house properties in Gwydir and Sturton Streets on the west (this is the medieval West Balk), and by the East Balk on the east. The ghost of this Balk lies straight across the railway sidings north of Mill Road (formerly Hinton Way). To north and south, Bradmore field is now bounded by Sleaford and Hooper Streets. The West and East Balks are prominent features of the medieval terriers, going north to south almost continuously from Newmarket Road to Hinton Way, and their sites are mostly retained in the modern street pattern.

The small area called 'Bradmore' is a rectangular plot of about 17 acres. Its curious feature is not only that it shares its name with the whole field, but also that it is not described in any of the terriers (up to the eighteenth century) as being an arable furlong or being held in strips, or indeed having any property- or tithe-owners. It is described only as bordering

Table 1. *Field names from copies of terriers in Jesus College (eighteenth-century) and University Library (1645).*

STURBRIDGE (ESTNHALE) (Furlongs 1–6, Figure 6)				CLAYANGLES (Furlongs 7–13, Figure 5)			
Furlong No.	Name (if any) and acreage	In Furlong	See Figures	Furlong No.	Name (if any) and acreage	In Furlong	See Figures
1	9.3.0	Roswen Dole		7	Caldwell	Barton Croft	
		Tibs Row			33.1.8	Caldwell	
		Walnot Dole				Chipax Close	
2	11.0.0 *No field names*					Green's Brewhouse	
3	Coal Pit	Coal Pit				Maids Causeway	5
	26.1.20	Cote Dole				Green Croft	5
		Hop acre				New England House	
		Mayor's house				Pitts Lane, Path	
4	Timber Dole	ChapelClose	6			The Plough	
	25.2.31	Chapel Hill				Walls Lane	5
		Joyners acre		8	19.0.29	Barnes Brew- Malt-house	
		Skinners house				Chantry of the Lady of Cambridge	
5	MiddleDole	Garlick Row	6			Drunken four acre	
	8.2.25					Friars Pryorhouse	5
6	Fen/ Nether-Shot 29.0.8	Ammers croft				Great Close	
		Balk Dole		9	17.0.0	Bakers houses	
		Cheese Row	6			Gore acre	
		Dovehouse Yard				St:Austins Close	
		Duddery Leys	6			West Dole	
		Golden acre		10	10.0.0	Maggots Croft	4
		Leyston acre		11	Overthwart	Black Swan Close	4
		Old Coldham acre			Dole 11.0.0		
		Pitance croft		12	4.2.20	Maids Causeway	5
		The Vine		13	18.3.0 *No field names*		

surrounding furlongs, and indeed is treated as if it were common land (like Coldham Common). Its location among the other fourteenth-century furlongs (Fig. 4) is also strange. It lies in a position that looks like the meeting of two furlong boundaries: one in the north which sweeps from west to east in a long curve between Old Mill Way and Coldham Lane, and the other which maintains a linear course parallel to Hinton Way. Moreover, in the descriptions found in the copies of the terrier, both Furlongs 23 and 24 (numbered in the Jesus College terrier) are divided into separate halves by 'Bradmore' itself. One can imagine a furlong boundary across 'Bradmore' from west to east, which would unite the two halves of each furlong. It is also noticeable that the eastern parts of Furlongs 23 and 24 respectively include South Bradmore Dole and East Bradmore Dole. The term 'Dole' in this context, as we shall see below, suggests land taken in from waste or pasture by a single owner.

There is another significant feature of 'Bradmore', which remains on Baker's map (Fig. 3). Above the 'E' in 'BARNWELL' is a rectangular plot, partly hatched with Baker's symbols for rough scrubland (as on Chesterton Fen). But 'Bradmore' is not fen. So far as there are any changes of level in this flat landscape, 'Bradmore' touches the 15 metre contour in the south,

Table 2. *Field names from copies of terriers in Jesus College (eighteenth century) and University Library (1645).*

BRADMORE FIELD (Furlongs 14–34, Figure 4)							
Furlong No.	Name (if any) and acreage	In Furlong	See Figures	Furlong No.	Name (if any) and acreage	In Furlong	See Figures
14	50.0.38	Anglesey House		19		Nocket [Naked] acre	
		Barnards/Richards Croft	4			Frog acre	
		Bell backgate		20		Intercommon	4
		Birdbolt Close	4			Mortimers Dole	4
		Black Swan Close		21	11.3.20 *No field names*		
		Coldham clay pits		22	4.1.20	Crouch acre	2,4
		Coldham Lane	1,2,4,7			Horsepath	4
		Dovehouse Close		23	22.3.20	'Bradmore' [common]	4
		East Bradmore Balk	4			Mortimers Dole	4
		John Smith's Croft	4			Smock Alley	4
		Old Mill Dole	4			South Bradmore Dole	8
		Overthwart Dole	4	24	29.0.15	Bradmore Drain	4
		Sheep house				East Bradmore Dole	
		Six Selions Croft				Smock Alley Way	4
		Steeple Dole Furlong	4	25	Overmilk 8.1.20	Ruttifers path	4
		Three Cups Close		26	7.2.20 *No field names*		
		West Bradmore Balk	4	27	Nethermilk	Coldham Wall	
15	67.3.6	Crouch acre	2,4		24.3.31	Hogmore, way to	4
		Finne's Croft	4			Pheasants Croft	4
		Gutter acre		28	Milk Croft 5.0.0		4
		Huntingdon Dole	4	29	4.3.20	Bad Husband's headland	
		Long headland	4	30	Seven acre	Coldham Green corner	
		Maniants Balk	4		8.1.20	Seven acre Dole	
		Ruttifer's path	4	31	5.1.20	Black acre	
16	6.2.0 *No field names*			32	Little Ives 2.2.0	Round Close	4
17	Roser/Cheker 6.3.0		4	33	Mickle Ives 8.3.0	Dirty Four-acre Close	4
18	Roser 7.1.0	Horsepath	4	34	Pesthouse/Cheney 16.3.20	Giles acre	4
19	25.1.20	Gaysley's headland	4				
		Kings acre					
		Long furlong					

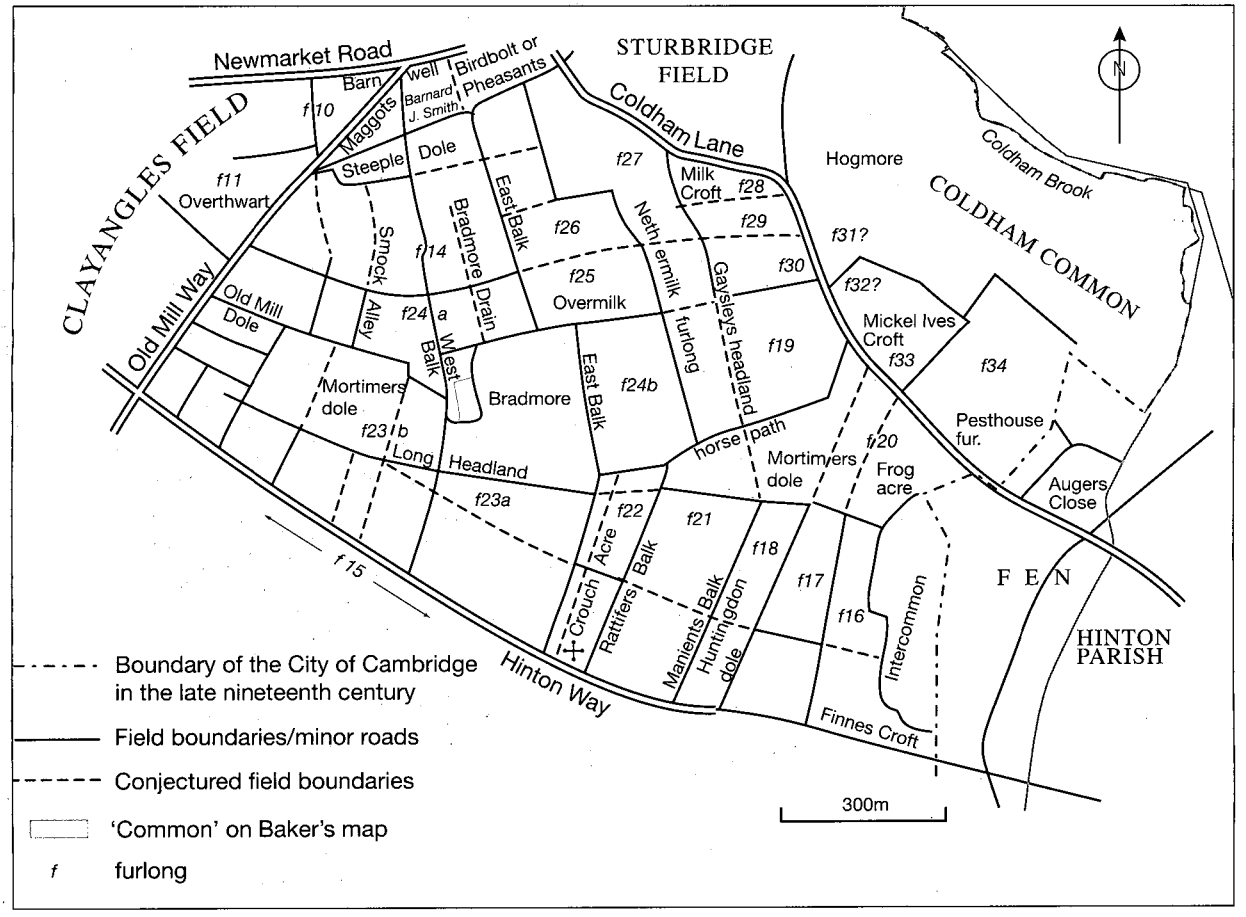

Figure 4. Bradmore field, drawn mainly from Jesus College terrier transcribed by Dr Caryl.

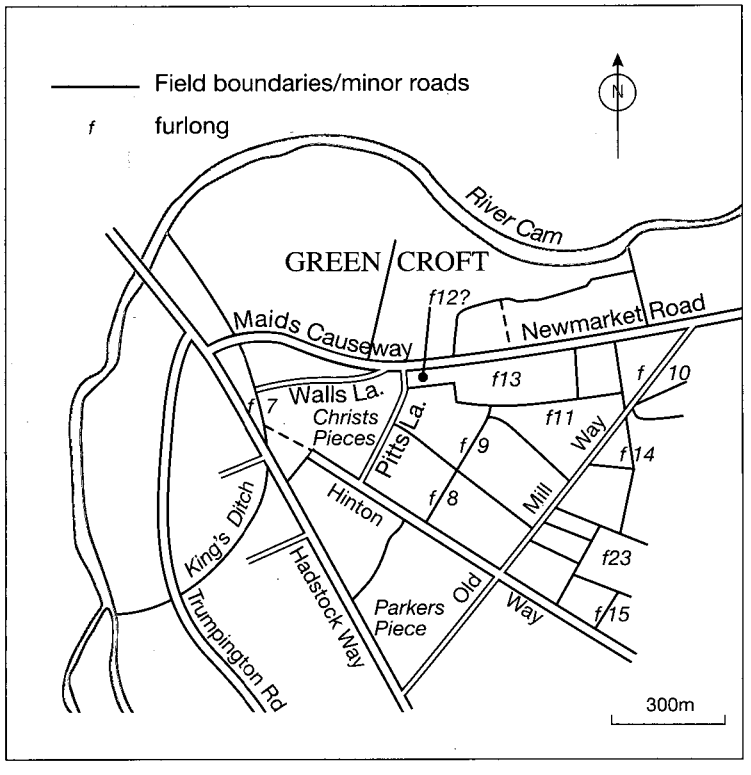

Figure 5. Clayangles field, drawn from Dr Caryl's transcription.

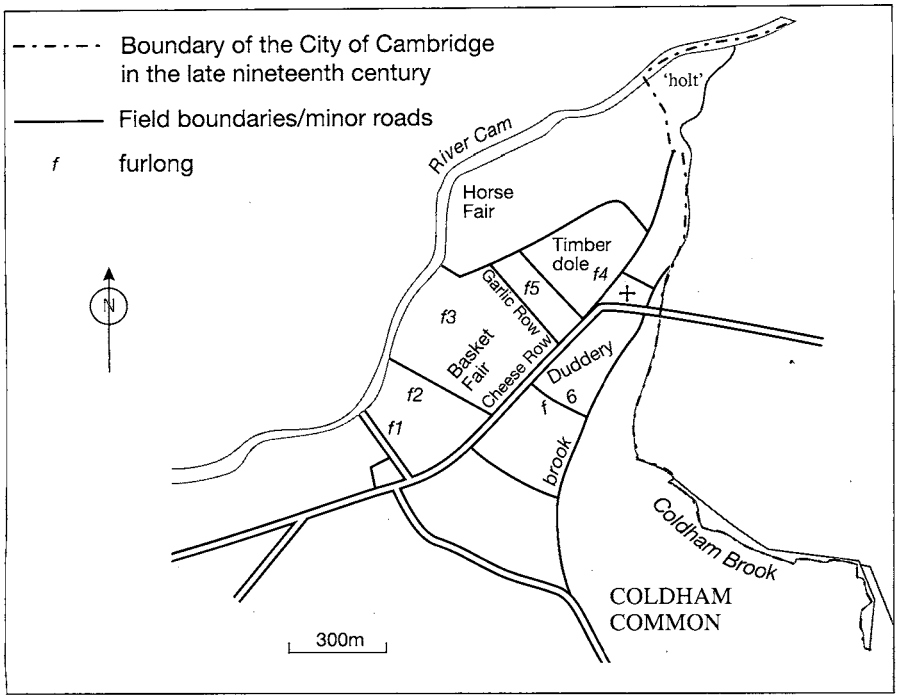

Figure 6. Sturbridge field, drawn from Dr Caryl's transcription.

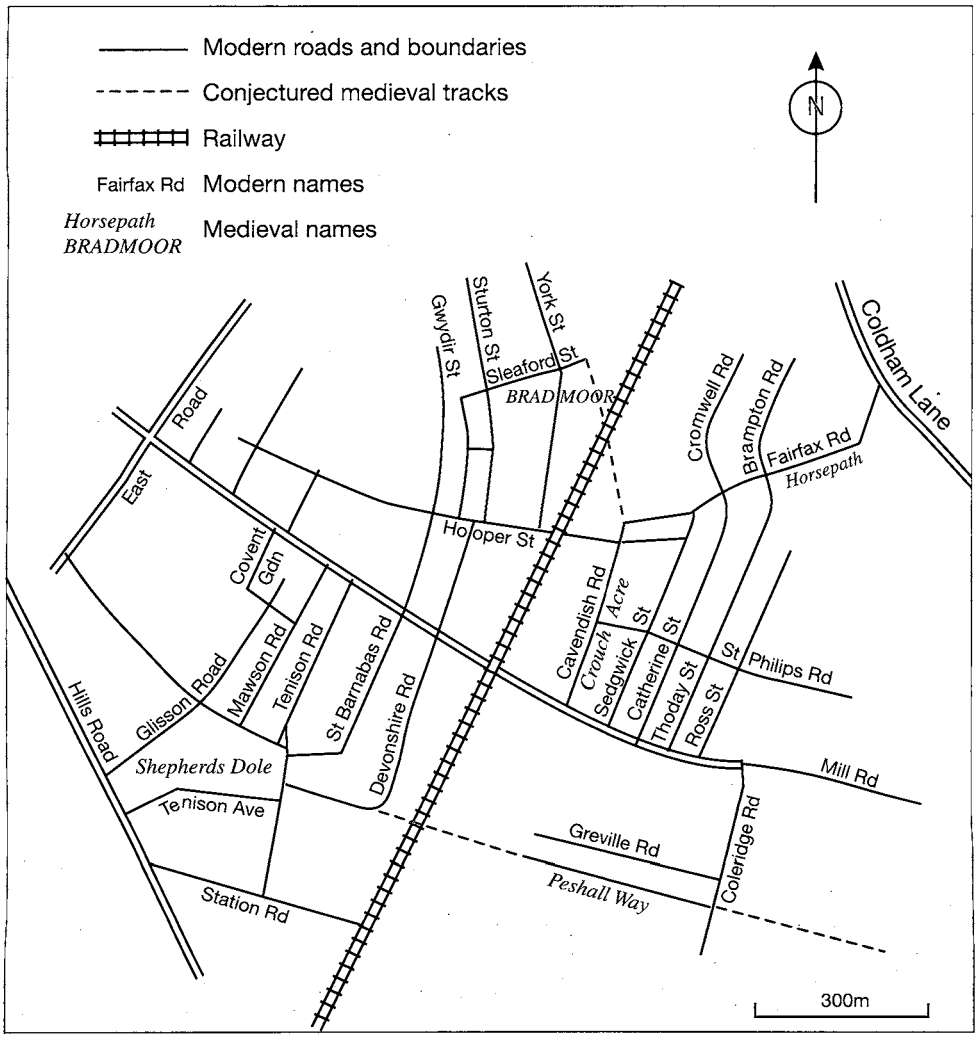

Figure 7. Portion of Bradmore field (Hesse, drawn from a selection of modern street maps).

and drops gently away to 13 metres in the north. The balk to its west is generally described as 'below Bradmore', and the East Balk as 'above Bradmore', all rather relative Cambridge adjectives. Even so, 'Bradmore' required a drain in the fourteenth century, going from just east of West Balk down to the Cam.

Perhaps 'Bradmore' holds a memory of the time when the whole of the Bradmore field was first used for arable up to the balks, leaving common and pasture as far as the borders of the Coldham Common fen to the east. On the other hand, the possibility that Furlongs 23 and 24 were once arable furlongs across 'Bradmore' suggests that it must have reverted to common or pasture after the initial period of assarting. We shall see below that there are other examples of such exploitation and reversion in the East Field.

The field names to the east of Bradmore field provide evidence that the furlongs there might have been cultivated comparatively late. The copies of the fourteenth-century terriers describe arable land as far east as an area of drainage along the Hinton parish boundary, including an intercommon in the south-east. In the north-east, the fourteenth-century furlong names also suggest a relatively recent memory of pasture rather than arable fields. There are 'Over-' and 'Nether-milk' furlongs (ff. 25, 27) and 'Milk Croft' (f. 28). 'Birdbolt' (f. 14) and 'Pheasants' (f. 27) hark back to bird-shooting over the fen. Part of Coldham Common is called Hogmore (f. 27), and Horsepath leads from 'Bradmore' to Coldham Lane. Further evidence will be cited below from Domesday Book to suggest that the East Balk might have formed a boundary of cultivation until the late eleventh century.

The Horsepath provides another example of the accuracy with which the modern street plan often follows the furlong boundaries. The path is first mentioned in the terriers as lying between the south abutment of Furlong 19 and the north abutment of Mortimer's Dole (f. 20), and is apparently the track leading from Long Headland in the west to the Fen in the east. There is an intriguing junction at Furlong 22, where it seems to make two sharp corners. Furlong 22 (including Crouch acre) is recognisable in Baker's map (Fig. 3), and in Figs 4 and 7. It has an irregular shape compared with its surroundings, and this is identifiable, both in Baker's map and in the modern street plan, between Cavendish Road and Sedgwick Sreet. In the terriers this furlong's selions run north and south. Four selions on the east side are described as being on both sides of the Horsepath, and a piece of headland at the north end is north of the Horsepath. The next selion to the west is Crouch Acre. All of this is consistent with the Horsepath making a zig-zag at the north-east of Furlong 22 and passing across the furlong. Crouch ('Cross') Acre is itself of importance, since it meets Hinton Way where a medieval cross stood (Stokes 1915, p. 54). This is just east of the East Balk, again supporting the idea that the balk might have been an early limit of cultivation.

There is a noticeable change of orientation between Baker's map and the modern street plan at the north-eastern point of Furlong 22. The terriers, followed by Baker's map, require the strips north of the continuation of Horsepath to be oriented at right-angles to it, following the change of direction of Horsepath itself. However, street maps now show how later building respected the line of the railway, destroying the medieval pattern that was still present in 1830. Near the north-eastern point of Furlong 22 there is now a roundabout and a confusion of streets round Fairfax Road (almost on the site of Horsepath), which marks the change.

There are other significant furlong names to notice. Pesthouse Furlong (f. 34) is first named in seventeenth-century terriers, but it occurs as an arable field in the fourteenth century, located at the corner of Coldham Common, and then called Cheney Dole.[8] It seems to have become part of the Common by the seventeenth century, when Parliamentary permission was required to allow it to be used as a pesthouse in the epidemic of the 1660s.[9] The area must have been withdrawn from cultivation due to waterlogging sometime between the late fourteenth and seventeenth centuries.[10] In 1794, Vancouver wrote one of his characteristic comments about this area:

> There is a moor of considerable extent lying between the highlands (sic.) of Cherry Hinton and Barnwell on the north-east ... which at this time is greatly annoyed by the stream which passes through the west end of Cherry Hinton ... the constant height of the water in this brook [reduces it] to the state of an absolute morass, though capable of being highly improved.

Looking at the overall plan of the furlongs in Bradmore field, it is interesting to see how Old Mill Way (East Road) intrudes across a great sweep of long boundaries in the north of Bradmore field and into Clayangles field. These cross the road with the furlong called Overthwart (f. 11) and a furlong to its north (f. 10), which was later divided between the Black Swan and Maggots Closes. It is not known when Old Mill Way was established, but it probably existed as a track at least as early as the building of Barnwell Priory, when it would have acted as a short cut to the roads to the south and east out of Cambridge. The field system, however, clearly shows that Clayangles and Bradmore were originally one field.

Middle and Ford fields

We now turn to the remainder of the East Field (Fig. 8). Swinecroft and Ford field lie between the River in the west and Hadstock Way (Hills Road) in the east, and extend from the King's Ditch to the Trumpington parish boundary. Maitland gave an excellent account of Swinecroft field where he actually lived, on the Downing College campus. He described how a Way-balk of the St Radegund garden was still marked by old thorn trees 'soon to be destroyed' (Maitland 1898, pp. 112–13). He also transcribed from the terriers the first three furlongs of Ford field lying west of

the Trumpington Road. These extend from the walls of Peterhouse and south to the bridge where Vicars Brook crosses the road and where Hobson's Conduit originally left the Brook to bring water to the town.

Unfortunately Maitland stopped there, but the rest of Ford and Middle fields were taken up by Stokes, using the terriers Maitland had unearthed (though Stokes' references leave something to be desired). I have tried to reproduce his map by the techniques used for Bradmore field, but with only limited success. One problem is that Stokes' relative acreages on his map do not always match those in the terriers, and he does not seem to have used even the sparse information available from the enclosure and tithe maps, or even Baker's map, as a possible basis for the medieval pattern. I have tried to take account of this extra information in a partial reconstruction of Stokes' map in Fig. 8. The problem is intrinsically more difficult than that of Bradmore field because, as mentioned above, the early furlong patterns in these fields were replaced before or after enclosure by large undivided arable fields. Again, the lands tithing to Jesus College were more widespread in the southern fields than in Bradmore, and they appear on the tithe map as vast acreages of undivided land.

A notable feature of Middle field is the long straight track called Peshall Way, going west to east from Shepherd's Dole to the parish boundary and into Hinton parish. It is parallel with Hinton Way, and the rectangular furlongs on its north-eastern side, as drawn by Stokes, seem to fit the terriers fairly accurately. In particular, the irregular shape of Shepherds Dole at the north end of Peshall seems to be at least as old as the terriers, where it appears as Furlong 46. It retains its shape in the enclosure and Baker's maps and in the modern street pattern around Tenison Avenue and Glisson Road (see Fig. 7).

On the south-western side of Peshall Way, however, there are problems with Stokes' map, and here it is possible to use some of the boundary orientations in nineteenth-century and modern road maps to suggest minor modifications. There is a pattern of field boundaries in the south-western corner of Middle field in the tithe map which is not reproduced in Stokes' map, and which seems to fit the terrier descriptions better than his reconstruction (Fig. 8). The result of incorporating these changes is to emphasise a discontinuity of orientation across the south end of Hadstock Way, as might be expected along the course of a known Roman road.

The south end of Ford field is more problematic, but it is interesting to see on Stokes' reconstruction an indefinitely shaped Potmore Common, placed amid the furlong strips rather like the 'Bradmore' further north. This is approximately where Brooklands Farm was, about 300 yards south of Brooklands Avenue, in the midst of more recent government offices. Potmore Common lies, like 'Bradmore', on a gentle slope just below the 15 metre contour, and drains down to Vicars Brook at Trumpington Road. *Potmore* may mean just 'hole' or 'pot' (Ekwall 1960, p. 372) or, perhaps more probably, it may be a corruption of *Podmore*, meaning 'frog moor' (Gelling 1984, p. 55). A close called Little Potmore further north (in the present Botanic

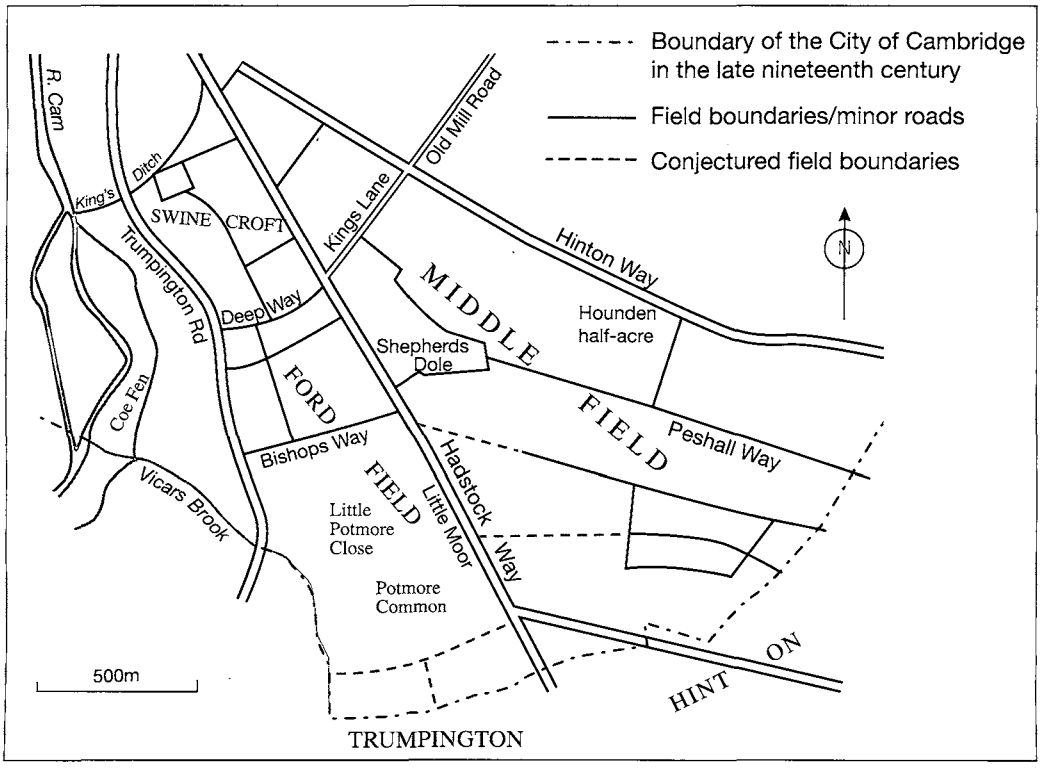

Figure 8. Middle and Ford fields, from Stokes' map and Dr Caryl's transcription.

Garden), together with a piece of scrubland marked on Baker's map and 'Little More furlong' in the south-east, all suggest that Potmore Common was once a larger area, before arable cultivation of the centre and south of Ford field was carried out. Further evidence for this will be discussed below.

The boundary perambulation

We can now try to come to some conclusions about the origins and general pattern of the early East Field system (Fig. 9). First, consider the parish boundaries. We start the perambulation, as Maitland did, at the railway bridge on Newmarket Road (that is, south of the confluence of Coldham Brook with the Cam and near the Leper Chapel). Follow Coldham Brook, with Fen Ditton and then Hinton parishes on the east side, and Sturbridge and then Coldham Common on the west. The boundary leaves Coldham Brook towards the south of the Common, near where subsidiary drains meet the Brook. Ditches here are mentioned in the fourteenth-century terrier, and appear to surround the furlongs called Cheney Dole and Mickel Ives Croft, which were then arable.

The boundary then goes west and irregularly south round some old copyholds, including 'Augers Close', in Hinton parish, crossing Coldham Lane on the way. 'Augers' is probably an Old English derivation meaning 'old enclosure' (Hesse 1997), which was corrupted to 'Angers' by the time of the enclosure of Hinton (1810). The presence of copyhold at this site perhaps suggests an early Hinton farm that was assarted from fen and common pasture. It is notable that a multitude of drainage channels on the enclosure map are all on the Hinton side of the parish boundary. This is also very clear further north, where the Cambridge boundary lies along the old irregular course of Coldham Brook, while a straight ditch accompanies it on the Ditton and Hinton sides. All this suggests that drainage activities by these villages occurred earlier at these sites than in Cambridge, where the earliest evidence we have for drainage is implied in the ditches described in the copies of the fourteenth-century terrier.

Going south across Coldham Lane, the boundary has a fen intercommon on its Cambridge side, which was present in the fourteenth century. On the enclosure map, this is accompanied by drains and by 'land immediately affected by drainage' on its Hinton side. Then it crosses Hinton Way (Mill Road), near where the Way crosses Hinton Ford (later White Bridge) and becomes Cambridge footpath No. 2 at enclosure. At this point Mill Road becomes a footpath towards Hinton and remains so to this day.

We are now on the boundary between Middle field and Hinton Moor, alias Bridge Field, in Hinton parish. All the way from Coldham Lane, the 1806 enclosure boundary has been sweeping round to the south-east in smooth arcs or straight segments. Peshall Way crosses it, going towards Hinton, where it is called 'Private Road No. 2' on the Hinton enclosure map. Apart from Peshall Way, however, there appears to be no continuity of furlong boundaries crossing into Hinton parish. The smoothly curved parish boundary is probably a demarcation across intercommoned fen and moor, which remained open before cultivation reached the edge of the parishes. On the Middle field side, the early Cambridge terriers list Fen Furlongs, with Hinton Moor and Fendon Field on the other side. Approaching Long Drift or Drove (Cherry Hinton Road) near its junction with Hadstock Way, the boundary becomes irregular again around some old closes on the Hinton side, and doles on the Barnwell side, one of which is called 'Beyond the Fen', and another 'Mere Dole'. The boundary continues as Mere Way from Long Drift and across Hadstock Way. The name 'mere' suggests an old boundary here, and the closes on Hadstock Way suggest that early advantage was taken of a comparatively steep rise (for this terrain) out of Hinton's Fendon Field.

The boundary continues west, dividing Ford field from Trumpington Field to the south. It has two straight stretches, with large rectangular enclosure fields oriented in parallel on both sides. In the terriers, the Ford field furlongs at this point are Hay Croft, Pit Dole and Little More furlongs, suggesting again that this part of the boundary was a late demarcation across the low-lying moorland, and perhaps parish intercommon. It is said in the *VCH* (1982, p. 248) to have remained uncultivated until the nineteenth century. 'Moor' occurs again as the boundary turns along Vicars Brook, going north to Trumpington Ford on Trumpington Road. Here a strip of common lies between the natural and artificial waterways that originate in springs in Shelford, and carry Vicars Brook to the Cam and Hobson's Conduit to the town. To the west of the boundary is Shelford Moor in Trumpington parish (possibly so-called because a road through Trumpington village leads towards Shelford by a left fork, which was also called Moor Way). The Cambridge-Trumpington boundary follows Vicars Brook to meet the Cam, and thereafter follows the river through the town to Maitland's starting point at the Newmarket Road railway bridge.

It must be concluded from the perambulation that most of the boundary of the East Field was determined by natural features. The only features that cross the limits of the Field are the roads and tracks: Coldham Lane, Hinton Way, Peshall Way, Hadstock Way, Long Drift, and Trumpington Road. There is no sign of other furlong boundaries continuing into adjoining parishes, so it appears that the earliest limits of the East Field were water, fen and moor.

The 'Doles' and Mortimer's estate

It is noticeable that several furlongs called 'Doles' are described in the terriers of both the East and West Fields. A very general meaning of 'dole' referring to land in Old English is 'A part allotted or apportioned to one, or belonging to one by report' (*OED* 1989, vol. 4 p. 934), and originally a share more generally, but

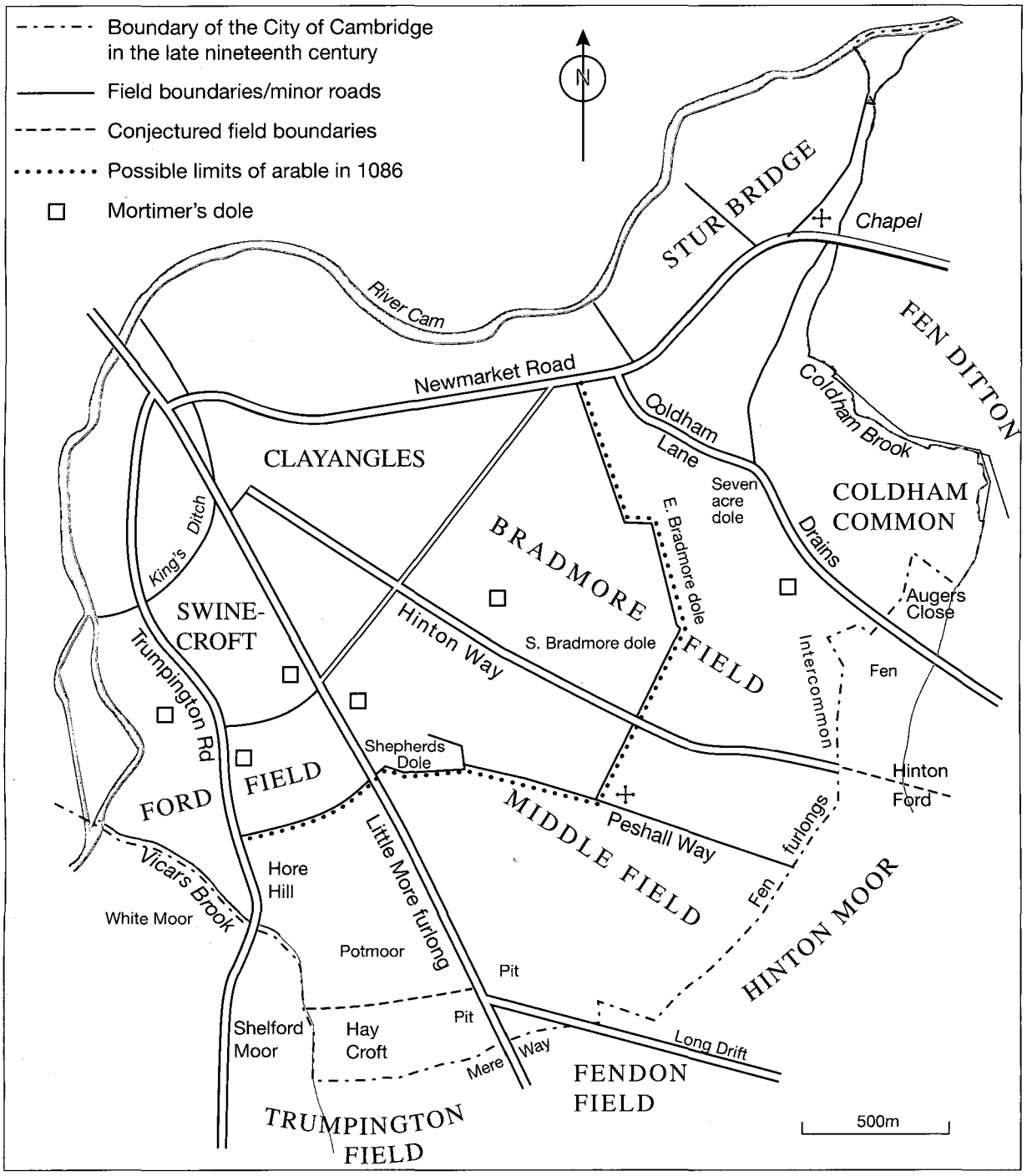

Figure 9. Perambulation of the East Field.

'dole' in the terriers is often more specific, referring to rectangular-shaped blocks of a few acres in area, usually without strip divisions.

In the terriers of the West Field, ten lands are explicitly called 'doles', and Hall & Ravensdale (1976, p. 19) note that: 'they are all, topographically or agriculturally, marginal land. That is to say, they either lie on the far side of the fields ... or they lie in wet places liable to water-logging ... or in other unpromising places, such as Nakedole in Br(a)mbilfurlong and Peperdole [meaning 'pebble'] where gravel was dug.' There are several other large blocks in the tenancy of 'Mortimer', which are not explicitly called 'doles' in the terriers of the West Field, but appear to be similar in size, site and soil. The locations and types of doles described in the above quotation can be classified as follows:

(1) at the far edges of Fields, where late assarting might be expected;

(2) on land liable to waterlogging;

(3) on unpromising soil;
(4) containing clay or gravel pits, or other non-arable products of the land.

These types can also be recognised in the terriers of the East Field, where some of the 'doles' are prominently displayed in the text. Thirty-four of them are undivided blocks of four acres or more in area, the largest being Mortimer's Dole of 14 acres (f. 20). Several are scattered along the eastern and south-eastern parish boundaries with Hinton and Trumpington, where there is land liable to flooding from Coldham Brook, and intercommon or 'Fen' and 'Moor' on both sides of the boundary. Where Hadstock Way crosses the boundary, there are gravel pits, which are also found at Hore Hill near where Trumpington Road crosses Vicars Brook. All of these 'doles' can be classified under types (1), (2), or (4). Another example of (4) is Lime Kiln Dole nearer to the town, and possibly Timber Dole near the Chapel at Sturbridge, given the evidence of woodland nearby. At the edge of Coldham Common are Seven Acre and Mortimer's Doles (the latter an irregularly-shaped block of 14 acres), both near Nocket (Naked) Acre, which suggests unpromising soil as in type (3).

There are also doles scattered among the furlongs nearer to the town that do not obviously fit types (1) to (4). The fourteenth-century names of many of these indicate properties of either relatively prosperous thirteenth-century families, or religious institutions. They include Mortimer's, Cayley's, Huntingdon (the Prior), Nuns (of St Radegund), Prior's (of Barnwell), Michael's House, and St Mary the Great. The last two form the present open space of Parkers Piece, and were previously the property of religious foundations in the town. These doles are comparable with Carmedole in the West Field, a block of land of 11 acres that lies immediately behind the Mortimer manor house in Newnham village. This dole probably acquired its name during a lease to the Carmelite Order between 1252 and 1292, which then reverted to the Mortimer family. It seems to have been part of the manorial demesne of Newnham (Hall & Ravensdale pp. 67, 155).

The early Mortimer estate was probably the only one in Cambridge town and fields that came near to being a 'manor' of the type familiar in Domesday Book. As a borough, Cambridge does not appear in 1086 as having any 'lord of the land' other than the King (Maitland 1898, p. 73). By the fourteenth century, the Mortimer Doles and their other lands were scattered over both the West and East Fields, with six in the East Fields ranging in size between four and 14 acres (Fig. 9).[11] These may loosely be called 'demesne lands', connected with the apparent Mortimer manor in Newnham. Other substantial estates in the East Field, consisting of doles together with smaller scattered properties, also functioned as demesne lands. The principal example is the demesne of the Prior and Canons of Barnwell, who held about 460 acres of arable (about a third of the whole field) according to the fourteenth-century terriers, and at least 750 acres in total according to their own account in the late thirteenth-century *Liber de Barnwelle* (Clark 1907, p. 28).

Evidence for the earlier history of such estates comes from charters of the immediate post-Conquest period, before the establishment of the first religious halls for the reception of students. This evidence has been summarised by Maitland in terms of exchanges of large plots of land between apparently prosperous individuals and families, including many burgesses of Cambridge. During this process, Maitland found a tendency for previously large blocks of land to be split into components of a few strips each (1898, p. 163). Some of the blocks survived intact, and explain the doles and other large holdings that feature in the terriers. In most cases their histories before the twelfth century are obscure, but in the unique case of the Mortimer estate, there is evidence to suggest its possible ancestry from before the Conquest.

The first connection of the Mortimer family with land in Cambridge was a grant of one carucate (ploughland) in about 1200, by King John, together with another carucate that went to the Hospital of St John (predecessor of St John's College).[12] There is evidence to suggest that these lands had earlier been held by the aristocratic family of Earl Waltheof, who was Earl of many counties (Cambridge, Huntingdon, Bedford and Northumbria), and a leading companion of Edward the Confessor. He was executed in a rebellion against the Conqueror in 1076. The properties can be traced almost continuously through Waltheof's descendants, to Earl David of Scotland (also Earl of Huntingdon and Cambridge), and until King John's gift to the Mortimer family. In the early sixteenth century, they passed from descendents of this family to Gonville Hall, and then, by some sleight of hand, became the property of the Town of Cambridge from the seventeenth to the nineteenth centuries (Maitland 1898, p. 179).

The early descent of these lands makes an intriguing story. As Maitland suggested, it indicates another possible close connection between the late Anglo-Saxon kings and the land of Cambridge, in addition to their royal demesne of Chesterton. The suggestion is supported by the Domesday tenures of the vills round Cambridge's south-western borders: Trumpington, Grantchester (then including Coton), Barton, and Comberton. In 1066 all of these were in the hands of King Edward or Earl Waltheof, or their servants or commended freemen, and many of the freemen owed cartage or escort duties to the Sheriff, the King's immediate deputy in Cambridgeshire. It seems that the late Saxon kings might have retained a close interest in a unitary estate extending from the Coldham-Hinton fen in the east, to the Cambridge Fields and its neighbouring parishes to the west. Particularly in the periods of Danish warfare, this would have provided support for the strategically important area of the Cam valley and its tributaries to the south. Discussion of this question would require a closer look at the lands to the west of the Cam, which is beyond the scope of this paper.[13] But some further

evidence about the pre-Conquest history of the East Field can be found from Maitland's discussion of the twelfth-century charters (1898, p. 163), and even from Domesday Book itself.

Origins and development of the field system

In the brief account of the arable fields of Cambridge given in Domesday Book, we learn only that they were present before 1066, and that they were held, at least partly, by burgesses. But we cannot at once conclude that they were then organised as a classic open-field system, that is, with tenure mostly divided in furlong strips and an annual rotation of crops and fallow between two or three large fields, as was certainly the case by the late fourteenth century. So the questions remain: first, when did such an open-field system develop, and second, did it happen all at once in what Hall & Ravensdale (p. 54) call a 'great plough-up', or perhaps in phases over a prolonged period, depending on the needs of the inhabitants and the availability and location of good soils?

In attempting to answer the first question, Maitland started with evidence from the thirteenth and fourteenth centuries, and then, as he puts it, stripped off the college ownership at that time to reveal, first, the lands of the previous religious houses, and then those of the early Cambridge burgesses who can be glimpsed with their holdings back to twelfth-century charters and to the time of the Domesday Book. As noted above, he found that, going back to the first burghal charters, the earlier land grants were the largest, suggesting that larger family acreages were beginning to be broken up at this time. This conclusion tends to contradict the usually accepted answer to the second question about the development of open fields, namely that the initial 'fair' apportionment of a tenant's strips involved scattering them widely across the fields, and that only in the later Middle Ages were they engrossed into bundles, or even into individual enclosures.

The dilemma is as follows: either a 'classic' open-field system was in place before the time of the Conquest, but the burgesses had already engrossed large areas of strips, which they subsequently sold off in smaller bundles; or their land had belonged to a pre-open field era, and their post-Conquest grants, with their tendency to partition, were themselves part of the process of establishing the sub-divided open fields from an earlier regime of block holdings. The possibility that this regime might even go back to 'Celtic' or 'Roman' fields is tentatively mentioned by Hall & Ravensdale (p. 52), but Maitland clearly favoured the first alternative. This was partly because his study of the twelfth-century documents did not reveal any clues about new rules for organising a drastically new system, as would be expected if the great transition had taken place during that period of increasing legal documentation. Again, although the fourteenth-century terriers reveal the continued presence of the doles and other large blocks of land held in severalty, these are still surrounded by, and often entangled with, sets of small strips of the open field. The whole picture in the fourteenth century looks much more like blocks of strips engrossed from open fields by individual owners, than open-field strips intruded among pre-existing blocks. This is well illustrated in the detailed furlong maps in Hall & Ravensdale (pp. 20, 40, 71, 77). It is possible, of course, that piecemeal transitions from engrossment of strips to subsequent break-up of single-owner blocks of land occurred more than once in the centuries between the establishment of open fields and Parliamentary Enclosure. It certainly seems that both before and after the Conquest there was much traffic between holdings, the details of which are probably forever inaccessible.

Hall & Ravensdale do not directly address the question of the time of origin of the open fields, but with regard to the question of development they take a clearly evolutionary view. Looking at their reconstruction of the West Field plan of 1789, they identify furlongs of two different types. There are groups of small fields with straight boundaries, some arranged irregularly and some in a grid pattern. These are concentrated around three areas of known early settlement: at the foot of Castle Hill near the old settlement of the Roman town; around The Howes at the Cambridge end of St Neots Way; and in Newnham Crofts and its surrounding fields. Settlement in these areas would have exploited gravel or chalk soil (Fig. 10), which provided easier farming conditions than the pervasive clay wetlands in the centre of the West Field. On the clay, by contrast, there are large long fields with curvilinear boundaries which have the typical appearance of classic open fields. The main east-to-west boundaries are usually headlands situated approximately one furlong apart, and the seventeenth-century map shows strips with reversed S-bends (Hall & Ravensdale pp. 20, 40). It is likely that development of these open fields would have taken place later over the central clays than around the three centres of settlement.

In the East Fields, it is noticeable that the furlongs in the four fields that border the town are smaller and more rectangular than those further out. So far this looks similar to the pattern of the West Field, where settlements seem to have surrounded themselves with small manageable closes. However, the similarities come to an end when it is noticed that the soil conditions in the West and East Fields are quite different (Fig. 10). In the west, the three areas of settlement outside the town are situated on rare patches of gravel near the river and along the Huntingdon Road, while the larger part of the West Field is on waterlogged clay. To the east of the river, on the other hand, patches of clay are small, and the bulk of the surface geology consists of gravel, rising to a low chalk ridge on the west side of Coldham Brook. As we have seen, however, in spite of the chalk, the presence in the flat landscape of the brook (and many chalk springs) causes heavy waterlogging if left undrained. We should expect, therefore, that the earliest arable

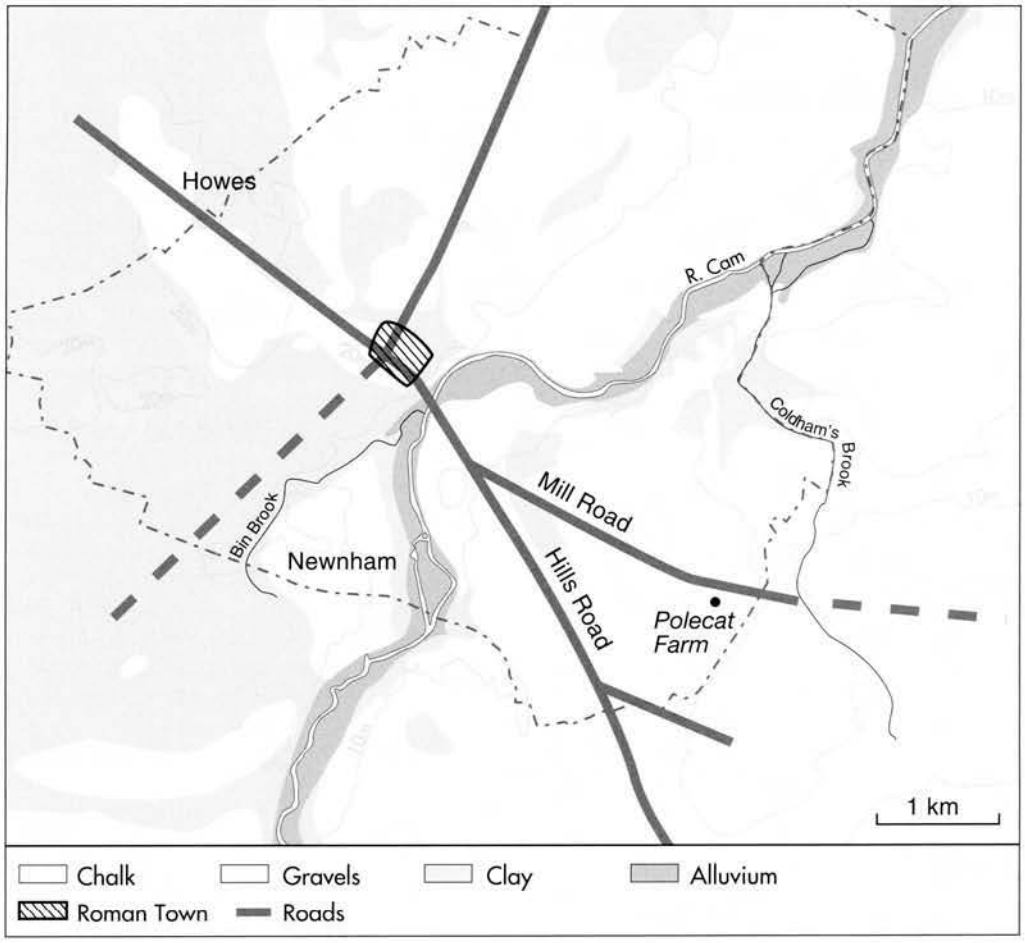

Figure 10. *The Geology of the West and East Fields (from drawing of Sarah Wroot, Taylor, 1999, p. 24).*

will be on the comparatively dry gravel, quite apart from its proximity to the town. It should be noted, for example, that on Baker's map, the only farmstead beyond the town along Hinton Way is Polecat Farm, and that this was already 'Polecat close and furlong' in the fourteenth-century terrier. It lies, not surprisingly, on the only patch of gravelly soil surrounded by chalk at the east end of Hinton Way.

Together with the geology, other clues about the timing of the development of the open fields are provided by Domesday Book. Interpretations of Domesday are always controversial, and this is no exception, but it is worth pursuing here because its consequences would provide independent evidence for the conclusions just drawn. The argument depends on an observation about numbers of ploughlands as given in the Domesday entries for wide areas of Cambridgeshire and its East Anglian neighbours.[14] First, assume that, in general, the known nineteenth-century parish boundaries are a near approximation to the boundaries in 1066. This has been confirmed in many cases of parish boundaries in pre-Conquest charters. Then, if numbers of Domesday ploughlands (or their surrogates) are taken to represent the acreage of the arable fields in 1066, it turns out that the proportion of arable to total parish area ranges closely around a mean of about 33%, with occasional anomalous deviations which can be explained by the nature of the terrain: heavy woodland, extensive fen, etc.

Carrying out this calculation for 12 Domesday parishes around Cambridge, and assuming as is usual for Cambridgeshire that a ploughland is equivalent to 60 field acres, we obtain a proportion of arable to parish area ranging from 48% to 29%, with a mean of 36%. Cambridge itself, of course, cannot be included in this calculation because Domesday Book does not record its number of ploughlands. But it is interesting to transfer this average percentage from its neighbours to the Cambridge East Field. Assume that the late Saxon arable stretched from the town limits outward along and between the roads from Newmarket Road to Trumpington Road and the river. The acreages of Midsummer and Coldham Commons should be subtracted from the available arable, since we assume that they were not cultivated before 1066. Probably the whole of Sturbridge field should also be subtracted, for three reasons: first, its situation between waterlogged commons and river make it unlikely to have been among the early arable fields; secondly, there is no evidence of substantial settlement near it until Barnwell Priory was built at its edge in the early 1100s;

and thirdly, it was included in the rotation cycle with Ford field, the most distant of the three larger fields, suggesting an afterthought when the rotation cycles had already been established.

On the basis of these assumptions it may be suggested that the 36% arable, out of the whole of the East Field, should be apportioned as follows (see Fig. 9). Include the whole of Clayangles and Swinecroft fields in the probable total of Domesday arable. They are adjacent to the town, and therefore probably among the first areas to be incorporated in the common fields. Then take the furlongs from the town outwards, and add up their acreages to give totals which form equal proportions of the three largest fields, so that these total acreages, together with those of Clayangles and Swinecroft fields, make up the 36% of arable to the total parish area, which includes the commons and Sturbridge field. This results in the following furlongs as potential Domesday arable:

(i) Clayangles and Swinecroft;
(ii) Bradmore field up to the East Balk, but omitting 'Bradmore';
(iii) Middle field as far south as Peshall Way, and east as far as Hounden Half-acre;
(iv) Ford field as far south as Bishops Way (Bateman Street), together with most of Coe Fen to the west of Trumpington Road.

In this method of calculation the choice of furlongs to constitute equal proportions of the three largest fields makes some use of what are clearly ancient boundaries. These boundaries do, however, turn out to have quite significant features which are independent of the 36% calculation. In Bradmore field, the 'ploughland area' reaches East Balk, which goes across the whole field in straight pieces from north to south. It is also roughly coincident with the boundary between gravel and chalk from Newmarket Road to Hinton Way, which certainly looks appropriate for the limits of cultivation at an early date. It is notable that the names of furlongs indicating pasture (Milk Croft, etc.) all lie outside it. Moreover, the Balk ends with Crouch acre, named in the fourteenth-century terrier, which doubtless refers to the later named Hinton Cross on Hinton Way. This cross may indicate a significant boundary, perhaps of early extensive intercommon to the east between Cambridge and Hinton. Again, in Middle field, it may not be a coincidence that it seems natural to apportion the early arable to the east of the old track of Peshall Way, and that the 36% proportion in that field brings us again to the cross on Hinton Way, almost opposite East Balk. To the south and west of this point, it cuts across the gravel which extends as far south as Trumpington village. In Ford field, the same calculation of proportion brings us just north of Little Potmore Close, south of which we have already found field names consistent with early moorland. On the other side of Trumpington Road, Coe Fen might seem to be an unlikely site for early arable, but strips there are clearly described in the fourteenth-century terrier.

Conclusion

This project has attempted to reconstruct as much as possible of a map of the medieval East Field of Cambridge, on the basis of early terriers and the work of Maitland, Stokes, and Hall & Ravensdale. The results have been used to trace out the early township boundaries in detail, and to discuss the possible consequences for the origins and development of the open-field system.

Several significant conclusions have emerged. First, it turned out that Clayangles and Bradmore fields were the easiest to reconstruct, because the street pattern, laid out mainly in the nineteenth century, has retained most of the boundaries described in terriers going back to the fourteenth century. The various later uses of the other largest fields (Sturbridge, Middle and Ford), made reconstruction more difficult, because the medieval pattern has been largely destroyed by post-enclosure arable fields, modern housing developments and various industrial activities. Secondly, a 'perambulation' of the medieval township boundary shows that most of it was determined by the river and other natural watercourses, together with areas of often waterlogged fen, and inter-parish moorland and common. The boundaries across fen and moor that can be deduced from the fourteenth-century terrier are relatively straight or gently curved, and were probably drawn across watercourses and intercommons at some earlier time to define the neighbouring parish territories.

Thirdly, tentative conclusions emerge about two of the long-standing problems in the history of field systems, namely, when were the Cambridge open fields established, and were they set up as single unified systems, or did they evolve over time in response to such factors as growing populations, soil conditions, or even just a human desire to 'tame the wilderness'? With respect to the date of origin, little new evidence is provided by the reconstruction of the medieval maps, but on the other hand nothing has emerged that would contradict the conclusion of Maitland and others that the open fields were pre-Conquest in origin. A new argument from an interpretation of 'ploughlands' in Domesday Book has been used, however, to suggest how arable cultivation in the East Field might have extended to a periphery at about a mile from the town before 1086, and subsequently to the parish boundaries as these existed in the fourteenth century. These boundaries survived until the early twentieth century, when the Borough of Cambridge incorporated much of the land of its neighbouring parishes into its rapidly growing suburbs.

Acknowledgements

I am grateful to the following for ready assistance in consulting their respective college archives: Elisabeth Leedham-Green, Roger Lovatt, Malcolm Underwood and Frances Willmoth, and to Peter Meadows for finding the University Library copy of the 1575

terrier. Also to Debbie Banham, Lyn Boardman, Catherine Hall, Susan Oosthuizen and the Editor, and to members of the Cambridge Landscape and Local History Group, for their perceptive comments on early drafts. My thanks also to Sarah Wroot, who drew the maps. All remaining mistakes are my own.

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The following manuscripts have been consulted, with acknowledgements to the Masters, Fellows and Scholars of the respective colleges:

Corpus Christi College, copy of fourteenth-century terrier of East Fields, CCCC 17.5, and sundry Maps and Plans CCCC 09/17/

Jesus College, terrier of Barnwell Fields, EST4.4. (late fourteenth-century, transcribed with notes by Dr Caryl, Master of the College 1758–80)

Peterhouse, 'Little St.Mary's', and 'Cambridge Fields', probably late sixteenth century

St John's College, 'Lands ... in Barnwell', 1550; Plan of Black Swan Inn, MRS 3; Grant of land by Convent of St Radegund to Hospital of St John, XXXII 6, 1299

Maps

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Plan of Sturbridge Fair, 1725, drawn by G J Smith, 1906. In Cambridge Collection

Endnotes

1 *Domesday Book* 189a

2 If Cambridgeshire ploughlands were nominally 120 acres, as appear in other counties, some Hundreds would have had an implausibly high percentage of ploughland acreage within their borders, e.g. Whittlesford Hundred, see Maitland (1897), p. 445.

3 See the references and argument in Haslam (1984, p. 23f), which suggests an Anglo-Saxon royal estate dating from before the eighth century, and comprising both Cambridge and Chesterton.

4 There have been many changes in this northern boundary during the past century, but measures from thirteenth-century documents given in *VCH* 1989, pp. 177, 183 show that the medieval boundary of Milton' s South Field was about half a mile south of Butt Lane, and in the position shown on Fig. 1.

5 The acreages used in the mapping are from the eighteenth-century terrier in Jesus College, and are assumed to be statute values. Most of the land areas in the earlier terrier-opies are given in selions rather than acres.

6 Taylor (1999), Plate 22; and *Plan of Sturbridge Fair Cambridge*, surveyed 1725.

7 The contrast is apparent in Spalding's map of Cambridge, 1898 (Baggs & Bryan 2002, map 10). The same difficulty arises in the reconstruction of the medieval West Fields. In spite of the existence of a plan drawn from a fourteenth-century terrier in 1789 (foldout in Hall & Ravensdale (1976)), there is very little coincidence between the pre-enclosure boundaries of this plan and those of Baker's map. For the contrast between urban developments in the West and East Fields respectively, see Bryan & Wise (2005) and Guillebaud (2005, 2006).

8 In all the terrier copies there appear to be internal contradictions regarding the location of the furlongs next to Cheney Dole (Little and Mickle Ives Crofts). But there is no doubt about the location of the Pesthouse, and therefore of Cheney Dole, on Coldham Common. Another early example of encroachment of arable on the town's ancient commons occurred on the land between the two ditches at the edge of Greencroft, built in the reigns of Kings John and Henry III respectively. See Faber (2006).

9 Grey (1953).

10 Vancouver (1794), Vol.I, p. 50).

11 Maitland (1898 p. 179) lists seven doles, but the most likely interpretation of the terriers seems to show that they have described separately a seven-acre dole, which should have been included in the irregular 14-acre dole in Furlong 20 next to Coldham Lane.

12 For the probable descent of these lands, see Maitland (1898), pp. 179ff, and Hall & Ravensdale (1976), pp. 64ff.

13 For a relevant study of the medieval field systems of this area see Oosthuizen (2006).

14 As found from Domesday calculations for the counties of Cambridge, Huntingdon, and Suffolk, and for several hundreds in the counties of Bedford, Essex, Hertford and Norfolk. For Suffolk, see Hesse (2000). In Norfolk and Suffolk the surrogates of ploughlands seem to be land areas measured in linear furlongs.

Ely Cathedral and environs: recent investigations

Craig Cessford with Alison Dickens

Small-scale investigations in and around Ely Cathedral have provided valuable insights into the development of the area. There is evidence for Late Iron Age and Roman settlement at Walsingham House and the Lady Chapel. The earliest evidence that might relate to the medieval religious community is a Middle Saxon pit at the Lady Chapel. Late Saxon activity is represented by buildings and other features, including a charnel pit at the Lady Chapel and evidence of substantial structures at the Bishop's Garden. Following the foundation of the cathedral, there is evidence for a twelfth-century cemetery at the Lady Chapel. This was followed by a thirteenth-century passage linking the Presbytery to a building or gate lying to the north. In the fourteenth century, this passage was rebuilt and linked the North Choir and the Lady Chapel. At the Old Bishop's Palace there is evidence of an earlier substantial thirteenth- and fourteenth-century stone building that might be the 'Abbots House' and a fourteenth-century cemetery.

The archaeology of medieval Ely has recently received a considerable amount of attention; in particular, large-scale excavations have taken place in the eastern part of the city towards the river (Alexander 2003; Cessford, Alexander & Dickens 2006) and on the western edge of the city (Mortimer, Regan & Lucy 2005). This work has focussed on the relatively low-lying peripheries of the settlement, where large-scale development has recently occurred. The dominant element of medieval Ely was, however, the religious community on the hilltop. While large-scale archaeological investigations have not taken place in or around the cathedral, a number of small-scale investigations have been undertaken over several years by the Cambridge Archaeological Unit (CAU) (Figs 1 & 2). The cathedral is built on Cretaceous Greensand and occupies the geographically advantageous high ground to the west of the River Great Ouse. The natural topography and the original contours of the hill are no doubt distorted and masked by later landscaping and structural activity.

The main thrust of investigations on the hilltop has been architectural rather than archaeological, with significant recent overviews (Fernie 2003; Maddison 2003) and work on the infirmary complex (Holton-Krayenbuhl 1998), Prior's Lodgings (Holton-Krayenbuhl 2000), Lady Chapel (Dixon 2002) and Octagon (Potts & Potts 2003). The archaeological excavations that have been published are largely concerned with secular rather than religious occupation of the area, as at the Paddock (Holton-Krayenbuhl 1988) and the White Hart (Jones 1993). The only published excavations of the religious buildings was the work within the north range around the Sacrist's Gate of the cathedral, which revealed medieval structural remains and a possible boundary to the early monastic precinct (Holton-Krayenbuhl, Cocke & Malim 1989). Elsewhere, a major and previously unsuspected fourteenth- to seventeenth-century stone building discovered at Ely King's School is probably part of the Old Bishop's Palace complex (Dickens & Whittaker in preparation).

The most significant archaeological work related to the cathedral was carried out between the Lady Chapel and the North Choir Aisle, which revealed activity predating the cathedral and shed light on the use of the area contemporary with the cathedral (Regan 2001). More limited work has taken place to the south of the cathedral around the south-western transept (Alexander 1994) and to the east and west of the south-eastern transept (Alexander 1996; Gibson 1995, Regan 1995; Whittaker 1996). Further afield, work at the Old Bishop's Palace (Alexander 1997; Regan & Alexander 1995), Canonry House Garden (Kemp & Hunter 1992) and Walsingham House (Hunter 1992) has also yielded results that are of considerable interest. Some of this work has been alluded to in recent discussions of the cathedral (e.g. Dixon 2002, 2003; Holton-Krayenbuhl 1998); however, this has usually been based on interim assessments that do not necessarily reflect considered analysis.

The Dean and Chapter of the Cathedral commissioned the majority of these excavations and funded the fieldwork and the immediate post-excavation work. Further post-excavation work and this publication were funded solely by the CAU. It was not possible to analyse the human remains that were

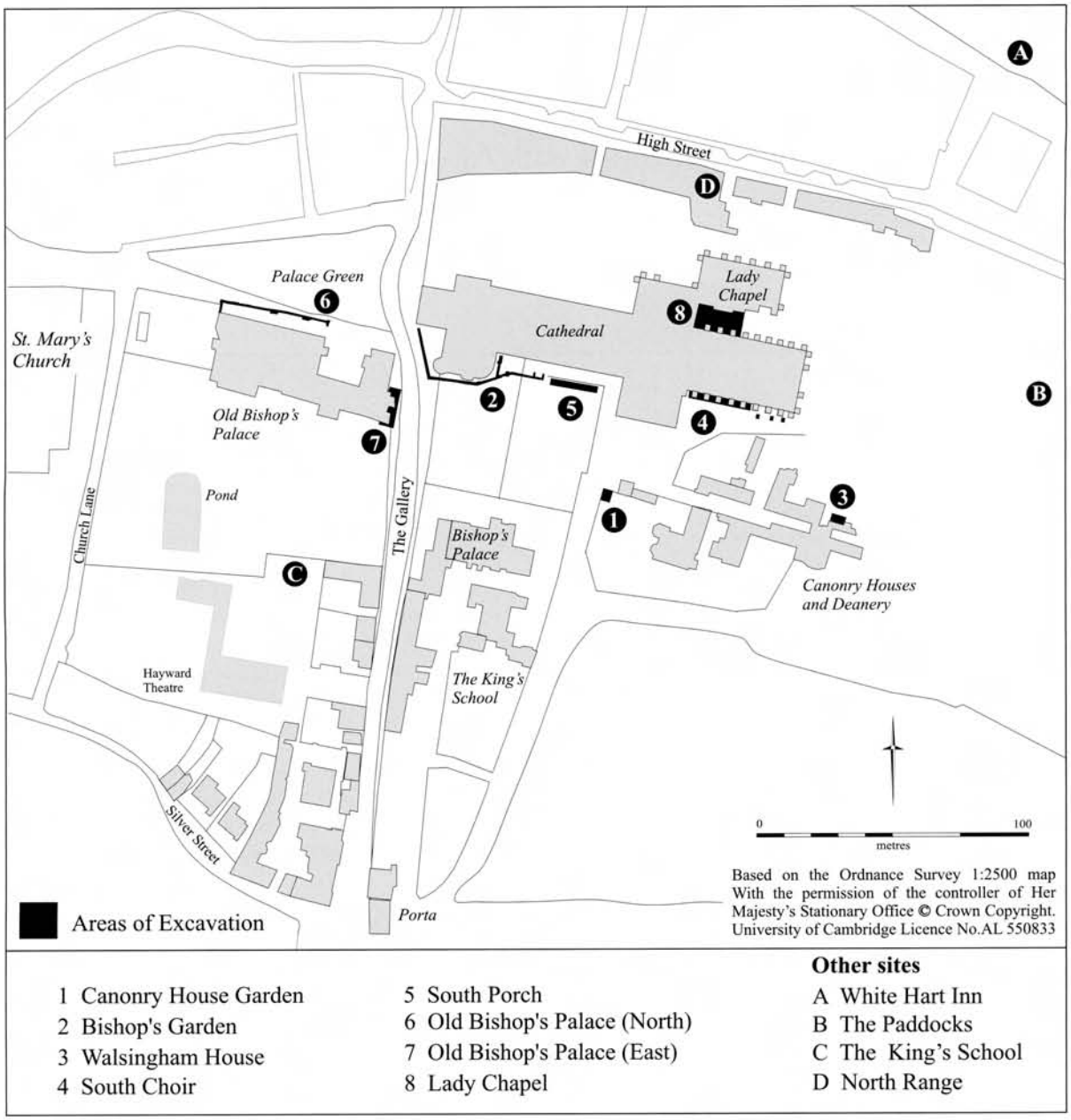
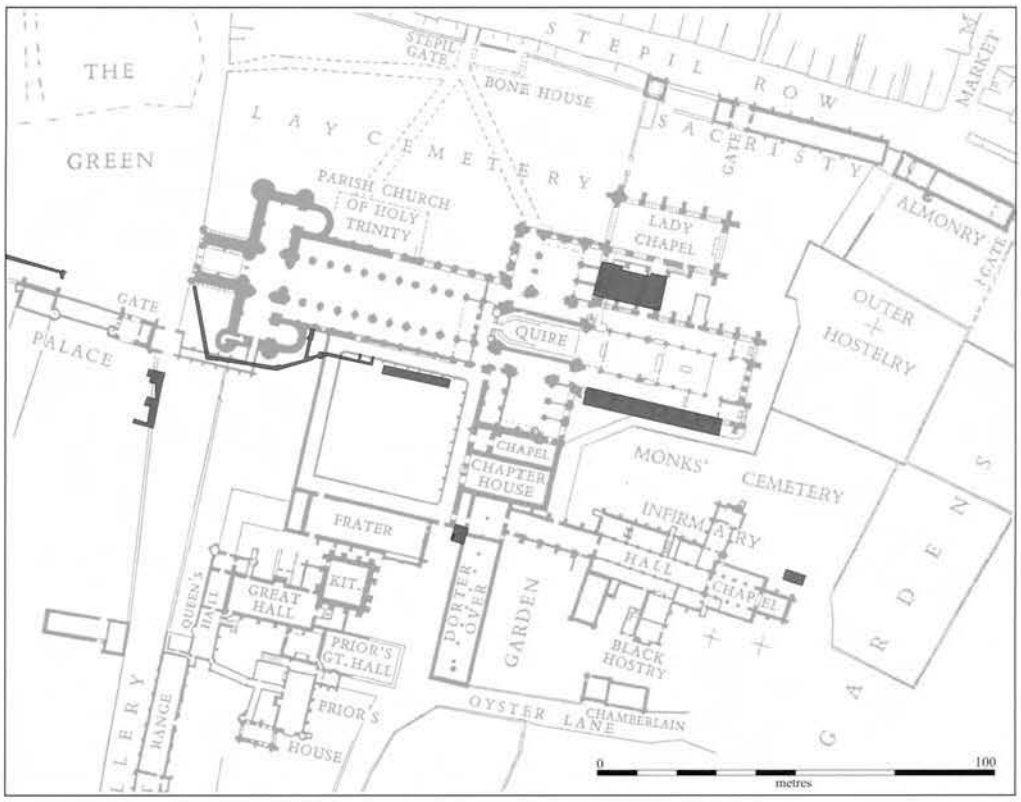


Figure 1. *Location of recent archaeological investigations in and around Ely Cathedral.*

discovered at the Lady Chapel in any detail, as the Cathedral authorities decided to reinter them immediately after discovery close to the site. All statements concerning these human remains are based upon on *in situ* examination of the material.

The Iron Age to Early Saxon periods

Extensive medieval and later activity means that there is little direct evidence for the early use of the hilltop. Discoveries of residual material hint at some prehistoric activity from the Neolithic onwards, but the earliest definite evidence for a settlement comes from the Late Iron Age. At Walsingham House (Fig. 3), a relatively small trench revealed a pit and a ditch flanked by an upcast bank containing Late Iron Age and Roman pottery (105 sherds). The relatively large quantity of Late Iron Age pottery suggests that the features might be part of a substantial Late Iron Age settlement; Roman activity was apparently much less intense. At the Lady Chapel, no Roman features were found, but a substantial quantity of pottery was recovered (128 sherds), much of it from a dark brown subsoil that produced no later material. Recent discoveries of extensive settlement at various sites in the vicinity suggest that the brow of the high ground was intensively occupied in the Late Iron Age and Romano-British period (Evans, Knight & Webley 2007).



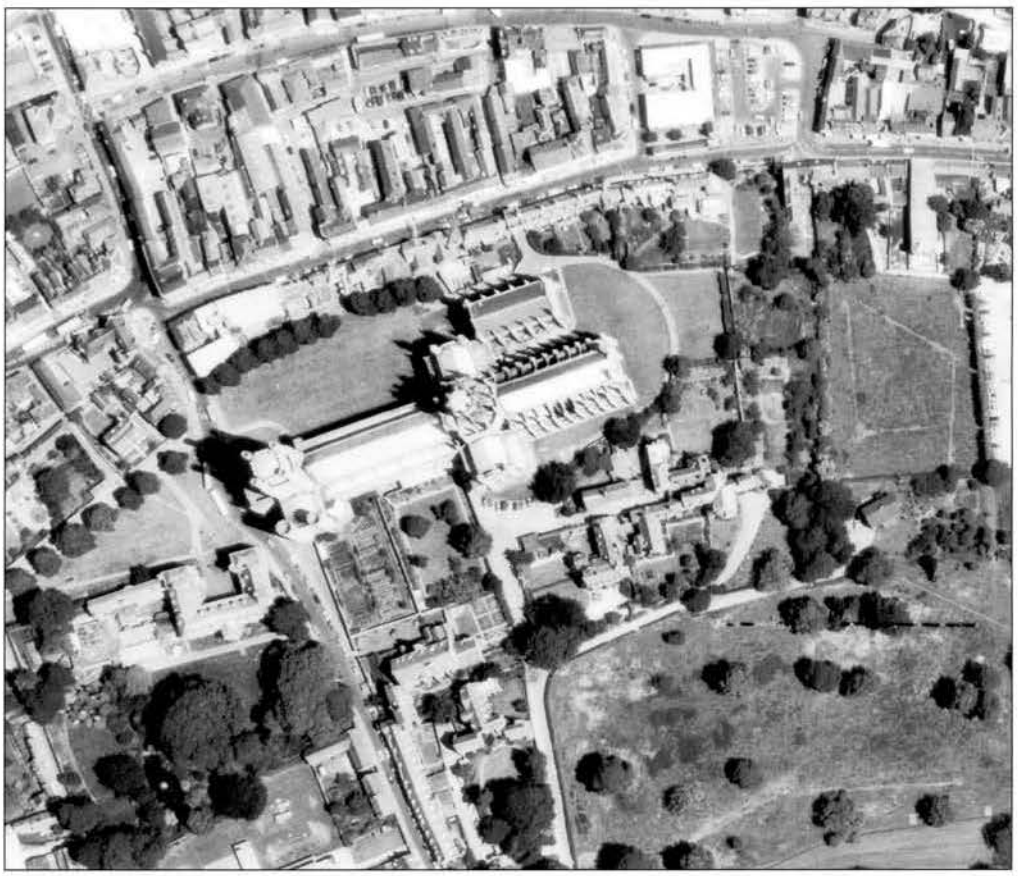


Figure 2. *Location of recent investigations overlaid on Atkinson's plan of Ely Cathedral and Priory (from Atkinson 1953, p. 78), plus aerial view of the Cathedral (courtesy of the Cambridge University Collection of Aerial Photographs).*

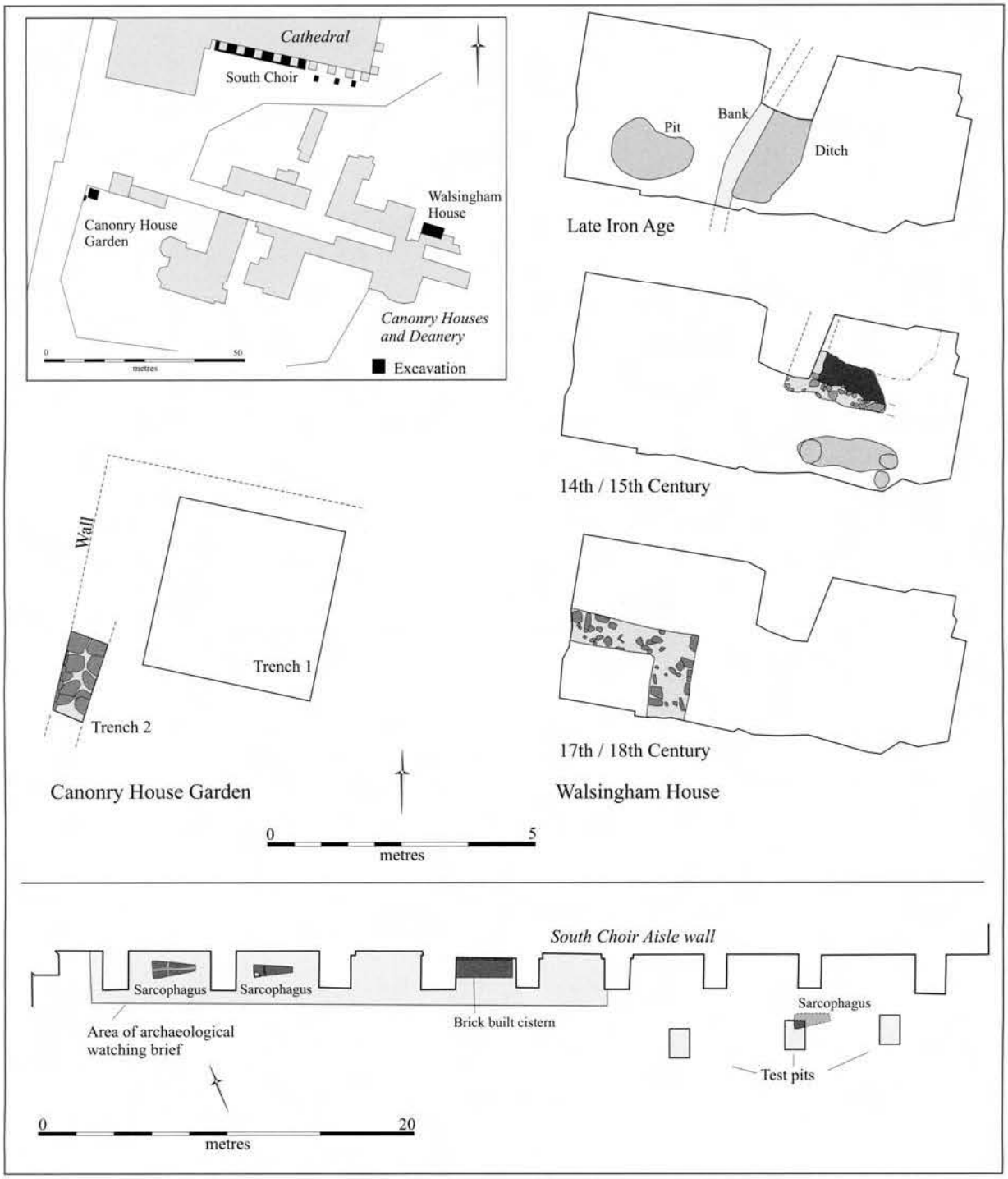


Figure 3. *Features at Walsingham House, Canonry House Garden and South Choir Aisle.*

No definite Early Saxon features or material have been recovered from the area of the cathedral. A small quantity of handmade pottery that is either Early or Middle Saxon was found at the Lady Chapel (ten sherds). In the absence of any definite evidence for Early Saxon activity, and given the presence of Middle Saxon features and material, it is probable that the handmade pottery is Middle Saxon.

There are three Early Saxon cemeteries located near Ely. At Witchford Aerodrome, three kilometres to the south-west, about 30 fifth- to seventh-century inhumations were discovered (Fowler 1947) and an eighth-century pendant from nearby might relate to a high status burial (Lethbridge 1952). Around 1.5 kilometres to the north is what appears to be a substantial sixth-century cemetery (Cra'ster & Bushnell 1959). More recently, a seventh-century cemetery has

been excavated to the west of Ely at Westfield Farm (Newman 2007). These cemeteries suggest that during the Early Saxon period the area around Ely was already a focal point and that the Christian ecclesiastical sites were located with regard to an already occupied landscape. All of these cemeteries are probably associated with nearby settlements (Hall 1996, p. 36). It appears that the Middle Saxon religious settlement was established between at least three existing settlement/cemetery complexes.

The Middle Saxon period

Evidence of Middle Saxon activity at the Lady Chapel (Fig. 4) came mainly from a series of dark soil layers, plus a single large pit. The pit was probably initially dug for sand extraction and its primary fill consisted of dumped burnt fuel, including rush and sedge, plus eggshell, fish and eel remains, suggesting that food preparation and cooking had been carried out. There was also some pottery and a copper alloy pin. Above this was a clean light-coloured puddled clay. This clay was not from the immediate vicinity and the pit was probably deliberately lined to hold water. When the pit went out of use it was deliberately backfilled with domestic debris, including considerable amounts of pottery and animal bone.

The pottery was dominated by Ipswich ware (48 sherds out of 89 from the entire site; Fig. 5.1) and the Ipswich ware assemblage from Ely is one of the largest from an inland site. The majority of the vessels were small jars although there were also some larger jars and pitchers. Ipswich ware probably began to be used in Cambridgeshire between 725 and 740 and continued until the middle or late ninth century (Blinkhorn forthcoming). There was also a single sherd of Maxey Type ware dated *c.* 650–850 (Hurst 1976, pp. 307–8).

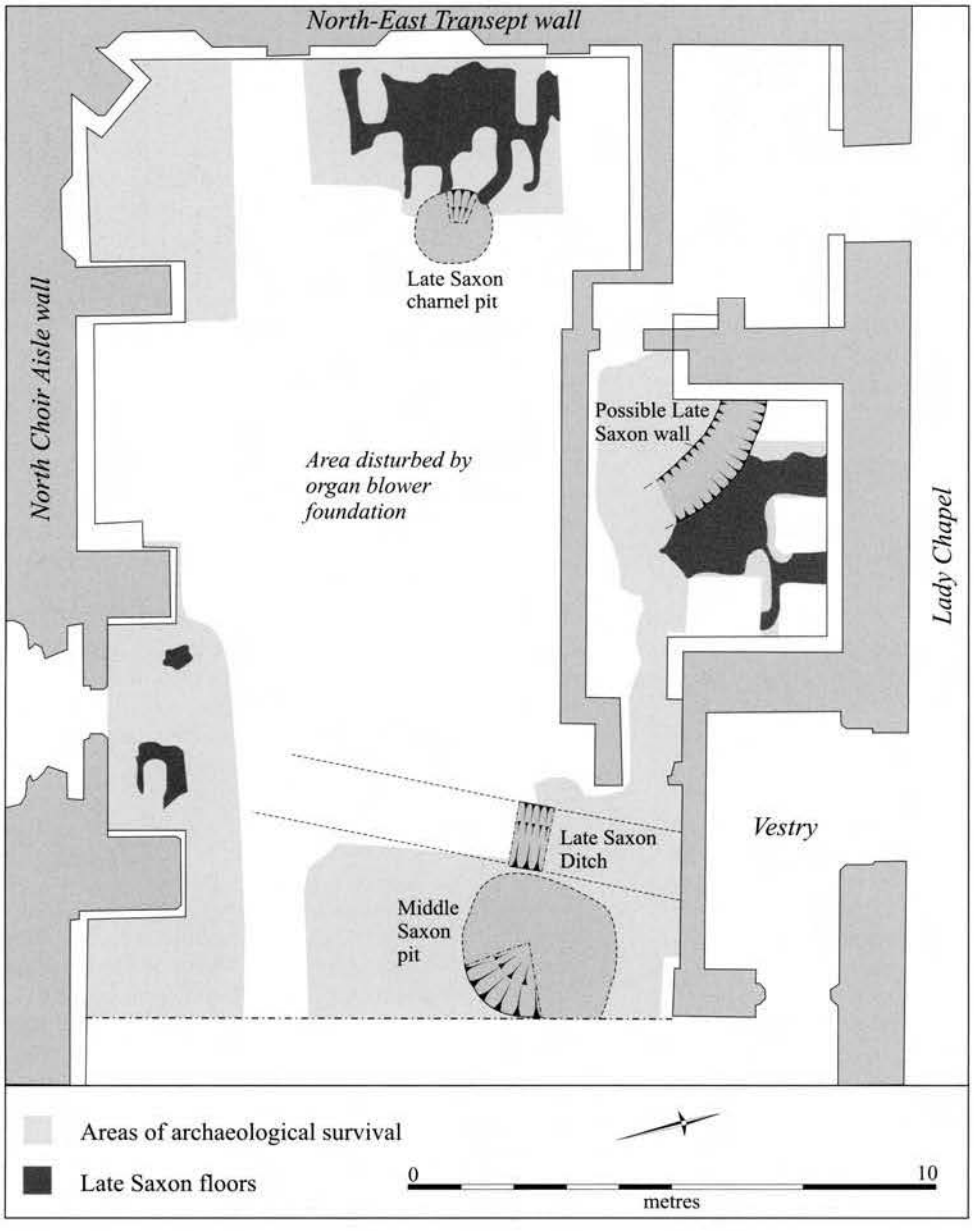


Figure 4. *Middle and Late Saxon features at the Lady Chapel.*

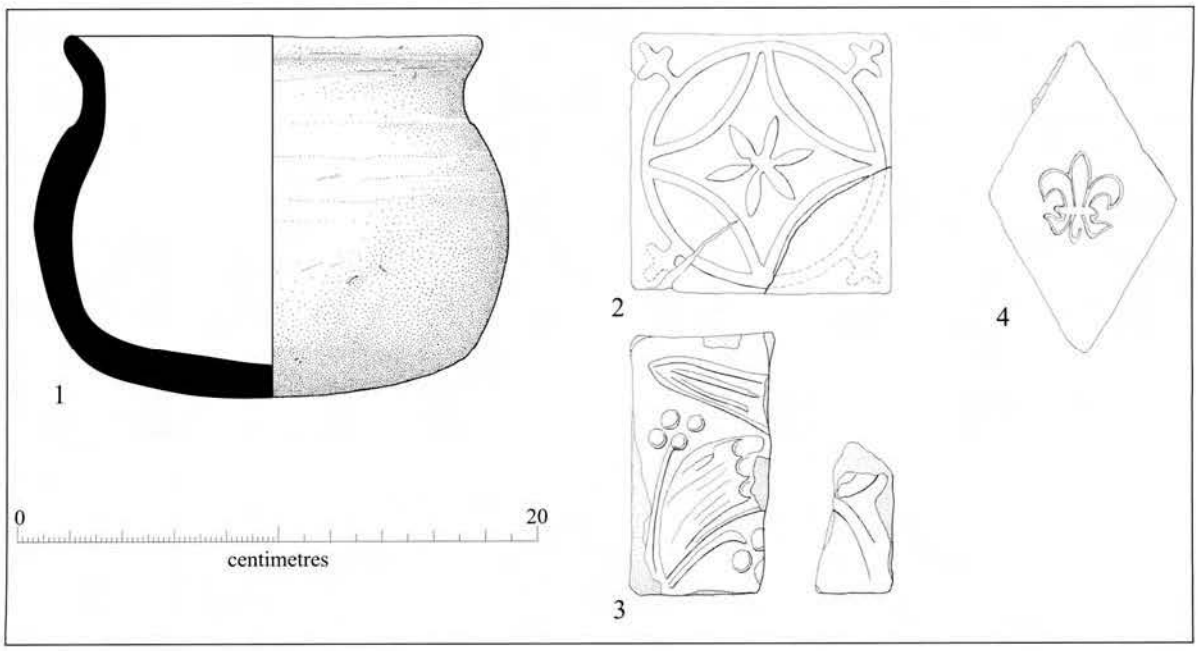


Figure 5. *1) Ipswich ware jar 2-4) Decorated fourteenth-century floor tiles.*

More significantly, there were three sherds of imported North French Blackware, a hard, wheel-thrown sandy ware with black burnished surfaces dated to the eighth and ninth centuries and made at many sources in France and the Low Countries. While imported pottery is relatively common at Middle Saxon coastal trading centres, it is considerably rarer at inland sites: these inland sites usually have a significant ecclesiastical component or are royal estates (Mayes, Hardy & Blair 2001). The presence of smaller quantities of Thetford and St Neots type wares suggests that the backfilling of the pit dates to the late ninth century (Cessford with Dickens 2005, table 5).

The animal bone was dominated by sheep/goat, cattle and pig, which represented the waste products of secondary butchery, and were supplemented to a lesser extent by deer and possibly game birds. The cereals from this and later phases were hulled barley and bread/club wheat plus some rye and oats, which are typical of the period; however, the weeds associated with them do not match those found at nearby sites such as West Fen Road, where crops were grown on heavy clay soils, as indicated by the presence of large quantities of stinking chamomile. The cereals from the Lady Chapel seem to have been grown further away on drier sandy loams as the associated arable weeds are small and medium-seeded vetches and wild peas, which may indicate the importation of cereals from distant manors owned and farmed by the religious community. There was also some iron slag.

The quantity of domestic debris in the pit suggests there was a substantial settlement in the vicinity, although the fact that only a single feature was found indicates that the Lady Chapel was on or just beyond the edge of the area of occupation. The most detailed evidence for Middle Saxon settlement at Ely comes from West Fen Road, where finds and structures relate to a settlement founded in the second quarter of the eighth century (Mortimer, Regan & Lucy 2005). There is less substantial evidence from a number of other sites, including evidence for ninth-century occupation at Broad Street (Cessford, Alexander & Dickens 2006, pp. 5–6). The *Liber Eliensis* records that St Etheldreda founded a religious community at Ely in about 673, which was subsequently burnt by the Danes in about 870. After this there was a community of secular priests, although it is unclear whether they were present immediately after the events of around 870. Later, Bishop Ethelwold founded a Benedictine institution with royal patronage in 970 (Fairweather 2005; see also Keynes 2003). The pit from the Lady Chapel with its evidence of high status imported pottery, not found at any of the other sites, may well relate to either the last years of St Etheldreda's religious community or to the early years of the community of secular priests that followed afterwards.

The Late Saxon period

Several floor deposits at the Lady Chapel (Fig. 4) appeared to pre-date the cathedral: these included thin bands of ash-like material, thin layers of mortar plaster, layers of rough pebbled metalling and burnt material from ovens or hearths. Between the floors was evidence of various episodes of deliberate dumping/levelling, with clean imported sand and mixed debris from occupation. No walls were directly associated with the floors, although a section of curving robber cut possibly indicated the line of a robbed out wall. There was also a ditch and a gully. Remains of wheat,

barley and rye, burnt fishbone, eggshell and shellfish suggest domestic activity, while the presence of slag and hammerscale (small 'fish-scale' like fragments dislodged from the oxide/silicate skin by mechanical or thermal shock during the forging of iron), together with fragments of masonry and glass, indicate construction activity. A large vertically sided charnel pit crammed with disarticulated human remains was presumably the result of grave clearance from a nearby cemetery. The pottery consisted of the typical types for the period, Thetford type (43 sherds), St Neots type (17 sherds) and Stamford (1 sherd) wares. There was evidence for the butchering of cats, probably to obtain either guts or skins.

In the Bishop's Garden (Fig. 6), there were layers of dumped domestic debris, which suggests there had been occupation nearby. Overlying these were remains of substantial buildings that appeared to predate the cathedral and were on different alignments. The relatively large quantities of Late Saxon domestic debris at both the Lady Chapel and the Bishop's Garden is in striking contrast to the medieval deposits associated with the cathedral, which generally contained much less material, indicating that the Late Saxon occupation was much messier as quantities of refuse were simply allowed to accumulate in the area.

The early medieval period: late eleventh to thirteenth centuries

At the Lady Chapel, the Late Saxon buildings appear to have fallen into disuse and were cleared away during or just after the initial construction phase of the cathedral. The area was then used as a cemetery during the twelfth century (Figs 7a & 7b). Thirty-two *in situ*

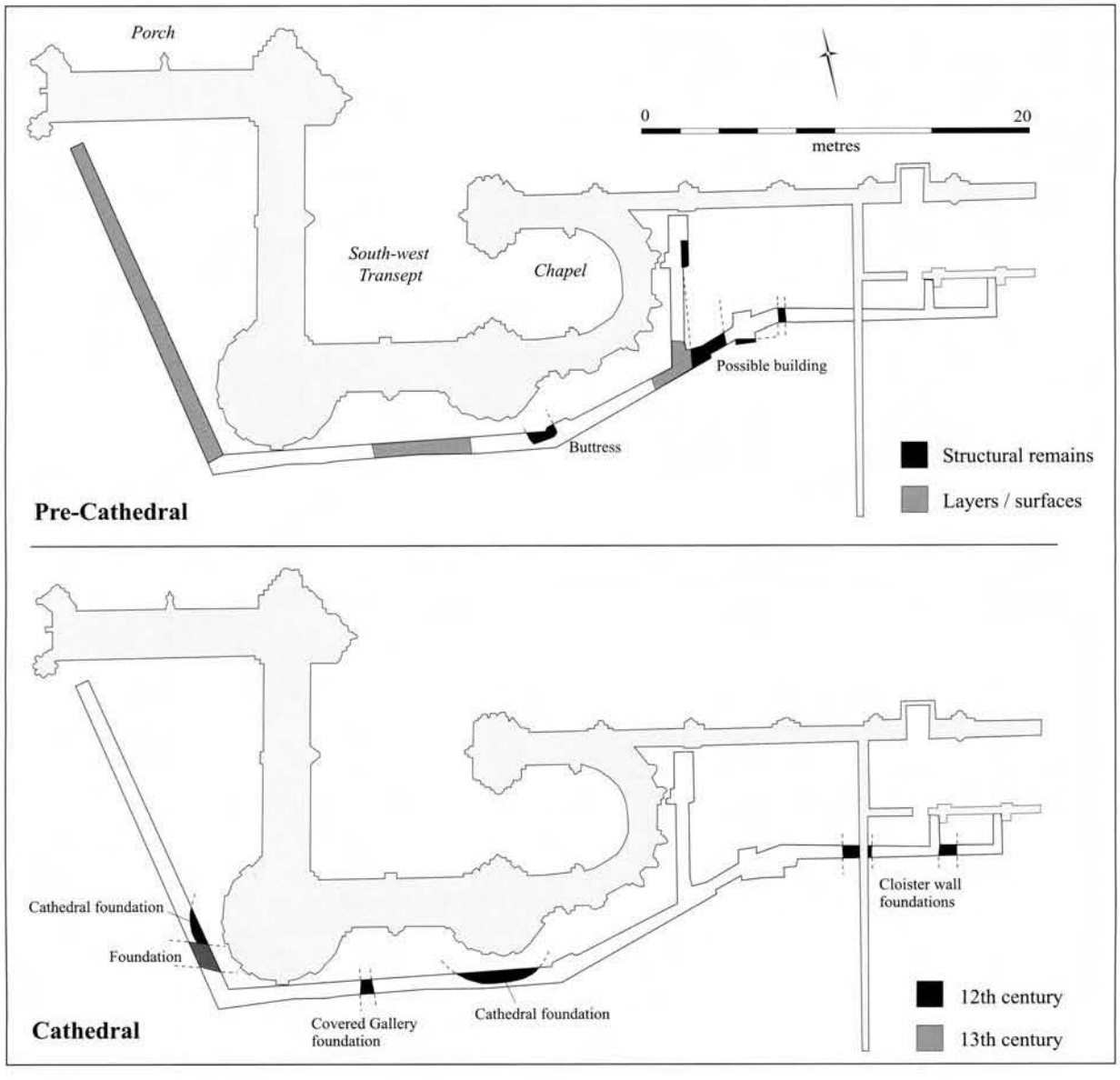


Figure 6. *Features at the Bishop's Garden.*

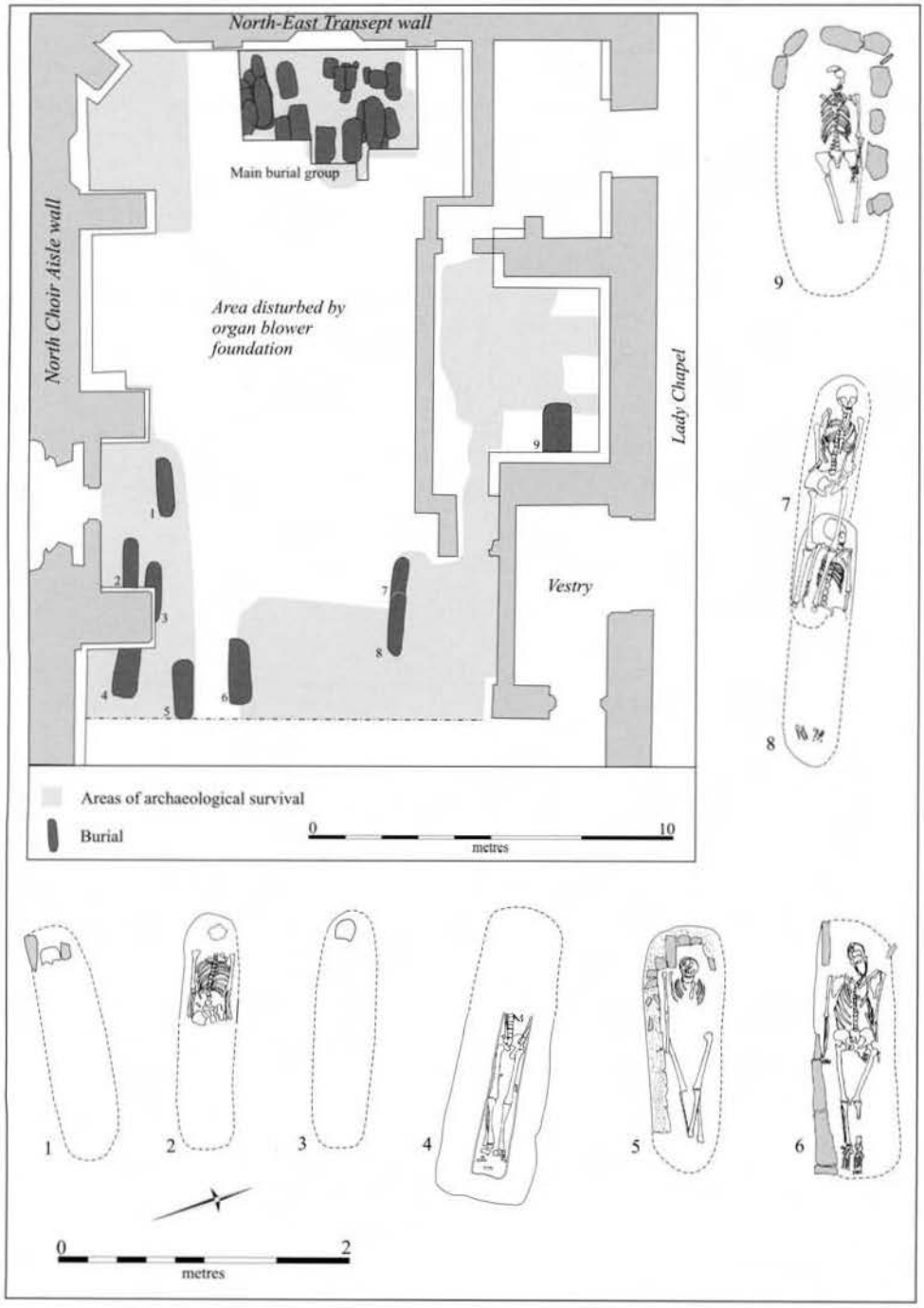


Figure 7a. *Twelfth- and thirteenth-century cemetery at the Lady Chapel.*

burials were uncovered and numerous disarticulated human remains were found. Both male and female adults were present, as were a significant number of children, ranging from neonates (possibly still-born) through to eight- or nine-year-olds. The child burials were all clustered towards the north transept wall: in the Anglo-Saxon period there appears to have been a belief that rain water run-off from the roof would effectively 'baptise' the children (Daniell 1997, p. 128). Although this belief might have died out in the Post-Conquest period, it is possible either that it continued or that this is simply some form of zoning of burial within the cemetery (*ibid.*). Nine bodies were interred in coffins and three had stone-lined tombs or cists. The others were either interred in coffins, now rotted, or were shrouded, although no shroud pins were found. Atkinson located the monks' cemetery on the south side of the cathedral to the east of the south-eastern transept and the lay cemetery to the north of the cathedral between the north-western and north-eastern transepts (1953, p. 58). The most likely explanation for these burials is that prior to the construction of the Lady Chapel the lay cemetery covered the entire area to the north of the cathedral (Atkinson 1953, p. 60).

The cemetery remained in use until the thirteenth century, when a passage aligned south-southwest

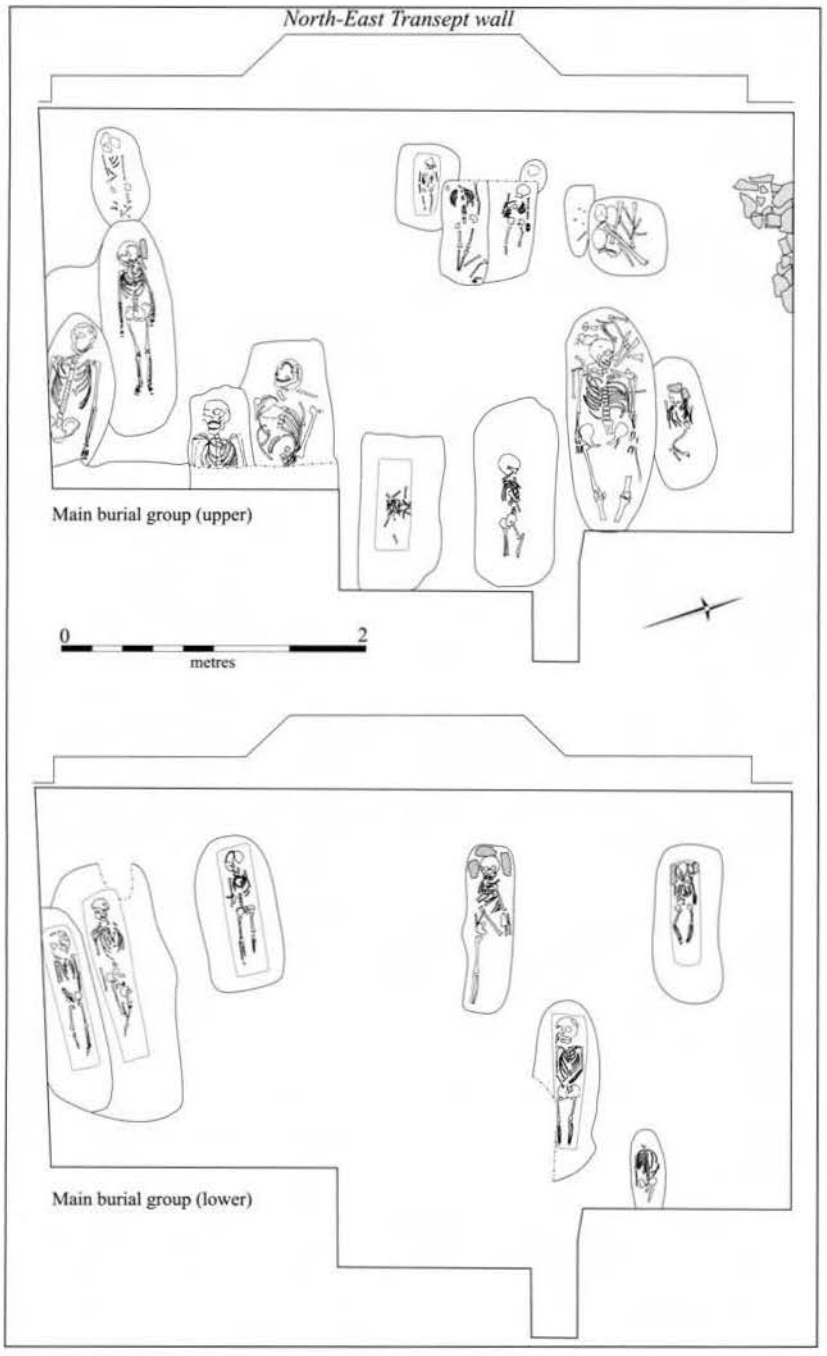


Figure 7b. *Main burial group from twelfth- and thirteenth-century cemetery at the Lady Chapel.*

to north-northeast was constructed (Fig. 8). In a recent discussion based on architectural surveys, it was argued that this passage was built in the early fourteenth century when the Lady Chapel was beginning to be constructed, to provide a covered way between the North Choir door and the Lady Chapel (Dixon 2002). This was based on evidence that it was built in with the primary walls of the Lady Chapel and against the end buttress of Northwold's North Choir Aisle (*c.* 1234–52), but underlying the buttress of Hotham's North Choir Aisle (*c.* 1330). Whilst this might be true of the upper elements of the passage, its foundations are earlier: the foundations of the both the North Choir Aisle buttresses and the Lady Chapel overlie the passage, indicating that it dates from the early thirteenth century. The two buttresses situated along the east wall of the processional way also sit rather uncomfortably between the two fourteenth-century structures, and appear to belong to a different phase of building. Further dating evidence for the foundations of the walls comes from the inclusion in them of fragments of pre-twelfth- and twelfth-century masonry. The re-used stones included fragments of moulded mullions, billets and parts of small columns, with some faced blocks showing finishes made using a pecking hammer and a masonry cleaver. The re-used stone dates the walls to after the twelfth century and the stratigraphic evidence places them be-

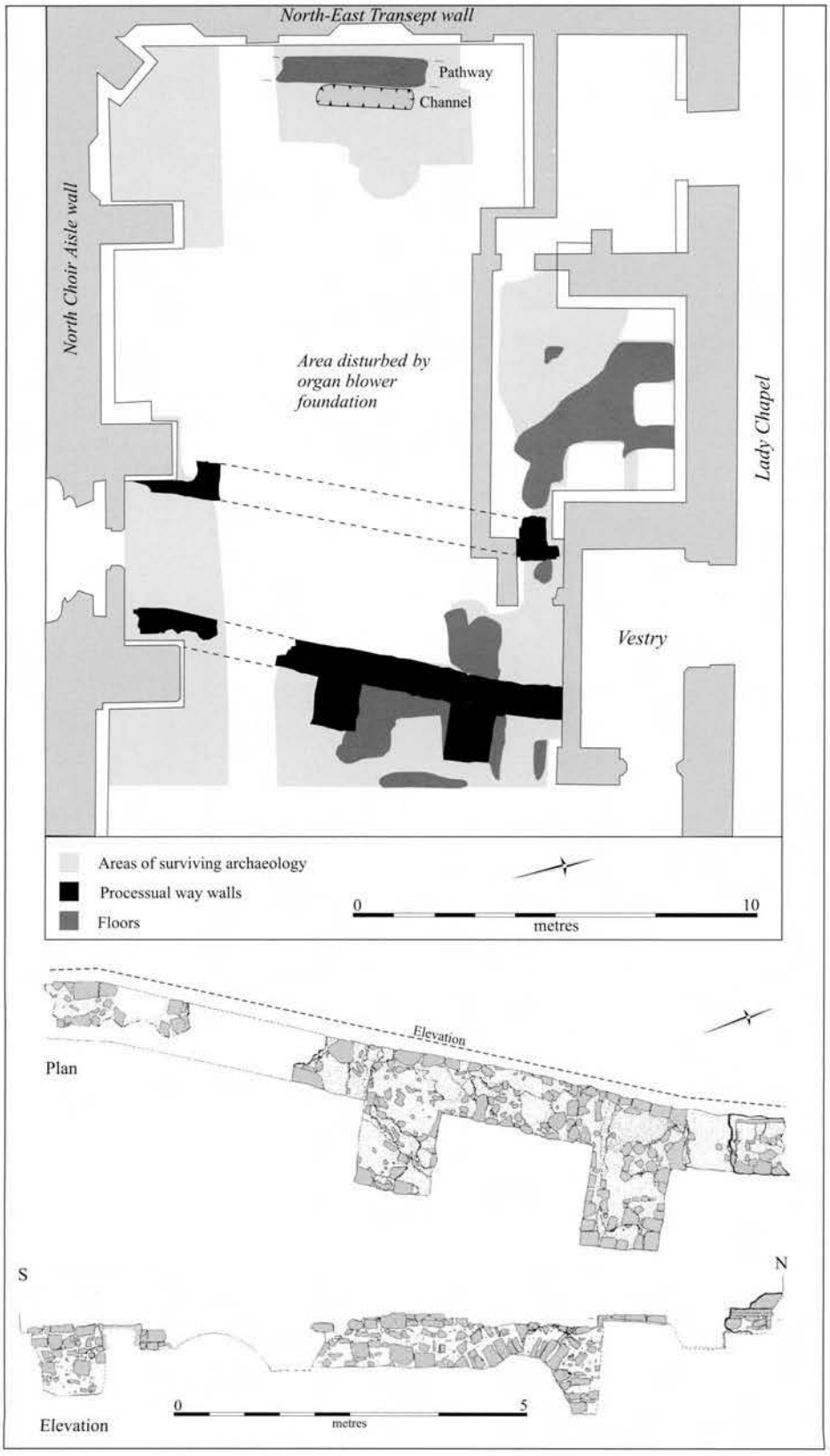


Figure 8. *Thirteenth- and fourteenth-century features at the Lady Chapel.*

fore the early fourteenth-century construction of the North Choir Aisle and Lady Chapel. If thirteenth century in date, then the passage might have been constructed to link the Presbytery, built by Bishop Hugh de Northwold, to a building or gate lying to the north, which has now been destroyed. This might also explain the presence of fragments of an earlier Norman building within the build of the wall, as the original apsidal end of the cathedral was demolished and replaced at this time. There is also the factor of the positioning of the passage *vis à vis* the buttresses of the Lady Chapel and the North Choir Aisle, especially the asymmetry of the buttresses along the eastern side of the passage, which supports this argument.

The foundations as exposed measured up to 0.85 metres wide and reached a depth of 1.7 metres from their greatest standing height. The wall was constructed mainly from Barnack limestone plus ragstone rubble, with some clunch, flint and re-used worked fragments. The binding agent was a relatively compact yellow coarse sandy mortar. The eastern wall had two foundation arches: the northernmost spanned a space of 1.5 metres, the southernmost collapsed, probably when the culvert was re-roofed in the sixteenth-century or later. The superstructure of the wall was supported by two rectangular buttresses on the eastern side. The buttresses do not lie symmetrically along this eastern side and had different mortar from the main wall, which suggests that they were later additions. Little was revealed of the line of the corresponding west wall of the passage, as it was heavily truncated by later activity, although the surviving fragments suggest that it was of similar build. Three ashlar blocks located to the north of the west wall indicated the presence of a doorway from or to the processional way: these provided a step up and out of the passage and the central uppermost surface was worn from prolonged use. Into these blocks on the north was cut a square recess for the base of a wooden door frame. The doorway leads through the west wall and onto a worn cobbled surface.

Other surfaces that appeared to be contemporary were a series of fragmentary mortar floors, largely truncated by later intrusions. Cutting through the mortar floor was a vertically sided rectangular cut, probably the remains of a tomb inserted within the floor between the two walls of the passage. A series of other minor cut features also belong to this phase.

The pottery recovered from this and the next phase consisted of local Medieval Ely ware (ten sherds), sandy coarsewares (19 sherds), Grimston ware (ten sherds) and Scarborough ware (one sherd). In general, the limited assemblages that were recovered have little to distinguish them from the material found in secular parts of Ely. The only elements that appear to be distinctive and restricted to the cathedral area are decorated floor tiles (Fig. 5.2–4), which might come from the short-lived fourteenth-century kiln at Bawsey (Eames 1955).

Twelfth- and thirteenth-century features were also found in most of the other sites that were investigated. In the South Choir Aisle there was found to be a difference in construction between bay six and bays seven to nine, with bay six having different foundations and more regular coursing above the floor and thinner mortar. At the Bishop's Garden (Fig. 6) were some of the foundations of the south-western transept. Cutting through these were some substantial stone foundations 1.5 metres wide on an unusual alignment and perpendicular to some of the walls of earlier buildings at the Old Bishop's Palace. There was also a wall that was part of a covered gallery linking the Old Bishop's Palace to the cathedral. The walls of the cloister were also found. At Walsingham House there was evidence of several phases of sand quarry pits. While these could have predated the cathedral, it is more likely that they were contemporary with it and might relate to its construction. At Canonry House Garden, a pit and posthole provided evidence of some other contemporary activity. At Old Bishop's Palace (East), some substantial foundations of stone walls aligned north-northwest to south-southeast consisted of mortared large flat slabs (Fig. 9). Beside these are what might have been a gravel surface. The foundations are on a different alignment to the Old Bishop's Palace and some distance from it and might represent the western boundary of the Gallery. At Old Bishop's Palace (North) there is evidence for the foundations of another substantial wall aligned north-northwest to south-southeast 1.1 metres wide and made up of mortared rough pieces of sandstone (Fig. 9). These walls might relate to the 'Abbots House', which is believed to have existed in this general area and was associated with bishops Northwold (1229–45) and Arundel (1374–88) (Atkinson 1933).

The later medieval period: fourteenth and fifteenth centuries

At the Lady Chapel site, the fourteenth century is dominated by the construction of the North Choir Aisle and the Lady Chapel. The thirteenth-century passage was largely demolished but the foundations were re-used for building or re-building the linking passage. This is suggested by the addition to the original foundations of new ones, including a chamfered plinth. Associated with this phase of building is a floor with preserved impressions of tiles. This construction work sealed off the area lying to the west of the processional way, making this a very dark and enclosed space and possibly precluding the use of the area as a burial ground. The burial ground was sealed by a gravel path, which was originally probably cobbled and would have run beneath the raised passage running along the eastern side of the north-eastern transept (Atkinson 1953, fig. facing p. 66). No foundations of the raised walkway were observed, although a shallow depression running to the east and parallel with the path suggests a channel caused by run-off from a roof. That the area was closed off by the late fourteenth to fifteenth centuries is suggested by the lack of evidence of any features dating to this period.

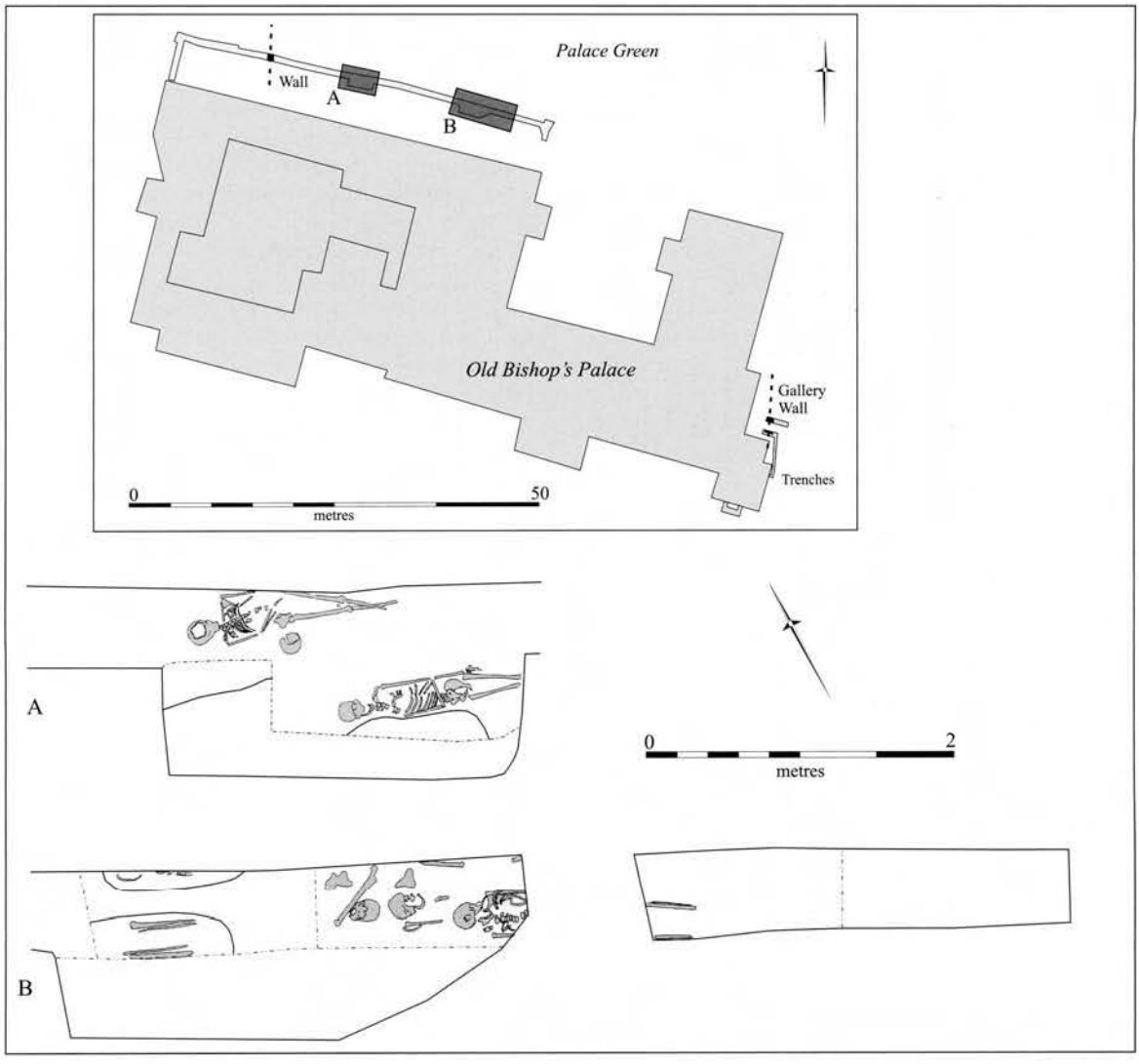


Figure 9. *Walls and fourteenth-century cemetery at the Old Bishop's Palace.*

Outside the South Choir Aisle, various disturbed human remains were found, and stone sarcophagi were found in bays seven and eight (Fig. 3). The lid of the sarcophagus found in bay seven is made of roughly tooled sandstone and is 2.09 metres long and 0.3–0.7 metres wide. The lid of the one found in bay eight is made of well tooled sandstone with a raised decorative central spine and is 2.14 metres long by 0.26–0.8 metres wide. Part of what was probably another grey limestone sarcophagus was found opposite the buttress between bays one and two. These sarcophagi were in the area of the monks' cemetery and confirm the use of the area for relatively high status burials. In bay five, a brick structure was found which was probably a cistern, one of 'two large soft water cisterns which received rainwater off the cathedral' (Bacon 1872, p. 146).

At Walsingham House, quarrying appears to have ended and the area was used as a garden for a considerable period. At some stage the area was levelled and two insubstantial structures, possibly workshops or stores, were built (Fig. 3). At Canonry House Garden, a fourteenth-century timber structure with postholes, a beamslot and a mortar surface was replaced by a more substantial set of mortared stone foundations that were probably part of the Dorter (Fig. 3). Some fifteenth-century pottery wasters (the remains of vessels that became damaged or deformed during firing) from Canonry House Garden may have derived from production closer to the river Great Ouse, but suggests that some kilns might have been located on the hilltop (Cessford, Alexander & Dickens 2006, fig. 66).

At Old Bishop's Palace (North), there was evidence for a previously unknown fourteenth-century cemetery (Fig. 9). Five burials and the remains of two more disturbed skeletons were identified, with evidence for intense use of the area and intercutting burials. The individuals were all adults: some were female and they were probably all buried in shrouds rather than coffins. The presence of a fourteenth-century cemetery almost opposite the western entrance to the cathedral and only 40 metres from it is particularly

noteworthy and indicates that this area to the south the Palace Green was not part of the main access route to the cathedral and that there might have been some form of division between the two areas. The area was levelled in the early to mid-fifteenth century and a series of three mortared floors was constructed. Further levelling took place in the late fifteenth century and an extensive pebbled surface was laid, which was probably a paved precinct.

The post-medieval period

The Lady Chapel became the parish church of Holy Trinity after the Dissolution in 1539. The processional way was demolished and lean-to buildings were constructed within the southern bays of the church. During this period, the walls and foundations were robbed, the robbing cut was backfilled and the whole area was levelled with sand and gravel mixed with domestic refuse and material from the demolitions. Other developments appear to be confined to the construction of drains and levelling the immediate area. A certain degree of respect for the dead is indicated by the re-interment of human remains after the construction of the drainage system. Several postholes might be evidence either of further wooden lean-to buildings or of scaffolding for repair work. The post-medieval pottery from the Lady Chapel was dominated by material produced locally in Ely, particularly Glazed Red Earthenware (188 sherds) and Babylon Ware (31 sherds) (Cessford, Alexander & Dickens 2006, pp. 46–71). There was also some tin glazed earthenware (five sherds) and imported German stoneware (17 sherds).

At Walsingham House, the earlier insubstantial building was demolished and a larger structure was built in the late seventeenth or early eighteenth century (Fig. 3). This had limestone and clunch foundations, including a number of re-used moulded fragments, and might have been an extension abutting the former Infirmary Chapel. This was eventually demolished and replaced by another set of stone foundations. At Canonry House Garden, there was evidence for a number of structures and garden features.

Conclusion

Although the scale and nature of the archaeological investigations in and around Ely cathedral means that they shed only limited light on the site, they have nonetheless led to a series of important discoveries. Whilst the evidence of Late Iron Age and Roman activity on the hilltop is of some interest, it is the evidence from the late ninth century of high status activity south of the Lady Chapel that gives us the earliest glimpse so far of the origins of the medieval religious community at Ely. Through the Late Saxon period, the evidence for activity around the site of the cathedral continues to provide tantalising hints of the Benedictine monastery, with evidence of substantial structures and a charnel pit.

After the foundation of the cathedral in the late eleventh century, the context of the sites around it becomes much clearer, although the limited scale of the investigations is frustrating. The early phases of the cathedral's development are elucidated by the evidence that the passage connecting the North Choir Aisle and the Lady Chapel is of thirteenth-century origin, and the identification of the 'Abbots House' complex under the site of the Old Bishop's Palace and the possible gallery connecting it to the cathedral. The identification of part of the Dorter at Canonry House Garden and a possible extension abutting the Infirmary Chapel at Walsingham House represent minor advances in our understanding of the layout of the cathedral area.

Elements of both the lay and monks' cemeteries have been revealed. Although this confirms what is known from documentary sources, the discovery of a fourteenth-century cemetery north of the Old Bishop's Palace was unexpected and indicates that burial was not as spatially restricted as had previously been believed.

Acknowledgements

The various investigations were largely undertaken on behalf of the Dean and Chapter of the Cathedral, with the assistance of their archaeological advisors Gavin Simpson, Anne Holton-Krayenbuhl and Philip Dixon. Other work was undertaken on behalf of Sue Ryder Care. This publication is based primarily upon investigations directed by Mary Alexander, David Gibson, Jim Hunter, Steve Kemp, Roderick Regan and Paula Whittaker and owes a great debt to them. Specialists whose work has been incorporated include Rachael Ballantyne (plant remains), Paul Blinkhorn (pottery), Andy Clarke (faunal remains), Natasha Dodwell (human remains), Christine Eden (human remains) and David Hall (pottery). Graphics are by Andy Hall.

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Re-assessing the navigation impact of draining the Fens in the seventeenth century

Michael Chisholm

Draining the Fens in the seventeenth century was an enterprise of national economic significance. The literature it spawned has been considerable and, concentrating mostly on the land drainage, generally paints a negative picture of the effects on navigation. On the other hand, there is clear evidence that traffic over the waterways continued after the drainage works had been completed and economic historians, and historians of transport, have accepted the fenland navigations as remaining viable from the mid-seventeenth century until the coming of the railways some two centuries later. The present paper concentrates on the Ouse between Denver and Earith, and the tributary rivers, systematically examining the available information regarding the 'before' and 'after' condition of the rivers, and the commercial traffic thereon, something which has not previously been undertaken. The claims for the adverse impact on navigation do not stand up to this scrutiny, requiring an adjustment in our thinking about the drainage enterprise.

Following a largely abortive attempt to drain the Fens in the 1630s, a fresh start was made following an Act of Parliament in 1649. The scheme adopted was that of the Dutchman, Cornelius Vermuyden, and is well described by Darby (1956) among others. Several rivers rise in the uplands which surround the low-lying Fens and traverse what was swamp and reed on their way to outfalls in the Wash. Vermuyden's scheme had some fundamental components. By shortening rivers, their gradient would be increased and consequently upland water would be discharged to the sea more quickly than hitherto. He dug the New Bedford River parallel to the Old Bedford River, with the space between designed to hold winter flood waters: the washes. To effect the diversion of the Great Ouse at Earith down the New Bedford River, a sluice was built at Hermitage, and other sluices were constructed to keep out the tides, the most important of these being the one across the Ouse near Salter's Lode, now known as Denver Sluice (Fig. 1). The scale of this nationally important enterprise is indicated by the fact that the sponsors – the Adventurers – would get 95,000 acres (38,445 hectares) of land in recognition of their investment.

Post-medieval navigation on the Ouse above Earith has been well documented (Summers 1973; Willan 1942; Wood 1992), but there has been no general study of the Fens as a whole, or of the Ouse above Denver Sluice to Earith and the tributary rivers. The mainstream literature on inland navigation has relatively little to say about the Fens since the medieval period; this may be because the area has seemed to be something of a backwater, there having been no modern canal construction. As a result, assessments of navigation have been much influenced by the literature on the seventeenth century draining of the Fens, in which it is common to portray the drainers as uninterested in navigation matters and making little or no provision for vessels, and that their works were in fact prejudicial to the use of the waterways for commerce. Chisholm (2003, 2005, 2006) notes a number of authors who have adopted this negative view of the impact of drainage on navigation, including Darby (1956, 1983) and – with special reference to Denver – Summers (1973, 1976).

One author, not previously mentioned by Chisholm, states that 'there was far more [water carriage] prior to the draining of the Fens' (Cox 1914, p. 10), and another says of the fenland rivers in the eighteenth century that they 'were barely navigable' (Hills 2003, p. 34). Not uncommonly, authors have assumed that when Denver Sluice was built across the Ouse in 1652[1] no lock facilities were provided, and that it was only when it was re-built in 1748–50, following its partial destruction in 1713, that a lock was incorporated (e.g. Gerrard 2003, pp. 103–4; Paget-Thomlinson 1993, p. 143). It has even been asserted that 'the old Fen sluices were intended solely to facilitate drainage' (Gaches 1906a, p. 266), a view consistent with Skempton's assessment of Vermuyden as a river engineer 'not concerned with river navigation' (Skempton 1953, Table IV).

Compiling a later work on civil engineers, Skempton changed his mind and recognised Vermuyden's provision for navigation (Skempton *et al.* 2002), and the papers by Chisholm noted above have begun a more general process of re-assessing the relationship

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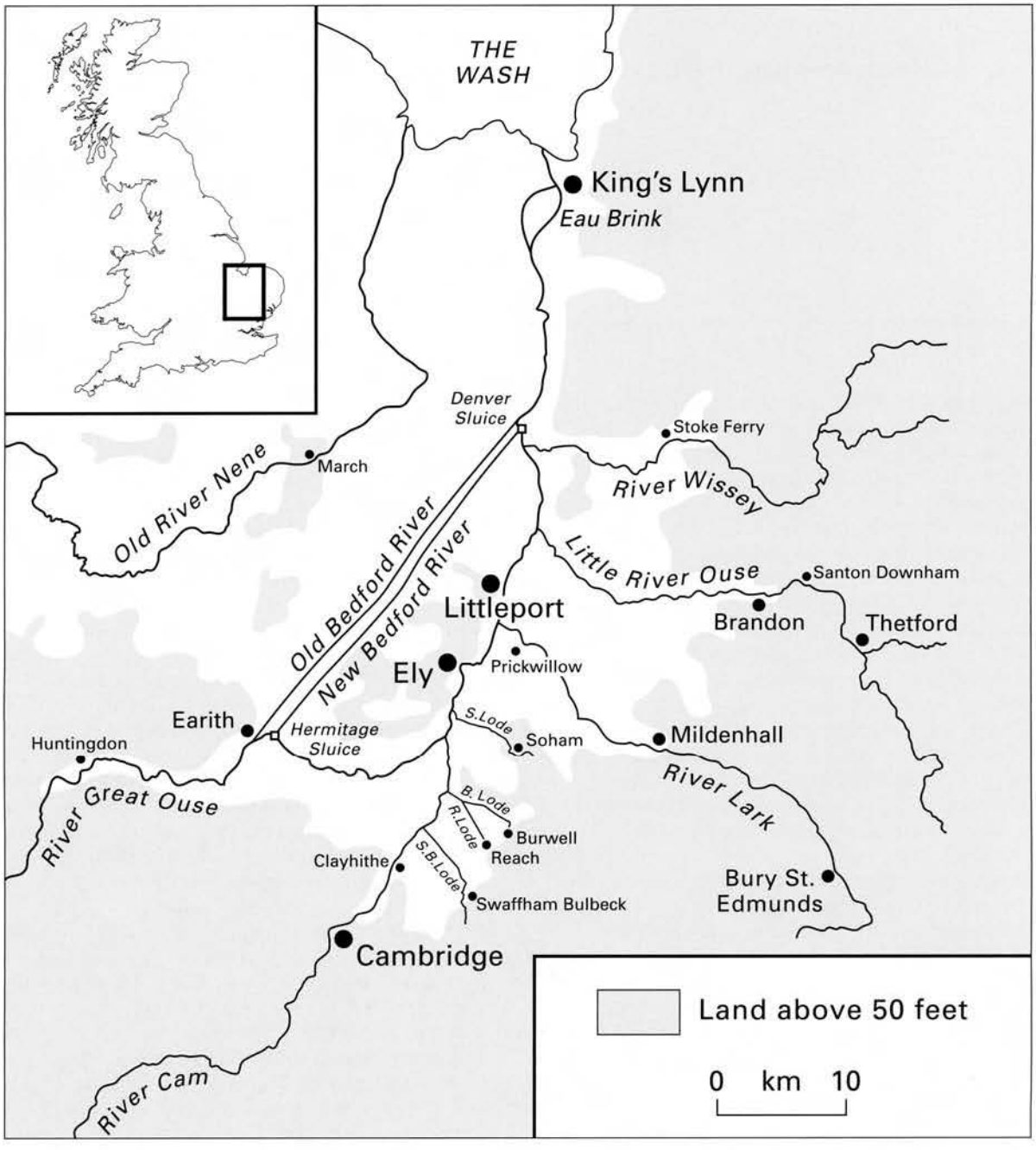

Figure 1. *The modern drainage system of the Fens. The earlier names of rivers are: Cam = Grant; Lark = Mildenhall; Little Ouse = Brandon; Wissey = Stoke.*

between drainage and navigation in the seventeenth century. The sluices built across navigable waterways included locks for the passage of boats, and there is clear evidence that traffic continued to ply to inland destinations such as Cambridge. Economic historians have certainly taken the view that draining the Fens resulted in a substantial increase in production and trade (e.g, Rich & Wilson 1967), and there is no evidence to suggest that the port of King's Lynn (henceforth Lynn) suffered on account of disrupted inland navigation after 1652 (Barney 1997, 1999). The general literature on inland navigations pays little attention to the Fens but does not suggest that the fenland waterways became less useful as navigations after the sluice at Denver and the other works had been completed (Duckham 1983; Dyos & Aldcroft 1969; Paget-Tomlinson 1993; Priestley 1969).

So why were fenland navigation interests so hostile to the drainage enterprise? Was there a real basis for their concerns and their desire to have the drainage works, including Denver Sluice, removed? Is it the case, as Paget-Tomlinson (1993, p. 143) and Parker

(1971, pp. 13–14) indicate, that navigation continued despite prejudicial effects from draining?

The basic issue, therefore, is how one may reconcile two contradictory views regarding the impact which draining the Fens had upon the quality of the rivers for trading purposes. To explore the matter, we will focus on the Great Ouse between the sluices at Denver and Hermitage, and the three main tributaries – the Little Ouse, Lark and Cam – since it is with respect to these rivers that contemporary complaints about the adverse impact of drainage on navigation were most numerous. For the towns on the Ouse above Hermitage, the creation of the New Bedford River has been accepted as a considerable benefit (Chisholm 2006; Summers 1973; Willan 1942; Wood 1992), and from this area the drainers received consistent support for their enterprise.

The procedure to be adopted is to consider the evidence which is available for the condition of the Ouse between Denver and Hermitage and its tributaries, before and after 1652. Given the disparate and patchy information available regarding water depths, the nature of the river craft and the tonnages which they could carry, we will assemble that which is available for the first half of the seventeenth century as the basis for comparison with conditions in the second half, treating these half centuries in approximate terms. In order to do this effectively we first need to know with rather more precision the damages to navigation which were alleged to have been caused by the drainage works.

Allegations regarding the prejudice to navigation post 1652

Allegations about the prejudicial impact of the drainage works upon navigation can only be understood in the context provided by the way the drainage scheme was funded and by contemporary ideas regarding the nature of changes in river regimes as a consequence of the structures that were built. Passage through the locks at Denver, Hermitage and elsewhere incurred no tolls, since the legislation was predicated on the idea that taxes on the improved lands would fund the whole enterprise: this method of funding was subsequently advocated by Henry George as a general principle. There were conflicts over the use of the embankments by the horses which haled, or hauled, the vessels, and it was not until the right to levy tolls was established in the eighteenth century that this issue was finally resolved. The other main sources of contention were as follows. Construction of Denver Sluice across the Great Ouse meant that the river above ceased to be tidal, although the New Bedford River remained tidal. The absence of tides between Denver and Hermitage removed the locomotive power of the daily tidal rhythm, which was deemed to be a problem in itself. But more important were allegations that the depth of water was no longer adequate, forcing a reduction in the loads that could be carried. The alleged diminution in draft was attributed to silting, due to the interference in the river's regime, and the manner in which water levels were managed for the benefit of drainage. There were also vociferous complaints about the 'choking' of the Ouse below Denver.

Badeslade (1766) documents these general concerns and provides a good deal of detail supporting the view that conditions for navigation deteriorated after 1652, when Denver Sluice was completed. Most of the allegations in the modern literature about the injurious effects of the drainage works on navigation can be traced to this volume. Unfortunately, many scholars have not recognised the polemical nature of Badeslade's work, which was first published in 1725 when there was an intense debate about the desirability of re-building Denver Sluice following its partial collapse in 1713.

In his preface, Badeslade categorically asserts that it is the tides which keep a river open for navigation. Consequently, he was not in favour of Vermuyden's approach to land drainage, preferring the surprisingly hardy rival ideas espoused by Westerdyke, who advocated keeping the rivers on their 'natural' courses, making them narrower and embanking them, with no sluices. It is not that Badeslade was 'on the side of those, such as the port of King's Lynn, concerned with navigation' and therefore in opposition to drainage (Darby 1983, p. 99); Badeslade had his own view of how drainage and navigation should be best combined. To that end, he assembled testimony which served to show that Vermuyden's scheme was inappropriate, comparing the good conditions which existed for navigation before the drainage was completed with the much worsened circumstances afterwards. This documentation has been surprisingly influential in shaping opinions about the impact of the drainage works on navigation.

Badeslade's starting point is the situation prior to 1652, described in the following terms:

> The inland navigation was so good in all the rivers, viz. Ouse, Stoke, Brandon, Mildenhall, and Grant, that keels could sail with forty tun of freight 36 miles from Lynn towards Cambridge at ordinary neip tides; and as far as Huntingdon with fifteen tun of freight. And barges with ten chaldron [about 13 tons] of coals could sail up Brandon river to Thetford: and as far in proportion up the rivers Mildenhall, Stoke, etc. (Badeslade 1766, p. i).

These river names, and their modern equivalents, are shown in Fig. 1. For the meaning of 'keel', and also for the conversion of freight figures to approximate tonnages, see the Appendix. Thetford was the historical head of navigation on the Little Ouse (Brandon), so Badeslade is saying that loads of about 13 tons could reach the head of navigation on the other tributary rivers. An ordinary neap tide is the lowest high tide, which occurs twice in a lunar month. Hence, it is evident that Badeslade is saying that under the least favourable circumstances the rivers were easily navigable as described and he might have claimed that he was being conservative in his portrayal of the pre-1652 situation.

Badeslade (1766, pp. 53–7) goes on to document the fears for the future and the alleged actual detrimental effects of the drainage works. In 1650, Lynn petitioned against the construction of sluices and was supported by the Corporation and the University of Cambridge. Other petitions in the early 1650s were lodged as follows:

1. Lynn. *That the freight capacity of the inland waterways had been halved and Denver Sluice should be removed.*
2. Brandon (Little Ouse). *Keels could formerly reach Brandon bridge with 20 chaldrons (about 27 tons) of coal but now only lighters could get that far, with smaller loads. Navigation was said to be 'almost quite useless'.*
3. Thetford (Little Ouse), Messrs Russel and Ruderham. *Formerly barges could bring up to 15 chaldrons of coal (about 20 tons) to the town but now no more than three chaldrons (about four tons).*
4. Cambridge (Cam). *Freight costs raised by more than one third.*

Nevertheless, the sluices remained in place. After several further attempts in vain to have Denver Sluice removed, Lynn amassed further testimony, including that of a Mr John Attleson, to the effect that, prior to the construction of Denver, 'large barges and vessels' could regularly and easily reach Cambridge with 26 to 30 chaldrons of coal (about 35–40 tons), whereas only 'flat-bottomed' lighters could now pass that far up river, and even then with great difficulty and carrying only 8–10 chaldrons (about 11–13 tons) (Badeslade 1766, pp. 61–2; see also Elstobb 1793, p. 211). Concerned about 'obstructions' in the port and the 'river belonging' (Borough of King's Lynn 1696), Lynn petitioned Parliament in 1696 for the removal of Denver Sluice, submitting a Bill for this purpose which elicited 12 other petitions, some in support of and some against Lynn's plea. Petitions supporting Lynn on navigation grounds were lodged by:

Stoke Ferry: Wissey;
Brandon and Thetford: Little Ouse;
Mildenhall and Bury St Edmunds: Lark;
Cambridge Corporation: Cam;
Cambridge University (who were equivocal): Cam

The general complaint was that, before the drainage works had been undertaken, 'vessels of great burden' could use the rivers, whereas now 'boats of the smallest burden' had great difficulty. The petitions are unspecific regarding the sections of river where the alleged defects were occurring. With the exception of the University, they were united in asking for Denver Sluice to be removed.

Three of the 12 petitions can be discounted in the present context because the petitioners were alleging the 'drowning' of their lands and not the impairment of navigation. The remaining four petitions all supported the retention of the sluices, Denver included. Two of these originated from Huntingdon, which had gained from the construction of the New Bedford River; one from the Corporation of the Bedford Level (the drainers); and one from the Dean and Prebendary of Ely Cathedral, Ely being located on the now non-tidal Great Ouse.

The negative view of the impact of the drainage works boils down to four propositions: first, that the outfall below Denver had silted up; second, that above Denver the Great Ouse and its tributaries had lost the benefit of the tides; third, that the water levels in the rivers were lower than they had been before drainage; and finally, that the change in fluvial regimes had caused silting of the river channels. The extreme case cited is that the level of the Ouse at Harrimere, just above the confluence with the Cam, had fallen by five feet following the construction of Denver Sluice, so that whereas 'boats and barges' had previously passed, 'grass and fodder is now mown' (Badeslade 1766, p. 62).

It is this and similar material which has been used by later authors to present a gloomy assessment of the impact of drainage on the navigability of the Ouse. It has seemed plausible that water levels on the Ouse would have been lowered by the drainage works and several authors have accepted that this would have caused problems on the tributaries (Boyes & Russell 1977, p. 326 fn; Chisholm 2003, p. 186; Dymond 1985, p.235; Gaches 1906b, p. 360).

To what extent are the 'before' and 'after' claims made by Badeslade supported by other evidence? This is the question to which we now turn.

The pre-1652 state of the rivers: general

Before considering the condition of the Great Ouse and the individual tributaries before and after 1652 in the sections below, there are some general points to note about the waterway system before the drainage works were undertaken. The pre-existing drainage pattern of 'natural' and artificial navigable waterways was much more complex than it was after Vermuyden's engineers had completed their work. Furthermore, prior to these engineering works, the waterways had been constantly evolving and changing, and these changes had continued into the first half of the seventeenth century (Astbury 1958; Fowler 1934).

All was not well with the waterways in the early part of the century. Three documents dating from 1617 and 1618 are reproduced by Wells (1830, vol. 2), which together indicate the seriousness of the problems and the difficulty of finding solutions that would respect the needs for land drainage while at the same time maintaining the existing navigations. A Commission of Sewers met in Huntingdon in February 1617, with representatives from six counties. In the light of surveys conducted in the preceding five months, they decreed that most of the main waterways were to be 'dyked, cleansed, formed, scowrered, and perfected, to the ancient breadth and to the old bottome' (Commission of Sewers 1617, p. 44). All of this work was to be undertaken by the landowners. Nowhere in the document is there any reference to navigation, though a reasonable inference would be that deepening the channels would facilitate rather than hinder navigation once the work had been completed. In the

event, it seems that little was done (Dugdale 1772, pp. 403–4; Summers 1976, p. 60).

However, both Atkins (1618) and Edmond (1618) note that dredging out shallow sections of rivers to improve the discharge of water for drainage purposes could have serious implications for navigation, primarily at times of low flow. Both authors record that the Vice-Chancellor of Cambridge University was against the dredging of the shallows, for fear that there would be inadequate water in much of the rivers' channels. Whereas Edmond proposed no dredging of shallows, Atkins proposed a more subtle approach. On the Great Ouse itself, he opined, the flow was sufficient to maintain a navigable depth and dredging could be undertaken, whereas the sandbanks and shallows on the Cam should be retained because otherwise the natural flow of the river would be inadequate for the passage of boats. Perhaps the single most important proposal was made by Atkins: the real need was to construct 'navigable sluices', i.e. locks, on the River Ouse, implicitly from near Ely and up river therefrom. In his view, this would simultaneously improve land drainage and maintain the navigation. However, he judged that the cost of building and maintaining such sluices meant that this solution was unlikely to be adopted (Atkins 1618, p. 94).

It seems that the general size of vessels on the fenland waterways was quite small in the sixteenth century. A special survey in 1566 recorded the details of river vessels at three towns in the administrative area of the Isle of Ely. At March, the freight capacity of the 'greate botes' ranged from one to two 'carte lode' (about 1–2 tons); at Ely, the barges could carry six to eight 'carte lode' (about 6–8 tons); while at Wisbech, the freight capacity ranged from three to 12 'tons' (Elye *et al.* 1909, p. 95). The figures do not include vessels based at Lynn and elsewhere, so we cannot be certain that they are representative; nor do we know whether, in the century to 1652, the size of vessel stayed constant. Nevertheless, these figures, in combination with the other evidence mentioned above, imply that one must be doubtful about Badeslade's statement that 'inland navigation was so good in all the rivers'. Nevertheless, the rivers were the highways of the Fens.

River Great Ouse, Denver-Hermitage
Pre 1652

In 1608, the Commissioners of Sewers resolved that the Ouse from Harrimere was to be straightened and deepened. The depth from Harrimere to Stuntney Bridge (presumed to be Ely Bridge) was to be four feet, while from there to Littleport the depth was to be five feet (Gaches 1903, pp. 197–8). The intention was to aid drainage; the needs of navigation were ignored. However, this 1608 resolution – which was not executed – indicates that there were parts of the river with significantly less water than the depths specified.

Dugdale (1772, pp. 380–1) records that in July 1605 there was a section of the Ouse in Ely with only 14 inches of water, and that below the town there were some 'Hards', or shallows, where the depth was no more than 18 inches or two feet (Fig. 2). These depths would have been inadequate for the standard lighters that became common in the seventeenth century; they could carry 25 tons when fully laden, drawing 3.5 feet of water, and required 12 inches when empty (Clark 1957, p. 212; Wilson 1972, p. 6). However, the summer of 1605 was exceptionally dry, so this record cannot be taken as representative of summer conditions. The more normal situation in the early seventeenth century seems to be that noted by Atkins: he states that the Hards below Ely always had sufficient water for 'lighters and flat bottomed boats to pass fully laden' (Atkins 1618, p. 93). However, he does not specify the size of craft to which he refers and he says nothing about the shallows in Ely itself. Here there was less

Figure 2. *Ely 1810. Note the horse wading, the use of poles and the evident shallowness of the river. (Cambs Collection Q.B. J10 4250)*

water and fully laden craft might not necessarily have had enough water even if they had negotiated the Hards unless they were quite small craft, as indicated by a 1654 pamphlet, the author of which states that, before the drainage works had been undertaken and after, an Ely-based lighterman made round trips from Lynn to Cambridge 'commonly with five tun weight' (Anon. 1654 p. 22). Even so, the same author goes on to say that, before 1652, 'in summer time the neap tides were not high enough, to help their liters over the gravel below Ely'. It does seem to be the case that, at times of low flow (normally in the summer), water levels at Ely could be low enough to make the passage of laden vessels difficult or impossible, which would have necessitated waiting for higher water or for trans-shipment to achieve lesser loads.

There were additional shallows, or 'stops', above Ely, at and above Harrimere, just beyond the Cam confluence:

> The other stops which be in Ouze from Harrimore upwards to St Ives, especially those about Stretham (which of all other are the worst) be gravells made over the river of sett purpose by cart to fetch over their fodder and hay out of the fennes: these gravells being 3 or 4 in number, do great harme to the drayneing, and cannot be said to be anything beneficial to the navigation (Atkins 1618, p. 94).

Some of these causeways are shown on later maps (e.g. Bowen 1751; Watson 1827, map facing p. 20). However, Stretham Gravel is a natural feature, not man-made; at this point, in the early seventeenth century, the water was only two feet deep (Fowler 1933, p. 122), with the implication that loads no greater than about 10 tons could pass, whereas Badeslade gives a figure of 15 tons.

Badeslade refers to keels with 40 tons sailing 36 miles towards Cambridge (1766, p. i). The point which they reached can be identified with some precision. Before the Ouse was diverted northward at Ely towards Littleport in 1830, it ran via Prickwillow, its course marked by Middle Fen Bank. For almost exactly one mile, this embankment is absolutely straight, signifying an artificial cut. At its eastern end, this straight section is marked by the Old Plough, formerly a riverside inn and now a private residence (grid reference TL 575 812). The river used to follow an older channel, from a point south of Ely, past Stuntney and Quanea to the Old Plough; this old channel is a clearly visible roddon on the 1:50,000 geological map, sheet 173 (Fig. 3). The straight cut west of the Old Plough was made in the twelfth century (Gardiner 1993, p. 35), to facilitate the building of Ely cathedral. This meant digging through the small exposure of rather hard Kimmeridge clay on which the Old Plough stands, giving rise to the Hards identified by Fowler (1934, p. 22).

These shallows are clearly shown in Elstobb's (1776) river profile, at a distance of 36 miles and five furlongs from the Old Bar Beacon, downstream from Lynn, at a point just under one mile from the Overfall Mill, which marks the western end of the straight embankment (TL 561 804) mentioned above. Elstobb identifies these shallows as 'near the Tild House'; if *tild* is an abbreviation of tiled, this would describe the Old Plough, which is indeed nearby.

Recent excavations at Broad Street in Ely have revealed harbours in the form of cuts perpendicular to the river, the cuts ranging in width up to somewhat over 13 feet (4 metres), suitable for vessels no bigger than lighters capable of carrying 15–25 tons. These harbours were in use from the fourteenth century into the sixteenth (Cessford, Alexander & Dickens, 2006). We do not know whether other harbours and quayside facilities could accept larger vessels, but the inference is that keels with 40 tons were not reaching Ely.

Post 1652

Despite complaints by those with interests in navigation, we know that commerce along the Ouse from Lynn continued and even flourished after Denver Sluice was built. This will be clear from the discussion about the Cam, Little Ouse and Lark later in this paper. Most histories of Ely say little or nothing about daily commercial life, but we know that there were quays from at least the late fourteenth century or early in the fifteenth (Cessford, Alexander & Dickens, 2006), and Carter (1753) describes the importance of the Ouse for the town. From the *Victoria County History* (VCH 1967, p. 43), it is clear that there was no interruption to or serious worsening of Ely's river communications after 1652; indeed, from the seventeenth century, coal was unusually plentiful and cheap. Furthermore, it is known that boat building was an important industry in the town and flourished after the middle of the century (L Turner Pers. comm. 2005). Two maps of Ely, dating from the early 1660s, show vessels on the river. The three craft depicted by Hermannides (1661) are all lighters, whereas Hondius (1662) shows two lighters and three larger vessels that look like sea-going craft, all three of which are downstream of the lighters. As noted in the Appendix, it is unlikely that sea-going ships penetrated up the Ouse, so Hondius may be portraying the keels which could reach the Hards below the town, with trans-shipment into lighters.

The standard lighter on the Ouse system (Fig. 4) was capable of carrying 25 tons when fully loaded, for which 3.5 feet of water would be needed (Clark 1957, p. 212; Wilson 1972, p. 6). So the fact that trade continued after 1652 implies that something near this depth of water was available most of the time up to and above Ely. That being the case, it is manifest that Badeslade's assertion that water levels at Harrimere fell by five feet after the drainage works were completed cannot be true. Given that the diversion of the Ouse at Earith down the New Bedford River should have reduced levels in the river to Ely and further north, how was a navigable depth maintained?

A seemingly obvious solution would be the construction of a lock or sasse downstream of Ely, and there is clear evidence of the *intent* to do so. Jonas Moore worked with Vermuyden as the Surveyor for the Fen drainage project. Moore published a map of the Fens, at a scale of two inches to the mile, first

issued in *c.* 1658 (Willmoth 1993, pp. 114–15). This map shows a major lock structure, one mile long, as depicted in Fig. 3. The feature identified as Russhill Clow would have been a dam or weir across the river maintaining the upstream water level, with the lock shown by the traditional '>' symbol identified by the word 'sasse'. The lock would have been very near the building now known as the Old Plough, just downstream of the Hards noted above. But this sizeable piece of engineering work was not undertaken.

It is well known that cartographers have included and continue to include future developments on their maps partly in the hope of prolonging their currency as up-to-date documents. In that context, and even in the absence of other evidence, Moore's map may be taken as clear evidence that a lock was envisaged just below Ely. But there is also other evidence, the earliest being a pamphlet which refers to the existence of 'the sasse at Rasshill', whence lighters plied to Cambridge (Anon. 1654, p. 20). Moore's map was re-issued from the same copper plates posthumously in 1684 and the following year a slim history of the Fens was published, ostensibly by Moore, in which there is reference to the 'brick sluce at Prickwillow, with the Weare Dike thereof' (Moore 1685, p. 53; see Willmoth 1993, p. 104 fn). Finally, and most significantly, an account book records a salary payment for 'Nicholas Knowles sasskeeper at Rossill and the stopp there' (Cambridgeshire Record Office 1659–60, p. 26; Palmer 1938, p. 72). Presumably, the 'stop' would be the clow depicted by Moore, no doubt on the principle that the whole structure would be under one management. The payment was for the year to Michaelmas 1659 and is listed with payments for other sasskeepers, including at Hermitage and Denver Dam. There can be no doubt about the intention to build a lock downstream of Ely. The Russhill that Moore depicted no longer exists, the Gault and

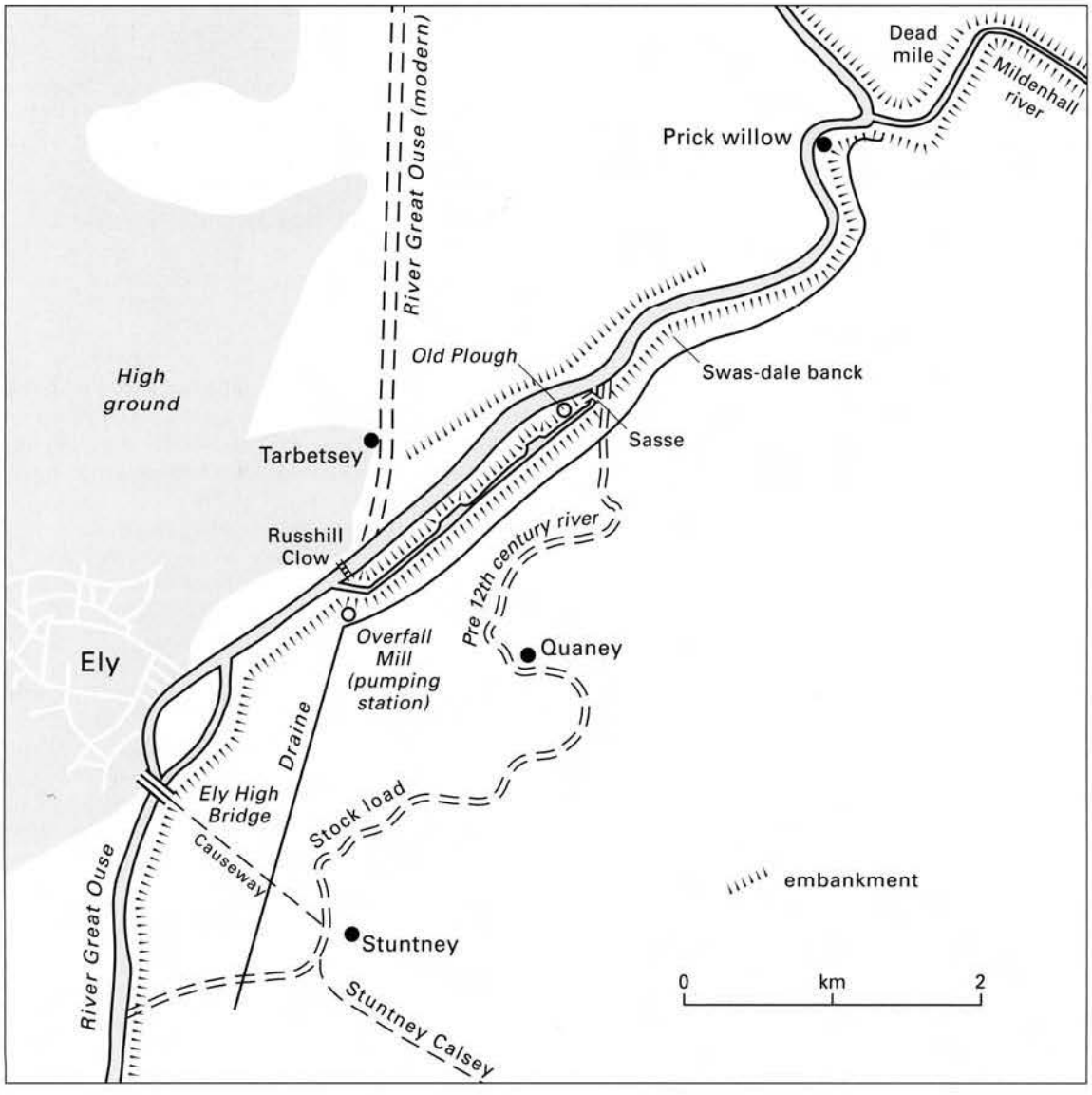

Figure 3. *The Great Ouse in the vicinity of Ely, showing the lock that was intended but not built. Redrawn from Moore (c. 1658), simplified and with some additions identified in italic.*

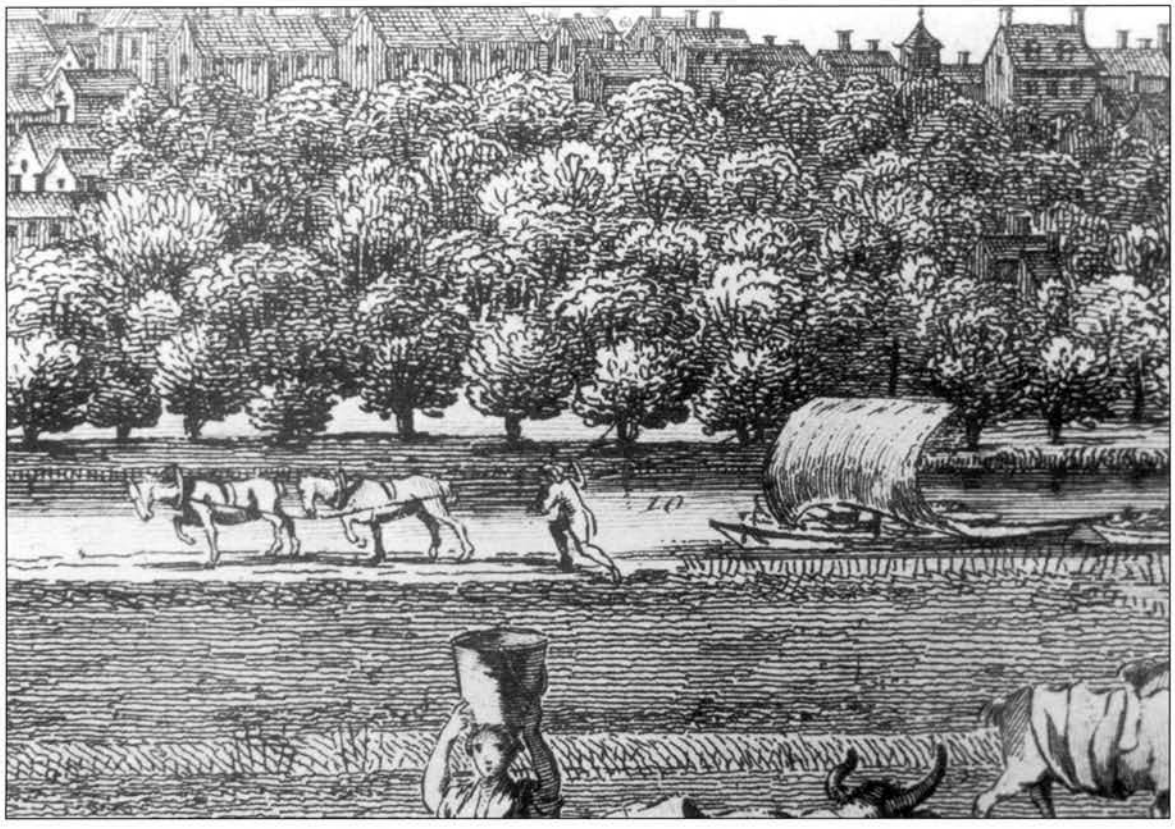

Figure 4. *Ely 1743. The horses have firm footing on what appears to be a towpath, pulling a string of barges or lighters. Note the auxiliary sail on the leading barge. (Cambs Collection Q.B. 143 4046)*

Kimmeridge clays having been removed to form what is now known as Roswell Pits (Holmes & Rouse 1973, p. 43). The hill is recorded as Roueshil in 1221 (Reaney 1943, p. 220).

The lock that was intended was never constructed. A likely reason would have been shortage of funds, but this could only be a partial explanation, because we know that navigation on the Ouse was maintained. So how was this done? There are passing references in the literature to the management of Denver Sluice to control water levels in the river but this is usually framed in terms of the interests of navigation being given low priority, to the annoyance of the traders. There has been no systematic study of which the author is aware that examines the realities of the water management regime. However, Golborne's report of 1791 is illuminating (pp. 37–8). This report was written in the context of proposals for the Eau Brink cut, to shorten the Ouse below Denver Sluice. It was generally believed that the effect would be to reduce water levels on the seaward side of the sluice by four feet, which would have consequential effects on the Great Ouse above. Golborne argues that, were this to be a problem for navigation, the solution would lie in timing the closure of the outfall gates of the sluice so as to maintain the requisite water level. He suggests that this would maintain levels to beyond Ely but that a lock might be needed to ensure an adequate depth to Clayhithe (see also Kinderley 1751, p. 58).

If a regime of this kind could be achieved with the sluice as re-built in 1748–50, might it have been possible with the original 1652 structure? A recent assessment of Vermuyden's work is categorical that the answer is 'yes'. At Denver:

> Vermuyden built a 24 ft wide 'double sasse', that is, a navigable sluice with doors to keep out the tides and another set of doors to maintain the River level for navigation from King's Lynn up to Ely and places beyond (Skempton *et al.* 2002, pp. 745–6).

This assessment lends credence to the claim made by the Corporation of the Great Level of the Fens (1696), in response to the Bill presented to Parliament by Lynn for the removal of Denver Sluice, that the 'fresh doors' enabled water levels to be maintained to Cambridge, Norfolk and Suffolk more reliably than hitherto. Somewhat over one hundred years later, Elstobb (1776) found about three feet of water at the Hards, just upstream of the Old Plough, though another profile recorded substantially less (Bower 1810). Nevertheless, we do know that there were some problems with parts of the Ouse/Cam system at the end of the eighteenth century and early in the nineteenth. Both Golborne (1791) and Mylne (1792) identified the need for an additional lock somewhere below Clayhithe because, at least seasonally, there was too little water downstream thereof, and Gooch (1811, p. 28) referred to the variation of river freight charges according to the amount of water.

The partial destruction of Denver Sluice in 1713 provides interesting confirmation that it had not been the impediment to trade that had been portrayed. Lynn and others did not find that conditions on the river improved with the re-introduction of tides and the picture recorded by two travellers is instructive. About a decade after Denver Sluice had been built, Schellincks in 1662 commented favourably on Lynn's ability to provide 'several counties around with grain and coal' (Exwood & Lehmann 1993, p. 154). Some 60 years later, after the sluice had ceased to function, Defoe waxed rather more lyrical about Lynn's inland trade in a much quoted passage from his travels in the 1720s (Cole & Browning 1962, p. 73). With or without the sluice, trade continued much as it had previously, but the practical circumstances facing the watermen were different.

River Cam, including Stourbridge Fair

Pre 1652

Despite the existence of a sandbar at the confluence of the Cam and Ouse, Atkins in 1618 considered that the Cam presented no problems for navigation except for the section between Clayhithe and Cambridge, where some 'sand beds' and 'shallows' existed:

> If they be removed the passage would be the worse, by means of the water which is limited by the going or not going of the mill [in Cambridge] would when the mill stands fall so fast away as there would not be left any store sufficient for navigation; so as the defect is in the want of water from Cambridge; which though these gravells hold up what they can, except the mills go, none but small boats can pass: and sith the water of Cambridge river cannot in any way be increased by adding of more, men must fashion their vessels to the water, and not the water to every vessel (Atkins 1618, pp. 934).

At this time, there were in fact three mills in Cambridge (Stokes 1910).

From this account, it appears that, if keels with 40 tons were able to negotiate the bar at the entrance to the Cam from the Ouse, they would have been able to sail further than the one or two miles which would take them 36 miles from Lynn haven as stated by Badeslade. Consequently, we may be doubly confident that Badeslade was using the Old Bar Beacon as the point from which to measure the distance to the head of the navigation for keels with 40 tons, and not the haven at Lynn. We also have confirmation of the improbability of sea-going vessels reaching Cambridge.

Although the Cam near the head of navigation at Cambridge was not a trouble-free river, it had for several centuries been an important commercial artery for the town, and so continued in Atkins' time. Stourbridge Fair, held annually in September, was established by Charter in 1211. Situated on what is now known as Stourbridge Common, a little downstream from Cambridge, and adjacent to the Cam, the Fair quickly became one of western Europe's leading fairs (Rogers 1866, pp. 141–4). River access to Lynn was vital and we know that in 1551 there was a dispute with burgesses of that town regarding 'the dockage of vessels and keels in Sturbridge Fair time' (Reeve 1932).

We know that the Fair was flourishing at the time Camden wrote *Britannia* in the late sixteenth century, he describing it as 'the greatest faire of all England' (Camden 1610, p. 489). As with commerce in general, Stourbridge Fair fell on hard times in the early to mid-seventeenth century. As Caraccioli said, 'The disastrous reign of Charles I ... put a stop to all commercial intercourse in the kingdom, and reduced Sturbridge Fair to the lowest ebb' (1773, p. 35). In addition, the Civil War was also a difficult time for normal commerce. But once the conflict was over, the Fair again flourished. There was a 'goodly and full fair', as in former peaceable times, as early as 1644 (Walford 1968, p. 122).

From numerous accounts, it seems quite clear that the fortunes of the Fair depended on political circumstances and the vagaries of the plague, and not upon changes in the state of the Cam and navigation to Lynn. This conclusion reinforces the inference that can be drawn from the annual price of coal purchased by King's College Cambridge, tabulated by Thorold Rogers (1887) and presented in graphical form by Chisholm (2006). Comparison of prices in Cambridge with less continuous information for London and with wholesale prices at Newcastle-upon-Tyne provides no evidence to suggest any long-term increase in the cost of shipping coal to Cambridge during the first half of the seventeenth century. So it seems safe to conclude that circumstances on the Cam were reasonably stable for navigation, with lighters and barges able to reach the town despite the difficulties noted by Atkins. On the available evidence, it seems reasonable to accept Badeslade's contention that vessels with 10 chaldrons (about 13 tons) of coal could reach the head of navigation. On the other hand, taking account of circumstances on the Ouse, which have already been discussed, it seems unlikely that the 1696 Bill presented to Parliament by Lynn could be correct in stating that vessels with 26 to 30 chaldrons (about 35–40 tons) could easily and regularly reach Cambridge.

The University and Corporation of Cambridge were fearful regarding the probable adverse impact on navigation which would be the consequence of the drainage plans proposed in the first half of the seventeenth century, and were vigorous in their opposition. The reasoning is summed up by Sweeting:

> 'It is clear that it was believed [by the University] that the Cam would become so low and sluggish as to be useless' (1894, p. 219).

Post 1652

A history of Cambridge by Thomas Fuller, a respected clergyman and historian, was published in 1655, shortly after the Fen drainage works had been completed, in which he sets out in clear tabular form the arguments that had been advanced against Vermuyden's project before it was completed and the counter arguments in favour. One of the issues discussed is the fear that had been felt in Cambridge

that navigation would be halted. He then proceeds as follows:

> I confess Cambridge ever looked on the draining of the fens with a jealous eye, as a project like to prove prejudicial unto them. ... But it seems Cambridge was then more frightened, than since it hath been hurt, now the project is effected.
>
> The chiefest complaint I hear of is this, that the country hereabouts is now subject to a new drowning, even to a deluge and inundation of plenty, all commodities being grown so cheap therein. So hard it is to please froward spirits, either full or fasting (Fuller 1840, p. 149).

Fuller then discusses, and dismisses, the notion that the three recent drought years had been occasioned by draining, commenting that the air in Cambridge had become much better. Although he does not explicitly comment on the impact of the drainage scheme on river navigation, the clear implication of his text is that no particular problems had arisen, an impression which is confirmed by other evidence (Plate 4).

A chronological account of Stourbridge Fair mentions the 1649 Act for draining the Fens, saying of the University and Corporation that in 1653 they 'justly petitioned Parliament' on the adverse navigation effects arising from the elimination of the tides (Walford 1968, p. 122). However, Walford does not include any further comment on navigation issues, not even mentioning the 1702 Act for creating a statutory navigation from Clayhithe to Cambridge. Several accounts testify to the continuing importance of the Fair after 1652. Caraccioli (1773, pp. 36–7) makes it clear that with the Restoration in 1660 the Fair resumed its former importance. Walford (1968, p. 127) records that in 1696 the Fair was 'a place of large commerce', an assessment confirmed by a visitor at the end of the century, who said of the Fair that it 'was supposed the largest, and best stored with all kind of wares and commodities' (Brome 1707, p. 55). A few year previously, another visitor to the Fair described the river as being 'thick set with boats for a mile in length with all sorts of provisions', noting the 'vast heaps of coal' on the river bank (Baskerville 1681, p. 273).

These contemporary reports leave no doubt that the Fair flourished in the latter part of the seventeenth century, and that the river was a vital factor for its success. There is no hint that draining the Fens had had an adverse impact, which implies that river navigation had not been prejudiced, a conclusion which is confirmed by other visitors to Cambridge. Magalotti's account of his travels was first published in Italian in 1669; he noted that the Cam was navigable 'for small boats of burden' (Magalotti 1821, p. 230). Three years later, a Frenchman noted that 'barques de la mer' could be seen in the middle of Cambridge, along the great quay (Jouvin 1672, p. 517). The two foreign travellers provide no hint that the town had recently been afflicted by worsened conditions for navigation. This evidence confirms the inference drawn by Chisholm (2006) from the annual data on the price of coal purchased by King's College in the second half of the seventeenth century. Jouvin's phrase could refer either to small sea-going craft or to small vessels from as far away as the sea, i.e. Lynn. As will be explained below, the latter interpretation seems to be the more probable (see also the Appendix).

Confirmation that the river below Clayhithe was fully navigable in the second half of the seventeenth century is provided from the villages that skirt the eastern edge of the Fens. Lodes or canals, more probably cut in late Saxon or medieval times than by the Romans, link them to the Cam and hence to the Ouse river system, providing trading links which allowed the settlements to thrive as commercial centres from the medieval period to the seventeenth century and later (Gardiner 1993, pp. 36–7; Hall *et al.* 1996, p. 112; RCHME 1972; VCH 2002). It seems probable that the Burwell and Reach lodes were substantially re-modelled in the 1650s and 1660s by the Commissioners for the Bedford Level, i.e. those responsible for the drainage works, for both drainage and navigation purposes. The Commissioners did the same thing for Soham Lode, which enters the Ouse directly. Although Reach was in decline by the sixteenth century (Taylor 1995, p. 269), both Burwell and Commercial End at Swaffham Bulbeck prospered in the second half of the seventeenth century. The hythe at Burwell, which is known to have existed since the 1480s, was probably enlarged following the cutting of a new lode in the second half of the seventeenth century (Franklin 2005, p. 170).

Commercial End superseded Swaffham Bulbeck, further up the lode: the fine Merchant's House, noted in Pevsner's *Buildings of England* (1970), was built in the late seventeenth century. Recent owners have carried out extensive restoration and confirmed that the house stands on the site of a smaller but nevertheless substantial building, one external wall of which has been incorporated (L & J Bevington Pers. comm. 2005). Adjacent to the house were a quay and substantial commercial buildings of various dates, some of which survive. When the trading business was auctioned in 1824, the sale particulars stated: 'The mercantile concern has been established upwards of two centuries' (Cambridgeshire Record Office 1824). Clearly, when the present house was built at the end of the seventeenth century it was an enlargement based on an existing, and thriving, business. This would not have been possible if the navigation had been impaired by the drainage works undertaken by Vermuyden.

Badeslade (1766, p. 47) assumes that the legislation passed in 1702 (1 Ann. St. 2. c. 11) to create a statutory navigation on the Cam proves that the drainage works had been prejudicial to commerce on this river. This inference is mistaken. The fact that half a century was allowed to pass after Denver Sluice was constructed suggests that there was no disaster for Cambridge. Indeed, the Corporation and the University had resolved in 1679 to seek Parliamentary approval for a statutory navigation, but took no action for somewhat over 20 years. The 1702 Act applied to the river from Clayhithe to Cambridge, precisely the section identified by Atkins in 1618 as being difficult for the passage of boats. The title of the Act includes

reference to making the river 'more navigable' and the Conservators moved quickly to construct pound locks. Four existed by 1708 or 1709, and possibly earlier (Chisholm 2003), and, so far as is known, they were built to accommodate lighters, which would have carried 25 tons fully laden. It would therefore appear that the statutory navigation was prompted by the need to rectify the long-standing deficiencies of the river, and to make real improvements, rather than by the need to remedy any supposed prejudice from draining the Fens. And whereas Badeslade records vessels with 15 tons proceeding to Cambridge before 1652, it seems probable that in the early eighteenth century vessels with 25 tons could make the trip: an increase of two thirds.

The Little Ouse

Pre 1652

The upper part of the Little Ouse, from Brandon to Thetford, was problematical for vessels in the sixteenth century. In 1507/8, stone for the priory at Thetford had to be carted overland from Brandon (Dymond 1995, p. 27), and in 1529 there were anxieties about the deterioration of the river (Martin 1779, p. 111). Improvements must have been made, and by the mid-century vessels carrying between 12 and 16 loads (about 12–16 tons) could pass from Thetford to the 'main sea' (Crosby 1986, p. 79; Martin 1779, p. 121). That improvement must have been maintained, because a document concerned with marketing corn in Norfolk, dated *c.* 1631, clearly considered the Little Ouse to be fully navigable. The county is described as an island, bounded on the south by the rivers Waveney and Little Ouse, and on the north by the 'main sea'; consequently, on all quarters the county had an abundance of 'havens and hithes' (Thirsk & Cooper 1972, p. 343). Before Denver Sluice was built, Brandon, like Thetford, 'was a water town, the inhabitants gaining their livelihood by water traffic' (Gaches 1906b, p. 360). Therefore, there is little reason to doubt Badeslade's figure of about 13 tons as the freight that could be brought to Thetford before 1652; the higher figure of about 20 tons claimed by Messrs Russel and Ruderham seems to be unlikely, and it is notable that Badeslade does not adopt this figure.

Post 1652

Some authors record that, prior to 1670, the Little Ouse was not navigable or was used only occasionally and that White House, near Brandon Ferry was the effective head of navigation (Clark 1957, p. 207; Hunt 1870, pp. 47, 126 fn, 127). There is a literal accuracy in these reports, but not for the reason one might expect.

We know that the river was navigable to Thetford in the years 1663–5. Roger North, scion of the eminent Mildenhall family, attended school in Thetford prior to a year of reading before he went to Cambridge University. His autobiography makes it clear that he had time at Thetford to indulge his pleasure messing in and about the river, including at least one jaunt to Brandon. Of Theford, he laconically records: 'There was a navigable river in town' (Jessop 1972, p. 11).

The year 1668 witnessed a major sandstorm, which blocked the river. Somewhat less than a century previously, a blowout had occurred in the sandy soils of Lakenheath Warren and episodically thereafter, at times of exceptionally strong winds, the mobile sands had advanced north-eastwards towards Santon Downham, on the Little Ouse. Santon was invested by sand, there were some quiescent years, and then the storm of 1668, which is described by Thomas Wright, a Santon resident:

> And the branch of the river Ouse upon which we border ... for 3 miles together so filled with sand, that now a vessel with two load [about 2 tons] weight passeth with as much difficulty as before with 10 [about 10 tons] (Wright 1668, p. 724).

The mobility of the Breckland sands has been well known among those interested in agricultural practices and the landscape ever since John Evelyn in 1677 made a comparison with the sands of the Libyan deserts (Bray 1818, p. 464). Some authors have noted the blocking of the Little Ouse in 1668 (Armstrong 1975, p. 75; Cook 1956, p. 61; Martelli 1952, p. 24). But, with only one exception known to the present author, the literature dealing with navigation has ignored the event, and even this exception tucks the reference away in a footnote at the back of the book (Boyes & Russell 1977, fn 89 on p. 326).

Before the storm, according to Wright, vessels with about 10 tons could pass, presumably on their way to Thetford, but the passage was difficult. Even allowing for the uncertainties about tonnages, it would seem that there may have been some deterioration of the river from the pre-1652 figure of about 13 tons given by Badeslade. But the claim by Messrs Russel and Ruderham that the navigation had been reduced to cargoes of about four tons on account of the draining of the Fens cannot be sustained. The catastrophic change had nothing to do with the Fens, and everything to do with the mobile sands, which in turn were probably due to the combination of land use (rabbit 'farming'), desiccation and other climate changes associated with the Little Ice Age of the seventeenth century.

Shortly after the river was blocked by sand, an Act of Parliament (22 Car. II)[2] was obtained, in 1670 according to the House of Lords Record Office (Pers. comm. 2005), not 1669 as recorded by several authors. Although the main motivation for the Act was almost certainly the 1668 storm, we also need to consider some wider issues. In 1655, a pamphlet was published that argued the commercial and national benefits of creating a unified network of inland navigations, by improving rivers and by connecting them across watersheds by means of 'still' rivers (i.e. short canals). The connection between the Bristol Avon and the Thames was specifically identified. Fifteen years later, the same author repeated the substance of his earlier argument and added the proposal to link the Waveney and the Little Ouse to create an inland link from Yarmouth to Lynn and thence to York. He also noted the strategic advantage of internal communications in the context

of the wars with Holland (Mathew 1655, 1670). These proposals accord with the consideration given in 1667 to opening a water link from the Cam to the Thames to supply London with coal from the north-east at a time when the sea passage was very hazardous, an abortive attempt having been made to do this in 1662 (Willan 1936, pp. 8–9, 120; see also Chisholm 2006).

The 1670 Act provided for the creation of two statutory navigations: on the Little Ouse from White House near Brandon Ferry to Thetford, and on the Waveney from Beccles to Bungay. There is no reference to the possibility of uniting these two navigations. In the Act, both rivers are described as having previously been navigable for 'lighters keels and other boats of considerable burden'. But navigation had become impossible, necessitating expensive land carriage, on account of 'blocking and sanding'. The reference to 'sanding' presumably applies only to the Little Ouse, whereas 'blocking' would have been relevant for both. In the case of the Waveney, no prejudicial effects from draining the Fens would have been possible, and the implication is that the need for a statutory navigation arose on account of other reasons: neglect on both rivers, and the catastrophic blockage of the Little Ouse in 1668. Both rivers were to be made 'passable with keels, lighters and other boats'.

The history of the Little Ouse navigation has been carefully documented by Clark in particular (Clark 1957; see also Crosby 1986, pp. 80–1). Initially, the Borough of Thetford took little action and then ceded the navigation rights to the Earl of Arlington in 1674. Under his jurisdiction, the river was cleaned and dredged, some straightening was carried out, particularly by cutting out the insides of bends, and weak banks were piled so that a halingway could be constructed. In addition, weeds were cut as required on a seasonal basis. By the time Baskerville (1681, p. 271) recorded his travels, the navigation had been restored. This had been done without the construction of any flash locks or pound locks, which confirms that the impact of draining the Fens must have been minimal in lowering water levels and/or encouraging greater silting.

We do not know what size of craft could reach Thetford, but there is a clear presumption that nothing bigger than a lighter would have been possible. When the Earl died, his daughter assigned the navigation back to the Corporation of Thetford in 1696 as a going concern. The Corporation immediately leased the navigation to a tenant, and allowed it to deteriorate. Ultimately, it became necessary to introduce some engineering works, with the first lock – a flashlock or staunch – built at Thetford in 1742. All the other locks that were built subsequently were also staunches, not pound locks. The Thetford staunch had doors wide enough to accommodate lighters, indicating that these craft either were already reaching the head of navigation or would do so when the other staunches had been built. In addition, a noted Norfolk naturalist and antiquarian states that, for much of the river up to Thetford, the depth of water of was about two feet (Clarke 1925, p. 97), which would limit cargoes to about 10 tons, compared with the 25 tons of a fully loaded lighter.

It will be recalled that Messrs Russel and Ruderham stated that, after Denver Sluice had been constructed, it was possible to bring only about four tons of freight to Thetford. Such a situation clearly existed for a few years, but on account of the 1668 sandstorm, and not because of Denver Sluice. It is equally clear that Dymond (1985, p. 235) was mistaken in believing that the 1670 Act was a direct consequence of the draining of the Fens.

River Lark

Pre 1652

The Lark is the smallest of the three tributaries for which a navigation Act was obtained within about 50 years of the completion of Denver Sluice. It is a narrow and shallow river, which has never been able to take large vessels. We know that Normandy stone was brought to Bury St Edmunds (henceforth Bury) via Lynn for ecclesiastical buildings in the twelfth century, and that the river was later the means for exporting woollen cloth (Bishop 1998, p. 80), Bury being an important centre for the East Anglian woollen industry. In the mid-fifteenth century, it seems that about one half of all exports from Bury went via Lynn, at a time when the Abbot, who had full control over all uses of the river, levied tolls on the barge traffic (Gottfried 1982, pp. 80, 92).

The comprehensive control over secular life exercised by the prelates came to an end with the dissolution of the monasteries in the sixteenth century, and it appears that the upper reaches of the river fell out of use as a navigation for want of regular maintenance; Bury became 'dependent on road communications till the Lark was made navigable in the seventeenth century' (Scarfe 1972, p. 188). However, below Mildenhall and Worlington the river was much used by the village of Isleham, via a cut leading to a hythe 'which was flourishing in the sixteenth and seventeenth centuries' (Oosthuizen 1993, p. 33).

That thoughts were turning to the problems of navigation on the Lark in the early seventeenth century is attested by a document held at the Suffolk Record Office in Bury St Edmunds. This is the draft of a Bill to be presented to Parliament in the early 1620s, though it appears that no action was taken (Suffolk Record Office *c.* 1621). As drafted, the intent was to cleanse, scour and shorten the river; to undertake the construction of locks, dams and other engineering works for the passage of boats; and to construct a halingway. The vessels in question were to be 'boats and cargo lighters', plying from the Ouse to Bury. There was another abortive attempt in 1636, when Henry Lambe sought to establish a navigation from Mildenhall to Bury (Boyes & Russell 1977, pp. 178–9; *Calendar of State Papers* 1636, p. 386). According to Weston (1979, p. 2), the traditional head of navigation on the Lark was Worlington, a village downstream from Mildenhall.

At a time when Cambridge and Thetford enjoyed the benefit of navigable rivers in the absence of

engineering works, it is striking that attempts were made to make a formal navigation on the Lark. The implication is that this river was not navigable in its 'natural' state and could only be made so by significant expenditure, for which a source of revenue would have to be provided. That the upper Lark was not a traditional navigation in and before the seventeenth century is confirmed by the fact that Thetford lodged objections to Lambe's initiative, on the explicit grounds that Thetford would lose trade to Bury.

Consequently, when Badeslade writes of barges with about 13 tons getting 'as far in proportion up the rivers Mildenhall, Stoke etc.' we are to understand that Worlington (or possibly Mildenhall) was the head of navigation on the Lark, comparable to Thetford on the Little Ouse, and not Bury.

Post 1652

The Lark Navigation Act was obtained in 1698 (11 Gul. III c. 22). The preamble states that between Mildenhall and Bury the river was 'utterly unpassable for boats lighters or other vessells', and that between Worlington and Mildenhall the river was 'very imperfectly navigable'. Consequently, the Act authorised Henry Ashley to make a navigation from Long-Common, a little below Mildenhall Mill, to Bury, and also to 'amend meliorate and improve' the passage of craft between Worlington and Long-Common. The right to levy tolls applied only to the formal navigation, i.e. from near Mildenhall Mill to Bury, and not downstream to Worlington. The inference is that the amount of work to be carried out below Mildenhall Mill was quite small, from which we may conclude that little if any adverse change had been occasioned by draining the Fens.

The Corporation of Bury would not permit the navigation to enter the town, with the result that the head of commercial operations terminated at Fornham St Martin, just beyond the boundary. The works were completed in or about 1715 (Weston 1979, p. 3) and were clearly of considerable benefit to Bury at the time of Defoe's travels in the early 1720s (Cole & Browning 1962, pp. 52–3). However, as Defoe notes, Bury had 'a very small branch of a small river'. Just how small can be seen from the width of the pound locks. The standard width was 11.5 feet, sufficient for a lighter. In the upper reaches of the navigation, the river was in some places so narrow that a staunch would occupy the full width of the channel, leaving no room for an adjacent weir: 'In such cases surplus water simply cascaded over the gates' (Faulkner 1977, p. 5).

It therefore seems that the navigation between Mildenhall and Bury had deteriorated to the point of impossibility long before the Earl of Bedford and Vermuyden set to work. Consequently, the 1698 Act is to be viewed as an attempt to rectify the long-standing deficiencies of the river, and not to remedy any problems arising from the Fen drainage.

Conclusions

River commerce on the Ouse between Denver and Earith and on the tributaries was not impeded by the seventeenth-century drainage works. If anything, conditions were probably improved, with greater reliability of water depth, something which is strongly suggested by the fact that the intended lock downstream from Ely was not in fact built because, we may infer, water levels could be managed by the regime adopted at Denver Sluice. In addition, the navigation Acts for the tributary rivers were not a response to the alleged prejudicial effects of the drainage works but reflected long-standing problems on the Cam and Lark, and the effect of a sandstorm in blocking the Little Ouse.

Given that conditions on the Ouse and its tributaries were not as good as Badeslade asserts that they were before 1652, and that thereafter navigation conditions were no worse than previously and probably somewhat better, why did Brandon and Thetford on the Little Ouse, Mildenhall and Bury on the Lark and the Corporation of Cambridge with respect to the Cam support Lynn in 1696 when the seaport petitioned Parliament for the removal of Denver Sluice?

Consider for a moment the impact of the New Bedford River on the Great Ouse at and above Earith. There is no doubt that the shorter route to the sea provided by the New Bedford River conferred considerable benefits on the navigation, with a marked reduction in freight costs (Summers 1973; Willan 1942; Wood 1992). In contrast, for the Ouse between Denver and Hermitage, it seems that, although there was no worsening of conditions occasioned by the drainage works, any improvement was comparatively small. Consequently, all the towns from Earith to Bedford gained a trade advantage relative to places on the Ouse and its tributaries between Denver and Hermitage, just below Earith. If Denver Sluice were to be removed and the New Bedford River abandoned, as Thetford, Bury and others wanted, then the commercially competitive situation would return to the pre-1652 position, to their relative advantage. This would not have been a persuasive argument to deploy in support of legislation to remove Denver Sluice, but may well have been the reason why other arguments and assertions were marshalled. This interpretation, which is supported by Lynne Turner (Pers. comm. 2005), would be consistent with the fact that, in 1696, the Dean and Prebendary of Ely Cathedral opposed Lynn's plea for Denver Sluice to be destroyed. The clergy's lands benefited from the drainage works and any disadvantage for navigation that there might have been was not sufficient to outweigh that advantage.

As for Lynn itself, it appears that opposition to Denver Sluice, and the drainage scheme as a whole, probably rested on perceptions regarding the navigability of the outfall below Denver – a highly dynamic environment – with the citizens of Lynn attributing any perceived worsening of conditions to a single cause, the changes associated with Denver.

Throughout most of England, the river navigations were superseded by canals in the eighteenth and nineteenth centuries. This did not happen in the Fens, where even small rivers remained commercially important until the advent of the railway. The catastrophic reduction in freight carriage that then occurred, as on the Cam (Chisholm 2003), implies that the rivers were less efficient than most canals, which were considerably more successful in retaining traffic. Despite the widespread belief that draining the Fens in the seventeenth century had a seriously detrimental effect upon river navigation, the rivers remained vital arteries of commerce for a further two centuries.

Acknowledgements

I am very grateful to Michael Young for reading an early draft and for help on a number of matters. In addition, the following individuals have assisted in various ways: Tim Atkinson, Tim Bayliss-Smith, Loder and Julia Bevington, Douglas Caffyn, Richard Grove, Paul Richards, Lynne Turner and Frances Willmoth. I am also grateful for the help rendered by the staff at: the Cambridge, Norfolk and Suffolk Record Offices; the Cambridgeshire Collection (especially Chris Jakes); the King's Lynn Borough Archives (especially Susan Maddock); the National Maritime Museum (Greenwich); and Cambridge University Library. I am also indebted to anonymous referees for very helpful suggestions. The illustrations were drawn by Ian Agnew, Department of Geography, Cambridge.

Appendix

Keels as sea-going vessels?

There are some references in the literature to sea-going ships penetrating quite far inland, for example: 'sea-going craft of considerable tonnage' as far as Reach (Hughes 1909, p. 122; see also Paget-Tomlinson 1998a, p. 44). Wilson (1972, p. 5) is more explicit, saying that until 1649 keels could sail to Cambridge with 40 tons, these vessels being capable of carrying 100 tons when fully laden and that they probably originated from the Humber estuary. This information for Cambridge was accepted by Chisholm (2003, p. 184). Rather similar information is provided by Badeslade (1766, p. i), who states that keels with 40 tons could sail 36 miles up the Ouse towards Cambridge before Denver Sluice was built, though he does not say whether these vessels were sea-going or plied only on the rivers. In another reference to Cambridge, Seymour (1972, p. 251) says that, before Denver Sluice was built, ships from Newcastle with coal could annually make 18 round voyages to the town but that the number was reduced to 10–12 afterwards. And a quick reading of Jouvin (1672, p. 517) might leave the impression that the 'barques de la mer' that he noted were capable of negotiating the North Sea. The belief that quite large sea-going vessels could use the waterways before 1652 (which is reinforced by the crest which adorns the Guildhall in Cambridge), and that this became more difficult or impossible after the drainage works had been completed, so navigation in general was prejudiced, has gained considerable currency.

According to the *Oxford English Dictionary*, the term 'keel' did indeed apply to sea-going vessels but this usage died out after the sixteenth century (see also McGrail 2001, pp. 239–40). Among those who have written about them, there is clear agreement that along most of the East Coast keels were restricted to river and estuary work (Carr 1951; Clark 1972; Heslop 1901; McKee 1983; Murray 1901; Paget-Tomlinson 1993, 1998b, p. 28). This was certainly the case for the Tyne keels; dating back to the mid-fourteenth century, they carried coal down the river to the colliers, with loads which came to be standardised at about 21 tons. Likewise, the Norfolk keels were river craft. The Humber keels had to cope with comparatively open water, and Carr describes these vessels as capable of coastal work, though according to Paget-Tomlinson they rarely ventured to sea. There was no specifically identified fenland version of the keel.

The standard Humber keels were very similar to medieval coasters. They were about 62 feet long, 15.5 feet in the beam and drew seven feet when fully laden with 100 tons (Carr 1951, p. 142 ff.). They were square rigged, and the masts could be lowered. Therefore, in principle they could pass under bridges and as a consequence could sail up river. Whether they were in fact able to pass under the five bridges that existed on the Ouse before 1652 between Lynn and what became known as Denver Sluice (Dugdale 1772, map facing p. 375) is uncertain. It is known that Downham Bridge existed in 1454, Stow Bridge in 1550 and Magdalen Bridge in 1582 (Norfolk Record Office 1890). As late as 1890, the spans of Stow Bridge were no more than 33 feet, so the earlier structures almost certainly afforded even narrower passages for boats. Furthermore, a sea-going vessel that could carry 100 tons when fully loaded would ride high in the water when carrying a part load of 40 tons, and it is known that the much smaller lighters, with a freeboard of only six inches, could be held up at spring tides for the want of headroom at the bridges (Stewart 1909, p. 104).

It seems unlikely that the Humber keels were seen very often at Lynn and equally unlikely that they could then sail up the Ouse. Consequently, it is probable that the term keel as used on the fenland waterways is derivative from the Tyne keels, not because these vessels made the passage southwards, but because the coal trade was very important on the fenland rivers, with the result that the term keel was applied to the flat-bottomed craft that were engaged in the coal trade.

There are further reasons for being sceptical about sea-going vessels penetrating inland to Cambridge and elsewhere. In the sixteenth and early seventeenth centuries, the overseas and coastal trades of ports were closely controlled by the Crown to ensure that the relevant dues were paid. The detailed procedures

are well described by Hinton (1956, pp. xiv–xvii). All incoming goods had to be unloaded under supervision, with equivalent provisions for outward bound cargo. Only the port's merchants could handle transactions. Conforming to these rules, all freight arriving at Lynn had to be unloaded, either from one vessel to another, or to land (Barney 1997; Parker 1971, p. 112). If the goods were destined up river in a sea-going vessel, then they would have to be re-loaded. This double handling, plus operating with a part load in the restricted circumstances of a river, means that the economics of inland navigation for sea-going craft must have been questionable.

That keels were in fact used solely on inland waters in the fenland context in 1566 is strongly suggested by the record in that year of 14 vessels at Wisbech, being 'keles barges botes and lighters' engaged in the carriage of grain and coal, operated by watermen who 'are no maryners or ffyshermen'; none of these vessels exceeded 12 tons burden. The same source records the 'few keels, lighters and barges' at Ely, which are then described as the three barges (Elye *et al.* 1909, pp. 94–5). There is a fourteenth-century record in Latin of corn being shipped from Cambridge to Lynn in 'keles' and from there in 'naves' to destinations beyond (Owen 1984, p. 258). The same source describes Lynn's trade as that of an entrepot, with other early records of keels that point to their use only on rivers and estuaries. The keels that were owned in the fifteenth and sixteenth centuries by inhabitants of Reach (VCH 2002, p. 225) almost certainly did not venture beyond Lynn.

Doubt regarding the possibility that sea-going vessels sailed up river to places like Reach and Cambridge is reinforced by the evidence contained in the *Inventory* published by the Royal Commission on Historical Monuments (RCHME 1972). At Reach, six basins are identified, the dates of which are unknown. Two of these are 20 feet wide, and the other four only 15 feet, dimensions that imply that only quite small craft could ever have negotiated the lode. A similar situation obtained at Burwell, where the Hythe was bounded on both sides by watercourses that were no more than 20 feet wide, with the additional complication that access thereto required a right-angle turn from the lode into The Weirs and another to come alongside the Hythe. Access to Commercial End at Swaffham Bulbeck also involved two right-angle bends, until the New Cut was made shortly after 1821. The lode is shown on the 1926 Ordnance Survey plan (scale 1:2500 or 25 inches to the mile) as being about 20 feet wide, with a turning point near the Merchants House which would have limited the length of vessels to less than 40 feet, more probably 35 feet at the most. At all three settlements, the configuration of the waterways strongly implies use by nothing bigger than barges or lighters at any time, including the early seventeenth century.

There is some suggestion that keels were the bigger craft on the inland waterways, with lighters and barges being terms used for smaller vessels. However, some care is needed in drawing this conclusion. None of the 1566 Wisbech craft exceeded 12 tons, nor were any of the vessels at Ely larger than eight loads (about eight tons). The Tyne keels carried about 21 tons, and the standard lighters on the fenland waterways after the seventeenth century carried 25 tons. But there will have been considerable variation in vessel sizes, as shown by a late eighteenth century Norfolk register of inland craft exceeding 13 tons burden (Norfolk Record Office 1795). Working the rivers from Great Yarmouth, the median size for keels was 60 tons, with the maximum and minimum being 97 and 20 respectively. The equivalent figures for wherries were: median 24, maximum 50 and minimum 14, while the three craft identified as boats carried no more than 16 tons each. Unfortunately, the equivalent information for Lynn has not survived (S Maddock Pers. comm. 2005). In the fenland context in the seventeenth century, it is probable that the terms 'keel', 'lighter' and 'barge' all refer to flat-bottomed estuarine and river craft, and that the terms might have signified the mode of construction – shape, whether clinker or carvel built, the configuration of sail and rigging – and also the cargo carried, with keels prominent in the coal trade and tending to be the larger craft. Barney (1997, pp. 221–2) is right in stating that sea-going craft did not ply the fenland waterways.

Loads, chaldrons and tons

In the literature about the fenland, cargo is measured as loads, chaldrons or tons, and it is clearly necessary to be able to convert to a common unit of carrying capacity: the long ton of 2240 pounds.

The chaldron was the unit used in the coal trade along the East Coast, but itself had different values. The wholesale coal trade in Lynn used chaldrons of 1.275 tons (Barney 1997), whereas the retail trade up the Ouse was conducted in chaldrons of 1.33 tons (Nef 1932 vol. 2). Rounded to the nearest decimal place, both chaldrons can be equated to about 1.3 tons.

The load was used for a wide variety of goods, with different definitions for what it comprised. Consequently, there is no generally agreed weight equivalence for a load of cargo (*Oxford English Dictionary*; Britten 1880; Zupko 1977). Fortunately, early navigation Acts generally specified the maximum charge that could be levied on the various commodities, from which it is clear that for navigation purposes one load was equated to one ton. For example, the 1702 Act for the Cam specified a toll of one shilling for a 'load or ton' of timber, and also for a load of hay defined as 20 hundred[weight]. Similar equivalents are found for the Little Ouse, the Lark, part of the Great Ouse and more generally (see Priestley 1969). For the purpose of this paper, one load has been taken to be about 1.0 ton.

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Endnotes

1. There is some doubt about the precise year in which the tides on the Ouse were stopped by Denver Sluice and the sasse or lock which it incorporated. Harris (1953, p. 132) states that the sluice 'was constructed first in 1651', but Frances Willmoth (Pers. comm. 2007) has pointed out that this may be too early. She notes that the company's minutes for 8 December 1653 record an order to Moore as the Surveyor, that he should 'have a vigilant Eie to the double sasse at Salters Lode and the sluices at Stow that noe evill disposed persons may prejudice the same while the buisines touchinge navigation is here above depend-inge' (CRO 1652–6). So we know that the sasse existed at the end of 1653, but we may also be confident that it must have been completed perhaps 12 months previously, for the following reason. In March 1651, the North and Middle Levels had been declared successfully drained, and on 17 February 1653 Vermuyden submitted a memorandum declaring that the main works in the South Level had been finished and were fit for adjudication; Denver Sluice was part of the South Level works. In March 1653, the whole drainage project was declared to have been successfully accomplished and there was a service of thanksgiving in Ely on the 25th of that month (Skempton *et al.* 2002, p. 746). Additional works at Denver were not completed until 1656: 'a Sluce and Clow by the great Sasse neare Salters Loade' (CRO 1654–5).

   The implication of Vermuyden's successful deposition is that the sasse across the Ouse at Denver had been completed by late 1652 or very early in 1653, and for this paper the earlier year has been taken to mark the end of tidal conditions on the Ouse above Denver, with vessels using the lock provided.

2. The 1670 Little Ouse Act was not printed and is therefore not readily available; it is also difficult to read. The version used is a transcript held at the Norfolk Record Office, catalogued as T/01/12, of which the author has a photographic copy: copies thereof have been deposited at the following Record Offices: House of Lords, Cambridge, Bury St Edmunds and Norwich.

West Cambridge 1870–1914: building the bicycle suburb

Philomena Guillebaud

This third article in a series about landscape and land-use changes in west Cambridge describes the creation of the residential suburb in that part of the Parish of St Giles nearest to the town centre. While this took place largely after 1885, it was preceded by the introduction of three new academic institutions: Newnham College, Ridley Hall and Selwyn College. The long-standing resistance by most college landowners to allowing building west of the Backs collapsed before the need to find alternative sources of revenue to offset the impact of the agricultural depression from the late 1870s on, while abolition of restrictions on the marriage of dons created new demand for houses. However the stringent conditions laid down by the colleges, who owned 90% of the area of the suburb, delayed by several years the take-off of a development whose character reflected unwritten agreement among the colleges that the suburb should consist of exclusively middle- or upper middle-class houses in spacious gardens, interspersed with academic buildings, playing fields and nurseries, devoid of commercial or community facilities. By 1914, Grange Road had been fully developed, the eastern end of Madingley Road partly so, and a number of subsidiary roads had been built. While there was little change in the most westerly parts of the parish, which remained largely arable, changes in landownership at the expense of an already very small private sector resulted in an increase in college and university ownership in the parish as a whole from 60% at the time of enclosure in 1805 to about 85% by 1914.

This is the third of a series of articles tracing the development of the former medieval West Fields of Cambridge and the impact of enclosure upon them. These Fields were one of the two medieval great fields that, together with the town itself, composed the Borough of Cambridge. The unit of parliamentary enclosure was the parish, and the 1361-acre parish of St Giles encompassed the whole of the West Fields and two small long-established population clusters, Castle End/Pound Hill in the north and parts of Newnham village in the south. The first article examined the process of parliamentary enclosure of the parish between 1802 and 1805, the roles played by the Cambridge colleges in that process and the ownership pattern which emerged from it, by which almost all the land closest to the town was in the hands of the colleges.[1] The second described the transformation of the agrarian landscape between 1805 and 1870, with particular attention to that area closest to the river, which would later become what, for convenience, I have called the west Cambridge suburb.[2] It explored the long lull that left this a largely green area of college playing fields, pleasure gardens, nurseries and pastures while in the same period massive housing development was taking place east and south of the town in the former East or Barnwell Fields.

Without ignoring the more westerly parts of the parish which would subsequently figure largely in the future of both colleges and university, the present article focuses primarily upon the initial development of the suburb with its mixture of new academic institutions and upper-middle- and middle-class housing largely geared to the university community, and the ways in which the ownership patterns established at enclosure influenced the development that took place. There is a widely held belief that the development of the suburb was triggered by the abolition in 1882 of the requirement that college dons must remain celibate to retain their fellowships. In describing developments between 1870 and 1914, it is hoped to show that this was only one element in a more complicated picture and, in terms of timing, not the most significant.

The timing and sequence of suburban development 1870–1914

Following enclosure, ownership of the land in the area of the future suburb (some 200 acres, roughly bounded by Queen's Road, Newnham and Barton Roads, Grange Road and Madingley Road; see Fig. 1) was divided among eight colleges, two churches, Cambridge Corporation and a few private persons. The colleges held about 90% with St John's much the biggest landlord. This distribution remained essentially unaltered for the next century and a half.

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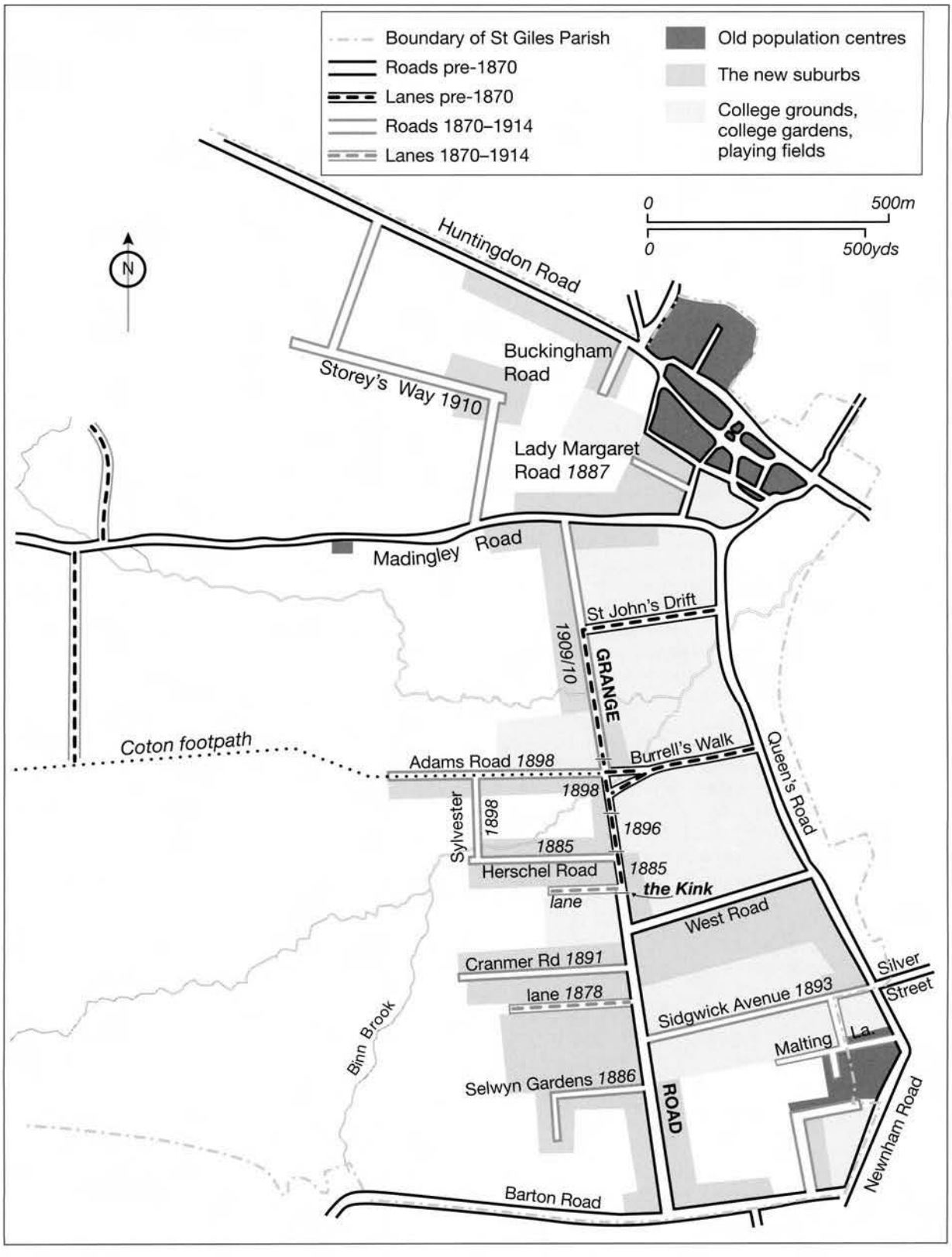

Figure 1. *The suburb of west Cambridge, showing development to 1914.*

Given this picture, it is not surprising that there was no master plan for the suburb. Certain minimum requirements were laid down by the municipal by-laws governing such matters as structural or sanitary standards for individual buildings and roads, but beyond that each landowner had a free hand. St John's College, which dominated the scene, decided in 1885 to divide into two estates the land it planned to develop, one with larger plot sizes and higher minimum house costs than the other. As far as can be judged from the records, planning was limited to laying out the plots in the light of that decision, and to designing two feeder roads, one in each estate, to increase plot numbers. There is no evidence that any broader issues were considered by the other landlords who participated in developing the suburb.

Figure 2 shows, at five-year intervals, the appearance of new houses or at least of building leases. (The term 'gentry houses' is used as shorthand for upper-middle- and middle-class housing.) The data must be treated as approximate, because they derive from multiple sources. Where the ground landlord was a college, it has in almost all cases been possible to find a lease, but leases bear two dates: the date from which the lease duration is calculated, always specified in the text, and the date of signature, usually one or two years later and in some cases as many as eight or ten years later. Given the arbitrary time lag, I have been obliged to use the first of these dates, although it generally predates the actual house construction by six to 18 months. Sometimes the existence of a building agreement has made greater precision possible. In the case of private owners, the principal source has been Spalding's Street Directories of Cambridge. Since these were initially published at three-year intervals from 1874 and annually only from 1910, in some cases all that is known is that a given house was built between 1884 and 1887, because it is listed in the Directory for the latter year and not for the former. In those cases I have taken the year before the house first appears in Spalding. Finally, there are the decennial censuses, in a few cases the only source for the period before the mid-1870s.

Only three new leases appeared between 1880 and 1884. The next five years show the first jump, to 19. Although these houses were scattered from Barton Road to Huntingdon Road, all but four were in the Grange Road/Madingley Road area, and in part reflected the initial impact of building two new roads westwards from Grange Road (Herschel Road and Selwyn Gardens) and one north of Madingley Road (Lady Margaret Road). The peak in the period 1890–4 was also associated with new road construction: Cranmer Road was built by Jesus College from 1891. The drop between 1905 and 1909 reflected a nation-wide building slump which in most other areas had developed earlier[3] and the final peak before 1914 reflects *inter alia* the beginning of the estate along the newly-built Storey's Way.

There is more to the story than statistics, and before discussing residential development in greater detail it is necessary to go back to the 1870s, when the first changes in the built landscape took place. Before 1875, no academic buildings had been constructed west of the river, i.e. beyond the traditional geographic bounds of Cambridge town, except for the University Observatory, the choice of whose site in the 1820s out on Madingley Road was governed by considerations of elevation and avoidance of smoke pollution. Now, however, three entirely new institutions appeared: Newnham College in 1875 with subsequent enlargements;[4] Ridley Hall (an Anglican theological college later linked to the University) in 1877;[5] and Selwyn Hostel, later Selwyn College, in 1879,[6] all more or less cheek by jowl, to be joined in 1896 by two more beyond the northern end of the Backs, Westminster

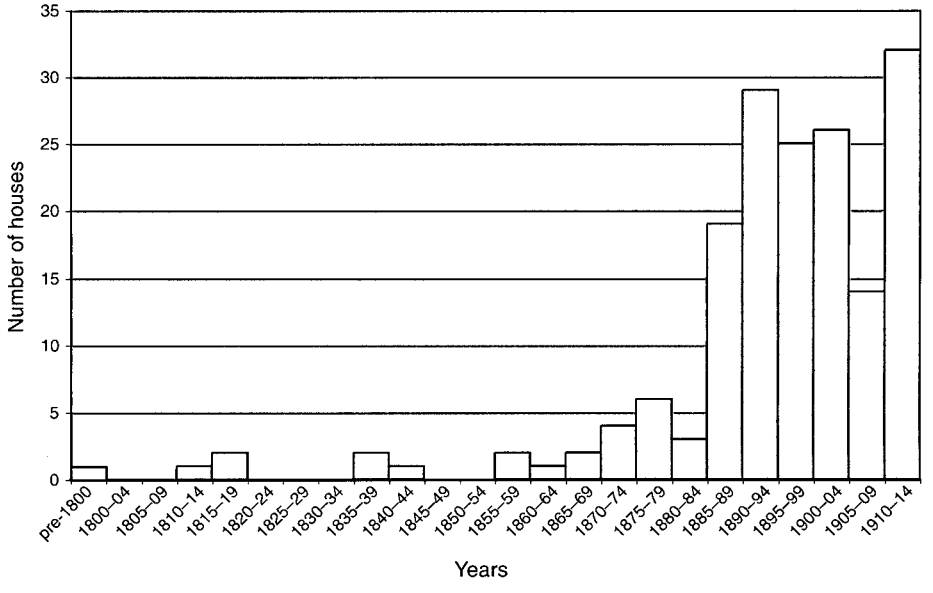

Figure 2. *'Gentry' houses built in St Giles's Parish, Cambridge, 1799–1914.*

College and St Edmund's House (one a Presbyterian theological college, the other a residence for Catholic students, both likewise later connected with the University).[7] All but Selwyn and St Edmund's were built on land allotted to St John's College at the time of enclosure, Selwyn being built on land acquired from Corpus Christi College and St Edmund's on land initially allotted to Storey's Charity.[8]

It is at first sight surprising that it was St John's that took the bold step in 1875 of granting a lease of two-and-a-half acres to what would become Newnham College, one of the two women's colleges struggling to establish themselves in (or near) Cambridge at the time. The explanation lies in the Master of St John's: William Henry Bateson was both a leader of the reform party in the University and a supporter of higher education for women, his wife was a prominent member of committees promoting that cause, and two of his daughters respectively a medieval historian and an activist for women's suffrage.[9] Although the senior Fellows of the college were described by a younger colleague as 'a narrow-minded and bigoted clique,'[10] Bateson was skilful enough to persuade them that the college should provide the site for this rather shocking experiment. That there were doubts about Newnham's viability is shown by the condition of approval of the design of the initial Newnham residence hall that the structure should be capable of conversion to a private residence.[11] (This condition was eventually dropped.)

The first, and so far only, evidence found that St John's might be thinking of changing its land-use policy in west Cambridge is a letter of 7 August 1873 from Miss Anne Jemima Clough, the future Principal of Newnham College, to the Bursar of St John's, George Reyner, inquiring about a site for her institution and saying she had heard that St John's was considering granting building leases in Madingley Road.[12] The Bursar suggested an alternative site in Newnham, which became the initial nucleus of the new college. In the absence of any record of their discussions we do not know why he did not offer a site on Madingley Road, but it might be because those sites were part of Grange Farm, with whose tenancy the college was currently having difficulties, whereas the Newnham site was on a short-term lease. Perhaps he also felt that the former area, relatively near the Castle End slums whose residents had an unsavoury reputation, was unsuitable for young ladies.

This initial lease of 1875, covering that part of Newnham College's eventual nine acres that was nearest the town and accessed from the very narrow Malting Lane, was followed by a second in 1879 and then a third in 1882, by which time Newnham's site bordered Grange Road. At the same time St John's sold in 1877 the two-acre site (abutting Newnham's first lease on the east) on which Ridley Hall was established, while Corpus Christi College sold nearly six acres in 1879 to the founders of Selwyn College, which again fronted on Grange Road. (That both the latter transactions were sales, whereas Newnham was granted leases, may also have reflected doubt about the viability of the Newnham experiment. However, in 1900 Newnham successfully bought its freehold.)[13]

Regarding the residential development of the suburb, much of the discussion that follows is devoted to the activities of St John's College because of its dominant ownership position, but those of other land owners must also be mentioned. In 1803, the Syndicate appointed to safeguard the University's interests at the time of enclosure made certain requests to the commissioners aimed at discouraging building along or near the Backs.[14] (The Backs, short for the Backs of the Colleges, is a term found in Spalding's Directory of 1874 and is still used today to denote the area encompassing the meadows and gardens on both sides of the river west of the buildings of St John's, Trinity, Trinity Hall, Clare, King's and Queens' Colleges, and bounded by Queen's Road on the west.) The commissioners duly obliged, and thereafter the colleges, with two exceptions, refrained from building there for the next 70 years. The first exception was Gonville and Caius College (henceforward referred to as Caius), which slowly and steadily developed its land in west Cambridge throughout the century: one building lease was granted in 1799, three in the period 1836–40, one in the 1860s, two in the 1870s, four in the 1880s and more later,[15] until by 1914 its only lands in St Giles not built upon were, as they still are today, its two playing fields and its Fellows' Garden. The sites to which these leases refer lay initially on the west side of the Backs, in an old enclosure known as Butchers Closes, and then on the south side of West Road on land allotted to Caius under the enclosure award. The second, lesser, exception was Merton College, Oxford, which granted two building leases, in 1817 and 1819 respectively, for land abutting Merton Hall at the north end of the Backs,[16] and none thereafter.

The half-century from 1820 saw no new building leases being granted (other than those of Caius mentioned above and a single lease by St John's in Newnham in 1864),[17] but in 1871 Corpus Christi College made the surprising decision to lease a nine-acre plot in the middle of the undeveloped area immediately west of Grange Road.[18] College documents record the fact, but as usual give no explanation, and the decision remains an enigma. The plot was leased to A. A. Vansittart, formerly Fellow and later Auditor of Trinity College, who built on it a large house (Fig. 3) initially called Grata Quies and later renamed Pinehurst, which was subsequently pulled down and replaced by flats in the 1930s. Corpus Christi followed this grant in 1878 with a second lease,[19] on an adjacent site initially of one-and-a-half acres but soon expanded to seven acres, on which the house called Leckhampton was built. This is now a residence for that college. Between these two dates, St Catharine's College granted two leases, each of over an acre, of land on the east side of Grange Road, north of West Road, on which St Martin's and St Chad's (see Plate 5) were built.[20] The first is now part of King's College Choir School, the second a hall of residence for St Catharine's College.

Figure 3. *Pinehurst, 33 Grange Road, erected on land leased by A. A. Vansittart from Corpus Christi College in 1871. Demolished c. 1931. Image courtesy of the Cambridgeshire Collection.*

The mid-1880s saw St John's finally moving into residential development, with Jesus following suit from 1891, smaller developments by Peterhouse[21] and Magdalene[22] around the turn of the century and finally the start of a big development by Storey's Charity into the empty land between Madingley and Huntingdon Roads shortly before the outbreak of the Great War. Clare, King's and Trinity Hall, each with small allocations, granted no building leases, although King's built some accommodation for its choir school.[23] The main arteries of development were West Road, Grange Road and Madingley Road. The first two had been balks (unploughed strips used *inter alia* for taking out the harvest)[24] during the open field era, and the third the turnpike road leading west to St Neots. West Road is significant in the present context because it was the first to be developed, by Caius, for housing and because it was the key to the development of Grange Road. Prior to 1865, there was not a single permanent building on Grange Road. An agricultural lease of the 1850s referred to it as a lane[25] although it, like West Road, had been designated in the 1805 award as a 40-foot-wide 'public bridle road and private carriage road and driftway' up to a point slightly north of West Road.[26] Thereafter Grange Road narrowed to a 12-foot public bridle road and footpath (the point at which it narrowed is on the divide between enclosure allotments to St John's and Jesus and is shown as the Kink on Fig. 1) until it stopped at the Bin Brook and met Burrell's Walk at a right-angle. It was not extended to its present intersection with Madingley Road until 1909–10 (see below).

In 1871, when Corpus Christi College granted the nine-acre building lease referred to above on the west side of Grange Road, access to the plot was via West Road, as was true of the two leases immediately north of West Road granted later in the 1870s by St Catharine's, and of the second large lease by Corpus. In other words, Grange Road developed from its middle outwards: both its southern and its northern limits (meeting Barton Road and Madingley Road respectively) were the last to be developed before 1914 (Fig. 4).

The celibacy issue

The Oxford and Cambridge Universities Act of 1877 led to major revision of the college statutes under which, in most colleges, dons had had to give up their fellowships upon marriage. That this leftover from medieval times was an anachronism had long been recognised by many within the University: Caius College had abolished it for all its Fellows in 1860,[27] Trinity Hall for its law Fellows in 1861[28] and several other colleges had relaxed the rule by exempting holders of various college offices such as tutor or bursar in the interests of good administration. Moreover professors, as holders of University posts, were exempt. Nevertheless the majority of college dons were still subject to this regulation.

The power of the belief that there was a direct causal effect between the abolition of celibacy and the development of what was to become a largely academic enclave is shown by the fact that the same is thought to have been the case in North Oxford, even though development of that suburb had begun a good 20 years before the change of college statutes.[29] There exists a Cambridge fable (whose source I have sadly been unable to trace) that on the day in 1882 when the new statutes took effect the railways had to put on extra trains to bring hopeful brides to Cambridge;

Ground landlord	Year	House number	House number	Year	Ground landlord
		Madingley Road			
	11 Madingley Road		9 Madingley Road		
St John's	1932	77			
St John's	1926	75			
St John's	1912	73			
St John's	1910	71	Playing fields		St John's
St John's	1908	69			
St John's	1923	67			
St John's	1913	65			
St John's	1911	63			
			62	1906	St John's
St John's/Trinity		Playing fields	60	1906	St John's
			58	1906	St John's
			62	1906	St John's
Here is Adams Road			*Here is Burrells Walk*		
St John's	1885	53	Real Tennis C		
Here is Herschel Road			Playing fields		Clare/King's
St John's	1884	49	50	1876	St Catharine's
Jesus		Rugby ground	48	1877	St Catharine's
			Here is West Road		
Jesus	1894	43	42	1927	Caius/Selwyn
Here is Cranmer Road			40	1901	Caius/Selwyn
Jesus	1896	41	38	1901	Caius/Selwyn
Jesus	1896	39	Selwyn Coll		Selwyn
Corpus Christi	1878	37			Selwyn
Corpus Christi	1871	35	*Here is Sidgwick Ave*		
Corpus Christi	1871	33			St John's/Newnham
Private	*c.*1894	31			St John's/Newnham
Private	*c.*1894	29			St John's/Newnham
Here is Selwyn Gardens					St John's/Newnham
Private	*c.*1893	27	Newnham Coll		St John's/Newnham
Private	*c.*1893	25			St John's/Newnham
Private	*c.*1893	23			St John's/Newnham
Private	*c.*1893	21			St John's/Newnham
Private	*c.*1892	19			St John's/Newnham
Private	1958	15			St John's/Newnham
Private	1906	13	16	*c.*1898	Holy Sep: Ch*
Private	*c.*1912	11	12	1891	Holy Sep: Ch*
Private	*c.*1906	9	10	*c.*1900	Holy Sep: Ch*
Peterhouse	1893	7	8	*c.*1900	Holy Sep: Ch*
Peterhouse	1893	5	6	*c.*1900	Holy Sep: Ch*
Peterhouse	1903	3	4	1897	Holy Sep: Ch*
Peterhouse	1912	1	2	1892	Holy Sep: Ch*
		Barton Road			

Grange Road

Holy Sepulchre Church* This attribution is speculative. This strip of land was alloted to the incumbent of Holy Sepulchre Church at Enclosure in 1805, and No. 16 was sold by the then incumbent of that church. But I cannot confirm ownership of the other plots at time of sale.

Figure 4. *Approximate dates of construction of houses on Grange Road.*

this event was presumably followed by a stampede by their spouses into real estate in west Cambridge. Alas for the story: since the celibacy restrictions derived from individual college statutes and not from a University statute, there was no single date to trigger such an onslaught.

If we consider the data underlying Fig. 2, it will be found that one house lease was taken out in 1882 (by W. Eaden Lilley, a prominent Cambridge retailer), none in 1883, one in 1884 (by a privately wealthy don who married the following year), two in 1885 (one by a professor, the other by a long-married Vicar of Great Shelford), and even in 1886 when the building boom begins to take off, of the nine leases granted in or around that year, only four may be attributable to dons who married since the change of statutes.[30] The authors of a history of Jesus College reported that all its resident Fellows but one married within a year of the adoption of its new statutes, some of them within a fortnight of that event.[31] This may have been an extreme case, but there is no doubt that there was a rash of marriages among the newly emancipated dons.[32] But where did they find their first homes? The answer is in the new middle-class areas east and south of the town, such as Harvey Road, Brookside or Trumpington Street. Movement into west Cambridge, when it occurred, was often a case of trading up. The main reason for the time lag in development of the latter area lay in the policies of the major college landowners, as will be explained.

Control of the development

Until the last quarter of the nineteenth century, college revenues in Oxford and Cambridge were derived almost entirely from agricultural rents, and the third quarter of that century was an era of general prosperity. Unfortunately the agricultural depression, which set in from about 1876 and lasted, with some fluctuations, almost to the end of the century, seriously undermined the financial foundations of the colleges.[33] It is not strange that these institutions began exploring building leases as alternative sources of income, particularly after the passage of the Colleges and University Estates Act of 1858, which made possible the granting of 99-year residential leases. What is surprising is how long it took colleges in Cambridge to develop west Cambridge. Several colleges, notably Caius and Jesus, had been actively granting building leases in the former East or Barnwell Fields (enclosed by 1811) since the 1820s, with Trinity Hall following later.[34] St John's, although allotted about 80 acres in Barnwell,[35] chose to keep them as farms until eventually selling them off at various dates, some not until the twentieth century, while in west Cambridge, as already mentioned, it retained its lands nearest to the river as playing fields (for its own use or on lease to other colleges) and gardens until well into the 1880s. Yet this college was far from lacking experience in residential development: almost as soon as the 1858 Act took effect, it began a massive development project based on 99-year leases on its estate in Kentish Town, on the northern edge of London as then defined, where it had received a large bequest in the seventeenth century. Over the 25 years from 1861, more than 700 house leases and almost 80 leases for shops and other purposes were granted.[36]

Kentish Town, however, was at a distance from Cambridge and could be regarded dispassionately as an investment. The land in west Cambridge was another matter, with the college's connections there going back to the medieval benefactions to St John's Hospital. Indeed, for all the colleges on that side of the town, it was their green belt. Nothing but economic necessity would have forced the invasion of this treasured area, and when the time came the colleges made sure that only 'our kind of people' would live there.

While there was no overall plan, there was clearly an unwritten consensus among the college landowners that residential development in west Cambridge was to be restricted to a relatively affluent market and strictly controlled to avoid deterioration of property values. Controls were exercised through the inclusion in leases or building agreements of some or all of the following conditions: minimum plot sizes, minimum house costs, deadlines for house construction, specification of superior building materials and stringent dilapidation clauses. All of the leases granted by Caius on the west side of the Backs and the early ones in West Road were for one acre or more. The only house lease granted by St John's before 1884 (in Newnham, to one of its Fellows) was for nearly two-and-a-half acres.[37] Mention has already been made of the two exceptionally large leases granted by Corpus Christi, that for Pinehurst (1871) of almost nine acres and that for Leckhampton of seven acres. The Pinehurst lease required the tenant to build a house valued at not less than £2000, and to complete it within seven-and-a-half years of the date the lease was signed; the lease of Leckhampton, for reasons unknown, was much more stringent: the house was to cost not less than £3000 and to be completed within 15 months.[38] Both of the leases granted by St Catharine's, in 1874 and 1878, were for plots of over one acre.[39] In the mid-1880s, when St John's finally embarked upon a programme of residential development, its policy was to specify one-acre plots with a minimum house cost of £1500 on its Grange Road estate and half-acre plots with house cost of at least £1000 on its Madingley Road estate. The college refused to make an exception even for one of its Fellows, Alfred Marshall, Professor of Political Economy, who wanted a half-acre site on Grange Road but was obliged to take one on Madingley Road where he built a house, No. 6. Carter Jonas (St John's estate agent) was 'disappointed at the smallness' of the house (Plate 6).[40] St John's also required its lessees to contribute to the cost of maintenance (and in some cases construction) of unadopted roads fronting their properties.[41] Jesus later made the same demand on their lessees in Cranmer Road.[42] There was one early development on private, rather than collegiate, land, which seems only partially to have followed such

policies. That was Selwyn Gardens, an L-shaped road leading from near the southern end of Grange Road (see Fig. 1) on land allotted at enclosure in 1805 to a John Kidman.[43] Who owned the land and developed the road 80 years later remains a mystery: all that has turned up so far is that two Trinity dons were building themselves houses there in 1885[44] and that the road itself, unmentioned in Spalding's Directory of 1884, appears in that of 1887, with the two houses on it. By 1914 (again relying on Spalding) there were 16 houses in the road. Lacking documentary evidence, we can only draw conclusions from the houses and plots there today, most of which are the originals. They are unmistakably 'gentry' houses, but the plot sizes vary considerably, many of them being less than half an acre.

The other significant non-college development, Storey's Way (see Fig. 1) was much later, begun in 1910 and interrupted by the outbreak of war, by when only 11 houses had been built. Originally designed to have over 70 houses[45] it envisaged the sale, not lease, of plots ranging from one acre – a few at the south-eastern end – to a much larger number of smaller plots at the north-western end, of not much more than a quarter of an acre, because by this time there was increasing demand for smaller houses. Houses built towards the end of the century on church land on the east side of Grange Road near Barton Road also occupied less spacious plots.

Burnett, referring to building costs in about 1906, states that £1000 was well above the price of 'a substantial suburban villa'.[46] In the late nineteenth century, the income of a don who did not hold a professorship was composed of up to three elements: the dividend he received as a Fellow, teaching fees and, if he held a college office such as bursar or steward, the stipend for that office. 'It seems that the dividend was still in 1870 a reasonable wage for a bachelor enjoying free meals in college; but from the late 1870s, as estates became less profitable, the dividend tended in most colleges to decline'.[47] To cite St John's, perhaps an extreme case, the dividend was maintained at £300 *per annum* from 1872 to 1878 – longer than it should have been in view of the state of college finances – fell progressively to reach only £160 in 1886 and then, after a brief recovery, plunged to its nadir of £80 in 1894 and 1895.[48] College stipends were equally linked to the overall financial health of each institution, and while teaching fees were less directly affected, the 1880s was not a period of rising academic incomes. (The stipend attached to a professorship, which might or might not be held simultaneously with a college fellowship, remained less affected since each was financed by a separate endowment, which is not to say that there were not wide discrepancies between the stipends of different chairs.)

The net result was that the cost of moving into the area was evidently beyond the means of the majority of the newly-married dons. However, in the years after 1877 there was a rapid growth in university appointments, from 33 professors and four others listed in the University Calendar for 1871 to about 180 professors, readers, lecturers and demonstrators in 1913.[49] This combined with the growth of the non-academic professional population of the town to fuel the longer-run demand for middle-class family homes. Ascent of the academic income ladder, resort to mortgages or help from parents gradually made the move to the new suburb feasible for dons.

A previous article contrasted the early growth of the population of St Giles's Parish with that of its companion St Andrew the Less, the former East Fields of Cambridge, of similar size and enclosed only five years later than the West Fields.[50] By 1861, St Giles, with a population of 2084, had barely doubled since 1801, while St Andrew the Less had shot up from near-zero in the earlier year to almost 12,000, accounting for virtually the entire population growth of the town to 1861. In the period with which the present article is concerned, St Giles grew by about 35% between 1861 and 1911 but the population was still only about 3000 (change of census boundaries makes the exact figure uncertain), while St Andrew the Less grew another two-and-a-half times, reaching over 30,000 in 1911.[51] There can be no doubt that without the restrictive effect of college policies, the population of St Giles would have been far higher.

The influence of St John's College

Within the above general context, we turn now to St John's, the prime mover in developing the suburb. Despite Miss Clough's letter of 1873, which indicated a belief that St John's was at that time contemplating granting building leases in Madingley Road, it was more than ten years before the college granted one. Why the delay, and what made St John's finally change its mind? I suggest there were a number of factors, among them changes of Senior Bursar and problems associated with Grange Farm, its biggest property in the Cambridge area.

In this period there were three senior bursars: George Reyner 1857–76, John Pieters 1876–83 and Robert Scott 1883–1908. The initial lease to Newnham was negotiated by Reyner, who died in 1876 at the end of a long period of college prosperity. When Pieters took over, the agricultural depression had seriously begun to bite. His term of office was blighted not only by shrinking revenue, but also by inheriting a large debt consequent upon the building of the new Chapel and Master's Lodge, for which the funding had not been soundly established. To quote his obituary in the college magazine, 'disappointments over what seemed like constant failure, rents subject to constant revision and reduction with frequent changes of tenancy, weighed heavily on Mr Pieter's spirits and he resigned his office in 1883'.[52] Apart from the distress he suffered in dealing with the farm tenants, he made heavy weather of the negotiations with Newnham College for their second and third leases, which might have discouraged any interest he had in building leases.[53] Both Reyner and Pieters had been trying to resolve the problems of the 290-acre Grange Farm, whose tenants from 1830 had been successive members of the Toft family. In May 1874, after Carter

Jonas, the college's land agent and surveyor, reported that the farm was in a poor state and that the tenant had insufficient capital to operate it efficiently,[54] the Tofts were replaced by a new tenant, Swan Wallis. His tenure was no more successful: by 1883, with the worsening of the agricultural depression, he was behind in his rent.[55] The college considered whether to take the farm over and run it itself, but concluded that this would be even worse.[56] A report by Carter Jonas in 1885 stated: 'When Wallis hired the farm it was in a wretchedly foul state all over, so that I consider the present tenant has never had the chance of getting the land into condition'.[57]

Overshadowing these two factors was the deteriorating condition of the Fellows' dividend. Robert Scott took over from Pieters as Senior Bursar late in 1883. A lawyer and Fellow of St John's but without prior bursarial experience, Scott became one of the college's more esteemed and capable Senior Bursars and eventually Master. In May 1884, when the Senior Fellows were already greatly exercised by the progressive cuts in the dividend, he proposed and was authorised to prepare a scheme, in consultation with Carter Jonas, to develop the college's land in west Cambridge for residential purposes as a means of offsetting the decline in income from agriculture. Much of this development was to take place on land taken from Grange Farm, but some was taken from smaller farms and nurseries established after enclosure in the vicinity of Madingley Road. The first major action was to open up the Grange Road estate in 1885 by building a new road (Herschel Road) running west from Grange Road towards Grange Farm, thereby serving the double function of creating more building sites and improving farm access. It is evident that the college considered its so-called 'Madingley Road estate' as less desirable, possibly because it abutted on the working-class neighbourhood of Castle End, and priced it accordingly. This had the unintended consequence that initially all the applicants for leases preferred the less expensive sites on the Madingley Road estate, and it was not until 1888 that the first site on Herschel Road was taken up. On the Madingley Road estate, the building of a new road was less urgent since the initial building sites were already accessible either directly from Madingley Road or from the roads bordering the estate on the north and east, then known as Mount Pleasant and Bandy Leg Walk; a new road named Lady Margaret Road was inserted in 1887 (see Fig. 1).

The first building lease granted by Scott was in 1884 on Grange Road, to W. W. Rouse Ball, a mathematician of Trinity,[58] and in his inexperience the former took a rather hands-off attitude to the preparation of the lease with results that were to haunt him for the next 25 years and can still be seen today in the kink in Grange Road opposite the access lane to the old Rifle Range (see Appendix). Between 1884 and 1914 the college granted more than 60 building leases in St Giles to private individuals, and also leased land to other colleges for playing fields. Because of its geographical dominance, and the fact that most of its early building agreements specified the use of red brick with tile roofs, it was therefore St John's that largely determined the appearance of the growing suburb, despite its early hesitation in granting building leases.

The development of new roads

Development on the scale described was only made possible by the building of new roads, including the extension of Grange Road . The approximate dates of construction of the roads are shown in Fig. 5. Because many of them were built in stages, the date in Fig. 5 is that of the first part to be built. The date must also be regarded in some cases as approximate, as the same difficulty regarding sources and dates applies for roads as it did for dates of house construction. Of the new roads, five were built by St John's, one each by Clare, Jesus and Magdalene, one by Storey's Charity, one – Selwyn Gardens – by so-far unidentified private parties and two – Sidgwick Avenue and Ridley Hall Road – by Cambridge Corporation (but largely financed by Newnham College) on land acquired from four colleges.[59]

Most of these new roads (Herschel Road, Selwyn Gardens, Cranmer, Adams and Sylvester Roads) were

Figure 5. Approximate dates of new roads constructed after 1880.

Road	When started	Ground landlord and financier
Herschel Road	1885	St John's College
Selwyn Gardens	*c.* 1885	Private
Lady Margaret Road	1887	St John's College
Clare Road	*c.* 1888	Clare College
Cranmer Road	1891	Jesus College
Sidgwick Avenue	1893	Four colleges/Cambridge Corporation
Adams Road	1898	St John's College
Sylvester Road	1898	St John's College
Wordsworth Grove	1899	St John's College
Ridley Hall Road	*c.* 1900	Ridley Hall/Cambridge Corporation
Buckingham Road	*c.* 1909/10	Magdalene College
Storey's Way	1910	Storey's Charity

westward turnings off Grange Road or connections between such turnings; those involving St John's were linked to the progressive northward widening and then extension of Grange Road, which was finally connected to Madingley Road only in 1910, each extension being accompanied by the granting of new building leases. Lady Margaret Road provided more building sites on St John's' Madingley Road estate, while Clare Road and Wordsworth Grove, built respectively by Clare and St John's Colleges, opened up areas in Newnham for gentry houses. The controversial Sidgwick Avenue, the sole new eastward turning off Grange Road, was not built with the primary aim of providing house sites (see below), nor was Ridley Hall Road, a minor connection between the new Sidgwick Avenue and the long-existing Newnham Walk. Buckingham Road is a short cul-de-sac leading off the southern tip of Huntingdon Road, while one important new road, Storey's Way, linking Madingley and Huntingdon Roads, was constructed in 1910 by Storey's Charity. This charity, the only significant corporate landowner in St Giles other than the colleges, acquired at enclosure an L-shaped allotment partly abutting upon Huntingdon Road,[60] and later obtained from St John's in 1906 a right of way permitting it to link the south-eastern end of that property to Madingley Road:[61] hence the two right-angles in the road (see Fig. 1).

Caius did not impose on its lessees any obligations with respect to roads contiguous to their plots; St John's, however, followed the advice of its land agent, Carter Jonas, in requiring lessees to contribute to the cost of constructing new roads and widening existing ones where undertaken by the college or, if the road already existed, paying for the cost of maintaining half the width of their road frontage until the road in question was adopted by the City Corporation. This policy, also followed by Jesus College when it built Cranmer Road, was the source of friction with lessees, and it is notable that although such maintenance charges were still being included in St John's leases written in 1898, when the college came to lease plots on its newly-built Adams Road from 1899 onwards this provision was dropped.[62]

At the time of enclosure, road construction was limited to grading and gravelling. By 1885, when Herschel Road was built, the standard had improved, but not greatly: the specifications provided for a nine-inch base of 'burnt ballast' (clay dug from adjacent property and fired in temporary kilns) and a six-inch coating of gravel.[63] Since this road provided convenient access to Grange Farm, the passage of farm carts, and later of construction vehicles as new houses came to be built, rapidly cut up the surface and gave rise to complaints from the neighbours. Lady Margaret Road, built in 1887 as a means of increasing the number of plots in the Madingley Road estate, was still surfaced with gravel.[64]

Some idea of the state of the roads in west Cambridge can be gathered from correspondence. Carter Jonas reported to Scott in 1888 that Herschel Road 'is getting down very much in the centre and ruts are being formed in some places eight or nine inches deep. It wants a man to rake the gravel into the ruts from the sides'.[65] In a letter from a Jesus lessee in 1892 about Cranmer Road, reference is made to the need to keep the road 'weeded and raked'.[66] The Corporation was responsible for maintaining Grange Road south of the point marked as 'the Kink' on Fig. 1 and in January 1896 that section was so neglected that five of St John's lessees wrote a joint letter to Scott urging him to intervene with the Corporation to point out that, 'the road is now almost impassable both for carriages and foot passengers. Mud and slush are continuously carried by carts and carriages to private roads on your estate to the annoyance and injury of your tenants'.[67] Scott wrote to the Town Clerk suggesting that: 'A few loads of gravel judiciously put down would effect a great improvement. If the road were even scraped and cleaned it would be something but there are many hollows both in the carriageway and footway where the water rests in wet weather.'[68] That his tone was not more vigorous reflects his continuing difficulties with the Corporation, as described in the Appendix. The Town did nonetheless accept responsibility for the stretch south of 'the Kink' and made some repairs.[69]

The first use of harder surfacing that can be documented in west Cambridge is in the 1898 specifications for the construction of Adams and Sylvester Roads and a short extension of Grange Road, all built by St John's.[70] These provided for 'a nine-inch consolidated bed of large ironstone slag ... or other approved material, a two-inch consolidated bed of similar but finer material and a two-inch consolidated bed of granite broken to pass through a two-inch ring and mixed with sand as a binding material.' Even this, as will be seen, failed to satisfy the Corporation when St John's sought to get the roads adopted three years later.

By and large the construction of new roads gave rise to little or no controversy, but this was not the case for Sidgwick Avenue, whose construction was the result of a campaign by Newnham College to close the public footpath, running from the end of Malting Lane through to Grange Road and enshrined in the Enclosure Award, which bisected its site. This footpath was highly inconvenient for the college, and could only be closed if an alternative route were offered; the obvious solution was to build a road linking the western end of Silver Street to Grange Road, something which had been urged by St John's estate agents as long ago as 1885 as a way of opening up that college's estate. Unfortunately this involved not only obtaining the consent of three other colleges (Caius, Corpus and Selwyn) to give up strips of land and overcoming the vehement objections of Professor Richard Jebb, lessee of Caius, whose garden was to be seriously curtailed, but also defeating determined opposition by a number of existing occupants of Grange Road and a section of the Town Council. The opposing residents felt that the road was unnecessary and that access to Grange Road via West Road or Barton Road was sufficient; the opposing Councillors argued that building the road

was a misallocation of scarce resources for the benefit of the rich, when the older and poorer parts of Cambridge were in serious need of road improvements.[71] A furious newspaper campaign was waged[72] and the fact that the Council eventually dropped its opposition and built the road in 1893 is largely explained by the payment by Newnham College (in effect mainly by Professor and Mrs Sidgwick augmented by a college fund-raising effort) to Cambridge Corporation of £1400 to build it.[73] St John's College contributed an additional £150,[74] and whether the Corporation made any financial input at all has not been determined.

In March 1901, the Senior Bursar of St John's wrote to the Town Clerk asking under what conditions the Corporation would be willing to adopt Adams, Sylvester and Herschel Roads and previously unadopted sections of Grange Road, as well as Lady Margaret Road on the Madingley Road estate.[75] This matter lay within the purview of the Borough's Paving, Drainage and Lighting Committee, which requested the Borough Surveyor to carry out tests on those roads or sections of roads built by St John's in the summer of 1898. The latter's report giving the results of 60 test openings found most of them unsatisfactory and concluded that all the roads required remaking before they could be taken over, and in particular that Grange Road needed to be widened above the point marked as 'the Kink' on Fig. 1.[76] The college protested that the Corporation had approved the specifications for the respective roads at their time of construction, but it took the former nearly two years to recruit a consultant surveyor, Richard Parry, to assess the Borough Surveyor's report and make further tests. He did so but his report submitted in June 1903,[77] while disagreeing with many of the detailed criticisms in the earlier report and with its conclusion that all of the roads needed to be entirely reconstructed, nevertheless concluded that the Corporation was within its rights in demanding a higher standard of road construction than had prevailed at the time of the original construction and furthermore that the college had no case against its contractors.

Before his report was received, the waters had been further muddied by a decision of the Paving, Lighting and Drainage Committee that before the roads in question could be adopted all the existing gravel walkways had to be replaced by granolithic (a kind of concrete) paths at the expense of the local residents. These pavements had been introduced in Romsey Town (an impoverished area of south Cambridge) and the Council was insisting on a similar standard for other parts of town. To quote a member of the Committee, who happened to live in Adams Road, 'I did my best to persuade them that such a footpath was quite unsuitable in a district of this kind, but the reply was that if the poor of Romsey Town were obliged to put it in, the rich of Newnham ought to do the same'.[78] Debate was acrimonious and it was evident that the ill feeling generated in the Council by the Sidgwick Avenue controversy had not died down.

In September 1908, the Corporation finally agreed to take over Grange Road, including the part linking it to Madingley Road that was not to be built until 1909–10, the college having agreed to pay to upgrade to an acceptable standard those parts it had constructed in 1898 and 1906. The problem of the pavements had apparently been resolved in 1908 with an agreement to use 'tar paving', evidently less expensive than granolithic.

But the vexed issue of adoption of Herschel, Sylvester and Adams Roads was not finally resolved until 1912, when St John's finally swallowed its pride and agreed to pay the Corporation £1300 for upgrading them to an acceptable standard.[79] Considering the inconvenience and expense for the lessees of St John's and the fact that most of them were senior members of the University and some its own Fellows, it is astonishing that this issue should have dragged on for more than 25 years. (The date of adoption of Selwyn Gardens has not been ascertained, but Cranmer Road was not adopted until 1929 and Clare Road is still private.)

Transport

It is often forgotten that Cambridge once had horse-drawn trams, but the closest to the new suburb that any of them ran was the east end of Silver Street.[80] Few families lived near enough to that point to derive any benefit from the service, which started in 1880 but by 1905 was increasingly replaced by motor buses. Talk of an electrified line came to nothing, and the suggestion that it be built along Silver Street and the Backs was met with a petition by local residents against it.[81] By 1910 there were four bus services concentrated in the more densely populated eastern and southern parts of Cambridge, although one of them did extend as far as the southern part of Huntingdon Road.[82]

Thus when the first houses were built in the suburb of west Cambridge, people walked or used carriages, either their own or hired: just a few of the larger houses had stables. Gwen Raverat wrote: 'There were not many people in Cambridge who had carriages, apart from the doctors, who drove about in broughams ... But for the most part people depended on flies – [hired] four-wheelers – until first the tricycle and then the safety bicycle came in: and then bicycles gradually became the chief vehicles for ladies paying calls.'[83]

But it is the bicycle that transformed the town, and eventually influenced house design in the new suburb. The first to be seen in Cambridge, in the mid-1860s, were unwieldy, uncomfortable and required considerable agility, and thus appealed mainly to young men. A brief collegiate craze for track racing has even left its mark on the landscape: a circular racing track of 440 yards circumference with an average width of five yards was built by the University Bicycle Club on land leased by Trinity from St John's on the west side of Grange Road. The club went into

debt and was unable to pay for demolishing the track and finally, in 1898, Trinity paid St John's £100 in compensation for not restoring the land to its condition before the track was built.[84] The whole track still shows as a prominent feature in Spalding's 1904 map of Cambridge and a small section is still recognisable in the back garden of 1 Clarkson Close.

'After the pneumatic tyre was introduced around 1888, cycling grew quickly, starting with middle-class men, then women, and then the working classes as the price of bicycles fell and the second-hand market grew.'[85] By the turn of the century the use of the bicycle had not merely become universal among the young males of the town (in 1898 St John's was obliged to build a bicycle store in First Court 'to relieve congestion in the rooms and on staircases')[86] but had spread to all ages and both sexes. Gwen Raverat's *Period Piece* is an invaluable source of information and includes three useful drawings. Born in 1885, she writes, 'By the time I was 11 or 12 I was even allowed to bicycle alone down the Backs after dark, when I came home after having tea with my cousins,' who lived in Huntingdon Road.[87] One thing this conveys is the improvement in the quality of road surfaces in west Cambridge: roads and footpaths whose gravel surfaces had to be raked were not very suitable for bicycles. Given the concern of the authorities of the women's colleges that their students must do nothing to attract the odium of the University, it is testimony to the social acceptability of the bicycle that Newnham laid down regulations for its use in 1894.[88]

Architects, architecture and gardens

In terms of English architecture, the era from 1870 to 1914 is best known for the development of 'Queen Anne' and 'Arts and Crafts' styles. In Cambridge, it is possible to see the adoption of these styles for collegiate architecture in Newnham and Westminster Colleges, and to see them competing against the Tudor/eclectic style chosen for Ridley Hall and Selwyn College. These styles are also found in domestic buildings. That the visual impact of the Cambridge suburb does not resemble North Oxford[89] is mostly an accident of timing: the enthusiasm for neo-gothic had reached its exuberant peak in the 1860s, and by the time the west Cambridge suburb began its rapid expansion fashion had changed to such an extent that there are few examples of domestic neo-gothic there.

The majority of houses built in the suburb up to 1914 were of red brick with tile roofs, the dominance of these materials explained by the initial insistence by St John's College on their use, which was followed by others. Indeed, it is notable that the houses built on property owned by Caius on the Backs and West Road, which precede the spate of building on land owned by St John's where the college placed no restrictions upon the type of building materials, were almost all built of local brick, the so-called Cambridgeshire white brick (Plate 7).

As a result of the conditions set by the ground landlords, a typical house was free-standing, of two or three storeys, in a large and well-tended garden. There were a few semi-detached but sizable houses, and one terrace of four houses (in Grange Road). Many of these houses stand to this day, albeit often converted for use by university departments, college hostels or (awkwardly) into flats. Almost all the architects chosen were based in London, the only popular local architect being W. M. Fawcett, dismissed by Pevsner as 'not a man of much talent'.[90] In terms of reputations that have lasted until today, the most prestigious architect was M. H. Baillie Scott, who designed nine houses in west Cambridge, four of them before 1914.[91] J. J. Stephenson, E. S. Prior and Ernest Newton were other architects of note, working generally in the Arts and Crafts style.[92]

The censuses of the period show that most households had a minimum of two servants living in, and more if there were young children. Some houses had stables but precision is difficult: some leases make specific reference to stables, but most talk generally of outbuildings and other premises. Stables are more readily identified in houses on sites of an acre or more and in houses built before 1890, although some are later. For example, Pinehurst, built around 1871, had both a coachhouse and a gardener's cottage, and the banker Edmund Parker's house, 4 Herschel Road, built about 1896, had stables and a coachman's cottage.[93] But it was more common for the coachman (when there were stables) or the gardener to live out.

The almost-universal adoption of the bicycle by the turn of the century had an impact on the dimensions and design of new houses. Not all servants had to live in: the cook might do so, but the housemaid could bicycle in from Coton or Grantchester (each about two-and-a-half miles away) or from even further afield. This, combined with a decreasing family size, led to a demand for smaller houses, as shown by those at the southern end of Grange Road or at the northern end of Storey's Way. The carriage was becoming unnecessary, and even the arrival of the motor car had remarkably little impact on the average west Cambridge household: for special occasions there were taxis, and for the rest the bicycle sufficed. However, by 1910 there were requests to the ground landlord to agree to the building of 'motor houses' or the conversion of stables into garages.[94] The general standard of gardens was high. College Fellows' Gardens vied for distinction, and among private owners it was fashionable to have a well-laid out and well-tended garden: gardeners were available at affordable wages, and even where the householder was not personally interested in the garden the ground landlord insisted on a high standard of maintenance. Given the popularity of tennis and croquet as social activities in the period, many gardens had either a tennis court or a croquet ground, and some had both.

Mention was made in an earlier article of the existence before 1870 of several clusters of small private leisure gardens.[95] Almost all of these were slowly taken over for building plots, until by 1914 only one

group of these small gardens was left, off Grange Road opposite Newnham College.[96] The same was the case for the nursery gardens that had existed on the south side of West Road and for most of those north of Madingley Road. But large areas of playing fields remained interspersed among the houses, which combined with the generous spacing of the houses themselves to give a generally verdant feel to the area.

Present and absent

So far, we have described what was created. Now it is time to consider what was not. Almost no working-class or what might be considered social housing was erected in the new suburb, and none whatsoever by the colleges with the minor exception of Caius, which moved the Perse almshouses in 1885 from Free School Lane – in the town centre – to Newnham when it sold their original site to the University for laboratories. This was not because of lack of demand. There were two long-existing populated areas in or on the edge of the parish of St Giles: Newnham in the south-east and Castle End/Pound Hill in the north-east. Examination of Spalding's Street Directories for the years before and after 1900 shows a highly concentrated working-class population in both places, as well as the existence in both of the courtyards so characteristic of Victorian slum areas.[97] These, accessed by gaps in the frontage on the main thoroughfares, mingled workshops with dwellings. For example, Anderson's Courtyard near Newnham Mill, entered through an archway from Newnham Road, listed seven houses, whose residents were described as dairyman, milkman, photographer, plumber's labourer, gardener (2), carpenter, confectioner, dressmaker.[98] Several, including Anderson's, exist today, the original buildings largely swept away in slum clearance activities in the twentieth century and replaced by lock-up garages, student accommodation or offices.

The nucleus of the old village of Newnham was its mill, and both the built-up area and the land immediately surrounding it was a patchwork of old enclosures, untouched by the work of the Enclosure Commissioners, and owned by Caius, Clare, Corpus Christi, St Catharine's and St John's Colleges as well as by various private parties. Further complicating the situation was that the village was divided between the parishes of Little St Mary, St Botolph and St Giles, with little of the built-up area within the last-named. In the context of the present discussion, it makes sense to ignore the parish boundaries and consider the village as a whole. Congestion was somewhat relieved by development, from the 1860s, of a new area of working-class housing south of Barton Road, then part of Grantchester Parish, (separated from the old village, as it still is, by Caius College's playing fields and the Lammas Land open space), and also the building of Summerfield, a row of small terraced houses on the west side of the old village without vehicular access but reached by a footpath. The 1871 Census lists five houses there occupied respectively by a printer, a college servant, a college porter, a blacksmith and a gardener, and another six were added later. It is significant that both these development were on private land. Not only did the colleges build no working-class housing, but in 1897 St John's bought part of the land owned by St Catharine's in Newnham precisely because it feared that the latter might be thinking of selling it to a speculative builder who would erect cottages 'and thus produce deterioration of the district'.[99]

The situation in the Castle End/Pound Hill area, remnants of the old medieval town near the castle, was similar. Conditions in some parts were said to be 'almost as bad as it was in Barnwell', and in 1884 the Cambridge Improved Industrial Dwellings Company, set up by a group of town and gown residents to address some of the worst slum conditons, built 18 cottages in Castle End, with more later, to help relieve some of the worst conditions. Once again there was no college involvement, although Clare, St John's and Magdalene all had land in the area.

By contrast, the new suburb as it existed by 1914 consisted almost entirely of middle-class housing and contained no community facilities: while there was one specialised school (King's Choir School) and a new cemetery (St Giles/Ascension cemetery, accessed between 145 and 147 Huntingdon Road near Storey's Way), which now contains the bodies of 39 people listed in the *Dictionary of National Biography*,[101] there was no new church, and no shops. This was in contrast to the equivalent suburb in Oxford whose 400 acres were under the single ownership of St John's College, Oxford. This college adopted a conscious policy of developing a part of the city to include both working-class and middle-to-upper class residential areas, though admittedly these were carefully separated. Moreover, thanks in part to active concern by the Bishop of Oxford, three new churches were established, within and not on the periphery of the area.[102] North Oxford was, however, double of the size of the original west Cambridge suburb, and the variants of Anglican worship were a more burning issue in Oxford, but there is no evidence of interest on the part of the Bishop of Ely or any other ecclesiastical figure in the spiritual welfare of the new residents in west Cambridge. St Mark's Church south of Barton Road, built in 1877, was initially a mission church of Grantchester parish designed to serve the needs of the working-class area recently developed there, without reference to the gentry suburb to the north. There the resident, if he was a church-goer, took his family to one of the town churches or to a college chapel. The lack of shops seems not to have been a hardship. As the advertisements in Spalding's Directories in the 1890s make clear, the milkman and the baker made daily rounds with horse and cart, and shops delivered other provisions. By 1892 the telephone had arrived, and thereafter it became increasingly unnecessary to send one of the servants into town with the orders.

In the absence of any contemporary records on the subject, one can only speculate about why the

colleges created the kind of dormitory suburb they did. First and foremost, the reason was clearly economic: given that the agricultural rents upon which they had depended for centuries now failed to provide the income the colleges were used to, they were looking for the most reliable alternative, and what more reliable to the academic mind than to lease land to other academics or persons of similar background and standards? Housing for the working-class offered no such security: it deteriorated, it damaged property values in adjacent areas, and it was not a good prospect in the long run. Moreover the creation and maintenance of a one-class suburb reassured the lessee, who 'could be confident that neighbouring land would be developed to a consistent quality, a most important consideration in late Victorian England with its sensitivity to social gradations'.[103] Nor were the colleges in any way unique in adopting this policy: to give only one example, when the much larger Birmingham suburb of Edgbaston was initially developed in the mid-nineteenth century, it too had almost entirely middle-class housing and no community facilities but here the ground landlord, unlike the colleges, proved unable to maintain control in the long run.[104]

Developers: three dons and a professional builder

The literature on suburban development in the nineteenth century is replete with references to the activities of speculative builders who leased or bought tracts of land and built numerous houses on them. This did not happen in west Cambridge, where it was the landlords' policy to handle individually each lease of a house. The great majority of building leases were taken up by individuals who built houses for their own occupancy, but there were exceptions, three of them dons. The first, in terms of chronology, was the Reverend John B. Lock, Senior Bursar of Gonville and Caius College.[105] On the site he leased from St John's in 1888 (the first one taken up in Herschel Road) he built his own residence,[106] but from 1891, when Jesus College decided to construct a new road leading west off Grange Road, he took out a series of leases there as speculative ventures: two house sites in 1891 (3 and 5 Cranmer Road, to give them their modern numbers), two in 1892 (7 and 9), one in 1894 (11) and three in 1896 (2, 4 and 13).[107] For some of the houses he commissioned he used almost identical designs. He was negotiating with St John's in 1913 to acquire two sites in Sylvester Road, but did not carry this through.[108]

His example was copied on a more modest scale by the Reverend Thomas Orpen, in the later part of his career Tutor of Selwyn College and Vicar of Great Shelford.[109] Having built a house on a Grange Road plot leased in 1885 from St John's (Binnbrooke, No. 53 between Herschel and Adams Roads) to which he moved his residence from Newnham,[110] he then leased a site from Jesus in Cranmer Road in 1896 on which he built numbers 6 and 8, a double house.[111] Next in 1898 he leased from St John's the site of 3 Adams Road, where he built a house that he sold on[112] and for a number of years he also held the lease on 5 Herschel Road, although he was not the builder of the original house.[113]

The third don with a similar building interest was Sir Donald MacAlister, Senior Tutor of St John's and an eminent medical man, Chairman for years of the General Medical Council and eventually Rector of Glasgow University. Unlike the other two, his area of activity was Madingley Road. In 1894 he acquired his first lease, on which he built the house (Barrmore, between Madingley Road and Lady Margaret Road) in which he lived for as long as he stayed in Cambridge.[114] Thereafter he leased four successive sites on which he built houses (Strathaird on Lady Margaret Road in 1897 (Plate 8) and 9, 7 and 13 Madingley Road in 1901, 1902 and 1903 respectively), and eventually sold all of them.[115]

The final developer to be mentioned is William Sindall, a builder whose yards were located in Newnham. Apart from the numerous houses in west Cambridge which he was hired to build, he also branched out on his own as a developer, primarily in Wordsworth Grove (a new road in Newnham) and the northern end of Grange Road. In each case the landlord was St John's College, and Sindall took out five leases in the former in 1899, as well as numbers 60 (Plate 9) and 62 Grange Road in 1906 and 63 and 67 Grange Road in 1911.[116] Except for one house in Grange Road for which the lease was acquired by another building firm, Coulson & Loffts,[117] Sindall was the only professional builder involved in such activities.

Changes in land ownership

Because the leasehold system made possible the long-term control by the landowners of the nature of the suburb, the emphasis of much of this article has been upon leasehold development, but outright changes in ownership also occurred which, though without any contemporaneous impact on the landscape, were to be of significance for much later developments by the University.

The first and biggest of these concerned undeveloped land in the extreme north-west of the parish. Admiral Sir Charles Cotton, Lord of the Manor of Madingley, was the largest private landowner in St Giles Parish after its enclosure. His 141 acres, adjacent to his larger estates in Madingley and Girton, constituted more than 10% of the area of St Giles. When he died in 1812, his property was inherited by his son, Sir St Vincent Cotton, a compulsive gambler who dissipated his whole inheritance.[118] Much was sold off piecemeal, but his estate in St Giles was acquired intact in 1855 by his sister Philadelphia Cotton when she took over the mortgages.[119] She in turn left it to a nephew, William Affleck King, whose executors sold it in the period 1894–6 to an enterprising merchant, Fred Crisp. Born near Cambridge, Crisp is said to have built up a chain of 26 drapers shops, mostly in

north London, and decided to become a gentleman farmer on a large scale.[120] Not only did he buy the former Cotton lands in St Giles but also in 1899 the adjacent 101 acres immediately east of them, Gravel Hill Farm, part of what had been assigned to the Bishop of Ely as tithe compensation at the time of enclosure.[121] Unfortunately for Crisp, by the turn of the century both his commercial and his farming ventures were in trouble, and in 1903 his entire holding in St Giles was put up for sale and bought by Trinity College as an investment.[122] In 1923, that college, though retaining a long strip on the south side of Huntingdon Road for residential development, sold the rest of it to the University for its University Farm. It is this area, between the Huntingdon and Madingley Roads, which is now the North-West Cambridge Sector, designated in a recent planning document as 'predominantly for Cambridge University-related uses, including key worker housing for university staff, student housing, and new faculty buildings and research facilities'.[123] Another, lesser, change in ownership was Trinity College's successive purchases from the 1850s of property previously in private hands north of Madingley Road, adjacent to the spring feeding the Conduit that supplied the fountain in the Great Court.[124]

The consequence of these changes was that the future of the St Giles Parish was to be more than ever entwined with that of the colleges and University: when enclosure was completed in 1805, these owners held 60% of the land,[125] and by 1914 this had grown to roughly 85%. Almost all the rest was owned by Storey's Charity, the Ecclesiastical Commissioners and other corporate bodies; land in private hands had shrunk to less than 5%.

Conclusion

By the time that peacetime building came to a halt with the outbreak of war in 1914, the basic outlines and characteristics of the west Cambridge suburb had been established. The stock of residential housing – interspersed with new academic buildings and open land in the form of playing fields, gardens and pasture – consisted of many dwellings that were too big for the needs or resources of the post-war generation and often difficult to convert. It was a single-purpose suburb, geared to a narrow market and devoid of community facilities, and it continued to show those characteristics. Developments in the twentieth century saw new colleges, new roads created either by infilling or by encroaching on the farming area to the west, and smaller house plots and houses, but the basic character of west Cambridge remained unchanged. Until the Leasehold Reform Act of 1967, the colleges held the freeholds and so were able to maintain their vision of the suburb, and in this they were followed by the non-collegiate minority of landowners. It was the increasing obsolescence of that vision which was to lead to the conflicts on land-use that engage west Cambridge today.

Appendix: The origin of the kink in Grange Road

The 1805 enclosure award laid down that Grange Road should be 40 feet wide from its southern limit on Barton Road until a point somewhat north of its intersection with West Road, when it narrowed to a bridle path 12 feet in width.[126] That point, marked as 'the Kink' on Fig. 1, was at the dividing line between land on the west side of Grange Road allocated by the award to Jesus College and to St John's College.[127] The east side of Grange Road was a continuous alignment, the narrowing occurring on the west side.

In 1875, St Catharine's College granted the Reverend Charles Graves (a Fellow of St John's) the lease of a one-acre plot bordering Grange Road on the east side immediately north of the kink.[128] Ten years later, in early 1884, Robert Scott, Senior Bursar of St John's, was approached by W. W. Rouse Ball, a mathematician of Trinity, who wanted a one-acre plot on the west side of Grange Road opposite Mr Graves. The building agreement drawn up late in 1884 or in early 1885 is missing, but it appears that Ball considered that his plot extended, if not as far as the 12-foot boundary of the original bridle road, at least well beyond the point which would have permitted a 40-foot road past his property (Fig. 6). That Scott had soon become aware of this, and of its implication for widening the road in the future, is shown by a sketch on a copy of a letter of his dated 20 November 1884 to a would-be lessee of a neighbouring plot,[129] but he seems to have believed that Ball would be cooperative in amending his boundary. This was not the case and furthermore Ball made a point of siting his house so close to what he considered his Grange Road boundary that his builder inquired whether he really meant it.[130] The plan contained in his lease,[131] dated 18 June 1886, erroneously shows his eastern boundary as aligned with the 40-foot road width to the south, i.e. with no protrusion, and the Ordnance Survey Map of 1888 based on surveys made in 1886 surprisingly seems to show none either, but the vast correspondence between Ball, the College, the Town Corporation

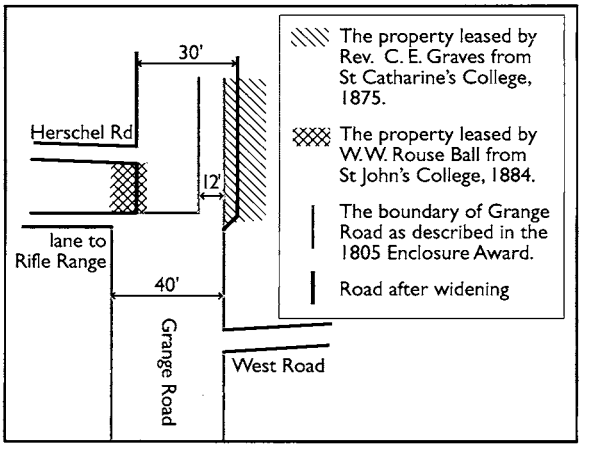

Figure 6. The Kink in Grange Road, based on a c. 1911 drawing provided by Cambridge City Highways Department.

and Ball's neighbours leaves no doubt whatever that there was a considerable protrusion.[132]

For the next 20 years the battle continued, Ball's neighbours clamouring to have the roads built by St John's north of the kink adopted by the Corporation so that they would no longer have to contribute to their maintenance, the Corporation refusing because that part of the road abutting Ball's house was too narrow to comply with the by-laws, and Scott hamstrung by Ball's unwillingness to yield. By 1904, the issue of road adoption had been further complicated by the Corporation's claim that the roads had not been constructed to an acceptable standard and by a further argument about replacing the existing gravel pavements with concrete, but it is possible to see the shape of the eventual resolution of the problem. The Corporation accepted, *faute de mieux*, a 30-foot width for the stretch of road outside Ball's house, and both he and his blameless and indignant opposite neighbour were obliged to give up territory to permit the widening up to this extent. Just when this took place, or whether it happened in stages, is unclear, but a drawing in the possession of the City Highways Department probably dated 1911 and showing the measured widths of the entire length of Grange Road clearly depicts the kink on both sides of the road. And finally there is the physical fact of the road as it exists today (Plate 10, a photograph taken in 2007).

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[127] Enclosure Award, 1805, pp. 32–3, 35–40
[128] St Catharine's Archives, XXXII/6
[129] SJC W/26.4, 20 November 1884
[130] SJC W/30.5, Ball to Scott, 20 March 1885
[131] SJC Leasebook 1864–88, p. 459
[132] SJC W/27, *passim*

Plate 4. *Cambridge 1815. St John's College from the garden. The University and the colleges would not permit a towpath along The Backs. The string of barges or lighters is being poled (Cambs Collection E. SJ. 14 28213. R Ackermann* History of the University of Cambridge, *1815. London: Printed for R Ackermann)*

Plate 5. *Garden front of St Chad's, 48 Grange Road, erected on land leased by the Revd Robert Burn from St Catharine's College in 1877. Now a hall of residence of St Catharine's.*

Plate 6. *Garden front of Balliol Croft, 6 Madingley Road, erected on land leased by Professor Alfred Marshall from St John's College in 1885. Now the Lodge of the President of Lucy Cavendish College.*

Plate 7. *5 West Road, erected on land leased by Captain Charles Clay, Printer of Cambridge University Press, from Gonville and Caius College in 1872. Recently housed the Institute of Criminology, and is shortly to be demolished by the University.*

Plate 8. *The garden front of Straithaird, Lady Margaret Road, erected on land leased by Sir Donald MacAlister from St John's College in 1897. Now part of Lucy Cavendish College.*

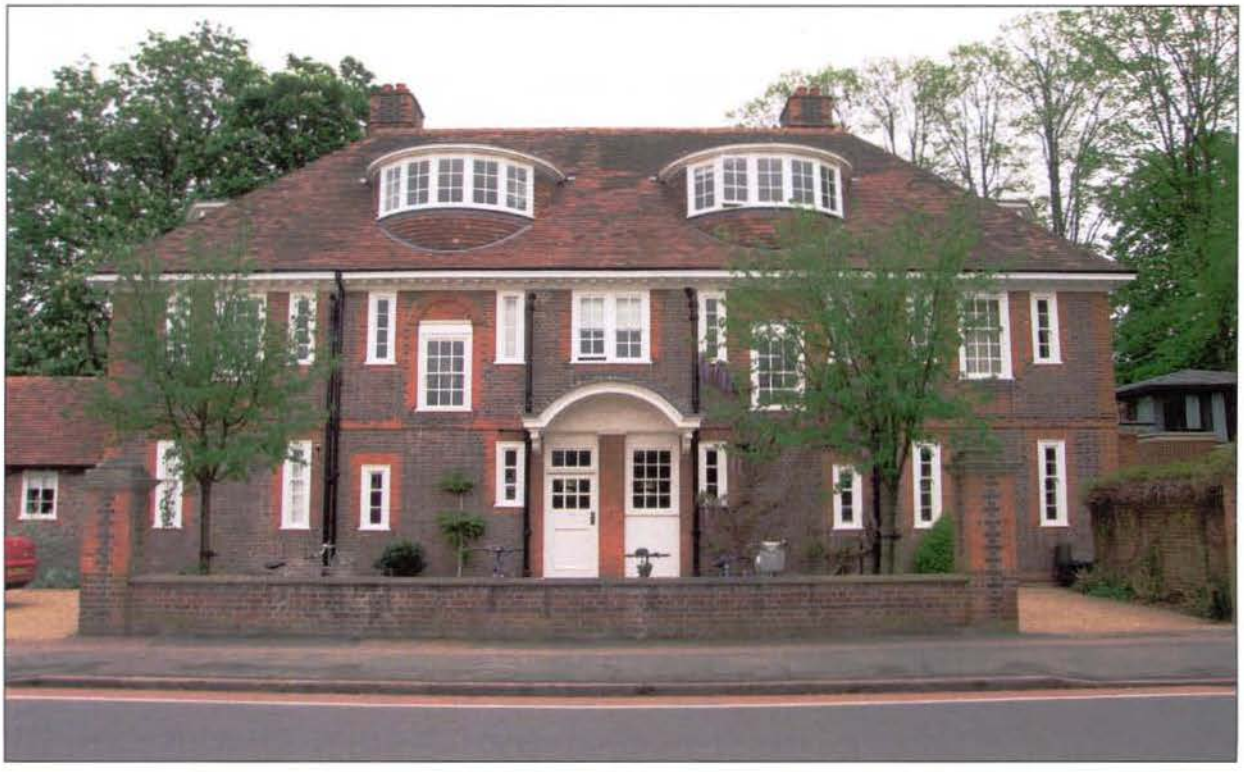


Plate 9. *60 Grange Road, erected on land leased by William Sindall, builder, from St John's College in 1906. Despite the double front door, it was used as a single house. Now a Trinity College hostel.*

Plate 10. *The kink in Grange Road, seen from the south.*

Fieldwork in Cambridgeshire 2006

Elizabeth Shepherd Popescu and Sarah Poppy

The work outlined below was conducted for a variety of reasons, including development control derived projects, emergency recording and research. All reports cited are available in the Cambridgeshire Historic Environment Record, Cambridge, for public consultation.

Abbreviations:

AS	Archaeological Solutions, previously Hertfordshire Archaeological Trust
CAM ARC	Cambridgeshire County Council Archaeological Field Unit
CGMS	CGMS Consulting
CAU	Cambridge Archaeological Unit
GSB	Geophysical Surveys of Bradford
NA	Northamptonshire Archaeology

Babraham, ARES site, Babraham Institute (2005)
TL 5092 5081 (CAU Report 752)
N. Armour with G. Appleby and S. Timberlake
Earliest activity on the site dated to the Neolithic period, when two periglacial hollows were exploited as a source for flint nodules, which were partially worked in situ. The hollows contained significant quantity of worked flint, a sherd of Early Neolithic Mildenhall pottery and degraded animal bone. The earliest occupation of the site dates to the Conquest period. Remains from this period include two inhumations, a series of boundary ditches, and the foundations of a rectangular building, possibly a farmhouse, with associated rubbish pits and a contemporary well. Another later Roman structure was identified, although it did not exhibit the features of a habitable structure. Later medieval features include a cobbled surface, which was part of a track. The track surface might have been constructed of material robbed from a nearby Roman villa, as ironwork and a Roman coin were found within its makeup. A field system of rectilinear enclosures from the twelfth to fifteenth centuries was recorded either side of the track.

Babraham, New access road, Babraham Institute (2005)
TL 5107 5093 (CAU Report 725)
N. Armour
Late Mesolithic to Early Bronze Age worked flint was recovered from the topsoil, and although no corresponding in-situ features were located, the presence of background scatters suggests an area of prehistoric activity. Excavation of sample squares revealed a concentration of Neolithic to medieval material, which had been redeposited within a large post-glacial hollow. Towards the centre of the evaluation area, four shallow Roman linear features were recorded, possibly part of a Romano-British field system. At the south end of the roadway several post-medieval features were recorded, which might have been associated with the former Georgian house at Babraham Hall.

Babraham, Riverside site, Babraham Institute
TL 5085 5067 (CAU Report 749)
S. Timberlake and N. Armour
Evaluation to the south-west of Babraham Hall revealed evidence for Neolithic and Bronze Age flint-working along the edge of a former palaeochannel, associated with the redeposited remains of possible burnt flint mounds. Remains associated with Romano-British activity were also identified, consisting of curvilinear and linear ditches, and a daub-filled beam slot that might represent the remains of a wooden structure. Pottery from the silted ditch fills indicate that the area was abandoned during the second century AD, possibly due to seasonal or permanent flooding. Some attempts at river management were undertaken, with evidence for recutting or deepening one of the palaeochannels in medieval and post-medieval times, and possibly Roman times, prior to the canalisation of the river in 1730. Finally, a group of post-medieval banks and ditches was recorded, which might relate to an inner estate boundary shown on historic maps.

Barrington, Cement Works extension (2005)
TL 3845 5116 (Alison Deegan Report)
A. Deegan
Aerial photographic mapping and interpretation identified several features of potential prehistoric or Roman date. Extensive evidence of the medieval and post-medieval agricultural landscape was also recorded, although this has largely been levelled by modern agriculture and in parts removed by quarrying.

Barrington, Cement Works extension (2005–6)
TL 3851 5101 (Stratascan Report)
D. Elks
Magnetic susceptibility and detailed magnetic survey recorded several anomalies of probable archaeological origin, including a rectangular enclosure, two circular features, and features consistent with the remains of former settlement activity. Extensive evidence of ridge-and-furrow was recorded across the site.

Bartlow, Topographic and geophysical survey of Bartlow Hills environs
TL 5866 4493
H. Eckardt
An extensive geophysical and topographic survey was undertaken to examine the landscape setting of the Bartlow Hills Roman barrows, and in particular to investigate the enclosing rectangular earthwork and Roman villa that are described in antiquarian accounts of the site. A linear earthwork was recorded in the wooded area to the north of the walled gardens, where it survives for a length of 77m and to a height of up to 70cm. The eastern extension of this east-west earthwork was also identified by magnetometer and resistivity survey in Bartlow Park, although the nature and location of its assumed north-south turn has been obscured by later boundary features and recent landscaping. A double ditched feature, which might represent part of the same enclosing earthwork, was also identified to the south-east of the mounds in Hill Paddock Farm. However, the projected extension of this feature, which clips the southernmost barrow, sheds some doubt on the contemporaneity of this feature with the Roman barrow cemetery. No evidence for the western stretch of the enclosing earthwork was identified, although this might be obscured by woodland to the west of the mounds. Magnetometer survey located a number of rectangular and linear features in the area of the Roman villa excavated by Neville in 1852, although no clear-cut evidence for the location of the villa has been established. Three large enclosures were located in fields to the north-east and south-east of the barrow cemetery, which are suggested to be of Iron Age or Roman date, and which might relate to settlement in the vicinity. A large circular feature was identified to the east of the surviving barrows, which might represent a lost barrow. A programme of targeted excavation is proposed to investigate the questions raised by the survey.

Bassingbourn-cum-Kneesworth, Bassingbourn Village College
TL 3294 4355 (CAM ARC Report 896)
L. Muldowney
Ditches and structural remains indicate a possible settlement, which might date to the Iron Age.

Bourn, Densett (2004)
TL 3294 5700 (GSB)
GSB Prospection
Gradiometer survey and small-scale resistivity survey revealed a range of anomalies of potential archaeological significance, thought to relate to occupation and iron-working activity. An old field boundary, shown on a nineteenth-century map, was identified, in addition to occupation evidence alongside the track in the western part of the site. Several high magnetic anomalies were thought to be ponds, backfilled in the 1980s, which might be the remains of ore-processing sites. Survey adjacent to Bourn Brook also revealed an area of archaeological and industrial-type responses, and an anomaly at the junction of Water Lane and Bourn Brook was suggested to relate to a post-medieval structure known to have existed in the area.

Buckden, Brampton Road
TL 2030 6892 (NA Report 06/146)
A. Burrow and A. Foard-Colby
An evaluation revealed evidence for Romano-British activity at the site spanning the first to third/fourth centuries AD. The majority of the remains comprised a system of ditches, including a possible stock enclosure, set within a larger field boundary system. A potential stock drove-way was also identified, in addition to a large pond that might have served as a watering hole for animals. Palaeoenvironmental evidence suggests that this was a grass pasture environment, supporting the interpretation that animal husbandry, rather than arable production, was the dominant activity at the site. The pottery was dominated by local coursewares, and the domestic nature of the assemblage suggests settlement in the vicinity of the site.

Burwell, Brown's Yard (2003)
TL 5857 6729 (NA Report 06/117)
C. Walker and A. Walsh
Open area excavation revealed evidence of medieval and post-medieval settlement activity on the site. A sequence of parallel boundary ditches was recorded, originating in the twelfth/thirteenth centuries. Two possible timber-framed buildings were identified along the street frontage, characterised by narrow slots and postholes of possible medieval date. These buildings predated the seventeenth-century stone-built cottage that occupied the street frontage until recently. Other records features included intercutting pits and ditches, dating from the twelfth to sixteenth/seventeenth centuries, and a post-medieval ditch that corresponded to features on nineteenth-century maps of the area. The remains on the site had been

heavily truncated by modern disturbance, particularly towards the street frontage.

Burwell, Land south of Isaacson Road
TL 5910 6587 (CAM ARC Report 916)
M. Muldowney
Pits, ditches and postholes were found, many of which might have been medieval. Although there was no evidence for domestic occupation, clunch extraction, wells and iron smithing were noted.

Cambridge, 2 All Saints Passage
TL 4485 5871 (CAU Report 729)
C. Cessford
Excavations in the basements and yard of 2 All Saints Passage revealed residual Roman pottery and features of twelfth- to fifteenth-century date, consisting of gravel quarry pits, garden soil and a possible large ditch, which might be the feature known as St John's Ditch. The features were sealed in the seventeenth century by the construction of buildings on the site.

Cambridge, Land adjacent to 68 Castle Street
TL 4444 5930 (CAU Report 739)
L. Ten Harkel
Excavation revealed a sequence of activity spanning the Iron Age to Victorian periods. A high level of truncation was noted on the site, caused by a substantial Civil War ditch in the southern half of the excavation area and by the presence of Victorian cellars. The earliest features dated to the Late Iron Age, consisting of occupation layers, metalled surfaces and cut features, with the possibility that some features might date back to the Late Bronze Age/Early Iron Age. A substantial ditch running from north-north-east to south-south-west was established in the Late Iron Age and remained in use until the Early Roman period, although truncated by later remains. Several Conquest-period features were also identified, including an eaves-gully, occupation layers and a significant sub-rectangular enclosure ditch. An increase in activity was evident in the Early Roman period, comprising small pits, metalled surfaces and several ditches. A steep-sided deep pit was excavated, suggested to be a rubbish or cesspit. The Early Roman features were covered by a garden soil, suggesting a change to more agricultural land use. A few Late Roman features were identified, probably the result of later landscaping rather than a decline in occupation activity. A single Late Saxon feature was interpreted as a cesspit on account of its depth and environmental evidence. Over half the site was truncated by a large ditch on a north-east to south-west alignment, which might have originated as the medieval outer bailey ditch, but which was cleaned out during the early years of the Civil War. This steep-sided ditch must have been at least 10m wide and 4m deep, and contained a sequence of fills and backfilling episodes spanning the medieval period through to the nineteenth century. Part of the western Civil War bastion might be represented by a 90-degree return of the ditch, observed in the south-western corner of the site.

Cambridge, CB1 development site
TL 4606 5720 (CAU Report 736)
D. Mackay
Monitoring of geotechnical pits on the site of the proposed CB1 development revealed the remains of probable Roman quarry pits adjacent to Hills Road. The project enabled the continued mapping of areas of archaeological survival and zones of truncation begun during an earlier watching brief.

Cambridge, 1A Ditton Walk
TL 4726 5948 (CAM ARC Report 917)
L. Muldowney
Pits and ditches indicate a possible settlement dating to the Roman or Anglo-Saxon period, close to marsh or wetland immediately adjacent to Coldham's Brook. The land to the west of the extant mill had been raised and levelled to create a flat terrace/garden during the eighteenth? century. A visual survey of the mill building indicates that the surviving fabric dates to the eighteenth or nineteenth centuries.

Cambridge, New accommodation site, Homerton College
TL 4613 5618 (CAU Report 720)
D. Webb and A. Dickens
An evaluation revealed features of Roman, medieval and post-medieval date. A series of Roman ditches is thought to form part of a small enclosure system, and a low density of finds indicate that this might lie close to, but not within, a settlement. The medieval and post-medieval ditches are interpreted as field or property boundaries, and correspond to features identified in earlier investigations.

Cambridge, Hostel Yard, Corpus Christi College (2004)
TL 4482 5825 (CAU Report 673)
C. Cessford
An excavation was undertaken in and around Hostel Yard revealing a stratified sequence of Saxo-Norman to early post-medieval features and deposits. The earliest activity identified was a series of quarry pits dating to the eleventh and twelfth centuries. A series of boundary ditches dating to the thirteenth/late fourteenth centuries was also recorded, with evidence that much of the area was also used for gardening during this period. Activity on the site increased from the late fourteenth century, peaking during the sixteenth and early seventeenth centuries, and was characterised by a number of large rubbish pits, small-scale industry and a substantial stone-lined cesspit. No features were recorded dating to the later seventeenth or eighteenth centuries, and all existing structures were demolished in the 1820s by Corpus Christi College.

Cambridge, Hostel Yard, Corpus Christi College
TL 4486 5822 (CAU Report 750)
C. Cessford and D. Fallon
Further monitoring revealed a range of Saxo-Norman to Victorian features relating to properties fronting onto Trumpington Street and Benet Street. Several medieval inhumations were found in Benet's Passage, adjacent to St Bene't's churchyard.

Cambridge, 15 Latham Road
TL 4485 5679 (CAM ARC Report 892)
T. Phillips
A Roman ditch contained a large quantity of Early Roman (mid-late first century AD) pottery. This was probably part of a field system of enclosures, paddocks and boundaries visible in local cropmarks.

Cambridge, 19 Mere Way
TL 4506 6080 (CAU Report 745)
S. Timberlake
An evaluation was undertaken within the garden of 19 Mere Way to check for the presence of a Roman road, depicted on Ordnance Survey maps as crossing the site. No evidence for the road was found, and the visible ridge, which had been thought to be the agger, was found to be a probable early medieval headland, which formed abutting a trackway, and which is likely to represent medieval reuse of the Roman Road. A tiny amount of redeposited Roman pottery was recovered from the headland soils.

Cambridge, Neath Farm Business Park, Cherry Hinton
TL 4884 5741 (CAU Report 716)
R. Patten
A ground-penetrating radar survey identified three areas of archaeological potential. Subsequent test pit survey demonstrated limited truncation across the site. Archaeological features were recorded within two of the test pits, comprising two east-west aligned ditches containing pottery dating to the twelfth century.

Cambridge, Newnham College
TL 4410 5787 (CAU Report 718)
D. Webb, S. Timberlake and N. Armour
A series of archaeological investigations was undertaken in advance of and during the redevelopment of the kitchen and buttery at Newnham College. The excavations revealed a buried medieval plough soil covering substantial Romano-British ditches, which might represent several phases of an enclosure. Two episodes of pottery dumping were recorded, dating to the first to second and the second to fourth centuries AD, and the finds indicate the presence of Roman occupation in the nearby area.

Cambridge, 34–6a Newnham Road
TL 4452 5775 (CAU Report 728)
J. Hutton and S. Timberlake
Monitoring recorded a large refuse or cesspit within the backyard, which was found to be more than 2.5m deep and contained layers of dumped sand, lime/clunch and organic materials, including charred cereal threshing waste and burnt sedge fuel. The pit was infilled from the north-east, suggesting that the refuse was coming from an area of settlement around the current Marling Lane and Newnham House, which was formerly the site of Mortimer Manor. Beneath the foundations of the current nineteenth-century buildings test pits revealed earlier brick footings, thought to be for seventeenth-century dwellings.

Cambridge, 34–8 Newnham Road
TL 4451 5774 (CAU Report 732)
S. Timberlake and D. Webb
A further phase of monitoring revealed further evidence for the nature and extent of a medieval pond in the backyard, as well as the foundations of what are thought to be seventeenth-century brick-built tenements. An earlier floor surface was found beneath the levelling layers for these brick buildings, which might belong to a sixteenth-century or earlier timber structure. Below this a garden soil containing fifteenth-century pottery was recorded, suggesting a phase of backyard cultivation, possibly associated with medieval dwellings on Froshlake Way or Newnham Road. The large pond was found to be up to 2.5m deep, and might have originally been excavated as a gravel pit, which subsequently flooded and might have been used as a fishpond. Sections of ceramic water pipe of probable fifteenth-century date were found, providing evidence for sophisticated water management. Some well-preserved fragments of leather shoe were recovered from the base of the pond, provisionally dated to the fifteenth century.

Cambridge, Purbeck House, Purbeck Road
TL 4593 5652 (Archaeological Services and Consultancy Report 826/CPH/2)
K. Semmelmann
An evaluation revealed evidence that the site was used as a quarry, possibly during the construction of the railway. The site has been quarried to a depth of at least 1m, which is likely to have destroyed any pre-nineteenth-century archaeological remains. Three pits were also revealed and found to contain building debris and worked stone fragments, which are likely to have come from Rattee and Kett's mason's yard, which was formerly located on the opposite side of Purbeck Road.

Cambridge, St Edmund's College (2005)
TL 4414 5923 (CAU Report 721)
D. Mackay
Excavations revealed a rectilinear, non-settlement-related, enclosure dating to the Roman period. Two poorly preserved undated graves were found within the enclosure, suggested to be of Roman date. Two parallel post-medieval ditches were also recorded.

Cambridge, St Edmund's College
TL 4416 5922 (CAU Report 741)
L. Ten Harkel
A fourth phase of archaeological investigation identified a series of linear features, mostly on the same north-north-east to south-south-west alignment. Several pits were also encountered, the two earliest dating to the Late Iron Age, possibly representing the westernmost extent of Iron Age settlement on Castle Hill. A pit and shallow linear feature dating to the first century AD were also recorded, the latter forming part of a rectangular enclosure discovered during earlier investigations. Other ditches and pits were also recorded of similar date, as well as a single Roman cremation. Activity on the site decreased during the second century AD, which concords with the evidence at Castle Hill. One pit and two linear features date to this period, possibly representing small-scale fields or paddocks. The finds assemblage suggests that one of the linear features might represent part of a small building that was intensively used, perhaps as a seasonal living space.

Cambridge, Shire Hall lawn
TL 4456 5925
Archaeology Rheesearch Group
Magnetometer and resistivity surveys were undertaken on the lawn between Shire Hall and the Cambridge Castle mound as part of the preparations for National Archaeology Week in 2006. The survey revealed several areas of high resistance, which largely correspond with parchmarks on the lawn observed in 2004. The high resistance features correspond with the entrance buildings to the County Gaol, as depicted on H. H. Dunn's plan of 1927. Several anomalies were also recorded in the southern part of the survey, including a garden path depicted on the Ordnance Survey map of 1886. A plan of the medieval castle layout suggests that the original moat was not detected during the survey.

Chatteris, Block Fen (area 5) (2003)
TL 4342 8336 (AS Report 1456)
B. Roberts and I. Turner
Archaeological investigation in advance of quarry extension revealed a large number of small pits, probable tree throws and drainage ditches of modern date. Some of the features contained small quantities of prehistoric pottery, animal bone and struck flints, although most were undated.

Chatteris, Block Fen (trenches 187–201)
TL 4401 8397 (AS Report 1993)
T. Schofield
Evaluation revealed sparse archaeological remains, consisting of possible pits, ditches and stake holes and many natural features such as tree hollows. Iron Age pottery, daub, and struck flint were recovered in very small quantities from one trench.

Chatteris, New Road
TL 3944 8625 (CAM ARC Report 868)
C. Thatcher
A ditch might represent a direct continuation of boundaries previously observed near the High Street. A cemetery previously recorded on the site did not extend into the area that was investigated.

Chatteris, Land west of 32 West Park Street
TL 3916 8572 (AS Report 1986)
T. Woolhouse and D. McConnell
Desk-based research has demonstrated that the site lies on the western periphery of the precinct of Chatteris priory, and was potentially a focus for medieval settlement. Evaluation revealed a number of pits, postholes, ditches, gullies and large gravel extraction pits. Most features were dated to the post-medieval period, whilst a few were of medieval date.

Christchurch (2005)
TL 4920 9650 (Air Photo Services Report 2005/21)
R. Palmer
An aerial photographic assessment mapped a large system of rectangular ditched fields of probable Roman date. A roddon crossed the development area, and ditches either side of the roddon might have assisted with water management. Several fen circles were also recorded in the central and western part of the study area, and were suggested to be of Roman date.

Downham, Cannon Street, Little Downham (2004)
TL 5253 8387 (AS Report 1605)
A. Grassam, P. Thompson and P. Weston
An evaluation recorded a number of sub-rectangular pits, thought to be related to medieval and post-medieval sand and gravel extraction. Many of the pits were intercutting, suggesting the quarrying occurred over a period of time. Residual finds of struck flint, Bronze Age, Roman and medieval pottery were recovered from many of the features, which had largely truncated any earlier remains. A posthole, tree hollow, ditches and gullies were also identified, but their full extent and nature was unclear owing to the high level of truncation.

Downham, Oak Farm, Cannon Street, Little Downham
TL 5229 8377 (AS Report 1970)
T. Woolhouse and T. Schofield
An evaluation revealed features indicative of sand extraction pits, thought to date to the modern and post-medieval periods. Residual struck flint, dating to the Mesolithic and Early Neolithic, was found across the site, together with residual Late Iron Age and medieval pottery.

Downham, Main Street, Little Downham
TL 5210 8393 (CAM ARC Report 913)
S. Cooper
Little Downham lies along a spur on the high land of the Isle of Ely that has attracted settlement from

the Mesolithic period through to the modern day. Investigations revealed remnants of Late Iron Age/Roman agricultural systems.

Eltisley, Caxton End and Church End (2003)
TL 2729 5949 (GSB Report 2004/01)
GSB Prospection
Geophysical survey was carried out at two sites in the village to locate the site of the lost nunnery of St Pandionia at Church End and to investigate any remains that might be associated with the pottery scatters at Caxton End. No evidence was found to indicate monastic remains at the Church End site, and the magnetic survey revealed only remains of ridge-and-furrow cultivation with some magnetic disturbance. At the Caxton End site a complex of ditch and pit anomalies was recorded in the cultivated field only. Some magnetic disturbance was noted in the pasture fields, which might be associated with Victorian cottages thought to have existed in the vicinity.

Elton, The Old Estate Yard, Over End
TL 0898 9353 (NA Report 06/47)
S. Carlyle
An archaeological evaluation revealed a series of features of probable medieval date, comprising a probable boundary ditch, two smaller ditches, two pits or small ditch terminals and a possible pit or tree throw scar. Other activity dating to the nineteenth and twentieth centuries was recorded, including a large pit containing iron-working slag, likely to relate to the iron foundry that occupied the site in the nineteenth century.

Ely, The Hoist, The Vineyards
TL 5436 8029 (AS Report 1963)
T. Woolhouse, A. Ginns, I. Williamson and J. Williams
An evaluation recorded a sequence of medieval and early post-medieval soil horizons, sealed beneath a sequence of post-medieval deposits. The earliest phase is represented by an undated pit, which was sealed by a medieval soil horizon. The second phase of activity consisted of two pits, one of which was dated to the sixteenth century. Late post-medieval features comprised a number of eighteenth- to nineteenth-century pits and a Victorian boundary ditch.

Ely, West Field Farm
TL 5263 7995 (CAU Report 738)
D. Mackay and C. Swaysland
An evaluation encountered human remains at a shallow depth in the area to the south of West Field Farm. Further excavation was carried out to define the extents of a small Anglo-Saxon cemetery, tentatively dated to the late seventh century.

Farcet, Manor Farm, 2 Main Street
TL 2023 9463 (Archaeological Project Services Report 81/06)
N. Hall
An evaluation revealed a single pit containing thirteenth-century pottery, together with two post-medieval field boundaries and an undated gully and pit. Structural remains associated with the nineteenth- to twentieth-century outbuildings were also recorded, consisting of a well/cistern, construction trench, postholes and a stone-lined well, and a layer of rubble from the recent demolition of these covered the site.

Fen Ditton, Home Farm, High Ditch Road
TL 4883 6025 (CAM ARC Report 914)
S. Kenney
Evaluation across a linear ridge thought to be the course of the Fleam Dyke (High Ditch) in Fen Ditton revealed several phases of ditch running south of and parallel to a scarp crossing the site on an east to west orientation. Finds recovered from the lower fills of the ditches have been dated securely to the mid- to late eighteenth century, and no earlier material was residual within those deposits. Earlier pits contained medieval pottery, strongly implying a medieval or post-medieval date for the construction of the ditch(es). This evidence calls in to question many of the previous assumptions about the location, date, purpose and character of the Fen Ditton segment of the Fleam Dyke.

Fenstanton, Grove House, Huntingdon Road
TL 3138 6847 (AS Report 2053)
K. Doyle and K. Trott
Grove House is a large Grade II*-listed brick house dating to the early eighteenth century, on the site of a medieval homestead. The earliest activity identified during evaluation dated to the tenth to eleventh centuries AD, consisting of two pits sealed by a fifteenth- to sixteenth-century plough soil. An eighteenth-century brick culvert and posthole were located, together with a series of mid-eighteenth- to nineteenth-century linear gullies, which contained large quantities of animal bone, suggestive of tannery waste. The recut of the medieval moat was filled with domestic rubbish, and several garden soils were recorded. This latest phase of activity probably relates to the landscaping of the grounds around Grove House by Capability Brown, who owned the house from the 1760s.

Godmanchester, Godmanchester to Hemingford Abbots replacement water main
TL 2538 6922 (Cranfield Forensic Institute Report 005)
P. Masters
A fluxgate gradiometer survey detected a few magnetic anomalies, including a series of linear and rectilinear anomalies at two locations, indicative of possible Iron Age/Roman enclosure ditches. Ridge-and-furrow remains were detected along the entire length of the pipeline route.

Great Abington, Rickett Field, Granta Park
TL 5269 4856 (CAU Report 737)
N. Armour
Excavation revealed some evidence for prehistoric activity, consisting of scatters of Mesolithic-Early Bronze Age flint and a single Early Iron Age pit containing knapped flint and pottery. Small quantities of residual Roman pottery were recovered from later features, indicating a very low level of Roman activity. A ditch of probable medieval date was located, associated with a field system and remains of ridge-and-furrow. Also identified were a number of post-medieval field boundaries, as well as the planting holes for a tree-lined avenue, which is shown on the 1716 map of Abington Hall and its estate.

Great Wilbraham, 25 Acres Field (2005–6)
TL 5364 5617
R. O'Donnell
A field-walking and metal-detecting survey was undertaken by students from Hills Road Sixth Form College. A variety of metalwork finds was recovered, including a pot mend, a knife and 17 coins, in addition to Roman pottery, animal and oyster shell remains, which indicate the presence of Roman domestic activity nearby.

Haddenham, 69 High Street
TL 4626 7509 (Heritage Network Report 335)
G. Saunders
An evaluation identified two medieval boundary ditches, with a possible associated track, and the base of a shallow medieval feature in the eastern part of the site. A late post-medieval boundary ditch and other late post-medieval/Victorian features were also recorded.

Harlton, Manor Farm
TL 3930 5289 (Cambridge Archaeology Field Group Report)
M. Coles
Systematic field-walking on land north of the Haslingfield to Harlton Road identified a concentration of Roman pottery in the northern part of the area investigated, against a backdrop of post-medieval agricultural debris. An unusual quantity of oyster shells was found in the easternmost field, although no other concentration of finds was identified in this area.

Hemingford Grey, St Ives to Hemingford flood alleviation scheme
TL 2964 7128 (Oxford Archaeology Report)
D. McNicol, S. Clough and L. Loe
A watching brief during flood alleviation works revealed evidence for a small Quaker burial ground, dating to the late seventeenth to early eighteenth centuries. At least 16 inhumations were recovered, many of the skeletons truncated by the insertion of later graves and modern intrusions.

In keeping with the nonconformist attitude, the graves were buried on a north-east to south-west or north-west to south-east orientation, aligned with the river or perpendicular to it. The skeletons were laid supine, and a range of coffin nails, fixtures and fittings provided evidence that the deceased were dressed in shrouds and placed in coffins. The high level of intercutting burials suggests there was no use of burial markers, which is typical of early nonconformist burial practice. Disease was frequent amongst the burials, and includes instances of amputations of the lower legs and scoliosis, a spinal deformity. This excavation has provided a rare opportunity to study the burial ground of a nonconformist group, very few of which have been archaeologically excavated.

Hilton, Scotts Close (2004)
TL 2904 6632 (AS Report 2113)
T. Woolhouse
Excavations revealed a system of Late Saxon and early medieval boundary/drainage ditches, demarcating backyard plots or small areas of home pasture attached to individual peasant holdings. Clusters of contemporary pits were also found; the majority are thought to have functioned as drainage sumps or watering holes for livestock rather than as rubbish pits. Activity at Scotts Close might have begun as early as the ninth century AD, providing the earliest evidence for Hilton's origins found to date. The most intriguing feature of the site was an Early/Middle Saxon inhumation, apparently accidentally disturbed and then reburied with a degree of care in the tenth to twelfth century. The circumstances of the reburial offer an unparalleled insight into medieval Christian perceptions of pagan otherness and attitudes to the pagan dead.

Horningsea, Land south-west of Eye Hall Farm
TL 4957 6345
T. Dymott
A field-walking survey was undertaken in fields adjacent to the scheduled Horningsea pottery kilns. A higher density of finds was recorded in the northern part of the field, in the area of the cropmark enclosure. As well as Horningsea wares and clay plates, other pottery types, iron nails, animal bones and oyster shell were also recovered, suggesting occupation as well as industrial activity. Some human skull fragments were also recovered. A magnetometer survey confirmed the presence of the rectangular enclosure, and identified some possible internal features. The geophysical survey was extended east into the scheduled area and identified a further possible kiln site. The survey also revealed high levels of activity in the northern and central parts of the site, following a south-west to north-east alignment, and continuing beyond the northern extents of the survey area.

Houghton & Wyton, Houghton Mill
TL 2809 7204 (CAU Report 746)
S. Timberlake and A. Dickens
Monitoring of flood defence improvement works to the west of Houghton Mill identified two phases of former flood bank construction dating to around the mid- to late nineteenth century. At the eastern end of the route for the new flood bank a trench cut

through a layer of organic river silts and alluvium, which contained an archaeological horizon consisting of dumped burnt hearth material, burnt grain, bone and some medieval pottery. This material might represent an early attempt at land reclamation in the vicinity of the mill or the dumping of domestic refuse from a nearby occupation site. A crudely fashioned Palaeolithic hand axe was recovered from within the clay-makeup of the flood bank.

Huntingdon, Pathfinder House
TL 2402 7155 (Heritage Network Report 383)
H. Ashworth, C. Turner and A. Rothwell
An evaluation encountered Roman pits and ditches of second- to fourth-century AD date to the west and south of Pathfinder House, one cut by a pit of ninth- to thirteenth-century date. To the east of Pathfinder House, around Castle Hill House, the overburden was deeper and more disturbed by post-medieval activity and modern services, although some Roman artefacts were recovered from this area. A post-medieval pit was recorded in the easternmost part of the site, probably associated with properties fronting onto the High Street prior to their demolition in the late eighteenth century. No remains associated with the use of Castle Hill House during the Second World War were encountered.

Isleham, Fordham Road (2005)
TL 6441 7390 (AS Reports 1870 and 2090)
I. Williamson, K. Doyle, K. Nicholson and T. Collins; A. Newton
Excavation revealed evidence for clunch extraction and domestic occupation at the site, dating predominantly to the medieval period, and continuing on a smaller scale into the post-medieval period. The earliest features include two buildings, one a sunken feature building, the other an apsidal structure with a tile floor, neither of which could be precisely dated. A second phase of activity comprised quarry pits, tanks for clunch soaking, six wells, a possible sunken feature building and a post-built structure with associated fence lines and rubbish pits, set within an enclosure. A third phase of activity was less well represented, and seems to indicate a decline in clunch processing activity at the site. Several undated features were also recorded, including a set of linear features, possibly wheel ruts, and a cluster of postholes, possibly representing a second post-built building.

Littleport, Land adjoining 80 Wisbech Road (2005)
TL 5609 8732 (AS Report 1851)
A. Grassam, K. Nicholson and P. Weston
An evaluation revealed remains of later prehistoric date, comprising a dense cluster of pits, postholes, a ditch and a gully, of probable later Bronze Age/early Iron Age date. A sequence of deposits reflecting inundation by water and peat encroachment was also recorded, as well as a clay deposit that might indicate an area of standing water north of the archaeological features.

Longstanton, The Manor (2005)
TL 4000 6633 (Cambridge Dendrochronology Group Report 01/2006)
R. Switsur and K. Rinne
Dendrochronological sampling of four timbers from this building gave felling dates of the mid- to late fifteenth century, which is consistent with the known history of the manor and the recent discovery that the current house is built around a core of a medieval hall.

Kimbolton, Kimbolton School
TL 509900 267525 (CAM ARC Report 882)
G. Bailey
Three small ditches might have been prehistoric in origin. A single Roman pit was also found. A very large ditch might have formed part of the thirteenth- to fourteenth-century moat system associated with the adjacent castle. Layers, ditches and conduits relate to the extensive post-medieval landscaping and drainage systems in the grounds of the later manor house estate.

March, The Church Hall, Church Lane
TL 4152 9524 (Archaeological Project Services Report 185/06)
V. Mellor
A watching brief revealed activity on the site spanning the prehistoric to post-medieval periods. Three sherds of Late Iron Age pottery, and a loom weight of the same probable date, indicate Iron Age domestic activity in the vicinity. Medieval occupation of the site is indicated by a pit, occupation horizons and a cesspit dating to the twelfth and thirteenth centuries, and a further undated pit and posthole might be of a similar or perhaps earlier date. A sequence of dumped deposits and soil horizons was identified, of medieval or later date, which is likely to relate to the use of this area as part of the graveyard. A single burial was recorded, comprising a wooden coffin within a brick-built vault of probable late nineteenth-century date. The use of the area as a graveyard ceased in the late nineteenth century, after when buildings occupied the site.

March, Norwood Road
TL 4123 9772 (CAM ARC Report 901)
S. Cooper
Prehistoric activity took the form of a large pit containing struck flints. Iron Age to Roman ditches formed part of a field system. Some were backfilled with charcoal-rich and relatively finds-rich fills, indicating that they lay close to occupation.

Oakington & Westwick, Queen's Way
TL 1626 4572 (CAM ARC Report 869)
R. Mortimer and M. Jones
An unploughed buried soil or land surface covered this site just below turf level; pottery recovered from it is principally Middle Saxon. Human remains were encountered but not excavated. These are almost certainly part of the sixth-century Anglo-Saxon cemetery

that is known to be present on the site, part of which was excavated in 1994. A series of boundary ditches post-date the cemetery to the west, while large, deep boundary or enclosure ditches lie to the east.

Oakington & Westwick, Slate Hall Farm
TL 3956 6339 (Oxford Archaeotechnics Report)
Oxford Archaeotechnics
A magnetometer survey was carried out at Slate Hall Farm to define the layout and extent of a Romano-British settlement site detected during previous trial trenching. The focus of the archaeological site is confined to the northern tip of the field with only ephemeral magnetic anomalies extending south and south-westwards. The principal enclosure measures approximately 120m by 70m and contained several internal subdivisions. No magnetic evidence to indicate an access track or road approaching from the nearby Roman road was identified.

Offord D'Arcy, 79 High Street
TL 2196 6651 (Wessex Archaeology Report 63400.04)
G. Evans
Evaluation of this site demonstrated the existence of three distinct areas of archaeological preservation. The eastern part of the site was characterised by the silted-up remains of a twelfth-century ditched enclosure, a probable Roman quarry pit, and large pond-like features dating from the twelfth century. A 2m-wide north/south-running ditch marked the westward extend of twelfth-century evidence. To the west of the ditch was a series of post-medieval and modern channels of unknown use. In the south-western part of the site a clay-lined circular pit was found, which possibly dates to the thirteenth or fourteenth centuries, as well as two inter-cutting parallel ditches. A large circular brick-built structure was encountered in the north-western part of the site, which was thought to represent a former modern sunken garden feature, and which had destroyed any earlier remains in this area. Across the site several brick rubble and modern gravel surfaces were recorded, which represent various farm activities.

Papworth Everard, Land off Ermine Street (Unit 5) (2004)
TL 2910 6238 (AS Report 1665)
K. Manning, L. O'Brien, B. Rennell, J. Williams and I. Williamson
Open area excavation at this site recorded the substantial remains of four Iron Age roundhouses defined by drip-gullies and internal postholes, within a banked circular enclosure with an entrance to the north-east. A second, C-shaped, banked enclosure was present within the north-western corner of the main enclosure. Clusters of pits, isolated pits, cooking pits and possible fence-lines were located to the rear of the buildings, with less activity in the apron of land between the structures and the entrance. Linear field boundaries were recorded outside the enclosure to the south. The finds assemblage comprised quantities of fragmentary and abraded Iron Age pottery, poorly preserved animal bone, abraded daub and sparse, probably redeposited metalworking debris. Two complete but broken ceramic vessels were recorded, one from the terminus of an enclosure ditch. The site contributes to the growing body of data regarding prehistoric settlement on the heavy clays between the rivers Cam and Ouse.

Papworth Everard, Plots 7, 9 and 10, Papworth Everard Business Park
TL 2924 6242 (NA Report 06/107)
I. Fisher
An evaluation revealed a series of linear ditches and shallow gullies, interpreted as field boundaries of Middle Iron Age to Early Roman date. The density of features and the amount of pottery that was recovered indicated that activity on site was associated with occupation. Medieval ridge-and-furrow cultivation was also identified together with a number of modern disturbances that were the result of dumping on the site.

Peterborough, Paston, Land South of Car Dyke, Manor Drive
TF 1964 0288 (CAM ARC Report 918)
T. Fletcher
Soil sequences suggest an upcast bank from the Roman Car Dyke, and a large water-management feature, also potentially linked to the Dyke. Roman ditches probably relate to a known enclosure system.

Peterborough, Oxney Grange near Eye
TF 2245 0135 (CAM ARC Report 897)
S. Cooper
This site lies on a gravel promontory just to the north of Flag Fen. Large pits and postholes were found relating to an Iron Age settlement. A possible roundhouse had a projected diameter of *c.* 7m, to the south of which lay possible four-post structures or outbuildings.

Significant remains relating to the medieval monastic site of Oxney Grange include graves, pits and some very substantial ditches dating to the thirteenth to fourteenth centuries. The graves were on an east to west alignment and had no grave-goods. They were therefore interpreted as Christian burials. The ditches were presumably contemporary with the medieval moat that is still faintly visible in the fields surrounding the site and might have divided the site into different specialised areas.

Peterborough, Peakirk, St Pegas Road
TF 1675 0610 (CAM ARC Report 879)
M. Jones
Ditches and other minor features pre-dating the Car Dyke probably formed part of a field system visible as cropmarks to the west.

Ramsey, Ailwyn Community School
TL 2948 8489 and 2958 8492 (CAM ARC Report 894)
R. Mortimer
Three ditched boundaries and a few small quarry pits were recorded, some of which relate to Ramsey Abbey. Cartographic evidence suggests that the ditches span the medieval (or late medieval), post-medieval and modern periods. The earliest boundary marker (a wide, curving ditch) can be linked to aerial photographic and map evidence, enhancing previous plans of the Abbey Precinct. The latter appears to have been ovate, measuring some 800m north to south and 550m east to west and enclosing an area of roughly 35ha. There is evidence for a road or track that circumnavigates the precinct boundary. Revised suggestions can also be made about the location of the Abbey's docking facilities and the lode that fed them.

St Ives, The Granary, 30–2 West Street
TL 31149 71542 (CAM ARC Report 870)
R. Clarke
This site lies on the northern fringes of the town's historic core and is located close to an excavation at the former Permanex site, where thirteenth- to fourteenth-century plot boundaries, rubbish pits and a seventeenth-century cock-fighting pit were uncovered.

The recent work found a mass of quarry pits at a depth of *c.* 0.7m below ground level, indicating extensive gravel extraction during the twelfth to fourteenth centuries. No remains of frontage buildings or boundary plots were found. These might have been removed by quarrying, or the site might have been located on the immediate fringes of the planned town. The pits were sealed beneath several post-medieval cultivation layers and modern rubble/construction deposits. Cartographic evidence indicates that the development area lay within a large parcel of land stretching back to North Road, which seems to have remained largely clear of buildings. The plot might have been an orchard in the latter part of the nineteenth century; no buildings are shown on the West Street frontage until the construction of the factory/warehouse in the twentieth century.

St Neots, 42 Huntingdon Street
TL 1864 6059 (AS Report 1969)
D. McConnell and A. Grassam
Cartographic evidence has indicated that there were structures on the western part of the site from 1757, whilst the eastern part of the site appears to have been garden. An evaluation revealed a series of later post-medieval features, consisting of a substantial waste pit and other pits of eighteenth- to twentieth-century date, possibly the result of quarrying for construction materials relating to the construction of Wistaria House.

St Neots, Longsands College
TL 1888 6100 (Air Photo Services Report)
R. Palmer
Aerial photographic assessment recorded several areas of ridge-and-furrow, and a single block of probable steam ploughing in the grounds of Priory Park. Some linear features, possibly ditches, were recorded to the north of Longsands College.

St Neots, Longsands Community College
TL 1911 6072 (CAM ARC Report 902)
A. Connor
Archaeological remains included a possible roundhouse, ditched track and a series of large ditches that might be part of an extensive enclosure system. Pottery suggests a date in the Early Roman period (first and second centuries), although the roundhouse and track might be earlier.

St Neots, Land to the rear of 33–5 New Street
TL 1830 6045 (CAM ARC Report 905)
D. Brown
A large medieval ditch might have formed part of a precinct boundary relating to the town's Benedictine Priory (established *c.* 972–5, dissolved 1539), which lies *c.*100m to the south-west of the New Street development area.

St Neots, Land to the west of St Neots Town Football Club
TL 201 606 (CAM ARC Report)
T. Fletcher
Investigations on land to the west of St Neots Town Football Club revealed enclosures and field systems contemporary with the activity recorded during CAM ARC's 2005 excavation to the immediate north. One small square enclosure revealed evidence of crop processing. A human burial was found, buried with a copper alloy ring. Subsequent trenching to the south of the club revealed drainage ditches, on the same alignment as those found to the north in the previous work, suggesting the presence of archaeological remains beneath the football club itself.

Sawston, Dernford Farm (2004)
TL 4694 5099 (AS Report 1741)
D. Eddisford, I. Williamson, K. Doyle and L. O'Brien
An evaluation revealed a focus of activity in the north-western sector of the site, with a few isolated features recorded across the site. Sparse residual Mesolithic/Neolithic flint was recovered from excavated features. The earliest feature identified was an Early Iron Age hearth, although the majority of features dated to the Mid/Late Iron Age and Early Romano-British period, consisting of linear ditches on north-east to south-west axes and discrete pits and postholes. Although no structural evidence was recorded, the finds and environmental assemblages suggest settlement within the immediate vicinity of the site.

Sawston, Land at Lynton Way (2005)
TL 4945 4975 (Air Photo Services Report 2005/22)
R. Palmer
Aerial photographic assessment recorded a ditched system, probably representing fields, tracks and settlement enclosures, which shares the same alignment with two enclosures mapped to the west.

Sawston, Land at Lynton Way (2005)
TL 4943 4978 (AS Report 1909)
P. Harris and K. Nicholson; P. Weston and A. Newton
The excavation revealed the southern part of a D-shaped enclosure, with an entranceway located on its south-eastern side. The ditches extended beyond the limits of the excavation, but the remainder of the enclosure and associated field systems have been identified through aerial photographic assessment. Close to its entranceway, the enclosure ditch was cut by a large pit. Within the enclosure, two partial concentric circles of postholes and stake holes were identified, and interpreted as the remains of a roundhouse. Pottery was recovered in very small quantities from the enclosure ditch and large pit which, combined with a radiocarbon date obtained from animal bone, suggest a Late Bronze Age date of *c.* 1100BC for activity at the site.

Sawston, Sawston Hall
TL 4884 4912 (CAM ARC Report 877)
R. Mortimer
Prehistoric finds include a relatively large worked and burnt flint assemblage found residually. A wide channel might have drained from a well or spring and appears to have been open during the Neolithic and Bronze Age, perhaps being recut in the Early Roman period. In one part of the channel were two contemporary wells or shafts, a ditch and a posthole. Very Late Iron Age to Early Roman pottery was also found.

Early medieval features might represent field ditches or perhaps relate to the adjacent medieval manor house. A large moat ditch was found within the walled garden immediately behind the hall. This might form part of the original twelfth- to thirteenth-century manor and was backfilled in the late medieval period. Standing remains from the 1940s occupation of the hall were also recorded.

Sawston, Sawston Hall
TL 4883 4912
Archaeology Rheesearch Group
A magnetometer and resistivity survey of the lawns at Sawston Hall, revealed a series of metalled garden paths and an anomaly which might indicate the north-western part of the medieval moat, which survives in part to the south of the hall. A weak rectilinear feature on the front lawn may represent an unknown structure of pre-Victorian date.

Sawtry, Archer's and Aversley Woods (2005–6)
TL 1666 8144
A. Simco
Documentary research and field survey were undertaken to investigate Aversley and Archer's Woods to inform future site management and presentation. Both originated as manorial woodlands, but Archer's was part of the estate of Sawtry Abbey for much of the medieval period. Aversley Wood contains extensive remains of medieval ridge-and-furrow, and evidence of early twentieth-century management of the wood's water resources. Archer's Wood preserves earthworks associated with a grange of Sawtry Abbey.

Sawtry, Black Horse Farm (2004–5)
TL 1770 8329 (AS Report 1996)
P. Weston with K. Doyle
Open area excavation revealed evidence of a Middle Iron Age settlement, securely dated to the fifth to second centuries BC. The earliest phase of activity comprised a roundhouse with an associated post-built structure and pit ovens. A second roundhouse was constructed at a slightly later date, and surrounded by a substantial ditched enclosure. A further circular structure was associated with the second roundhouse, together with a cluster of pit ovens and spread of cooking debris. An infant burial was found at the south-eastern entrance of this structure. The roundhouse fell out of use in the second century BC, although the ditched enclosure continued in use as a corral from the mid-first century BC to mid-first century AD. At this time a pair of droveway ditches were dug running north-west from the entrance of the enclosure towards Ermine Street, which were recut in the Early Roman period. A layer of buried soil sealed the southern part of the site, possibly representing a short phase of agricultural activity before the site was inundated by alluvium. Two further Mid-Late Iron Age inhumations were recorded from the settlement, in addition to an undated cremation to the south of the site.

Sawtry, Land North of Scandstick, Black Horse Farm
TL 1766 8344 (AS Report 2093)
K. Doyle and P. Weston
An evaluation revealed sparse remains in the southern part of the site, whilst defining the promontory of higher ground, which had formed a focus for Iron Age settlement to the immediate south of the site. The remains comprised a shallow pit and two ditches containing medieval pottery, and two undated features, including a section of a possible ring ditch. Several nineteenth-/twentieth-century features were also recorded that relate to the outbuildings at Blackhorse Farm.

Shepreth, Brown Spinney
TL 539792 248299 (CAM ARC Report 872)
M. Jones
This work took place at a possible Roman Villa site (Scheduled Monument 85). Alluvial deposits indicate extensive and repeated flooding events, which might be directly related to a known palaeochannel to the east and north.

Soham, Brook Street
TL 560111 272671 (CAM ARC Report 904)
G. Bailey
Three phases of low-status buildings date span the mid-twelfth to mid-sixteenth centuries. Street-front quarrying was separated from the domestic activity by a ditch running parallel to the road. Historic maps note the presence of quarries on the other side of the road for clunch extraction. Alternatively, chalk might have been extracted for use in lime production.

Soham, Lion Mills
TL 5907 7295 (Oxford Archaeology Report 3465)
B. Matthews
An evaluation on the site of the former Lion Mills revealed medieval ditches and pits close to Clay Street at the northern edge of the site, together with an undated ditch parallel to the road frontage. Three ditches of uncertain function and date were also recorded at the south-west of the site. In-situ narrow gauge railway tracks were also encountered, which related to the use of the site as a mill in the late nineteenth to twentieth centuries.

Somersham, Knobbs Farm (2004)
TL 3667 7926 (CAU Report 651)
J. Wills
An evaluation recorded evidence for the westward continuation of archaeological features excavated earlier in 2004. The earliest identified remains were a Neolithic pit and an Early Bronze Age ditch, which might be part of a wider system. A possible Late Iron Age/Early Romano-British droveway was recorded, which could be seen to continue to the north as a crop mark. The droveway was thought to be contemporary with the field boundary ditches, which continue west from those previously excavated. Further evidence of Roman burials was recorded, together with the recovery of one cremation.

Stilton
TL 1720 9014 (Wessex Archaeology Report 62505.1)
S. Thompson
An archaeological evaluation was undertaken by Channel 4's Time Team at two sites near the village of Stilton to investigate the site of a possible Roman pottery kiln located on a fen island. The project identified a pottery kiln, a tile kiln, and another kiln-like structure, which appeared to form part of a wider ladder settlement along a Roman road branching off Ermine Street. The wider settlement was identified through geophysical survey and a landscape study, while the excavation was able to date the occupation between the early to mid-second century AD and the end of the Roman period. The site was largely abandoned due to climatic changes, although the excavations revealed two inhumations and a large surrounding oval enclosure, which post-dated the Romano-British settlement. It was suggested that the oval enclosure was the site of a hermitage at this period, although no direct evidence was found to support this theory.

Stilton
TL 1720 9014 (GSB Prospection Report 2006/45)
GSB Prospection
Two areas were subject to geophysical survey as part of the Time Team investigation of the site. Some of the field team was provided by Cambridgeshire Archaeology and CAM ARC. In one area, gradiometer survey identified several possible kilns and revealed a wealth of ditch- and pit-type anomalies indicating settlement and related feature. The results suggest at least two phases/periods of activity at the site. A limited ground-penetrating radar survey failed to identify the kilns and the poor results are attributed to geological factors together with the extremely dry conditions prevailing at the time of the survey. A small second area was also investigated with gradiometry, revealing two possible ditch-type anomalies, but the limited size of the survey area precludes a more complete interpretation.

Stow-cum-Quy, Main Street
TL 520 604 (CAM ARC Report 899)
C. Thatcher
A prehistoric land surface preserved within a depression left by a solution hollow was exposed towards the eastern edge of the development area. This was found to contain stratified Mesolithic and Early Neolithic flint and pottery assemblages. A leaf-shaped arrowhead was recovered from the Early Neolithic assemblage, which was dominated by serrates.

Sutton, Land North of 35–45 Bellairs
TL 4396 7887 (AS Reports 1923, 2060 and 2619)
T. Woolhouse and I. Cameron; T. Woolhouse, D. McConnell, P.Weston and A. Grassam; A Grassam
Two phases of archaeological investigation revealed a number of Late Iron Age/Early Roman features, comprising pits, postholes, a water hole and two possible enclosures. A group of postholes was identified but did not form a coherent structure. A number of features produced Belgic ware pottery. A medieval pit and modern boundary were also excavated. A core Iron Age settlement site has yet to be identified in Sutton, and it is argued that it was probably located closer to the fen edge.

Swaffham Prior, Southfields to Swaffham Prior pipeline
TL 5984 6289 (Archaeological Services and Consultancy Report 752/SPS/2)
T. Hawtin
An evaluation was undertaken along the route of the Southfields to Swaffham Prior water pipeline. A linear group of six steep-sided post pits was recorded in the south-western end of the pipeline route. Although these pits contained no artefactual evidence, they are suggested to be of prehistoric date on the basis of environmental evidence and a scatter of worked flint in the vicinity.

Thriplow, 22 Middle Street
TL 5606 8607 (CAM ARC Report 911)
A. Howe
Early- and late-medieval remains found here include post pads for a barn and four ditches.

Waterbeach, Land north of Bannold Lodge (2004)
TL 4964 6604 (Albion Archaeology Report 2004/49)
R. Thorpe, W. Keir and J. Wells
An evaluation was undertaken revealing two linear gullies, which are likely to represent Roman enclosure boundaries. No other archaeological remains were identified.

Waterbeach, 30 High Street
TL 4966 6582 (CAM ARC Report 867)
R. Clarke
A buried soil of probable prehistoric date produced a small quantity of calcined bone, three conjoining sherds of Bronze Age or Early Iron Age pottery and a few charred seeds. Medieval activity was represented by a pit dating to the twelfth to fourteenth century; the remaining features and deposits comprise sixteenth- to twentieth-century pits and layers. One nineteenth-century pit might have been a cesspit or well. A sample from one of the earlier post-medieval pits was largely composed of humic matter, indicative of pit composting.

Relatively few archaeological investigations have been undertaken within Waterbeach, and these results, although fairly typical of the relevant periods, are therefore of some importance for informing predictive deposit models for the immediate area.

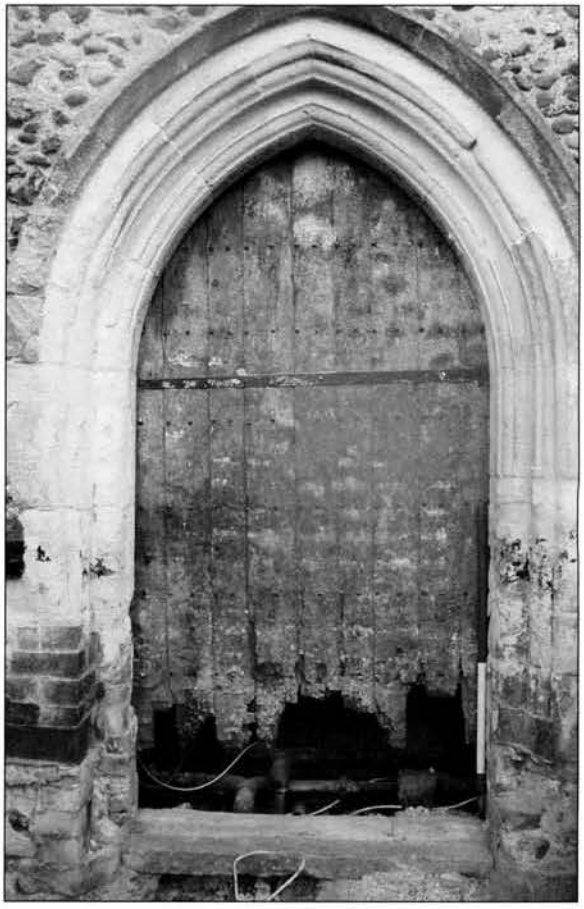
West Wratting, The Common
TL 6096 5180 (PreConstruct Geophysics Report)
P. Masters
A fluxgate gradiometer survey was undertaken, which revealed a series of linear and rectilinear anomalies that might be associated with the medieval village. A group of positive anomalies was also recorded, which might indicate pits or burnt material.

West Wratting, The Common
TL 6094 5181 (CAM ARC Report 900)
L. Muldowney
A high density of medieval features was recorded in the northern half of the eastern field, consisting of ditches, pits and postholes, as well as evidence for metalworking. The central field was devoid of archaeological remains; the eastern field contained one ditch of probable medieval date, a pond and post-medieval foundation trenches.

Whittlesford, Church of St Mary and St Andrew
TL 4737 4859 (CAM ARC Report 933)
T. Fletcher
Several complete and incomplete human burials were excavated and handed immediately to the church in preparation for reburial, with the exception of one burial which appeared to pre-date the church: this was retained by CAM ARC for analysis. A number of shallow truncated features contained Early Saxon pottery. Other finds included a medieval German jetton from the sixteenth century and a large loom or thatch weight. Recording also took place when a previously blocked doorway on the northern side of the church was unblocked. A wooden door of possible thirteenth-century origin was found.

Whittlesey, Stonald Field (2005)
TL 2630 9797 (Air Photo Services Report 2005/26)
R. Palmer
An aerial photographic assessment identified the presence of a ring ditch and a series of ditches on an area of locally higher ground. A scatter of possible pits was also mapped in the northern part of Stonald Field. It is likely that deep soils might mark the full extent of the archaeological remains.

Wilburton, Mitchell's Farm (2004)
TL 4841 7480 (Heritage Network Report 306)
H. Ashworth
Three phases of activity were identified during the excavation of the site. Late Bronze Age/Early Iron Age activity was represented by a scatter of waste flint flakes and pottery. During the medieval period, the area was subdivided into plots with ditched boundaries, some of which were recut and modified over time. Most of this activity dated to the twelfth to fourteenth centuries, although the pottery indicates some features might be earlier in date. The remains of a possible medieval structure were recorded in the north-eastern corner of the site, adjacent to the road frontage. The boundary alignments continued into the post-medieval and modern periods, as demonstrated by a number of linear features excavated in the south-eastern part of the site. A possible post-medieval track running across the northern part of the site on an east-west alignment was also found.



Whittlesford, Church of St Mary and St Andrew
A wooden door of possible thirteenth-century origin.

Willingham, 1 High Street
TL 4040 7037 (CAM ARC Report 922)
G. Bailey
This site lies close to the present centre of the village of Willingham. Middle and Late Saxon settlement was indicated by ditches, pits and postholes. The suggested northern migration or expansion of the village during the medieval period has been confirmed by the recent findings.

Willingham, High Street (2003)
TL 4026 7026 (AS Report 1420)
J. Grant, W. Keir, B. Roberts and P. Weston
An evaluation revealed a number of finds and features on the site, indicative of medieval and post-medieval occupation along the street frontage and within back plots. The remains comprised a number of pits and postholes, a probable cesspit containing quantities of medieval pottery in its lower fills, and two possible yard surfaces.

Willingham, 6 and 8 Earith Road
TL 4043 7071 (CAM ARC Reports 883 and 865)
D. Hounsell
The focus for the Roman settlement of Willingham might have lain just to the north of the current village centre. Investigations on the fringes of this settlement recovered a Roman enclosure system, defined by moderately-sized ditches. Pottery consisted of jars, cooking pots and a dish, typical of low status kitchen and storage assemblages associated with farmsteads of the second to fourth centuries AD. An assemblage of horse bone indicates butchery, or possibly tannery waste. Several pits were found, one of which had been used to dump the partial remains of a human: chiefly a leg, mixed with the partial remains of a pig (mainly the jaw).

Wimpole, Brickend
TL 3388 5174
Archaeology Rheesearch Group
Magnetometer and resistivity surveys were carried out to look for evidence supporting the presence of a moat shown on plans of 1815. Both surveys recorded anomalies that were coincident with the southern portion of the moat, together with features corresponding to possible spring lines and drainage channels. Some magnetic disturbance was recorded in the western part of the site, possibly indicative of settlement activity.

Woodditton, Darley Stud, Saxon Street
TL 6694 5981 (AS Report 2010)
T. Woolhouse, A. Mundin and D. McConnell
Evaluation of an area of 185ha revealed sparse and dispersed archaeological remains of later prehistoric to post-medieval date. The majority of remains comprise ditches and pits, with some residual pottery in later features.

Woodditton, Derisley Wood, Darley Stud
TL 6616 6076 (AS Report 2123)
A. Mundin, S. Hogan and K. Trott
An evaluation revealed ditches and a pit of Late Bronze Age to Middle Iron Age date, providing evidence for sparse prehistoric activity at the site. Several undated ditches, gullies and pits, a tree-throw pit and a post-medieval ditch were also recorded. No evidence for medieval occupation associated with the nearby moated site was identified.

Desk-based assessments were undertaken at the following sites:

Cambridge, Trumpington Meadows
TL (CAU Report 681)

Hauxton, Bayer Crops Science Site
TL (CGMS Consulting Report)

Huntingdon, St John's Business Park
PreConstruct Archaeology Report

Milton, NAPP, Cambridge Science Park
CAU Report 743

Milton, New Park & Ride Site
CAM ARC Report 890

Pampisford, London Road
AS Report 2083

St Neots, Crosshall Manor
AS Report 2012

Soham, Lion Mills (2005)
CGMS Consulting Report

The following sites produced little or no archaeological evidence:

Alconbury, Flood Alleviation Scheme
TL 1881 7551 (Oxford Archaeology Report)

Alconbury Weston, 3, 5 & 7 Vinegar Hill
TL 1791 7699 (AS Report 1968)

Babraham, Babraham Hall (2003)
TL 5100 5050 (Air Photo Services Report 2003/12)

Cambourne, GC28
TL 3227 5981 (Wessex Archaeology Report 63120.02)

Cambourne, Knapwell Plantation Far East
TL 3282 5981 (Wessex Archaeology Report 63121.03)
Barton, C.

Cambridge, Brooklands Avenue Phase 3
TL 4562 5680 (CAU Report 744)

Cambridge, Former Black Bear Press Site, Kings Hedges Road
TL 4597 6153 (AS Report 2148)

Cambridge, Clare College Memorial Court
TL 4422 5846 (CAU Report 740)

Cambridge, Glebe Farm road corridor, Trumpington (2005)
TL 4467 5402 (CAU Report 662)

Cambridge, Guided Busway
(CAM ARC Report 903)

Cambridge, Meadowcroft Hotel, Trumpington Road
TL 4516 5647 (CAU Report 724)

Cambridge, Netherhall Upper and Lower School, off Queen Edith's Road
TL 480 560 (CAM ARC Report 898)

Cambridge, Physics for Medicine Buildings
TL 4297 5892 (CAU Report 726)

Cambridge, Red House site, Station Road
TL 4606 5731 (Foundations Archaeology Report 497)

Chatteris, Block Fen (trenches 2002–5)
TL 4388 8387 (AS Report 2108)

Chatteris, London Road and Blackmill Road
TL 3905 8486 (Archaeological Project Services Report 148/06)

Earith, Brackhill Fen (2005)
TL 3879 7715 (Oxford Archaeotechnics Report)

Earith, Hermitage Lock
TL 3935 7464 (Oxford Archaeology Report)

Elm, Land off Rose Lane
TF 4697 0694 (Archaeological Project Services Report 152/06)

Hauxton
TL 4338 5256 (CAM ARC Report 880)

Hauxton, Bayer Crop Science site
TL 4331 5242 (CGMS Consulting Report)

Histon, Chivers Way
TL 4386 6295 (Heritage Network Report 365)

Histon, Land adjacent to 53 Cottenham Road
TL 4370 6440 (AS Report 2008)

Houghton & Wyton, Houghton Grange
TL 2969 7205 (Archaeological Services and Consultancy Report 799/HGR/1)

Huntingdon, Land at St John's Business Park
TL 2325 7370 (PreConstruct Archaeology Report)

Huntingdon, Walden House
TL 2376 7181

Litlington, Land to the rear of 1 Ashwell Street
TL 3161 4204 (AS Report 2127)

Littleport, Millfield Primary School
TL 5606 8607 (CAM ARC Report 912)

Littleport, Land off Wisbech Road
TL 5492 8769 (Allen Archaeological Associates Report)

Melbourn, Moorlands Residential Care Home, Moor Lane
TL 3851 4519 (PreConstruct Archaeology Report)

Meldreth, West Way/Whaddon Road
TL 3678 4629 (AS Report 2048)

Meldreth, Whaddon Road
TL 3677 4629 (Stratascan Report)

Milton, Land south of Butt Lane
TL 4685 6295 (Cranfield Forensic Institute Report 003)

Morborne, Manor Farm
TL 1398 9161 (CAM ARC Report 871)

Papworth Everard, Land west of Papworth Everard Business Park (2005)
TL 2856 6240 (Stratascan Report)

Papworth Everard, Papworth Business Park
TL 2921 6221 (CAM ARC Report 878)

Peterborough, Flag Fen Reinforcement Scheme
TF 5224 2999 (CAM ARC Report 907)

Ramsey, Abbey School
TL 2917 8504 (CAM ARC Report 893)

St Ives, Greaves Farm (2005)
TL 3030 7080 (Oxford Archaeology Report)

St Neots, Crosshall Manor, Great North Road/Cross Hall Road
TL 1738 6125 (AS Report 2020)

St Neots, 441–3 Great North Road, Eaton Ford
TL 1725 6085 (AS Report 2072)

St Neots, Longsands College
TL 19239 60749 (CAM ARC Report 921)

St Neots, Land north of Priory Hill Road
TL 1965 6160 (Archaeological Project Services Report 123/06)

Somersham, Knobbs Farm (2004)
TL 3665 7932 (CAU Report 616)

Spaldwick, Ellington Brook
TL 1272 7305 (Network Archaeology 523)

Steeple Morden, Land adjacent to Station Quarry
TL 307 393 (Oxford Archaeology Report)

Stetchworth, July Racecourse
TL 6128 6181 (CAM ARC Report 875)

Stetchworth, National Stud Roundabout
TL 6116 6098 (Heritage Network Report 373)

Stetchworth, Newmarket Equine Hospital
TL 6105 6080 (Air Photo Services Report 2006/14)

Sutton, Land at rear of 80 High Street
TL 4421 7881 (CAM ARC Report 884)

Swaffham Prior, Mill Hill
TL 5718 6417 (CAM ARC Report 864)

Upwood and the Raveleys, Bury Lane Farm
TL 2652 8470 (NAU Archaeology Report 1178)

Whittlesey, Land adjacent to 75 Coates Road, Eastrea
TL 2971 9730 (NA Report 06/21)

Whittlesey, Stonald Field (2005)
TL 2633 9789 (Archaeological Surveys Geophysical Survey Report 124)

Whittlesey, McCains Potato store, Funthams Lane
TL 2332 9759 (CAU Report 719)

Wimblington, 3 Church Street
TL 4162 9221 (CAM ARC Report 889)

Wisbech, Sandyland Street (2004)
TF 4599 0993 (Archaeological Project Services Report 118/04)

Obituary

David Raoul Wilson BLitt, MA, FSA, MIFA 1932–2006

The Society was very sorry to learn of the death of David Raoul Wilson on 6 August 2006. He served on the Council of the Antiquarian Society for 15 years from 1979, as Ordinary member, Vice-President and as President during 1988–90. He introduced the Capriol Dancers and spoke on Social dance in Europe 1250–1650 in 1987, and in 1989 lectured on and displayed the University's collection of aerial photographs to members. Both occasions were unusually and memorably concluded with 'refreshments'. It fell to him to oversee and host the 150th Anniversary celebrations of the Society's founding during 1989–90; they included a formal dinner at St John's College and a reception attended by the Duke of Gloucester. We are grateful to Derek Edwards for providing the obituary published below.

David Wilson was born on 30 October 1932 in Tunbridge Wells and died peacefully in Cambridge on Sunday 6 August 2006, aged 74, having been diagnosed with pancreatic cancer in November 2005. In the short time remaining to him before his untimely death, with intense enthusiasm and typical attention to detail, he completed work on his publications in progress, prepared his own eulogy and determined the order of service for his Humanist funeral.

David Wilson had three careers: as a classical scholar and Roman archaeologist, as an aerial photographer, and as a dance historian. He had a profound effect on each of his chosen disciplines, attaining an excellence that both inspired and commanded the respect of all those who had the privilege to know and work with him. He was a deeply private man, with an alluring, if wry, sense of humour. In the field of archaeological aerial photography, he was one of a small and ever-diminishing number of master-practitioners, the like of whom we may never see again.

David's interest in Roman archaeology developed when, as a sixth-former, he learnt his excavation technique from Professor Sheppard Frere on the bombed sites of Canterbury, when Frere was still a schoolmaster at Lancing College. A scholarship in Classics to Oriel College, Oxford, caused David to delay his national service until 1955. It was this training in classical studies that would later place David in a unique position when reviewing the works of eminent classical scholars who strayed into the sphere of aerial photography and archaeology.

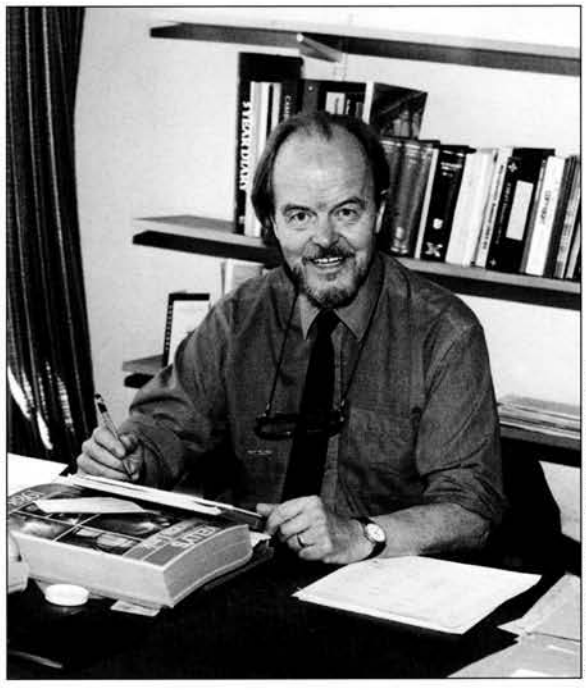
Four years in the Oxford University Cadet Force allowed David to complete eight weeks of basic training and to go on to officer training. In due course he passed out from Mons Officer Cadet School as Senior Cadet with the Stick of Honour and was posted to 1 RHA at Münster (Westfalen). David found army life as a subaltern in a leading regiment sufficiently congenial to consider a Short Service Commission. Two factors held him back. First, as a national serviceman he gave of his best, but he was still doing so under compulsion. Secondly, if he took a Short Service Commission, he would become a professional with the serious intention of training people to kill others. For David, even a three-year Commission was too much to contemplate and he returned to Oriel, determined to become a professional archaeologist.

Supported by a scholarship and then Fellowship of the British Institute of Archaeology at Ankara, he undertook two seasons of fieldwork in Northern Anatolia, (Bithynia, Paphlagonia and Pontus). The study of the historical geography of the area made good sense but was ludicrously large for ground exploration. It was as he was beginning to write up in his third year of study that Professor Sir Ian Richmond invited David to become his Research Assistant at Oxford and, with exquisite tact, told him that he (Richmond) was currently too busy to give David any work and that he had better get his thesis finished!

So began five of the happiest years of David's life, working as a Roman archaeologist, assisting Miss M. V. Taylor, the editor of the *Journal of Roman Studies* – who was heard to say on occasion that he had 'excellent judgement' – and working with Professor Sir Ian Richmond on the revision of R. G. Collingwood's classic *The Archaeology of Roman Britain* (1930). David was pleased to note that he was able to exert 'great influence' in the choice of illustrative material for the revised work.

On 1 April 1965, after an exhilarating trial flight, untroubled by *mal de l'air*, David Wilson began his second career and became an aerial photographer, joining the late Kenneth St Joseph's small pioneering team of aerial photographers and photo-interpreters at the Cambridge University Committee for Aerial Photography (CUCAP). In those

Proceedings of the Cambridge Antiquarian Society XCI pp. 227–229



Photograph courtesy of Rowan Whimster

early months at Cambridge, following the death of Ian Richmond, David was also responsible for over-seeing the publication of the revised *The Archaeology of Roman Britain* for Methuen.

Three days after his appointment as St Joseph's Senior Research Assistant, on 3 April 1965, David married Gay Marsden and they went on a fortnight's honeymoon, digging at Lezoux (the south Gaulish production centre for *terra sigillata*) with Brian Hartley. Unfortunately, their marriage survived only into the mid-seventies; their amicable separation was celebrated with a fancy dress ball at their home in Haslingfield. The sight of David, masquerading as Mephistopheles, dressed in a crimson smoking jacket, with fiery horns and an enormous, black, barbed tail draped over his arm is a lasting personal memory and testament to his remarkable sense of humour.

By 1965 Kenneth St Joseph's unique programme of interdisciplinary aerial reconnaissance was already in its twenty-first year. It was, however, David's arrival that paved the way for some of the most important and creative years in the life of CUCAP and he acquired and developed new skills, involving both oblique and vertical survey photography that was relevant to many areas of research – agriculture, archaeology, ecology, forestry, geology and geographical subjects of all kinds – and subsumed himself in undergraduate and extra-mural teaching and the publication of educational text-books such as the *Roman Frontiers of Britain* (1967), for Heinemann Educational Books. However, working with Kenneth St Joseph in Cambridge was, for David, a less happy experience than his five years in Oxford.

These were the decades that saw the Cambridge flying programme extend its range from mainland Britain to Ireland, France, the Netherlands and Denmark. It was also the period when simple archaeological reconnaissance began to expand into the mature and sophisticated sub-discipline that it has become today. David's contribution to that growth took many influential forms. In the air he was responsible for literally hundreds of new archaeological discoveries, many of which were never acknowledged, while, on the ground, his rigorous standards ensured the consistent technical excellence of the CUCAP collection and its supporting catalogues.

David was elected a Fellow of Wolfson College, Cambridge, in 1971 and it was in those halcyon days of the early seventies, when archaeological aerial reconnaissance was, possibly, at the height of its development and practice in the United Kingdom, that an International Symposium took place in London. The papers from this symposium were edited by David and published by the Council for British Archaeology (CBA) under the title *Aerial Reconnaissance in Archaeology* (1975).

The CBA adopted the symposium committee as its own Research Committee in Archaeological Aerial Photography in 1975 and David was one of its most distinguished members for many years. When the CBA promoted regional committees for aerial reconnaissance, David became Chair of the Committee for the Anglian Region and was instrumental in the establishment of the Aerial Archaeology Foundation and the journal, *Aerial Archaeology*. This journal first reviewed all the photographic archives in the Anglian Region and then, in volume 3, included a 25-page gazetteer of all the known, published, archaeological aerial photography in the region, a task that required meticulous attention to detail and one to which David was ideally suited as senior contributor.

David was a Founder Member of the Aerial Archaeology Research Group (AARG) and he made regular and enthusiastic contributions to both the Annual Conference and the group's *Newsletter*. His role as a catalyst for the publication of books and articles about aerial photography have been equally important to the discipline, and include the splendid *Cambridge Air Survey* volumes published under his evangelical direction during the 1980s and 1990s. His editorial role brought the message of aerial photography to a whole series of new audiences, both in the United Kingdom and around the world.

David was a Founder Member of the National Association of Aerial Photographic Libraries (NAPLIB), Honorary Secretary (1989–93), President (1993–6) and Past President (1996–8) and the driving force behind the publication of the *NAPLIB Directory of Aerial Photographic Collections in the United Kingdom* (1993), and his own *The Care and Storage of Photographs: Recommendations for Good Practice* in 1997. He was a perpetual inspiration to all who care for air photographs and appreciate their irreplaceable importance as sources of information and understanding about the landscapes of yesterday and today.

When Professor St Joseph retired from Cambridge in 1980, David was appointed Curator of Aerial Photography, an increasingly demanding role that combined the traditional skills of aerial photographer, archival conservator, librarian, academic researcher and teacher combined with the unique entrepreneurial ability to ensure CUCAP's survival in an increasingly competitive, modern, university world.

In addition to his editorial role at Cambridge, David's research resulted in a steady sequence of papers on subjects as diverse as Neolithic causewayed enclosures, Romano-Celtic temples, villas, Roman forts and smaller Roman towns. His study of the mechanics of cropmark formation led to the publication of *Air Photo Interpretation for Archaeologists* (1982), subsequently revised and republished by Tempus in 2000. To this day it remains one of the most accessible and helpful introductions to the techniques of aerial archaeology. Though, in David's opinion, this seminal work is now 'out of date in many ways', it has still to be replaced by 'the work of a younger man'.

It was in 1980, shortly after his marriage to Elizabeth Wallwork, whom he met at an archaeological conference in York, that Elizabeth took David by the hand and led him to the dance floor, launching him into his third career, which, like the first two, would again make his name truly international. She introduced him to early dance and the Capriol Society for Courtly Dancing: a move that led him into an entirely new form of activity, first dancing with his beloved Elizabeth, who he maintained *danced*, whilst other members of the Society merely did the steps! Subsequently, David's meticulous research resulted in the production of several excellent books on the subject, including *Domenico of Piacenza* (2006), a transcript of a fifteenth-century Italian dance treatise.

David and Elizabeth shared several years that were some of the happiest of their lives but she tragically died from metastatic breast cancer in 1993. Four years later, in 1997, he retired from his University work. Freedom from University responsibilities allowed David to dedicate himself to historical dance, which had already been his principal research interest for ten years. In the following years, and in addition to the very considerable voluntary work that he did for the Cambridge Cancer Help Centre and other bodies, David was instrumental in setting up a National Resource Centre for Historical Dance for the Early Dance Circle and cataloguing their substantial library. In February 2006, the Early Dance Circle was proud to recognise the magnitude of David's contribution to the study of early dance by presenting him, with the first ever Peggy Dixon Trophy, awarded for 'Outstanding Service to Early Dance'.

In his final weeks, David was hard at work updating *Air Reconnaissance in Roman Britain 1977–84*, which he had first published with G. S. Maxwell in 1987, and had already completed the first revision, from 1985 to 1990, with Rebecca Jones. But he was also striving to finish his final *magnum opus*, the complete study of the basse danse from its earliest form to the latest, found in the late sixteenth-century volumes of Caroso and Negri. Completed only a few weeks before his death, the manuscript of this masterpiece is now in the United States of America awaiting publication by Pendragon Press: the final chapter of an invaluable legacy of published material by an internationally acclaimed scholar.

Inset: David Wilson wearing an accurate reproduction of a late sixteenth-century Italian court costume. Photograph courtesy of Hugh Hillyard-Parker.

Reviews

Malcolm Underwood, Paul Spoerry, Debby Banham

An Intimate History of the Parish of St Clement in Cambridge, 1250–1950
T. E. Faber 2006
Cambridge: Privately published, xxiv, 956pp.

Tom Faber's explorations of the history of his neighbourhood began with the unravelling of a mystery about his own house, thought from the seventeenth century to have been a house for chantry priests of St Clement's, and later called The Old Vicarage, both without firm historical evidence. His characteristically restless quest for the truth of its history led gradually to a consuming interest in the buildings and people of the whole parish, resulting in a fascinating panoramic study of the area which, with its appendixes, indexes, and plans of tenements, is nearly a thousand pages long. After an introductory tour of the parish as it was in 1886, the book moves on to examine its topography through the history of blocks of holdings in its various sectors: the Church and its surroundings, Quayside with its wharves and warehouses, the settlement around Thompson's Lane, and the commercial area of Bridge Street. A third section, the longest in the book, called 'People' tells the story of families of the parish as they appear in a wide range of published and unpublished sources.

The history's biographical emphasis reminds one of another great study of parish identity: Richard Gough's *History of Myddle*, written in 1700–01 but not published until 1834. Gough started from the named family pews in the parish church, a circuit of which was the cue for a wealth of anecdotal detail about their owners, and hence about sixteenth and seventeenth century village life. Tom's analysis, however, is far from anecdote, although it contains some highly entertaining personal stories. It reveals his tireless scientific bent for arriving at accurate detail, through comparing the terms of deeds of properties, rentals, surveys and tax lists found in a number of Cambridge colleges and in public collections. All of this was accompanied by attempts at systematic mapping of tenements, showing graphically how the balance of acquisition altered among the various families. Tom's sense of precision was often frustrated by a continual need to revise layouts, based on the sometimes ambiguous evidence of boundaries in medieval and later deeds.

Indeed, ambiguity both in the realm of topographical data and in weaving strands of personal information into a satisfying whole presented Tom with his greatest difficulty. The research for an informative passage (p. 123) on the brewing trade that flourished in the neighbourhood of the present Thompson's Lane was complicated by uncertainty about the succession of tenants, and about the way in which businesses shared the land. Nevertheless we now know much more about who managed this trade and how the river water was piped and pumped to support it. Similarly, the reconstruction of families and careers, especially in the thirteenth and fourteenth centuries, was subject to occasional conjecture due to lack of firm identification. Yet the accumulated details of these holders of land, messuages and civic offices, and of the alliances between their families, which emerge in such a prosopographical study, also provide valuable raw material for studying the economy and government of the town.

At Tom's death in 2004 the legacy of his unpublished materials, in an almost finalised state for a history of the parish, presented both an inspiration and a challenge. The situation was splendidly resolved by the initiative of his widow Elisabeth in pressing forward with publication, and by the work undertaken by Laura Naplin in order to realise that goal. It is an effort that will be enormously appreciated by anyone interested in the development of the town of Cambridge.

Malcolm Underwood
St John's College, Cambridge

Between Broad Street and the Great Ouse: Waterfront Archaeology in Ely
Craig Cessford, Mary Alexander and Alison Dickens
2006
Cambridge: Cambridge Archaeological Unit, East Anglian Archaeology volume 114. 118pp. £12.00
ISBN-10 0 9544824 3 3, ISBN-13 978 0 9544824 3 5.

This monograph is the second volume to appear in recent years describing developer-funded excavations carried out by the Cambridge Archaeological Unit in the city of Ely. The authors are to be congratulated on achieving publication quickly; this is a necessary addition to the bookshelf, being only the second publication to detail modern-style excavations in the lower town.

This volume is principally the publication of excavations at Jewson's Yard, which readers might be familiar with from the Time Team programme that detailed their progress over several months during 2000. It also describes a watching brief on large-scale development at the former Tesco's site and it reviews a number of smaller investigations, also between Broad Street and the river. This group of sites together form a sizeable part of the riverside zone of medieval Ely and there is much sense in bringing them together for consideration.

The sequence at Jewson's Yard is presented across five temporally-defined chapters that for the most part clearly elucidate the changing nature of activity on the site from the eighth to the seventeenth centuries. The exception to this is the first phase described in chapter 2. Editorial control fell away here and the difference in start date presented on the volume contents page (from mid-eighth century) when compared with that of the Chapter heading itself (ninth century) points to the uncertainties of dealing with only a tiny sample of the potential landscape of this period. Two trenches totalling perhaps 30 square metres revealed Middle to Late Saxon features of type and apparent density that could only be evidence for occupation. The authors rightly make this suggestion, based also on the important group of Ipswich ware sherds and the early ninth-century coin found here. The chapter is less than two pages long. This evidence is important, but it is depressing that only such a small window into this phase of activity was given. We are fortunate that the site for the most part now remains as parkland, as implicit in these findings is the potential for a much large survival of Middle Saxon occupation remains in this area of the waterfront. Chapter 2 thus can only hint at an opportunity that has yet to be taken.

Following a period of abandonment due, presumably, to worsening local environmental conditions, activity recommenced in earnest in the late twelfth century. Chapter 3 details the excavation of part of an aisled structure, unfortunately introduced as a 'hall' as it is later interpreted as most probably a 'barn'. This inconsistency betrays the limited extent of the structure observed through excavation but, nonetheless, the authors have done a good job in giving the context of this building, and some boundary/drainage ditches to the south-east of it, in terms of an emerging picture of the lower town's plan development. A single large 'tank' probably represents the storage of live fish, something that is well attested in documents relating to the waterfront area. The most valuable contributions here are, however, the sections summarising material culture (principally pottery) and environment and economy, strangely also incorporated under the former heading. Here, for the first time in Ely, new assemblages, when added to previously published data, have started to map out differences and similarities across the town that offer real insight into animal husbandry and product processing, into utilisation of Fenland resources and into the supply and usage of pottery vessels.

Chapter 4 follows a similar pattern, charting the appearance of later buildings near the Broad Street frontage, which include an aisled hall of fourteenth-century date for which much ground preparation was made. The central part of the site witnessed a continuation of property/water-management boundaries and an increase in the number of 'fish tanks'. The riverside initially saw little activity beyond seasonal flooding, but by the end of the fourteenth century two channels had been dug perpendicular to the riverbank, which were created to allow small craft to be brought into these properties and loaded and unloaded safely and easily. This form of fenland 'hithe' and spur canal or lode has a number of regional parallels, which the authors draw attention to, and these are certainly the first excavated examples to be published properly. Again, ignoring oddly organised headings, environment, economy and material culture are well served by a substantial set of thoughtful syntheses.

The remains detailed in Chapter 5 bring together the themes of riverside, canals and craft activity in the description of a sixteenth-century pottery production site complete with kilns, puddling pits and workshops lying at the end of three channels, serviced by lifting gear. Part of an adjacent tannery was also excavated. We have known for decades that there was sixteenth- to seventeenth-century blackware or Cistercian-type ware production at Ely (known as Babylon ware), and the medieval products of local potters are now also becoming well understood. Nonetheless the gritty and fine redware, bichrome redware, whiteware and 'Babylon' products of this sixteenth-century site had not been entirely predicted. Now defined and described, these products can be recognised elsewhere and the authors rightly point to their presence in other published assemblages, including the previous definition of the bichrome redware as 'West Norfolk bichrome' at King's Lynn. Two phases of production during the sixteenth century were revealed and the authors have done an excellent job in defining and describing this important pottery producer, and placing it in the context of ceramic studies, relating it to available documents concerning the riverside properties in the post-medieval period, and to the wider industries and economy of Ely and the Isle.

A final temporally-defined chapter provides more insight into seventeenth-century and later phases of pottery production, including the detailing of a sizeable slipware waster group, alongside a comprehensive discussion of horn working and tanning remains.

The final chapter is unsurprisingly the 'meat' of the volume and here for the first time a model of the development of Ely's medieval and post-medieval waterfront is constructed from excavated archaeological evidence. Previously only landscape and documentary data have been available. The authors here stand squarely behind their assertion, first made in Chapter 3, that the canalisation of the Great Ouse must have occurred in the twelfth century, and not perhaps in the tenth century, which has previously been suggested. All the development and activity that the volume documents stems from this point, temporally, economically and in landscape terms. This is then fleshed out in their discussion, which is wide-ranging and substantial, in particular in its consideration of the evidence for trade and industry. Here, for the first time, we are given a real archaeologically-derived picture of this emerging settlement that eventually becomes a town, but which, in common with many fenland places, exhibits a confusing set of attributes, both rural and urban, throughout its evolution.

Overall, in this very worthwhile volume there is much that is useful to the specialist pottery researcher, student of medieval archaeology and also for those with an interest in the archaeology of Ely and the Fenland generally. It is most definitely a recommended read. A few editorial oddities aside, its only major weakness is that this strong thesis is derived from the set-piece excavation of one site only, all the other evidence being gleaned from a ragbag of observations and recording exercises in this of part of town. Future researchers might therefore give those of this generation two cheers only for their efforts: finally we have quality excavated evidence in the lower town at Ely, but opportunities may well have been missed to achieve a more comprehensive view.

Paul Spoerry
CAM ARC

Lords and Communities in Early Medieval East Anglia

Andrew Wareham 2005
Woodbridge: The Boydell Press ISBN 1 84383 155 4,
pp. xix,185. £45

This book was written in response to the report by English Heritage *Power of Place: The Future of the Historic Environment*, and in particular to its call for regional case studies. To a great extent, it is a study of aristocratic families; and readers, even those familiar with the early Middle Ages, may be surprised to discover how much can be known about individuals and their relationships, both to other people and to the districts where they lived and held land, in the tenth and eleventh centuries. A central theme of the book, which might be deduced by astute readers from the period covered, but is not immediately obvious from the title, is the idea of a 'feudal transformation'. The scholarly context, largely continental, of this idea, is set out in the introduction; as Dr Wareham points out, scholars working on England have tended to associate the origins of feudalism with the Norman Conquest, and not to look further back for changes that might be relevant. A regional focus allows him to look at how such changes might have worked in practice, by examining how aristocratic families related to each other, to those above and below them in society and, crucially in East Anglia, to ecclesiastical institutions.

Readers from Cambridgeshire and Huntingdonshire will be pleased to know that both counties are included in Dr Wareham's East Anglia; he does not confine himself to the ancient kingdom of the East Angles. His book contains a good deal of interesting local information, and features some characters who will already be familiar to many readers. The very first chapter deals with the dynasty of Ealdorman Æthelwine and the foundation of Ramsey Abbey. Chapter 2 is a companion piece on the refoundation of Ely in the tenth century and the family of Wulfstan of Dalham, a useful corrective to the usual emphasis, based on the *Liber Eliensis*, on the role of Bishop Æthelwold. The next chapter is concerned with two more patrons of Ely, Ælfflæd, the widow of Ealdorman Byrhtnoth, the tragic hero of the battle of Maldon, and her sister Æthelflæd, and the fourth with Byrhtnoth's own family and their donations to Ely. Benefactions to both Ely and Ramsey also feature in Chapter 5, in this case those of emerging 'gentry' class, people who were of thegnly rank, but whose interests did not extend beyond their home region. Later chapters focus mainly on other counties, but reveal for instance that the biggest landowners in Cambridgeshire and Huntingdonshire also held extensive estates in the other eastern counties (Chapter 8). This applies both to those who held lands all over the country and to those whose interests were purely regional. The importance of royal influence, frequently operating through patronage of the Church, also emerges clearly. Another interesting phenomenon is the development during this period of little 'central places', with both markets and churches adjacent to lords' residences.

It cannot be pretended, unfortunately, that this book is an easy read. It is in the nature of the case-study format that it is heavy with data, and, because the author uses each case study to test a particular hypothesis about the 'feudal transformation', it is heavy with theory as well. Nonetheless, the effort of grappling with the data, and even the theory, will reward readers with some fascinating insights into society in our counties at a crucial stage in its development. And writers of more popular works will find a good deal here that would be worth disseminating to a wider audience.

Debby Banham
Department of History and Philosophy of Science,
University of Cambridge

Index

Jane Carr

Illustrations are indicated by numbers in *italics* or by *illus* where figures are scattered throughout the text.

Abbreviations

CAM ARC	Archaeological Field Unit, Cambridgeshire County Council
Ant.	*Antiquity*
Antiq. J.	*Antiquarians Journal*
Arch. J.	*Archaeological Journal*
BAR	British Archaeological Reports
BUFAU	Birmingham University Archaeological Field Unit
CAU	Cambridge Archaeological Unit
CBA	Council for British Archaeology
CCC Rpt	Cambridgeshire County Council Report by the Archaeological Field Unit
CRO	County Record Office, Cambridge
CUCAP	Cambridge University Committee for Aerial Photography
CUL	Cambridge University Library
CUP	Cambridge University Press
EAA	East Anglian Archaeology
HAT	Hertfordshire Archaeology
HER	Cambridgeshire Historic Environment Record, formerly Cambridgeshire Site and Monuments Record (SMR)
HMSO	Her Majesty's Stationery Office
HRO	County Record Office, Huntingdon
NMR	National Monuments Record, Swindon
OUP	Oxford University Press
PCAS	*Proceedings of the Cambridge Antiquarian Society*
PPS	*Proceedings of the Prehistoric Society*
PRO	Public Record Office
RCHME	Royal Commission on Historic Monuments (England)
VCH	Victoria County History, Cambridgeshire
VCHH	Victoria County History, Huntingdonshire

Recent Accessions to the Cambridgeshire Collection 2006

Chris Jakes

AMBROSE, Tom
St Mary & St Michael, Trumpington.
Trumpington: The author, 2006.

ANDREWS, Margot & Derek
Prickwillow Pottery, 1975–1995.
Cambridge: The authors, 2006.

ANTHONY, Graham
The Fascination of Fenland.
Cambridge: SeaHorse Publishing Ltd, 2006.
ISBN 0955263018

AYRES, Peter
Harry Marshall Ward and the Fungal Thread of Death.
St Paul Minnesota: APS Press, 2005.
ISBN 089054333X

BAKER, Eddie
A history of firefighting in Cambridgeshire.
Huddersfield: Jeremy Mills Publishing Limited, 2006.

BARCLAY, Oliver R
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The Cambridge Antiquarian Society is grateful to Cambridgeshire Libraries for a grant towards publication of this article.

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